# Analysis of Interactive Videos from a Gamification Perspective: A Case Study of Bilibili (Postprint)

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## Abstract

The leapfrog development of new media technology has positioned deep integration as the mainstream trend of the era, transforming "audiences" into "users" who increasingly prioritize individual choice and process-oriented experiences. Interactive videos mobilize user skills to confront unknown challenges; through pause-based decision-making, users engage in role-taking and immersion, thereby acquiring a sense of agency and participation. Grounded in gamification theory and utilizing popular interactive videos on Bilibili as a case study, this research investigates user emotional experiences during viewing processes via online participatory observation and danmaku text data mining, while also examining the underlying cultural significance and audience behavior patterns, ultimately elucidating the dissemination characteristics of interactive videos on the Bilibili platform.

## Full Text

## Interactive Video Analysis from a Gamification Perspective: A Case Study of Bilibili

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### Abstract

The rapid advancement of new media technology has made deep integration the mainstream trend of our era, transforming "audiences" into "users" who place greater emphasis on individual choice and process experience. Interactive videos mobilize user skills to confront unknown challenges; through pause-and-select

mechanisms, users project themselves into roles and become immersed, thereby gaining a sense of agency and participation. Grounded in gamification theory and using popular interactive videos from Bilibili as case studies, this paper employs online participatory observation and mines bullet comment text data to explore the emotional experiences generated during user viewing processes, as well as the underlying cultural significance and audience behaviors they reveal, thereby clarifying the communication characteristics of interactive videos on Bilibili.

**Keywords:** interactive video; user experience; gamification

"It was the best of times, it was the worst of times." Having witnessed the technological evolution from 2G to 4G and now 5G, the modes of information delivery have shifted from early text-image formats to video iterations [1]. The highly developed network has unprecedentedly enhanced each individual's capacity to access and receive information, with people increasingly utilizing fragmented time for entertainment, which imposes higher demands on video content's entertainment value. The need for traditional video upgrades cannot be ignored, and to enhance user stickiness to both content and platforms, interactive videos—more aligned with information transmission patterns and the needs of both communicators and recipients—have emerged accordingly.

## 1. Interactive Video and Gamification

### 1.1 Definition and Development Overview

As a product of Web 2.0 technology, interactive video first captured public attention in 2018 when the renowned American video platform Netflix launched interactive dramas such as *Black Mirror: Bandersnatch* and *LATE SHTIT* [2]. Subsequently, a wave of interactive video enthusiasm swept across China, making it a keyword and focal point for innovation among video platforms. Interactive video is a video format that enhances user interaction experience and sense of participation through diverse interactive methods. Compared to traditional film and television, interactive video transfers the decision-making power over story development to users, who can flexibly intervene in the narrative structure and outcomes of the work. During the interaction process, users enjoy considerable freedom to participate in plot advancement and ending determination. Content producers pre-create databases containing numerous plot events, waiting for users to 赋予 these events a causal trajectory, thereby forming a narrative [3]. This narrative approach first became popular in video games, such as role-playing games where players, under certain game rules, control virtual characters to select personalized gaming experiences. Later, this interactive narrative method was also applied to novels, film, television, and other fields.

Domestic research on interactive video has primarily concentrated from 2019 to the present, with the earliest study being Jin Xin's article *The Impact of Interactive Video on Film Represented by Mobile Terminals* published in *Modern Film Technology* [4]. Subsequent research has focused on reviewing the devel-

opment history of interactive video. Scholars have examined interactive video from technical perspectives and various disciplinary backgrounds, discovering that its development model is gradually maturing, with increasing scholarly attention. Most of these works appear as journal articles and are fairly numerous; however, due to the short development time of interactive video, most scholars have only focused on reviewing its developmental process, while there remains a certain degree of deficiency in deeply analyzing its development motivations and employing standardized research methods. Overall, academic research on interactive video presents a status quo of singular research methods and theoretical scarcity.

### 1.2 Characteristics of Interactive Video

**1.2.1 Immersive Experience** Traditional video employs linear narrative, using montage techniques to advance plot development according to temporal structure. Interactive video, however, adopts multiple branching narrative structures, incorporating various parallel spacetimes within the same story. *Invisible Guardian* is an interactive game video with themes of war and espionage that includes four branching storylines and as many as 134 different endings. When users interact with the video, their posture shifts from passive reception to active selection, and their identity transforms from "user" to "player." This interactive gaming experience constitutes an important reason why these players become immersed. In interactive videos, user behaviors such as clicking, swiping, and perspective-switching serve not merely for interaction; these behaviors create an interactive influence between users and the video. This interactive influence provides users with a present experience in which they can become immersed. Through different plot endings and multiple parallel spacetimes, interactive video continuously stimulates user curiosity and challenge psychology while simultaneously creating an immersive experiential atmosphere.

**1.2.2 Instant Interactivity** The most important characteristic distinguishing interactive video from other video formats is interactivity. Interacting within virtual scenarios further mobilizes user participation. In the new media environment, the transformation of audience identity into user identity all demonstrates the audience's pursuit of interactivity. Users employing interactive video are no longer simply sitting before screens receiving information from media unidirectionally; rather, they achieve interaction between users and between users and media by participating in interactive videos. Users complete interaction with videos by clicking and swiping interactive nodes and on-screen interactive information elements provided by creators. This instantaneity eliminates, to a certain extent, the time lag for information feedback to users, making media feedback rapid and immediate.

**1.2.3 Autonomous Selectivity** In interactive videos, users experience content or plots from a first-person perspective. Under the multi-plot selection

settings of interactive video, users can trigger completely different story directions through two or more options provided by creators. This multi-mainline narrative approach allows users to make autonomous selections from a god's-eye perspective, experiencing different storylines and endings. Unlike previous video formats, users in interactive videos are equivalent to the protagonists of stories, so the protagonist's fate lies in users' hands. In the Bilibili interactive video *Peach Blossom Spring Horror*, user plot selections trigger two completely different endings: either being trapped in the Peach Blossom Spring or successfully escaping. This interactive video model that can determine the protagonist's life and death is beloved by users, particularly Gen Z users. The selectivity of interactive video brings users not only immersive experiences but also distinct characteristics of personal choice.

### 1.3 Gamification

Gamification refers to the application of game design elements and game mechanics to non-game fields. The earliest practitioner to apply gamification thinking was British game developer Nick Pelling, who in 2003 applied game user interface design to consumer electronics, making electronic transactions more fun and efficient [5]. In the Internet era, gamification concepts have been widely applied in commerce, education, health, and various other fields.

Interactive video is a typical example of gamification application, introducing game elements to satisfy users' psychological needs during viewing experiences. Based on different game elements employed, interactive videos have gradually differentiated into two types during development. One type features shallow gamification, focusing more on branching storyline design, where users act as directors controlling partial narrative authority over the imagery. Early interactive videos mostly belonged to this type, such as *Black Mirror: Bandersnatch*, which operates under a shallow gamification model with "branching plots" as its core interactive mechanism [6]. The other type features higher gamification, demanding more from users' interactive operations and requiring greater attention and effort to obtain video content. These interactive videos exhibit more obvious gamification traits, with relatively simpler plots.

## 2. Communication Characteristics of Interactive Videos on Bilibili

### 2.1 Personalized Satisfaction Based on Gaming Psychology

"Convergent choice" represents an important communication characteristic in interactive videos. Bilibili is a pan-entertainment cultural platform with Gen Z as its audience group. Gen Z users, having grown up in the Internet environment, pursue unique personal traits in daily life [7]. Test videos can provide users with a profile through comprehensive analysis of their answers. This profile, featuring users' unique personality characteristics, directly serves the purpose of seeking identity recognition. Bilibili's bullet comment function creates an environment

of belonging for Gen Z users. During the dissemination of interactive video content, users judge, accept, and share video content based on their preferences to establish emotional resonance with other users. In the Internet era, people's most basic social needs are expression and communication. The multi-linear narrative approach of interactive video can circle groups of users with distinct characteristics through each different ending for discussion and exchange. The integrated dissemination of interactive video and Bilibili not only satisfies users' most basic needs for expression and communication but also further fulfills their entertainment needs, enhancing personalized customization experiences and diversified expression feelings, fully satisfying users' social needs in the current era. Additionally, users can learn knowledge through interactive videos. For instance, a user preparing for the judicial examination can select interactive videos created using Teacher Luo Xiang's materials. Some dry and uninteresting judicial knowledge can be disseminated to users in more interesting ways through the gamification characteristics of interactive video, helping users understand and remember.

### 2.2 Gamified Interactive Behavior

Gamification does not essentially mean establishing a complete game but rather attracts people to continuously invest in an activity by activating three basic psychological needs of intrinsic motivation: competence needs, autonomy needs, and relatedness needs. Users' instant feedback and interaction with others help satisfy their emotional relationship needs. American sociologist Randall Collins' "Interaction Ritual Chains" theory posits that people generate common emotional impulses based on shared psychology and attention, and interaction rituals occur when people use the same symbols to represent their common focus and emotions [7]. As a media communication method, interactive video generates ritualized interactive behavior when participants engage. People share common emotions or experiences through interactive video behaviors. Interactive video incorporates gamification elements in both narrative content and expression methods. Bilibili's currently launched interactive videos introduce gamification mechanisms that give users opportunities to transform their intentions into character actions, forming an active projective identification between users and characters—a two-way feedback between virtual and reality. Based on interaction, there are various game and interaction modes depending on different themes and plot settings. Bilibili creators continuously explore more interaction modes to obtain higher view counts and likes.

### 2.3 Immersive Gaming Experience

Due to its bullet comment instant feedback mechanism and the diversity of interactive video endings, Bilibili's interactive video also represents, to a certain extent, the video-ization of social networks [8]. Interactive video breaks the limitations of time and space, closely connecting frontstage and backstage, media communication, and daily life through role-playing and plot exploration.

Through the interactive form of games, users only need to click fingers, operate mice, or swipe screens to complete chapter content during participation in interactive video dissemination. In Bilibili interactive videos, realism and immersion are what image creators pursue. Interactive video creates a more realistic "sense of presence" through the coordination of digital technology and audiovisual language. This "simulated" virtual space constructed by image symbols blurs the boundary between reality and virtuality, bringing users an immersive viewing experience. When users control plot development while watching interactive videos, it aligns with McLuhan's concept of "the medium is the extension of man" proposed in *Understanding Media*. In the space constructed by interactive technology and image symbols, users are not only viewers but also "creators" under their cognition. The interactive form blurs the boundary between users and creation, with their identities transforming mutually at any moment during the image narrative process, continuously deepening user immersion.

## 3. Limitations of Interactive Videos

### 3.1 Overemphasis on Form at the Expense of Content

Quality content remains the core essence of interactive video. If interactive video relies solely on technology for expression without substantive content, it cannot generate effective interaction. As a pioneer in interactive video, Bilibili possesses a large number of interactive video works. However, upon searching, it was discovered that most high-click-rate videos are personality tests and interactive mini-games leaning toward gamified styles, yet the popularity of gamified content often proves fleeting and cannot drive the long-term development of interactive video. Although many domestic interactive videos have been launched, their quality is uneven, and production levels and techniques are relatively rough. Many interactive videos are interactive for interaction's sake, being rigid and illogical without truly touching upon the deepest meaning of video. Form and content are interdependent and mutually reinforcing. A good work should not merely have empty form but should achieve both unique form and quality content.

### 3.2 Complex Narrative Structure and Low Technical Production Standards

Interactive narrative allows users to participate in film segments or game stories, determining character plot development through their own choices. Compared to conventional narrative structures, interactive narrative demands higher technical skills and presents numerous production challenges. The first issue concerns playback effects at interaction points—the nodes where choices must be made in videos—where lag and delay phenomena frequently occur, affecting overall video quality. The second involves multi-platform compatibility issues. Incompatibility of single-platform interactive plugins creates difficulties for interactive video creators releasing content across multiple platforms and is not conducive to unified supervision and regulation. For instance, the interactive

video editor developed by Bilibili can only be used by content creators with 10,000+ followers, representing a significant restriction [9]. Additionally, problems exist such as repetitive operations, excessive interaction segments, time consumption, low user retention rates, and low input-output ratios.

### 3.3 Weak User Stickiness and Immature Industry Development

Currently, domestic interactive video remains in its initial stage, primarily for three reasons. First, most existing interactive videos feature single themes that easily create aesthetic fatigue among audiences, which is not conducive to establishing stable audience groups. Interactive film and television created by iQiyi, Youku, and Tencent mostly focus on romance, suspense, and other limited themes, while Bilibili predominantly features tests and mini-games. Interactive video themes face significant restrictions that cannot satisfy audience demands. Second, due to traditional habits, audience acceptance of interactivity is not high. The numerous choices presented in interactive videos reconstruct the original narrative development, affecting user experience to a certain extent. Third, technical issues also impact viewing experience. Interactive videos can only be watched online and cannot be downloaded, making them difficult to access in areas with poor networks or without widespread wireless broadband.

## 4. Future Paths for Interactive Video Creation

### 4.1 Cultivate Professional Teams and Create Quality Content

Although interactive video is gradually emerging, it has not yet produced blockbuster premium content. While interactive video is technologically novel, the standard for evaluating quality videos remains whether they possess quality content. Therefore, interactive video still needs to return to a content-centric approach to create premium works. Achieving this goal requires major platforms to assemble professional teams with technical support. These professionals should form a collaborative whole encompassing scriptwriting, game design, video production, project coordination, and technical support to more accurately grasp user needs and create targeted quality content.

### 4.2 Improve Platform Functions and Lower Technical Participation Thresholds

Currently, domestic video websites are striving to provide creators with universal interactive video production plugins to lower participation barriers and support the production and widespread dissemination of interactive video. With universal plugins, interactive video producers can view and obtain user feedback data in real time, accumulating experience to create better works. For ordinary Bilibili users, they can also use universal plugins to freely participate in interactive video production, upload and release their own videos, and gain attention from others.

### 4.3 Expand Application Fields and Achieve Diversified Scenario Applications

Against the backdrop of the 5G era, the maturation of new technologies such as AI and VR provides interactive video with richer, more realistic, and immersive interactive experiences. This human-computer interaction and sensory experience of reality will bring new opportunities for scenario-based applications of interactive video. For example, in the field of intangible cultural heritage communication, interactive video holds great promise. Intangible cultural heritage possesses not only important aesthetic value but also rich storylines. Through professional team design and filming production, using forms such as role performance and scene reproduction to disseminate intangible cultural heritage, combining traditional intangible cultural heritage with internet games can enhance interaction and communication with users.

For interactive video to truly become popular, besides solving the fundamental technical issues, creators must also deeply consider how to grasp the interactive characteristics of video while delving into the internal aspects of the work. With the maturation of new media technology and the development of 5G technology, people's demands for video interactivity are increasing, and the audiovisual industry will face new opportunities and challenges. As a blue ocean market in the video industry, interactive video needs to make more efforts and explorations to stand out among numerous videos. Interaction in interactive video should not remain at the level of "pseudo-interaction" but should start from both form and content to maximize the gaming experience of interactive video. Under the development of 5G, AI, and 8K technologies, interactive video should also adapt to trends and combine with high technology to optimize production processes, produce quality interactive videos, and build an interactive video industrial chain—from upstream production to midstream distribution to downstream services—while improving market access standards. Starting from gamification characteristics, an exclusive IP industry for interactive video should be built to provide users with comprehensive services. Although interactive video has only experienced a short two-year development process in China, it has rapidly attracted users' attention through distinctive features such as interactivity, gamification, immersion, autonomy, and hybridity [10]. It can be said that interactive video contains both the time-honored theoretical foundation of interactive concepts and has burst forth with vigorous vitality in the new era. Because of this, the interactive video market possesses enormous development potential.

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*Note: Figure translations are in progress. See original paper for figures.*