

Research Article

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Author for correspondence:

Astri Wulandari

✉ astri22002@mail.unpad.ac.id

✉ Faculty of Communication Science,
Universitas Padjadjaran Bandung, Indonesia



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Digital Learning Communication to Preserving Javanese: The Role of Digital Media in Education of Local Language in High Schools, Yogyakarta, Indonesia

Astri Wulandari^{ID}, Deddy Mulyana^{ID}, Purwanti Hadisiwi^{ID},
Edwin Rizal^{ID}

Abstract

Background/purpose. Indonesia has more than 1,300 ethnic groups and 652 active local languages. Javanese, the most widely spoken regional language, is experiencing a decline among younger generations who increasingly prefer using Indonesian for daily communication. While traditionally transmitted within families and local communities, educational institutions play a crucial role in preserving Javanese through formal curriculum integration. This paper aims to explore how digital learning communication platforms contribute to preserving Javanese language skills among students in Yogyakarta.

Materials/methods. The study analyzed the integration and utilization of digital platforms such as WhatsApp, YouTube, and Google Meet in the context of classroom interactions and extracurricular activities involving students and teachers in Yogyakarta. Data collection involved qualitative analysis through classroom observations and digital content analysis, focusing on interactions facilitated by digital media in learning Javanese as a heritage language.

Results. The study found that incorporating digital applications significantly enhanced the learning and communication of the Javanese language. WhatsApp effectively supported both synchronous and asynchronous communication, allowing continuous language learning interactions beyond the formal classroom schedule. Meanwhile, YouTube provided a creative space where educational materials and collaborative learning resources could be developed, shared, and accessed flexibly by students. Additionally, Google Meet facilitated interactive virtual sessions that reduced physical communication barriers, enabling consistent engagement and practice of Javanese skills.

Conclusion. The integration of digital media in Javanese language education positively impacts language preservation among younger generations. Digital platforms such as WhatsApp, YouTube, and Google Meet effectively mitigate barriers to traditional communication, fostering enhanced student participation, interaction, and ongoing language acquisition. These platforms provide a promising approach for maintaining Javanese as a vibrant heritage language amidst shifts in youth linguistic behavior.

1. Introduction

Indonesia, as a multicultural nation with more than 1,300 ethnic groups, has 652 different languages, each shaping ethnicity and cultural identity alike. As the biggest ethnic group in Indonesia, it is a regional language with the most significant number of speakers in Indonesia, with more than 75 million speakers (Suharyo & Nurhayati, 2020). The Javanese culture has spread out around Indonesia's region because of the Javanization political movement in the Soeharto era for 32 years (Elmhirst, 2000).

The so-called Javanization movement under Soeharto's New Order aimed to promote Javanese administrative, cultural, and linguistic norms as part of a broader strategy to consolidate national unity (Elmhirst, 2000). In practice, this policy encouraged local governments across Indonesia to adopt Javanese titles and ceremonies in official functions, integrated Javanese proverbs and rituals into state-sponsored festivals, and even introduced Javanese vocabulary into administrative forms in non-Javanese regions (Suharyo & Nurhayati, 2020). While these measures elevated Javanese prestige at a macro level, portraying it as the exemplar of "high culture"—they also had unintended consequences for everyday usage. Within Central Java and Yogyakarta, many families began to regard Javanese as a marker of traditional status but increasingly switched to Indonesian in schools and urban workplaces, believing Indonesia would better serve social mobility (Elmhirst, 2020; Suharyo & Nurhayati, 2020). As a result, although public ceremonies, signage, and official communications remained heavily Javanese, younger generations in urban areas often perceived Javanese as less practical for modern life, accelerating a gradual language shift away from daily use.

Yogyakarta, as one of the central parts of Javanese culture, has different characteristics than other regions with Javanese. As one of the significant destinations for high school and college students from various ethnic groups to continue their studies, Yogyakarta had become a 'little Indonesia' in which most people from various ethnicities come together. This multilingual environment encourages the dominance of Indonesian as a lingua franca, reducing opportunities for the youth to practice Javanese, especially in formal registers. From the initial observation of the research, the multicultural condition in Yogyakarta raises problems in the use of the heritage language, Javanese, because, in daily life, the younger generation uses more Indonesian. Javanese is more often used when communicating with family, and even then, more with 'ngoko' or rough Javanese.

In the Javanese language, hierarchy is used based on the status of interlocutors. As culture's identity, the Javanese language also houses important social identity markers. The Javanese language is divided into three speech tiers to show someone's social status: *ngoko*, *madya*, and *krama* (Geertz, 2014). The tier 'ngoko' shows the boundless relationship between people who speak, for example, between close friends or teachers and their students. The speech tier 'madya,' which also means middle, shows a moderately respectful attitude, for example, when one speaks to an elder. Meanwhile, the tier 'krama' shows a very respectful manner and reluctance. It is used when a child speaks to parents or teachers. (Poedjosoedarmo et al., 2013; Santoso, 2017). This complex speech system is one of the main problems in inheriting the Javanese language, especially for children and adolescents. Although Javanese is a subject in the curriculum for teenagers (students) in Yogyakarta and Central Java, teenagers still need help understanding and practicing this local language daily.

Students and teachers use digital media to help transfer knowledge and language skills in learning the Javanese language. Students who are Generation Z as digital natives are more involved in the learning process with digital media, so schools and teachers are required to be able to adjust to digital media-based education. Secondary school teachers in Yogyakarta are important in inheriting and maintaining Javanese speech levels as a local cultural heritage. Effective communication and role modelling are essential tools in the education and inheritance of Javanese culture, including the

Javanese language (Agustini, 2022). Another obstacle in the inheritance of Javanese speech level is that it is significantly less used in daily interactions in the school and home environment, so it is feared that Javanese language habits among teenagers in Yogyakarta can fade and disappear (Suparta, 2017). While many studies have addressed language endangerment and revitalization (Crystal, 2014; UNESCO, 2021), there has been limited attention paid to how digital pedagogies intersect with local language instruction in ethnically diverse urban schools. This study fills that gap by focusing on digital learning communication as an educational solution for preserving Javanese in Yogyakarta's multicultural classrooms.

The very complex systems of speech tier, as they become internalized to perform a critical socialization process for the Javanese culture, became one of the main factors in the inheritance of the Javanese language, especially for kids and teenagers. Despite exposure to information technology and communication and processes of globalization, they were expected to use the correct Javanese language. The environment at home and in peer relations at school underpin and cement the usage of the Javanese language as the primary marker of cultural identity for teenagers in Yogyakarta. It is interesting to analyze how the recent generation has accepted the knowledge and education of the Javanese language regarding its complex system of speech tiers with digital-mediated education.

This article examines how education today has shifted from traditional teaching and learning methods based on printed materials to digital formats. The authors try to understand and analyze the use of digital media in the learning process of the Javanese language by high school students in Yogyakarta city to find out whether digital media has an important role in the inheritance of local culture and language in Indonesia. In this case study research, the author uses a qualitative approach to get an in-depth picture of the use of digital media in learning local languages in secondary schools. The author looks at the phenomenon of using digital media in learning Javanese from the perspective of computer-mediated communication theory and digital learning communication. The researchers expect this study to be a model of local language learning that will be input for stakeholders related to the global inheritance of local languages.

Building on this context, the present study positions digital learning communication as a concrete pedagogical manifestation of computer-mediated communication (CMC) principles. By viewing WhatsApp, YouTube, and Google Meet as CMC environments, we can examine how their affordances—synchronous and asynchronous interaction, multimodal message design, and networked participation—translate into day-to-day teaching practice. The following section, therefore, reviews key CMC concepts alongside emerging scholarship on digital learning communication to clarify the analytical lens used throughout the paper. Therefore, this study seeks to answer the question: How can digital learning communication platforms (such as WhatsApp, YouTube, and Google Meet) contribute to the preservation of the Javanese language among high school students in Yogyakarta? This study situates the preservation of Javanese as not only a linguistic and cultural issue but also a pressing pedagogical concern that contributes to current discussions in education about how heritage language instruction can be enhanced through digital instructional design in formal school settings.

2. Literature Review

2.1. Computer-Mediated Communication

Computer-mediated communication (CMC) provides the theoretical backbone for our investigation, because every platform studied—WhatsApp, YouTube, Google Meet—relies on computer networks to enable human interaction. In line with Iwatani & Watamura (2021) and Spitzberg (2006), we treat CMC not merely as 'technology use' but as a social process that shapes message production, reception, and learning outcomes. Recent technological developments allow multimedia means that offer various options, ranging from text and audio to visuals, all of which can

be presented simultaneously. For example, when people chat on WhatsApp, they need a computer, internet, and a browser application (Liaw, 2017). Communication that occurs in chat is interactive, where the communicator can be the communicant simultaneously.

The utilization of technology and digital media in the learning process at school can be done because almost all students have digital devices such as smartphones and laptops (Yang, 2024). In mediated learning, teachers can integrate the lesson content by gathering relevant images, videos, and other visual materials from online sources (Huang et al., 2024). Computer-mediated Communication involves digital technology utilization, meaning any communication digitized or converted into a form that can be managed by a computer system. CMC has two types, determined by the type of Communication that occurs, namely, synchronous, and asynchronous (Oztok et al., 2013). Synchronous Communication occurs when the participants interact in real-time, and they act as both sender and receiver. An example is a phone call or online chat (Ko, 2012; Yamada & Akahori, 2007). Meanwhile, asynchronous interaction involves delayed interaction, and each participant must take turns being the sender and receiver. This asynchronous interaction occurs when there is a gap between content creation and consumption, such as email correspondence (Liang & Walther, 2015).

Along with developing information and communication technology that allows internet networks to be 'embedded' into a mobile phone device, CMC has undergone several developments and changes. Not only personal computers (PCs) or portable computers (laptops) can be referred to as "computers" in the context of CMC theory, but devices or gadgets such as tablets and smartphones are new media based on computer technology that can be used as a medium of communication with the internet network (Nugroho, 2020). The existence of social media itself is similar to the existence and workings of computers. Today's social media varies, such as Instagram, Facebook, Twitter, TikTok, and others, with the exact specifications. In mediated Communication, presence is considered when a response matches expectations and the response is immediate (Lindemann & Schünemann, 2020). Furthermore, four CMC themes affect young people: physical activity, mentality, mindset, and relationships with peers (Favotto et al., 2017). Research also states that participating in social media brings feelings of familiarity among adolescents and results in intimacy and closer relationships (Meier & Reinecke, 2021). Understanding these synchronous-asynchronous dynamics in CMC helps explain why specific digital tools become effective channels for language-preservation tasks, a point elaborated in the following discussion of digital learning communication.

Recognising that CMC affordances only translate into learning benefits through skilled facilitation, we next examine how teachers operationalise these affordance in daily practice and how school governance frameworks enable—or constrain—them.

2.2. Digital Learning Communication

Teachers act as pedagogical "gate-openers" who decided which digital channels enter the classroom and how they are orchestrated for heritage-language goals. Their choices, therefore, become a practical test-bed for Computer-Mediated Communication (CMC) theory. Building on Mechlova and Malcik's notion of teachers as learning designers, we frame Javanese-language teachers as digital mediators who curate content, model online discourse norms, and scaffold students' self-directed exploration of WhatsApp, YouTube, and Google Meet. Videos on YouTube, for example, can become references for teachers and students learning about Javanese as a heritage language. Junior and senior high school students use and utilize technology and digital media to communicate and learn, so they are often called digital natives or digital learners. These digital-age students can access resources and knowledge beyond traditional school structures and practices with their digital devices, social media pages, and text messaging (Milakovich & Wise, 2019).

In the digital era, teachers are no longer the main source of information for students. Teachers engage students in the experiences and knowledge they can gain from digital media, use students'

responses in planning the next lesson, and seek to elaborate on students' initial responses (Mechlova & Malcik, 2012). Digital learning must be distinct from one's ability to use and utilize media. Various intellectual processes related to the use of digital technology and media are divided into three categories: finding and consuming digital content, creating or producing digital content, and communicating digital content (Nugroho & Nasionalita, 2020; Spire, 2019). What is meant by finding and consuming digital content is the skill of finding, understanding, and consuming digital content. Consuming digital content means students can sort and select digital content related to helpful knowledge and information in the learning process. Students and teachers can create or produce digital content as a form of mediated communication, for example, by making videos on YouTube or other social media (Boerman & Reijmersdal, 2020).

Teachers act as pedagogical "gate-openers" who decide which digital channels enter the classroom and how they are orchestrated for heritage-language goals. Their choices, therefore, serve as a practical test bed for Computer-Mediated Communication (CMC) theory. Teachers in Yogyakarta not only transmit linguistic content but also shape interactional norms within digital platforms. School governance frameworks—including professional development policies and digital infrastructure allocation—also affect how well teachers can implement such strategies. In the learning process in digital media-based schools, it is necessary to emphasize the importance of cooperation and collaboration in solving problems. This collaboration is not only between students but between teachers and students, where teachers are no longer the center and source of learning but actively involve students in using digital media as an alternative reference source.

The internet has resulted in the rise of new communication channels, which have extended the options for transmitting and accessing educational information (Grek, 2008). These media and virtual venues serve as learning facilitators. Student learning can become more dynamic and engaging by establishing tasks in class that incorporate technology resources, oral presentations, and group participation. Participation can extend beyond verbal communication as well (Haleem et al., 2022). Taken together, insights from CMC and digital learning communication frame our methodology choices: we treat each classroom and platform as an embedded CMC site and trace how its technical affordances shape Javanese-language practices. The next section outlines the qualitative case-study design used to operationalize this framework.

3. Methodology

3.1. Research Design

The method used in this research is qualitative, with a case study approach. In this research, the researcher seeks answers to the "how" and "why" research questions regarding contemporary phenomena, or the researcher has little or no control over these events. According to Robert K. Yin (2003), case studies are one of the many contemporary research methods in which researchers have little or no control over the object (Ma et al., 2024; Yin, 2003). Case study research is a qualitative approach in which researchers explore real life, current limited systems (cases), or multiple limited systems (various cases) through detailed and in-depth data collection involving various sources of information (Creswell, 2016).

Furthermore, Creswell (2016) conveys several characteristics of the case study approach, namely identifying "cases" for a study and stating that these cases are "system bound" by time and place. Creswell further explained that case studies use various sources of information in data collection to provide a detailed and in-depth picture of the response to an event (Creswell, 2016). In this research, the "case" that is the basis for the research is the use of social media by teachers and students in Yogyakarta City in empowering and improving local language learning. Researchers will also observe and analyze the digital materials from YouTube, which are produced by teachers and students, to get

an overview of the use of social media for community welfare and how messages related to Javanese learning are received from community groups.

3.2. Research Participants

The study employed a case study design using purposive sampling. Semi-structured interview guides covered four core themes: teacher facilitation, student engagement, platform usage, and perceived learning outcomes. Thematic analysis followed Creswell's (2016) coding procedures, with researcher triangulation used to ensure the reliability of findings. This study's data collection techniques were direct observation, focus group discussions, and in-depth interviews with informants. Data collection is the most strategic step in conducting research (Nugroho et al., 2020). The informants in this study were two teachers from the Junior and Senior High Schools in Yogyakarta and one employee of the Culture Office of Yogyakarta Special Region. The other informants were five junior high school students and three senior high school students who were carrying out the process of social mediated education in Yogyakarta.

Participants were selected using purposive sampling to ensure representation from key stakeholder groups. Two teachers represented different secondary school levels, a Culture Office employee contributed a policy perspective, and eight students shared their learning experiences. Data saturation was reached after 11 interviews, as no significant new themes emerged. At the request of the informants and to protect their personal data, the researcher only displays the initials of the names of the research participants in the Table 1. The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Table 1. Research Participants

Informant	Gender	Initial	Characteristics
1	F	WD	Junior high school Javanese language teacher in Yogyakarta
2	M	DR	Senior High School Javanese language teacher in Yogyakarta
3	M	AM	Employee of Culture Office of Yogyakarta Special Region
4	F	BU	Junior High School student in Yogyakarta
5	M	AR	Junior High School student in Yogyakarta
6	M	BG	Junior High School student in Yogyakarta
7	M	TM	Junior High School student in Yogyakarta
8	M	SH	Junior High School student in Yogyakarta
9	F	DN	Senior High School student in Yogyakarta
10	M	UD	Senior High School student in Yogyakarta
11	M	FJ	Senior High School student in Yogyakarta

The research team used participant observation when they were directly involved in the Javanese learning process with social media, YouTube, and WhatsApp. Researchers made direct observations in YouTube accounts of Javanese language teachers that have content about Javanese language learning, both content created by teachers and by students. The researchers conducted digital observations through YouTube to obtain data on the interaction and communication between teachers and students. Researchers also conducted in-depth interviews with informants regarding the use of digital media in Javanese language learning in July–August 2024 to obtain data on the ease and obstacles of using social media in the learning process. In addition to in-depth interviews, the

researcher also conducted focused discussions with four junior high school students in Yogyakarta city to explore the learning process of the Javanese language by utilizing digital media.

This research involves human informants and has met the standards and research ethics approval from the Research Ethics Committee. All informants in this study have provided oral statements regarding their willingness to be identified by their initials or full names and their position or role in the digitally mediated education in Yogyakarta, Indonesia. Research data from observations, focus group discussions, and interviews with informants were recorded and documented visually (photos) through audio and video. This data becomes the researcher's documentation and will remain confidential. Interviews included questions such as: “How do you use digital media in teaching/learning Javanese?” “What challenges or benefits do you experience?” and “How do students respond to digital materials?”. Data were coded thematically using Creswell’s (2016) guidelines. Major themes included teacher mediation, student motivation, platform-based pedagogy, and digital infrastructure.

4. Results

4.1. Student Digital Behavior and Learning Motivation

Findings confirm that teacher-led WhatsApp groups and ad-hoc Google Meet tutorials transform limited in-class contact hours into a continuum of after-school micro-interactions. This shift turns homework help into ongoing dialogue and positions teachers as always-reachable mentors, a role students describe as “making us more open and active” in practising *krama* vocabulary. Learning is related to human communication, and learning messages take place in communication behaviors that include learning contexts, subjects, educational pathways, and communication settings. The communication setting is the physical and psychological scope that distinguishes the communication behavior as a learning communication that is no longer only done face-to-face in the classroom but can be done through media such as smartphones and can also be done outside the school, not during class hours. Based on the author's observation, junior and senior high school students in the age range of 17-21 years old are very active in using digital devices.

School teenagers belong to Generation Z or the post-millennials generation who grew up in the 2000s when the most significant changes in the world occurred with the presence of web technology, the internet, smartphones, laptops, networks, and digital media that are freely available and cheap (Nugroho, 2020). This generation is very familiar with digital devices and tends to spend their time within the scope of technology and digital media (Mardiana et al., 2019). They use and utilize technology and digital media as a means of communication and as a medium of learning, so they are often called digital natives or digital learners. Engagement indicators—task completion rates, response latency in chat, and voluntary content creation—improved markedly once teachers embedded “challenge-based” activities (e.g., short *krama* vlogs) inside YouTube assignments. Students viewed these tasks as social rather than solitary, because teacher feedback appeared publicly and peers could remix each other’s videos, sustaining motivation beyond grades.

Based on discussions with several junior high school students in Yogyakarta City, they use internet connections to access Google, Facebook, Instagram, TikTok, WhatsApp, and YouTube. WhatsApp's penetration in Indonesia in 2024 reached 90.9%, which shows that Indonesians are very familiar with this application (We Are Social, 2024). Students access Google when they need information to complete school assignments or seek general information. At the same time, various social media such as WhatsApp, Instagram, and TikTok are used to communicate and for formal learning (Costa-Sánchez & Guerrero-Pico, 2020; Costa et al., 2022; Yousefikhah, 2017; Youssef & Malek, 2024). Students' engagement with video calls and voice messaging was vital for developing (Androutsopoulos & Lexander, 2021; Said, 2021). This phenomenon is found in the learning process

in the classroom in several subjects, including Javanese language lessons, which are local content subjects.

Informants DN, UD, and FJ, high school students, said that digital media such as websites, social media, and digital Javanese language applications help learn and understand Javanese, especially words in 'krama.'

"With search engines like Google or Instagram, we look for the equivalent of Javanese words in 'krama' to understand their meaning and use them in daily conversations"
(Interview with informant UD, July 2024).

Informants BU, AR, BG, and TM conveyed the same message when asked about the role of digital media in the learning process of the Javanese language: that with the presence of digital media such as search engines and social media, students can find answers to homework questions given by Javanese language teachers. Many Javanese words and sentences that students in Yogyakarta do not understand can be found on several websites or Javanese language applications.

WhatsApp is the most widely used social media platform by high school students in Indonesia, although they also have other social media applications such as Facebook, Telegram, Instagram, and TikTok. WhatsApp features used include private messages and WhatsApp groups. In each class at this level, students create a group for various coordination and communication related to learning, including students and teachers. Meanwhile, students use personal messages, for example, to send answers to assignments or communicate privately about learning to teachers. WhatsApp is also used as a communication medium between parents and teachers when students have difficulty doing homework and parents cannot help.

In the process of communicating with fellow students or teachers, the WhatsApp messaging application has become a digital media platform that significantly helps cultural communication in learning Javanese as a heritage language. Teachers in Yogyakarta create WhatsApp chat groups to provide a medium of interaction and communication for students learning Javanese together outside of school hours. Teachers in Yogyakarta provide facilities in the form of additional lesson hours to students who need explanations and extra time to learn Javanese with WhatsApp application.

"Some parents send messages to me via WhatsApp, apologizing if their children cannot follow Javanese lessons and they cannot help their children's homework because they have just moved to Jogja. But I replied, "It's okay. I will provide study time outside of school hours, and please don't hesitate to contact me if there is material you don't understand."
(Interview with Mrs. WD, July 2024).

Sometimes, practice questions or assignments are also given. Communication and learning take place through the WhatsApp group, and what's noteworthy is the student's active participation in this process. The teacher's practice questions or assignments can be in Word, Excel, or Notepad files. Students are asked to provide answers and submit them using the same format. Some teachers also use Google Forms as a medium for practice questions. However, information regarding the time, theme, and Google Form link is provided through the WhatsApp group. The results of Javanese distance learning via WhatsApp showed that students became more open and active in communication, enabling the learning objectives to be met on time. The students reported understanding the material well and adhering to the schedule while studying from home. They also completed assignments and participated in discussions with their peers and teachers.

Students actively utilize Google and social media to search for krama-level vocabulary, enabling independent language acquisition outside classroom boundaries. Informants consistently stated that digital tools help them understand and practice krama. The platforms allow them to bridge gaps between classroom instruction and real-world language usage, reinforcing self-directed and peer-

mediated learning. Students' high frequency of digital interaction correlates with increased openness and confidence in using the Javanese language, particularly in its more formal varieties.

4.2. Pedagogical Strategies and Teacher–Student Collaboration

Teachers in Yogyakarta adopt multiple digital tools—primarily WhatsApp, Google Meet, and YouTube—to extend learning beyond limited classroom hours. WhatsApp groups serve as continuous spaces for homework guidance, interactive discussions, and emotional support. Teachers also offer one-on-one sessions and maintain flexible hours to accommodate students' and parents' inquiries. In addition to the WhatsApp application, teachers and students conduct video conferences using the Google Meet application to conduct the learning process outside school hours. With direct interaction and communication through this video conference, the difficulties and obstacles students face in learning Javanese can be overcome, given the limited hours of Javanese lessons at school. As stated by informant DR, a high school teacher in Yogyakarta, WhatsApp messaging and video conferencing applications such as Google Meet and Zoom benefit students' learning process of the Javanese language.

“With digital applications, I, as a teacher, can provide additional lessons outside of school hours to students to learn Javanese. I do this because the number of hours of Javanese lessons is minimal, so many students do not understand and understand the lessons I convey in class” (Interview with informant DR, August 2024).

In addition to the WhatsApp chat application, Javanese language learning in Yogyakarta also requires digital materials from YouTube social media to help students gain knowledge and skills in understanding and using Javanese as a heritage language. YouTube is a form of mobile learning that leverages information and communication technology as a learning medium. Its growth as a widely used social media platform presents a valuable opportunity to enhance the quality of educational resources (Greeves & Oz, 2024). According to Wearesocial data, in 2024, YouTube ranks second as the most visited website by Indonesians, with an average of 814 million monthly visits. This data shows that YouTube is a viral media for teenagers to find information and knowledge. YouTube is also widely adopted in education because it provides many variations of learning materials and practices.

Schools not only accommodate the learning process in the classroom but also provide moral values, ethics, and cultural norms to shape the character of their students. Adolescent speakers in Kotabaru, Yogyakarta, can develop their talents, achievements, and Yogyakarta Javanese cultural competence through schools. Schools also utilize technology to introduce and provide materials and space for students to adapt without losing their cultural identity. For example, Mrs. WD, one of the Javanese language teachers at a public junior high school in Yogyakarta, utilizes YouTube social media in the learning process, such as providing opportunities for students to find examples according to the material being studied, and teachers also use social media to publish the best content from their students.

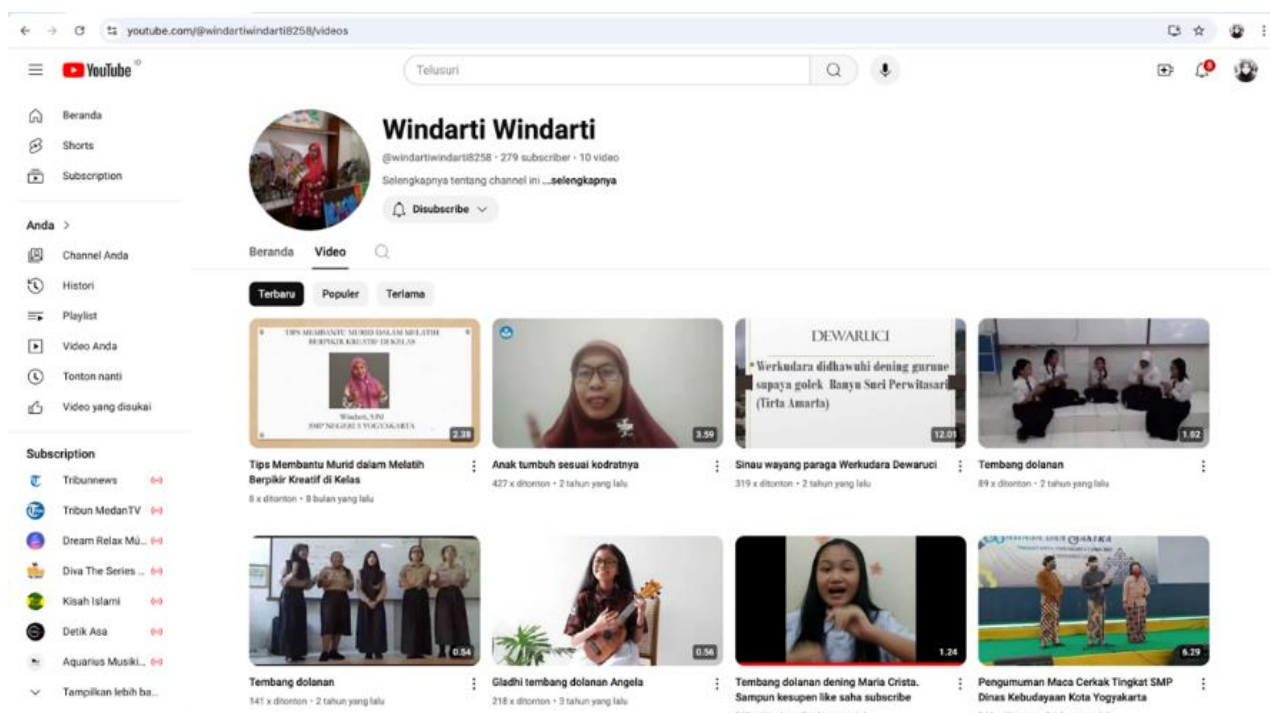


Figure 1. Teacher YouTube account (Junior High School Javanese Language Subject Teacher)

As seen in Figure 1, YouTube accounts have two audience preferences: educators (teachers) and students. The Windarti YouTube channel shows that the current trend is not binding to users (teachers), which can be seen from the intensity of video content produced that does not have a specific pattern in the form of consistent uploading time of content and very audio-visual aspects. The campaign carried out by users is to provide and build awareness related to the use of Javanese language and information development guidelines for educators, especially Javanese language teachers. Teachers also give assignments to students to practice the use of high-level Javanese language (krama) and then upload them to the YouTube account with the consent of the students so that other students can learn from the video. The process of learning Javanese with YouTube videos makes it easy for students to access material anywhere and anytime.

In the account, there is one video/content entitled "Children Grow According to Their Nature," which aims to persuade the audience to understand and interpret freedom and learning as an effort for children to develop according to their external nature. The video targets an audience of educators (teachers and parents). With a duration of 3:58 minutes, the video is classified as the longest and was made directly by Mrs. Windarti, the account owner, with 241 views and 12 supportive comments. If analyzed and observed related to the use of the social media platform YouTube, users have an urgency in introducing education patterns for children that refer to growth and development as well as a platform that is empowered in encouraging awareness of culture and the use of Javanese language. These patterns underscore the governance question: How do school policies, infrastructure budgets, and professional development mandates shape what teachers can do with digital media? The Discussion, therefore, links micro-level interaction data to meso-level governance logics identified by Grek (2008) and Haleem et al. (2022).

5. Discussion

Yogyakarta's unique cultural and ethnic diversity significantly influences the rate of Javanese language use among young people. Although Javanese remains the region's dominant heritage, the presence of non-Javanese communities—such as Sundanese, Madurese, Batak, and Chinese Indonesians—alongside migrants from other provinces creates a highly multilingual environment in which Bahasa Indonesia often functions as the lingua franca (Andriyanti, 2019; Smith-Hefner, 2009).

The Javanization movement during the Soeharto era aimed to promote Javanese culture and administration nationally. Ironically, within Yogyakarta itself, this contributed to a language shift—Javanese was maintained for ceremonial use, but daily conversation increasingly shifted to Indonesian. Consequently, many adolescents navigate between Javanese, Indonesian, and occasionally their parents; heritage languages in both formal and informal settings. Exposure to global media and education has led many students to associate English or Indonesian with modernity and upward mobility, thereby marginalizing the Javanese language. This global-local tension poses a threat to intergenerational language transmission.

A recent study in Sleman, Yogyakarta, found that approximately 65 percent of Javanese-heritage youth now prefer Indonesia in daily conversation, signaling weakened intergenerational transfer of Javanese (Noveintine, 2024). One senior high Javanese teacher began recording short "krama-tier" micro-lectures (2–3 minutes each) and uploading them to a YouTube playlist before each weekly class meeting. Drawing on flipped classroom principles, students were required to watch these videos at home and note unfamiliar vocabulary. In class, they engaged in role-play exercises, alternating between *ngoko* and *krama* registers, guided by the teacher.

As a result, some youths reserve Javanese for family or ceremonial contexts, regularly mixing registers or defaulting to Indonesian during peer interactions (Andriyanti, 2019; Smith-Helner, 2009). Furthermore, the proliferation of ethnic festivals, intermarriages, and easily accessible digital content in other regional languages exerts additional downward pressure on everyday Javanese use (Noveintine, 2024). Therefore, efforts to reinforce Javanese usage through digital platforms—such as online video series showcasing local traditions or community-run WhatsApp groups focused on Javanese literature—are essential to counteract these influences by making Javanese more visible, relevant, and appealing to youths who might otherwise default to Indonesian or other languages.

Moreover, the forces of globalization and modernization exert additional pressure on the preservation of the Javanese language and culture. Increased exposure to global media, digital entertainment, and internationalized curricula encourages youths to adopt more widely spoken languages—such as English or Indonesian—as marker of modernity and upward mobility (Andriyanti, 2019; Crystal, 2014). Urbanization and the influx of non-Javanese cultural influences in Yogyakarta's metropolitan areas have led many families to prioritize economic and social integration over maintaining traditional linguistic practices (Smith-Hefner, 2009; Noveintine, 2024). Consequently, without deliberate efforts—such as integrating Javanese content into popular streaming services or embedding local-heritage modules within formal schooling—globalizing trends risk accelerating the erosion of intergenerational transmission and diminishing the perceived relevance of Javanese in daily life (UNESCO, 2021).

Furthermore, inequalities in Javanese language use across socioeconomic, geographic, and gender lines significantly affect students' learning outcomes. For instance, youths from higher-income families and urban schools often receive supplementary Javanese instruction, either through private tutors or enhanced digital resources, whereas those from lower-income or rural backgrounds must rely solely on limited school-hour exposure, resulting in proficiency gaps (Smith-Hefner, 2009; Andriyanti, 2019). Moreover, female students may face stricter parental enforcement of formal Javanese registers (*krama*), while male peers are permitted more informal *ngoko* use, which in turn skews their mastery of higher-level speech tiers (Kartini, 2019). These disparities extend into the digital domain: urban students with reliable internet access can actively engage in online Javanese forums and create vlogs, whereas the rural learners struggle with connectivity and device availability, limiting their opportunities for practice (Nugroho, 2020). Unless targeted measures—such as subsidized internet access, community-based digital literacy workshops, and gender-sensitive, pedagogical support—are implemented, digital platforms risk reinforcing existing divides rather than bridging them.

As explained in Computer-Mediated Communication (CMC) theory, communication messages through computers (in this case through WhatsApp on smartphones) can be synchronous or immediately delivered, which occurs when the communicating teacher and student are both online simultaneously or respond to the message directly (Ahmad et al., 2023; Anil Kumar et al., 2017; Spitzberg, 2006). Meanwhile, asynchronous, which involves delayed interaction, occurs when messages are not read or opened immediately and when there is a lag between the creation, delivery, and consumption of content. This happens when there is a gap between content creation and consumption, e.g., correspondence via email, and communication with social media such as WhatsApp, Instagram, and YouTube (Liang & Walther, 2015). Synchronous communication that allows real-time interaction within the CMC sphere via WhatsApp video calls is not widely used because it requires access to visual displays (Uludağ, 2024).

Focusing on the challenges and solutions that teachers face in the use of digital media is extremely important for achieving positive educational outcomes. It is, therefore, useful to illustrate not only students' enthusiasm for learning activities on digital platforms but also how teachers integrate these tools into their lesson plans—and the specific obstacles they encounter along the way. In our Yogyakarta case, teachers repeatedly cited unstable internet connectivity, lack of reliable devices, and minimal institutional funding for platform subscriptions and professional development as major impediments (Chin et al., 2022; Setiawan et al., 2025). In response, they employed practical solutions, including sharing low-resolution video content offline, rotating multimedia pods (utilizing shared tablet sessions), and co-developing activity calendars with students. Despite infrastructure constraints, students reported higher engagement with digital tasks. Teachers also created localized best-practice manuals that guided consistent use of the digital platform across schools.

Despite these constraints, students frequently report heightened interest when lessons incorporate interactive elements—such as short video quizzes on YouTube or peer-reviewed voice recordings on WhatsApp. To address connectivity gaps, some instructors adopted a “download-and-watch” strategy, disturbing low-resolution audio and video files via shared drives so that learners with intermittent access could participate asynchronously. Others mitigated device shortages by rotating “multimedia pods,” where small groups of three to four students shared a single tablet during offline practice sessions.

In terms of pedagogical integration, teachers often co-design weekly activity calendars with students, soliciting feedback on which digital tasks—collaborative text annotation in Google Docs, vocal role-plays in WhatsApp groups, or micro-lecture viewing on YouTube—resonate most with theory individual learning styles. By pairing these student-centered activities with clear rubrics and scaffolded instructions, educators strive to create a more equitable digital learning environment. Moreover, through trial and error and peer collaboration among the teaching staff, many have developed localized “best practice” manuals—outlining step-by-step setup guides, troubleshooting tips, and sample lesson templates—to ensure more consistent and scalable implementation across different schools. Consequently, although technical and logistical challenges remain, these proactive solutions have enable teachers to harness student enthusiasm for digital learning, ultimately improving both engagement and language-acquisition outcomes in Javanese instruction.

Digital media tools have not only extended the temporal and spatial reach of Javanese instruction but fundamentally reshaped classroom roles and lesson structures (Bergmann & Sams, 2012; Bartholomew & Reeve, 2018). For example, one senior-high Javanese teacher began recording short “*krama-tier*” micro-lectures (2-3 minutes each) and uploading them to a dedicated YouTube playlist prior to weekly class meetings. Drawing on flipped-classroom principles (Bergmann & Sams, 2012), students were required to watch these video at home—pausing to note unfamiliar vocabulary and examples of appropriate speech-level usage (Bartholomew & Reeve, 2018). As a result, in-class time shifted from a traditional lecture format to small-group “practical workshops,” where learners

engaged in role-play exercises—alternating between *ngoko* and *krama* registers—while the teacher circulated, offering real-time correction and encouragement. This approach contrasts sharply with pre-digital practices, where *krama*-tier instruction was confined to a single 45-minute slot per week, often delivered through rote memorization and blackboard examples (Bartholomew & Reeve, 2018).

Similarly, WhatsApp groups transformed homework assistance into a dynamic, ongoing dialogue. Research on instant-messaging in language learning suggests that platforms like WhatsApp foster rich asynchronous interaction, allowing teachers to provide rapid feedback through text, audio, or video (Burston, 2014; Annamalai et al., 2025). Instead of assigning written exercise to be submitted the next day, teachers began posting daily “*krama*-vocabulary challenges” (e.g., “Translate these five Indonesian sentences into *madya* level and record yourself saying them as a voice note”). Peers replied with audio recordings, which the teacher reviewed and annotated—sometimes forwarding exemplary clips back to the group to model correct pronunciation. Over time, this constant, asynchronous interaction fostered a more student-centered, collaborative environment: learners not only practiced at their own pace but also offered peer feedback, effectively co-constructing knowledge outside campus hours.

Finally, Google Meet sessions introduced new possibilities for real-time, multimodal practice that were not feasible in a strictly face-to-face setting. Liaw and Huang (2015) note that video-conferencing platforms create synchronous, multimodal environments that replicate small-group tasks even when students are geographically dispersed. For instance, one junior-high teacher scheduled weekly “virtual *krama* salons,” where students joined via video conference to perform brief dialogues with a partner—each taking turns as “elder” and “child,” thus practicing appropriate honorific forms in context (Ismailov, 2021; Glimäng & Sauro, 2024). The teacher used Google Meet’s screen-sharing feature to display authentic text excerpts (e.g., excerpts from traditional *macapat* poetry), then guided students through collective reading and discussion, pointing out how certain metaphors or idiomatic expressions aligned with higher-level speech tiers. When internet connectivity was uneven, breakout rooms allowed smaller groups (3-4 students) to work together on short translation tasks, ensuring that even those with the intermittent bandwidth could participate (Park, 2016; Yao et al., 2023). These asynchronous, interactive sessions replaced sporadic after-school tutoring with a predictable, structured routine of conversational drills and text-based analysis, leading to measurable gains in both student confidence and accuracy in *krama* usage (Ismailov, 2021; Glimäng & Sauro, 2024).

Together, these examples illustrate how digital platforms—YouTube for flipped content delivery, WhatsApp for continuous voice-based feedback, and Google Meet for synchronous role-plays and text analysis—have shifted pedagogy from teacher-centric, time-bound instruction to learner-centered, multimodal, and socially situated practices (Bergmann & Sams, 2012; Burston, 2014; Yao et al., 2023). This pedagogical transformation not only increases student engagement and motivation but also deepens their functional competence in navigating Javanese speech tiers across real-life contexts (Chin et al., 2022; Setiawan et al., 2025).

From a governance perspective, Yogyakarta high-school principals now issue annual “digital action plans” specifying platform usage, data-privacy protocols, and minimum upload quotas for heritage-language content—turning informal teacher innovation into codified institutional practice that can be monitored and scaled. With a large user base, YouTube significantly influences the dissemination of information through visuals, videos, texts, graphics, symbols, and sounds. The variety of content on YouTube opens up opportunities for creativity, self-expression, and learning. YouTube has also evolved into a competitive arena where various groups, such as governments, industries, and social media users, use different content genres and formats to promote their interests—whether for financial gain, attention, career advancement, or to foster new forms of nationalism (Lee & Abidin, 2022). As we have seen, teenagers and even children are able to use

technology to design and create their media. They might, for example, develop vlogs or produce and edit music content and short films and then share them online (Nugroho, 2020). Many teenagers also create YouTube channels to share content and get feedback from users. Their goal is sometimes to entertain and make their friends laugh or share their knowledge.

YouTube makes Javanese language learning more engaging, with teaching materials that can be accessed at any time and in visually appealing formats. Its educational functions facilitate knowledge acquisition regardless of location and time (Mannahali et al., 2024). With YouTube, students are excited and motivated to learn, as it breaks the monotony of traditional learning and adds an element of fun to the process. YouTube has become one of the most commonly used educational video platforms for students (Barlis et al., 2023). It has become an alternative way to supplement learning needs related to various subjects, including language and local wisdom (Astuti, 2021).

In Javanese language learning for learners in Yogyakarta, multimedia (YouTube videos) in teaching encourages learners to be willing to know and understand the material presented. Some junior and senior high school teachers in Yogyakarta have produced content on YouTube to build awareness about using the Javanese language and culture and guide information building for educators and students. The videos created and uploaded on YouTube are intended to persuade the audience to understand and interpret the true freedom of learning as an effort for children to develop according to their nature. Thus, multimedia allows the learner to understand the material, which leads to the construction of new knowledge. Several studies have shown that YouTube is a valuable learning medium for millennials already familiar with technology combined with transformational pedagogy (Dumitrescu, 2014; Kibirige & Odora, 2021; Kruse & Veblen, 2012).

YouTube for online teaching and learning in secondary education institutions in Yogyakarta can help students learn at home without restrictions in the face of the COVID-19 pandemic. YouTube has become a dominant educational platform due to its broad reach, allowing students to access learning materials anywhere and anytime. Students in the heritage language learning process also produce content to be uploaded on YouTube, and teachers provide an assessment of the videos created by the students. The videos created and uploaded by students learning the Javanese language are generally the practice of using the Javanese language in the form of Java traditional songs and "macapat" (traditional poetry).

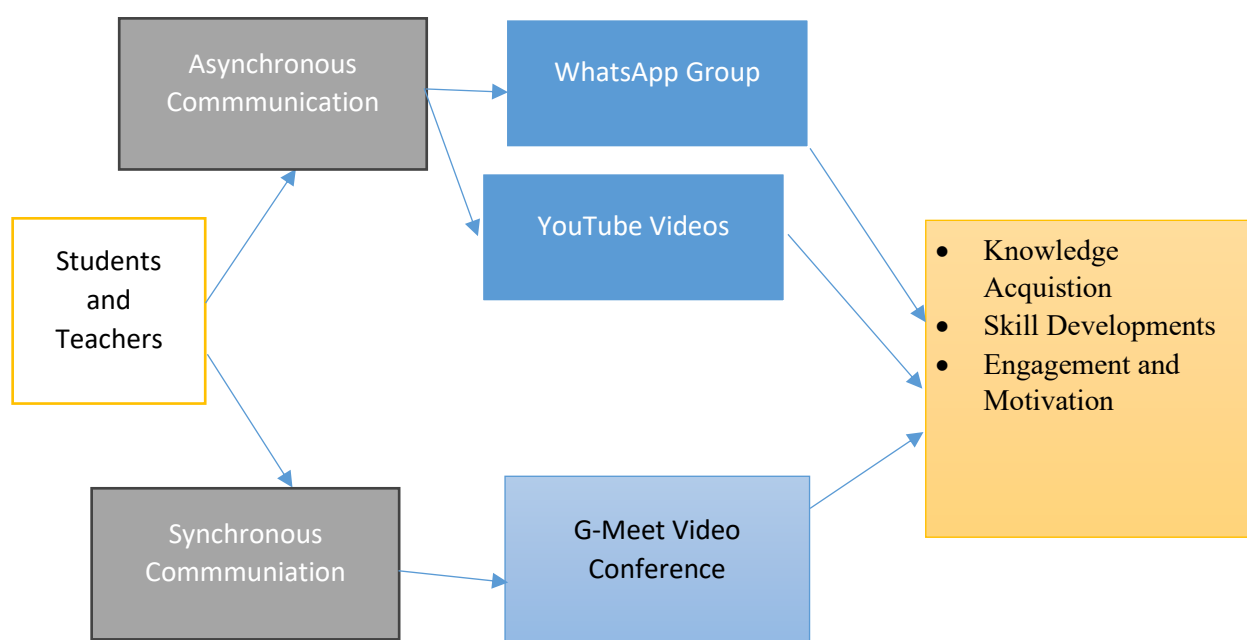


Figure 2. Digital Learning Communication Process in Yogyakarta High Schools

In the Figure 2, summarizes the digital-based Javanese language learning process in Yogyakarta High Schools. Teachers and students communicate asynchronously and synchronously. Asynchronous communication is mediated by WhatsApp and YouTube digital platforms, where messages and feedback sent by the teacher can be received by students at different times and places. Synchronous communication occurs through video conferencing, utilizing the Google Meet application to provide opportunities for students to get additional lessons outside of school hours. The digital learning process helps students gain knowledge and develop Javanese language skills. Because students are actively involved in the learning process, their motivation and desire to learn the Javanese language increase. The observed WhatsApp interactions demonstrate asynchronous communication, a core element of CMC theory (Spitzberg, 2006). Similarly, Google Meet enabled synchronous multimodal exchanges that supported real-time krama practice. These findings confirm that the affordances outlined in CMC theory—such as networked interaction and temporal flexibility—are effectively mobilized in Javanese language learning through digital platforms.

6. Conclusion

The learning process mediated by web-based applications such as WhatsApp and YouTube are beneficial for students and teachers in overcoming communication barriers due to limited learning time at school. Javanese language lessons as local content that is more than the weekly lesson hours make students and teachers need a medium of communication and learning that can be accessed anytime and anywhere. With all its features, WhatsApp has proven to help students and teachers in Yogyakarta to learn Javanese as a heritage language that needs to be preserved. Meanwhile, YouTube can serve as a medium for uploading content related to the Javanese language from both the perspective of students and teachers. Education mediated by digital media such as YouTube provides variations in the local language learning process and opportunities for students and teachers to learn from each other from the uploaded videos.

The preservation of the Javanese language requires attention from stakeholders, as it is one of the essential aspects of the nation's cultural heritage. The Education Office of Yogyakarta City and Yogyakarta Special Region, Javanese language teachers, academics, and parents should collaborate to encourage and support teenagers in learning Javanese with the help of communication and information technology. In addition, Yogyakarta is considered a cultural center where Javanese plays a vital role in daily life, serves as a communication tool, and is the carrier of cultural values and identity amidst the torrent of globalization. These efforts can offer a holistic approach for Yogyakarta teenagers to understand Javanese as a linguistic system and an essential component of cultural identity and social structure.

7. Recommendation

Based on the findings of this study, several recommendations can be proposed to strengthen the role of digital learning communication in preserving the Javanese language among younger generations. First, educational stakeholders, including local education authorities and schools in Yogyakarta, should consistently support teachers in effectively integrating digital media such as WhatsApp, YouTube, and Google Meet into the curriculum. Second, training programs should be conducted regularly to improve teachers' digital literacy, ensuring optimal utilization of these platforms. Third, developing structured digital content specifically tailored to the complexity of Javanese language levels (ngoko, madya, krama) would significantly enhance language acquisition. Finally, future research should investigate broader demographic samples and additional digital platforms to further understand their impact on local language preservation.

Declarations

Author Contributions. All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest. The authors declare that they have no relevant or material financial interests related to the research described in this paper.

Ethical Approval. The study was conducted in accordance with the Declaration of Helsinki, and approved by the Research Ethics Committee of Universitas Padjadjaran protocol code 916/UN6.KEP/EC/2024 on 8 August, 2024.

Data Availability Statement. Data sharing is not applicable to this article, as no datasets were generated or analyzed during the current study.

Informed Consent Statement: All informants in this study have provided oral statements regarding their willingness to be identified by their initials and their position or role in digital-mediated education in Yogyakarta, Indonesia.

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About the Contributor(s)

Astri Wulandari, Faculty of Communication Science, Universitas Padjadjaran Bandung, Indonesia
 Email: astri22002@mail.unpad.ac.id
 ORCID: <https://orcid.org/0000-0002-6038-0899>

Deddy Mulyana, Faculty of Communication Science, Universitas Padjadjaran Bandung, Indonesia
 Email: deddy.mulyana@unpad.ac.id
 ORCID: <https://orcid.org/0000-0002-2004-6845>

Purwanti Hadisiwi, Faculty of Communication Science, Universitas Padjadjaran Bandung, Indonesia
 Email: purwanti@unpad.ac.id
 ORCID: <https://orcid.org/0009-0002-1876-0609>

Edwin Rizal, Faculty of Communication Science, Universitas Padjadjaran Bandung, Indonesia
 Email: edwin.rizal@unpad.ac.id
 ORCID: <https://orcid.org/0000-0003-1727-633X>

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