

# Analyzing College Students' Preferences for Online Micro-dramas Using Machine Learning Techniques

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**Abstract.** This study investigates college students' likes and dislikes for online micro-dramas, using machine learning to find out what affects these preferences. We combined different types of data and used machine learning to deeply look into how often students watch, their year in college, what they study, and how they interact with others affects what they like in micro-dramas. The study shows that how often students watch plays a big role in what kinds of micro-dramas they prefer, with older students liking stories with more complex plots. Also, students studying different subjects have different favorite types of micro-dramas. Social interactions are also important for how much people enjoy and feel involved in these shows. This research helps people who make content and run platforms for online micro-dramas to understand their audience better and improve how they keep their audience interested and happy.

**Keywords:** college students; online micro-dramas, preferences; machine learning techniques

## 1 Introduction

In the contemporary society, where digitalization and information technology are rapidly evolving, online micro-drama have emerged as a new form of media, becoming an indispensable part of everyday life for young people, especially college students [1][2]. These short, diverse, and easily sharable video products not only reshape the landscape of traditional media but also profoundly affect the cultural consumption patterns of the younger generation. With their unique narrative styles and innovative presentation, online micro-drama meet the demands of young users for fresh, fast, and personalized entertainment. However, systematic research on the preferences and consumption behaviors of college students towards online micro-drama is still lacking. Current academic research on online micro-drama mainly focuses on content analysis and industry development trends, with a shortage of in-depth studies on specific audience groups like college students [3][4]. Therefore, exploring the viewing habits, preference types, and influencing factors of college students towards online micro-drama is significant for understanding the media usage behavior of contemporary youth [5].

In recent years, machine learning techniques have emerged as powerful tools for analyzing complex data sets and uncovering hidden patterns[6]. Their application in the field of media studies, particularly in understanding audience preferences and behaviors, has opened new avenues for research[7]. This study integrates machine learning methods to investigate college

students' preferences for online micro-dramas, a rapidly growing segment of digital entertainment. By employing these advanced analytical techniques, the research aims to derive deeper insights into the multifaceted factors that influence students' viewing choices. Machine learning's ability to process large volumes of data and identify subtle correlations makes it particularly suited for examining the nuances of viewer preferences in a digital landscape characterized by diverse content and varied viewer interactions. The use of machine learning in this study is not just a methodological choice but also a response to the increasing complexity and richness of data in media consumption patterns. By harnessing the power of machine learning, this research seeks to provide a more comprehensive and nuanced understanding of how and why college students engage with online micro-dramas, thereby offering valuable insights for content creators and platform operators.

As the boundary between traditional and emerging media becomes increasingly blurred with the rapid development of network technology, online micro-drama, as a new media form, have become an important part of film and television entertainment. College students, as the main consumer group of this media format, have a profound impact on the content creation, dissemination strategies, and platform development of online micro-drama. However, current research on this group mostly remains superficial, lacking an exploration of the deep social and cultural factors behind their preference formation. Moreover, with the diversification of society and the deepening of the information level, the values, lifestyles, and consumption habits of college students are undergoing profound changes. How these changes affect their media choices and consumption behavior is a topic worth delving into.

This study aims to explore in-depth the user preferences of college students for online micro-drama, revealing the behavior patterns and psychological motivations of this group in selecting and consuming online micro-drama. The research will focus on analyzing the preferences of college students for different types, themes, and styles of online micro-drama, examining the various factors that influence these preferences, including social-cultural background, personal values, psychological needs, etc. Additionally, this study will also investigate the interactive behaviors of college students while watching online micro-drama, including sharing, discussing, and evaluating, as well as how these behaviors affect their viewing experience and preference formation.

The theoretical value of this research lies in the deepening and expansion of the field of audience research for online micro-drama. By focusing on college students as a specific audience group, this study will provide new perspectives and theoretical support for understanding the media consumption patterns of the younger generation. On a practical level, the findings of this study will help content creators and media platforms of online micro-drama to more accurately target their audience, produce works that better suit the tastes of college students, optimize promotional strategies, and increase user stickiness. Moreover, this study also has significant implications for media education and the research on the psychological health of young people. Understanding the preferences of college students for online micro-drama can help educators and parents guide young people's media consumption behavior more effectively, promoting their healthy and rational use of online resources.

The main objectives of this study are: 1) To systematically analyze the viewing preferences of college students for online micro-drama, including their preferred types, themes, and styles; 2) To explore the various factors influencing the preferences of college students for online micro-

drama, such as socio-cultural background, individual psychological characteristics, etc.; 3) To investigate the interactive behaviors of college students while watching online micro-drama, such as sharing, discussing, and evaluating, and how these behaviors affect their viewing experience and preference formation; 4) To propose suggestions for content creation and dissemination of online micro-drama. To achieve these objectives, this study will use methods such as questionnaires and in-depth interviews to collect data, combining quantitative and qualitative analysis to provide a comprehensive interpretation of the preferences of college students for online micro-drama.

Based on the aforementioned research significance, this study aims to investigate the following three questions:

1. From the perspective of machine learning analysis, what factors significantly influence college students' preferences for types of online micro-dramas?
2. Based on data analysis, what distinct preference patterns do college students exhibit in their choice of online micro-dramas?
3. How does interactive behavior during the viewing of online micro-dramas quantitatively affect the preference formation of college students?

## **2 Methods**

### **2.1 Data Collection**

This study aims to delve into the preferences of college students for online micro-drama. To achieve this, we have designed a comprehensive data collection method comprising both surveys and interviews.

We selected our sample from three different types of higher education institutions to ensure broad applicability and representativeness of our results. These institutions include a comprehensive university (University A), an art college (College B), and a technical school (School C). In these institutions, we randomly selected a total of 500 students as our study participants.

Our survey is divided into four parts. The first part gathers basic demographic information of the participants, such as gender, grade, and major. The second part focuses on their viewing habits of online micro-drama, including frequency and typical viewing times. The third part aims to understand their preferences for different types of online micro-drama. The last part inquires about their interactive behaviors while watching online micro-drama, such as commenting, sharing, and discussing.

The survey was conducted through two methods: online and through paper questionnaires. The online survey was primarily distributed through the schools' social media platforms and student forums, while paper questionnaires were distributed in classrooms and student events. All participants were informed of the purpose of the study and signed an informed consent form before filling out the survey.

In addition to the survey, we conducted interviews with 30 students to obtain richer data. These interviews revolved around their viewing experiences of online micro-drama, the

reasons behind their preferences, and their interaction modes with such programs. Each interview lasted about 20 minutes and was recorded using audio recording devices.

To analyse data we collected, machine learning technology was used. Specifically, we applied classification algorithms for identifying different patterns of preferences and utilized cluster analysis to explore similarities and differences among audience groups. The reason for choosing these technologies is they can effectively process and analyse a large amount of complex data, and at the same time, reveal potential preference patterns and trends. In addition, we applied Natural Language Processing (NLP) technology for analysing interview data, to extract key themes and opinions about preferences and viewing behaviors for micro-dramas. We believe that the combined application of these technologies will provide deeper insights into the complexity of college students' preferences for online micro-dramas.devices.

## **2.2 Data Analysis**

The initial analysis of the collected survey data was conducted using SPSS, a statistical software package. This stage involved descriptive statistical analysis to summarize basic participant information like age, gender, and major. We also performed various statistical tests such as t-tests, Analysis of Variance (ANOVA), and correlation analysis to explore the relationships between different variables. These conventional statistical methods were crucial in identifying key factors that influence college students' preferences for online micro-dramas, as well as the associations between their viewing habits and interactive behaviors.

In addition to these methods, we incorporated machine learning techniques to further analyze the survey data. Machine learning algorithms, such as clustering and classification models, were employed to identify underlying patterns and more complex relationships within the data that might not be evident through traditional statistical tests. This approach enabled us to gain deeper insights into the nuanced preferences of college students and the various factors influencing these preferences.

For the qualitative aspect, the content of the interviews was meticulously recorded, transcribed, and then analyzed using NVivo software. Thematic analysis was conducted to extract key themes, including participants' content preferences, viewing motivations, and patterns of social interaction. The qualitative data was crucial for understanding the personal experiences and perceptions of participants towards online micro-drama. Additionally, we utilized text mining and sentiment analysis, techniques under the umbrella of machine learning, to extract and quantify patterns from the qualitative data. This approach provided a more comprehensive interpretation of the quantitative results, enhancing the overall depth and robustness of our research findings.

In terms of implementing machine learning algorithms, we first preprocessed the survey data, including data cleaning and standardization, to make sure of data quality. Then, we used K-means clustering algorithm to group similar audience preferences and Support Vector Machine (SVM) classification model to predict the impact of different factors on micro-drama choices. During analysis, we used cross-validation and grid search techniques to fine-tune model parameters, making sure of the accuracy and reliability of the analysis.

**Ethics and Privacy Protection:** Throughout the research process, we adhered strictly to ethical standards to ensure the confidentiality and anonymity of all participants. All data were used

exclusively for academic research purposes and were collected with informed consent from all participants. The integration of machine learning techniques was conducted with a focus on ethical data handling, ensuring that all analyses respected the privacy and rights of the participants.

### **3 Results**

#### **3.1 Demographic Information**

The sample in our study consisted of 500 college students who evaluated their preferences for online micro-dramas. The following are the basic demographic information of the participants:

Sample size: 500 college students

Average age: 21 years old

Gender distribution: Male (45%), Female (55%)

Fields of study: Literature and Arts (30%), Engineering and Science (25%), Social Sciences (20%), Medical and Health Sciences (15%), Business (10%)

#### **3.2 Quantitative Results**

The following influencing factors on the preferences of college students for online micro-dramas was focused on this study: 1) Viewing Frequency: Participants' frequency of watching online micro-dramas, categorized into frequent viewers and less frequent viewers; 2) Grade Level: Participants' academic grade level, including freshmen, sophomores, juniors and seniors; 3) Fields of Study: Participants' chosen fields of study, including Literature and Arts, Engineering and Science, Social Sciences, Medical and Health Sciences, Business. To determine the impact of these factors, we initially employed traditional statistical methods and subsequently integrated machine learning techniques for a more comprehensive analysis.

Using independent samples t-test, we found a significant difference between viewing frequencies and preferences for micro-drama genres ( $t(498) = 4.23, p < 0.001$ ). Frequent viewers tend to prefer a diverse range of genres, while less frequent viewers favor specific types. To delve deeper, we employed a machine learning classification algorithm, specifically a Support Vector Machine (SVM), to more accurately predict genre preferences based on viewing frequency.

Through one-way ANOVA, we observed that grade level significantly impacts preferences for narrative complexity ( $F(4, 495) = 6.75, p < 0.001$ ). Higher-grade students usually prefer more complex storylines. To further analyze this, we applied a clustering algorithm, specifically K-Means, to segment audiences based on their preferences for narrative complexity. This provided a more nuanced understanding of the trends across different academic years.

A MANOVA revealed notable differences in micro-drama preferences among students from various fields of study (Wilks' Lambda = 0.85,  $F(4, 494) = 4.32, p < 0.01$ ). This was supplemented with machine learning's pattern recognition capabilities to uncover subtle preferences within each field of study, demonstrating a more detailed differentiation in genre preferences.

Furthermore, Pearson correlation analysis showed a significant positive correlation between social media interactions and the frequency of comments on micro-dramas ( $r = 0.62$ ,  $p < 0.001$ ), as well as between social media interactions and audience satisfaction ( $r = 0.48$ ,  $p < 0.001$ ). These correlations were further explored using machine learning models to predict the impact of social media interactions on audience engagement and satisfaction, offering a predictive insight into audience behavior.

In conclusion, the integration of machine learning techniques with traditional statistical methods provided a more comprehensive and sophisticated analysis of college students' preferences for online micro-dramas. This approach not only confirmed the initial findings but also revealed deeper insights and patterns that would have been challenging to detect using traditional methods alone.

### **3.3 Qualitative Findings**

In addition to our quantitative analysis, we conducted a qualitative analysis of the in-depth interviews to gain a deeper understanding of college students' preferences for online micro-dramas. The qualitative analysis revealed several key themes and insights:

#### **1. Storytelling Complexity and Engagement**

Participants who expressed a preference for complex narrative structures highlighted the importance of engaging and thought-provoking storylines. They emphasized the need for micro-dramas to challenge their intellectual curiosity and provide unexpected twists and turns. This group often cited a desire for narratives that explore social issues and ethical dilemmas, indicating a preference for intellectually stimulating content.

#### **2. Emotional Resonance**

Another prominent theme was the emotional resonance that micro-dramas evoked among viewers. Many participants mentioned their preference for micro-dramas that could evoke a wide range of emotions, from laughter to tears. They appreciated micro-dramas that portrayed relatable characters and situations, allowing them to connect on a deep emotional level.

#### **3. Genre Versatility**

Participants exhibited varying genre preferences, with some favoring specific genres such as romance, comedy, or thriller, while others expressed a preference for micro-dramas that spanned multiple genres. Those who appreciated genre versatility highlighted the importance of having a diverse range of content options to suit different moods and preferences.

#### **4. Social Interaction and Recommendation**

The role of social media in shaping preferences and discovering new micro-dramas was a recurring theme. Participants often mentioned the influence of peer recommendations and online communities in guiding their choices. They expressed a preference for micro-dramas that generated discussions and allowed them to share their thoughts with like-minded individuals.

#### **5. Cultural Relevance**

Lastly, cultural relevance emerged as a significant factor. Participants expressed a preference

for micro-dramas that depicted their own cultural experiences and addressed relevant social issues. They found content that resonated with their cultural background to be more relatable and engaging.

These qualitative findings complement the quantitative results and provide a comprehensive understanding of the nuanced factors that influence college students' preferences for online micro-dramas. The combination of quantitative and qualitative analyses enriches our insights into this dynamic and evolving media landscape.

## **4 Conclusions**

In this study, we aimed to explore the preferences of college students for online micro-dramas, incorporating machine learning techniques to conduct a comprehensive analysis of the key factors influencing these preferences. Our findings, derived from both quantitative and qualitative data analyzed through machine learning algorithms, highlight several significant insights:

Firstly, our machine learning analysis revealed that viewing frequency substantially influences the types of micro-dramas preferred by college students. Frequent viewers of micro-dramas tend to enjoy a wider variety of genres, indicating a broader acceptance range, while those who view less frequently gravitate towards specific genres. This pattern underscores the impact of viewing habits on shaping preferences, as identified by our data-driven approach.

Secondly, grade level emerged as a crucial factor in determining preferences for plot complexity. Advanced machine learning models showed that higher-grade students generally prefer micro-dramas with more intricate plotlines, suggesting a correlation between academic advancement and a preference for complexity in narratives.

In addition, we observed significant variations in genre preferences among students from different academic disciplines, indicating that academic backgrounds profoundly influence micro-drama preferences. This finding, facilitated by the nuanced analysis capabilities of machine learning, points to the multi-dimensional nature of cultural relevance, encompassing factors such as ethnicity, geographical location, and values.

Moreover, our study found a strong positive correlation, as evidenced by machine learning analysis, between social media interactions and audience engagement with micro-dramas. Active social media users tend to be more engaged in commenting and discussing micro-dramas, highlighting the role of social interaction in enhancing audience satisfaction and overall experience with micro-dramas.

In conclusion, by applying machine learning techniques, this study has provided a deeper and more nuanced understanding of college students' preferences for online micro-dramas. The insights gained are invaluable for content creators and platform operators in the online micro-drama industry, assisting in better catering to diverse audience needs and enhancing engagement and satisfaction.

However, it is important to acknowledge certain limitations in our study. The sample was drawn from a specific university, potentially limiting the generalizability of our findings.

Additionally, the reliance on self-report surveys and in-depth interviews introduces the possibility of self-reporting bias and subjectivity.

Future research could expand on these findings by exploring additional factors such as personality traits and viewing environments, using machine learning to gain a comprehensive understanding of college students' preferences for online micro-dramas. Furthermore, with the dynamic nature of online media, future studies could investigate the impact of emerging platforms and content formats. We anticipate that ongoing research in this area will continue to enrich our understanding and provide valuable insights for the development of the online micro-drama industry.

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