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Research Paper

An Exploration into Young Twins' Journey Toward Multi-Literacy Development via Digital Multimodal Composing

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Abstract

Digital multimodal compositing (DMC) has recently garnered considerable interest in second language education. There is an increasing demand for L2 teachers to invest in DMC. This instructional activity engages students through digital tools for integrating texts with other semiotic modalities, including images, sounds, and motion. The proposed approach in this study included choosing a topic, planning a narrative, collecting authentic resources, employing digital platforms, incorporating dialogue-based multimodal elements, peer reviewing and revising for quality, exporting the final product, and reflecting on the creative process. While DMC is predominantly designed to entertain players, it may significantly impact multi-literacy development. This qualitative study employs narrative inquiry, which entails collecting data from the experiences of young twins who have spent a substantial amount of time creating DMCs. The data was compiled from various sources, including individual interviews, diaries, and observation. In this study, the twins describe how creating digital multimodal composition led to their subconsciously developing multi-literacy and acquiring English. A narrative analysis reveals how creating DMCs contributes to multi-literacy development, language acquisition, and cultural knowledge of digital native twins. The implications of incorporating DMC into language learning and multiple literacy skills were considered.

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Introduction

Digital multimodal composing (DMC) has gained prominence in recent years due to the increased use of digital tools and technologies. Multimodal theory highlights the significance of different modes in constructing meaning beyond language alone (Kim & Belcher, 2020). DMC is an essential skill for individuals who want to communicate effectively in the digital age and is widely used in education (Jiang, 2016). Digital multimodal composing is derived from the New London Group's (1996) concept of multi-literacies, which arose in response to concern about how literacy instruction can prepare students for an ever-changing world (Anstey & Bull 2006). One of these transformations was associated with the advent and development of digital technologies and texts comprising multiple semiotic systems, necessitating new methods of constructing meaning. As a result, digital technologies have modified the meaning-making process, expanding texts and literacy practices, including DMC (Tour & Barnes, 2022). Theorists of multimodality and new literacies studies argue that since digital technologies have developed resources for text construction (Warschauer, 1999), there is an essential need to broaden the conventional curriculum from print-based and linear writing to DMC. As society is ever-changing, the types of literacy are evolving and emerging to respond to society's needs (Grapin & Llosa, 2020).

Among various definitions of multiple-literacy, Cazden (1996) defined it as "the multiplicity of communications channels and media, and the increasing saliency of cultural and linguistic diversity" (p. 63). Additionally, Cervetti et al. (2006) proposed that it is viewed as social practice skills varying according to time and space and involving the relation of power (Street, 2003). Unlike the dominant approach of acquisition, which might embrace a set of reading and writing skills, multiple literacies may involve various sorts of literacy, including multimedia, Web-based technologies, communication networks, discussion groups, or blogs. The concept of multi-literacies emphasizes the need to expand traditional definitions of literacy to encompass a range of communication channels and cultural diversity. Grounded in the constructivist theory of learning, DMC can be helpful in ELT as it enables students to understand and overcome challenges through multimodal artifacts (Raffone, 2020). Following constructivism, composing short videos can bring up learning by doing (Jonassen, 1999), which calls for digitally oriented activities and new literacy.

Related to arguments about the nature of multi-literacies are multimodalities, two interrelated theoretical frameworks that inform research on DMC (Cho & Kim, 2021; Smith, 2014). The interdisciplinary feature of DMC implementation can build learning and practicing of multi-literacies across contexts (Yang et al., 2020). Namely, multi-literacies pedagogy allows multiple entries into divergent learning strategies, which embraces diverse expressive potentials in meaning production (Cope & Kalantzis, 2009). DMC has received considerable attention in the research literature regarding its effectiveness and has emerged as a multi-literacies practice (Jiang & Ren, 2020) over the past decade. The primary focus of DMC is on the core notion of "multimodality." This term refers to utilizing several modes, such as textual, aural, linguistic, spatial, and visual, to facilitate communication and construct meaning (Kress, 2003). Prior studies (e.g., Hafner, 2014; Jiang & Luk, 2016) have demonstrated that second language (L2) learners develop multi-literacy skills, negotiate identities, and increase motivation and autonomy in learning through multimodal practices.

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The landscape of conventional teaching practices has significantly transformed with new technologies and changing definitions of literacy (Nair & Md Yunus, 2023). This transition extends beyond traditional monomodal and teacher-centered instruction, embracing multiple modes of digital technologies, which has caused drastic changes in education. Numerous studies have underlined the necessity of adopting new literacy pedagogies that acknowledge the multimodal nature of human communication when appropriate (Zhang et al. 2021). Several literacy scholars (Hafner, 2015; Jiang et al., 2021; Jiang & Luk, 2016; Kress, 2003 Zhang et al., 2021) have emphasized the essential role of DMC in providing a favorable situation for students to integrate their out-of-school multimodal experiences into educational settings, thereby improving their language skills and enhancing digital literacy. The transition from traditional instruction to digital instruction necessitates adjustments in the delivery of educational content. Although previous studies indicated that DMC significantly impacts EFL learning worldwide (Jiang & Ren, 2020; Zhang et al., 2021), its affordances for users have received little attention regarding exploratory inquiry. Namely, the existing research on DMC has been mainly on the effects of DMC on learning. To fill this gap, this study employs a narrative inquiry methodology to shed light on how individuals can draw on the potential of DMC to enhance multi-literacies. By doing so, the phenomenon is investigated through the lived experience of digital natives' perspectives. By examining personal narratives and experiences, the study aims to determine how DMC can foster language literacy and multiple-literacy skills, thereby redefining the landscape of language education in the digital age.

How did two EFL learners engage with digital multimodal composing in a digital and multimodal learning environment?

How did the experiences of creating digital multimodal composing contribute to various literacies?

Literature Review

Digital multimodal composing in language learning contexts

In a second language context, DMC refers to "activities that engage learners in the use of digital tools to construct texts in multiple semiotic modes, including writing, image, and sound" (Hafner, 2015, p. 487). It requires students to "orchestrate" a variety of semiotic resources to produce digital products that "combine a plurality of signs in different modes into a particular configuration to form a coherent arrangement" (Kress, 2010, p. 162). The pedagogical use of DMC in second-language education has attracted increasing attention. According to a recent review by Li and Akoto (2021), research on DMC in L2 contexts focuses on three major themes: DMC processes, learners' perceptions, and DMC effects. Reviewing 26 articles, Li and Akoto (2021) identified three primary research strands: students' perceptions of DMC, the DMC process, and DMC's effects. Regarding perceptions, three themes emerged, including perceived benefits of DMC, obstacles, and moderating factors. Three themes emerged about the process: appropriating multiple modes, remixing/code-meshing, and conveying voice/identity/attitude. The effects of DMC were apparent in language gains, metalanguage development, and identity

development. It is assumed that there may be some overlap between these research strands and that a single article may also encompass multiple strands.

In recent years, various forms of DMC have been integrated by researchers as part of L2 pedagogy, in which video-making has been considered the most popular form (Jiang & Luk, 2016), which affects language learning. The overall findings of this body of research have indicated that adopting DMC in L2 classrooms can boost language literacy. For instance, using captions on the screen in DMC can enhance students' productive skills, such as writing (Jiang, Yu, & Lee, 2022; Kim & Belcher, 2020; Yi et al., 2020). Xu (2023), in a quasi-experimental study, revealed that employing DMC can affect Chinese EFL learners' L2 writing performance far better than traditional writing. Concerning the difference between formal writing and DMC, Comparing the qualities of DMC and conventional writing using analytical rubrics and classification of content and linguistic characteristics, Cho and Kim (2021) discovered no statistically significant difference between digital multimodal and monomodal writing.

In another empirical study, Kim and Belcher (2020) evaluated writing tasks' syntactic complexity and accuracy. The findings indicated that traditional writing was more syntactically complex than DMC, but there was no significant difference in accuracy. Although some researchers have questioned the use of DMC in L2 instruction, arguing that writing research should focus on students' language development (see Yi et al., 2020), the majority of DMC research focuses on describing and analyzing learners' DMC processes or teacher and learner perceptions of the impact of DMC. However, Allagui (2022) studied students' perceptions of multimodal versus traditional essay writing experiences. Although they identified several affordances for multimodal writing and described it as more fascinating than conventional essay writing, they resisted incorporating a variety of semiotic resources into their projects to demonstrate their writing abilities.

The overall findings of this body of research have indicated that adopting DMC in L2 classrooms can promote various literacies. For instance, adding voiceovers can enhance speaking skills (Shin et al. 2021). Concerning speaking, as one mode of productive skill in composing videos, the effectiveness of DMC in language learning can be interpreted in some studies. Yang et al. (2022) compared the impact of DMC and PPP instructional styles on seventh-grade students' English speaking and creative thinking. The suggested DMC implementation helped students become effective English speakers and innovative thinkers. The interdisciplinary project enabled authentic, output-oriented, multi-literacies learning opportunities, allowing the students to become effective English speakers and creative thinkers.

Amgott (2023) examined the perceptions of undergraduates regarding multi-literacy courses. Using the theory and pedagogy of multi-literacies, Amgott (2023) examined how students navigate multimodal composing in video reflections and digital multimodal projects. Students viewed the multi-literacies curriculum as providing opportunities to cultivate critical literacy, a growth mindset, and a sense of community. Students also indicated spontaneous speaking and time constraints as tensions in the multi-literacies curriculum. Zhang and Yu (2023) evaluated L2 student DMC competence through focus group interviews, classroom observations, and DMC sample analysis using an emic approach. They concluded that the clarification of L2 DMC competence can guide the measurement and instruction of L2 DMC competence, promote its integration into the L2 curriculum, and motivate L2 learners to engage in self-assessment to promote their DMC competence.

Maghsoudi et al. (2022) assessed Iranian EFL students' writing skills, DMC, and self-efficacy in a mixed-methods study. After writing essays, their study assessed the multimodal and monomodal groups' self-efficacy using the Second Language Writer Self-Efficacy Scale. Participants' views on DMC were assessed in semi-structured interviews at the end of the study. The study found that the multimodal group outperformed the monomodal group in content, communication, and organization, but not language. Self-efficacy affects multimodal and monomodal writers' writing ability regardless of type.

Scholars have employed data collection techniques in prior research, such as interviews, questionnaires, and written reflections, to evaluate students' perceptions of DMC. According to previous studies, L2 students have reported numerous benefits of multimodal environments, including increased authenticity and motivation and heightened audience awareness (Hafner & Miller, 2011). Incorporating multimedia elements in DMC can create a dynamic and interactive learning experience, which can help engage students more effectively. Overall, it has been argued that integrating DMC into language learning and teaching might provide opportunities for all language skills (speaking, listening, reading, and writing) and enable learners to develop their multi-literacies associated with different modes of representation (Jiang, 2022; Xu, 2023).

Multiple-literacy with the framework of multimodality

Unlike the traditional view of literacy, namely the ability to read and write, multiple-literacy enjoys various skills bound to personal, historical, cultural, and social considerations (Cervetti et al., 2006). It is assumed that multi-literacies might overcome the limitations of traditional approaches by focusing on cultural differences and linguistic diversity and may influence students' lives; hence, this new view of pedagogy can evolve the language of work, power, and community, and employment and enhance the critical pedagogy (Cazden,1996). The notion of multi-literacies has been the focal core of the New London Group's (1996) attention. The importance of communication channels and the diversity of cultures and languages has been highlighted. The world is changing, as is the communications environment. Therefore, it seems reasonable for literacy teaching and learning to evolve (Cope & Kalantzis, 2009).

The concept of multi-literacies aimed to elucidate the various forms of literacy practices, while multimodality focused on analyzing the semiotic systems in which signs or symbols are employed to communicate or transfer meaning. These forms can encompass linguistic means, visual representations, auditory elements, physical actions, or non-verbal expressions (Walsh, 2017). Multi-literacies and multimodalities are two interrelated theoretical frameworks that inform research on DMC (Cho & Kim, 2021; Smith, 2014). Multimodalities, the second theoretical framework for DMC research, asserts that miscellaneous modes contribute to meaning-making in various ways to generate communication units (Jewitt & Kress, 2003; 2010). These modes are structured semiotic resources for meaning-making, including image, gesture, sound, writing, and music (Jewitt, 2008).

The emergence of technology and globalization has profoundly impacted the conceptualization of literacy practice in the 21st-century, highlighting the need for educators to implement instructional strategies that comprise or combine traditional and emerging literacies (Yang et al., 2022). Robin (2008) proposed that 21st-century skills may embrace different aspects of literacy, including information, digital, computer, global, technology, communication, visual,

and language literacies. DMC could be considered an effective instructional strategy for students to utilize digital multimedia, e.g., images, audio, text, and videos (J. Wu & Chen, 2020), which might lead to multiple-literacy development.

With the introduction of new technology and shifting conceptions of literacy, the landscape of conventional teaching approaches has undergone a significant transformation (Nair & Md Yunus, 2023). This transition extends beyond traditional monomodal and teacher-centered instruction, embracing multiple modes of digital technologies, which has caused drastic changes in education. Theorists of multimodality and new literacies studies (Warschauer, 1999) argue that since digital technologies have expanded the repertoires of resources for text construction, there is an essential need to broaden the conventional curriculum. Cazden (1996) indicates that linguistic diversity, the multiplicity of communications mediums, and the growing cultural diversity worldwide call for a more expansive form of literacy than traditional language-based approaches. Unlike the conventional view of literacy, the ability to read and write, multiple-literacy enjoys various skills (Cervetti et al., 2006) identified as "a social practice, not simply a technical and neutral skill which is always embedded in socially constructed epistemological principles" (Street, 2003, p. 77).

Zhang et al. (2021) suggested the theories informed by multimodality/sociosemiotics (Jewitt, 2009; Kress, 2003, 2010), the new literacy or multi-literacies approach by the New London Group (1996), and SCT (Vygotsky, 1978) have significantly affected the domain of DMC. Likewise, Liang and Lim (2021), drawing on multi-literacies, noted that students need to understand the significance of being readers who can critically recognize multimodal texts and effectively convey their viewpoints through multimodal production. Consequently, it is crucial to comprehend and delineate how meanings from various forms are incorporated into cohesive texts during the writing process. While linguistic modes play a key role in texts' use, similar to conventional writing, they are no longer the sole way to convey meaning. Instead, they are a part of communication tools for making meaning, like other modalities, images, and music (Smith, 2014). Therefore, the new generation needs to learn from diverse multimodal productions to keep pace with various modes of communication. Accordingly, in this context, employing DMC as a means of storytelling can facilitate the adaptation to this rapidly transforming landscape.

While previous research has acknowledged the significance of DMC in evolving new literacies, there is a shortage of empirical studies investigating how DMC is used as an instructional strategy for fostering multiple literacies, including digital, language, visual, and communication literacies. The originality of this research lies in its interdisciplinary approach, which integrates theories of multimodality/sociosemiotics, the New Literacy or Multi-literacies framework, and SCT to provide a comprehensive understanding of how EFL learners engage with diverse multimodal productions resulting in multi-literacies development.

Method

This study will use a qualitative narrative inquiry to investigate DMC authored and prepared by the participants through observations, interviews, and narrative frames. Narrative research that can be longitudinal provides an in-depth description and exploration focused on individuals' experiences who can describe particular learning, teaching processes, or techniques (Merriam, 2009). The narrative inquiry is adopted since it is "the best qualitative approach for capturing

detailed stories of life experiences of single individuals" (Ary et al., 2019, p. 408). Narrative inquiry is a qualitative research approach that illustrates a phenomenon by telling stories and exploring the participants' experiences and feelings as a group or as individuals (Heigham & Croker, 2009). That is, "the main strength of narrative inquiry lies in its focus on how people use stories to make sense of their experiences in areas of inquiry where it is important to understand phenomena from the perspectives of the people who experience them" (Barkhuizen et al. 2013, p. 2). As this study focuses on the participants' experiences, the narrative analysis is well suited as the research technique that makes sense of the lives through narrative. According to Barkhuizen et al. (2013), verbal accounts and stories narrated by individuals about their lives and their experienced reality can reveal more about their inner worlds. Likewise, the study's unit of analysis is EFL learners, and the narrative inquiry is used to account for the phenomenon through narration or a collaborative re-storying process (Ary et al., 2019). In narrative inquiry, it is usual practice to adopt different data-gathering strategies; hence, various data collection methods, including observations, interviews, and diaries, were utilized to investigate uncharted regions (Dornyei, 2007). Thus, methodological triangulation is applied to collect data and define codes and themes to make the findings credible (Merriam & Tisdell, 2015). Overall, inductive and deductive analysis is adopted to interpret the phenomena by reducing and reconstructing the data into codes and categories.

Participants

The purposive sampling procedure was adopted to select individuals with similar experiences to the study's focus (Dornyei, 2007). The study was conducted in Tehran, Iran, and involved the participation of two 13-year-old twin boys, Mahyar and Mazyar, who were in the 7th grade. The participants were chosen based on their technological ability and preference for digitally oriented activities, qualities regarded as highly suitable for inclusion in this study. They were one of the researchers' children. Hence, this distinctive state has the potential to yield far more comprehensive and detailed information. Due to the exposure to various digital tools, the participants are generally competent enough to use mobile phones, tablets, and PCs. These particular cases possess specific characteristics. Namely, they are more interested in playing video games and making short videos than reading textbooks that can provide rich and varied insight (Dörnyei, 2007) into DMC to expand our knowledge. They primarily use technology to play games, communicate, and enjoy their time. Consequently, we may consider them technologically savvy and "digital natives" (Prensky, 2001) who prefer to spend their time playing video games and viewing animated content over traditional book studies. (Prensky, 2001) The 21st-century has witnessed the emergence of digital natives, individuals born and developed in the digital age.

Instrumentation

Given the study's qualitative design, semi-structured interviews, narrative frames, and observations were utilized to draw meaning from raw data. The participants used various video recording software, music, and animation representations through computers and mobile devices, including color photographs and cartoons. The twins narrated the game stories with user-friendly software such as Inshot and Powtoon, including music and animation representations to make

recorded videos more visually appealing and artistic. Inshot is a video editor and free video maker that offers all video editing features, including trimming, merging, editing with music and transition effects, adding stickers and text to films, and cutting and joining. Powtoon is a web-based animation software that enables users to build animated presentations using pre-made items, imported photographs, music, and user-created voiceovers. Because each of these instruments possesses unique features that the other does not, they can complement one another regarding affordances and downsides. Participants can link PDFs, text, images, and audio files, record their voices, and add subtitles with the help of the software above.

Procedure

The first set of data from observation was applied to prepare more specific narrative frames (see appendix) and as a reference for subsequent procedures, i.e., anchored interviews (see appendix) (Heigham & Croker, 2009; Merriam, 2009; Dörnyei, 2007). One of the focal points of this inquiry is observation while events are happening (Ary et al., 2019; Yin, 2016). The participants' behaviors and reactions were observed while composing the videos and narrating the stories. As such, the researcher records detailed descriptions of participants' activities, behaviors, and actions, which cannot be identified through other data collection methods (Patton, 2015). As a complete observer, one of the researchers kept notes and completed memos to derive specific data related to the language learning process. In the last part, a written report was satisfied with the memos perceived by the researcher.

Through diaries, the participants recorded their experiences in composing and kept notes of different aspects of creating DMC (Seliger & Shohamy, 1989). In this narrative inquiry, the participants took one fixed form following Bolger and Rafaeli's (2003) typology to record the procedure. The design of the narrative frame followed Barkhuizen and Wette's (2008) frame that contributed to obtaining the information the researchers needed to achieve the purpose of the study. The diaries can reveal the participants' thoughts, which are not manifested through other data collection methods, e.g., the interviews.

This narrative inquiry used interviews to elicit oral accounts of language learning and participants' experiences. However, this study focuses on the participants' DMC experiences for language learning without any teaching intention from the interviewer-researchers part (Barkhuizen et al., 2013). As such, we used unstructured interviews to encourage the participants to elaborate on their stories without presuppositions. However, they are not fully grown. They often need questions to prime and prompt them, which are more like informal conversations (Heigham & Croker, 2009). It offers a compromise between semi-structured and unstructured interviews (Dörnyei, 2007), a set of guiding prompts accompanied by open-ended and flexible questions (Merriam, 2009). Specific open questions were determined to provide coherence across interviews, from which the interviewer branches off to explore in-depth information as the interview progresses. Consequently, follow-up questions were provided for interviewees to have the participants elaborate on their thoughts (Barkhuizen et al., 2013; Seliger & Shohamy, 1989).

Through this exploration, as the participants narrated and composed stories, the data were collected through interviews, diaries, and observations. First, observing the participants while telling and writing the stories, the researchers, as the non-participant observers, recorded every detail on the spot to make meaning from them. Overall, during the observation, the participant

was asked to talk about what they think about the process of narrating the stories. During planning, preparing, producing, editing, and sharing videos, the participants verbalized their ongoing thoughts and perceptions through diaries. Once the observation was finished, the researcher shortly after that conducts interviews. The participants were then interviewed to elicit information concerning their experiences of composing videos and narrating digital stories. Ultimately, the researchers focus on the participants' diaries to uncover how engaging with DMC enlightens gamers and how language patterns emerge, respectively.

The interviews and observations were transcribed and sorted, respectively. The interviews were conducted in L1 and lasted approximately ten minutes for each session. Following the general recommendations of Barkhuizen and Wette's (2008) frame for diaries, the participants wrote down their thoughts. The frame of diaries was employed to avoid burdening the twins and to guide them to keep forward. The diaries were introspective documents that recorded the experiences of creating stories, a series of entries written over the study at random intervals. At the bottom of the narrative frame, some spaces were given to the participants to write freely. The diaries asked for three prompts, including explaining the procedure of creating digital stories, their feelings, and their point of view.

Data analysis

Data analysis involves sorting, organizing, summarizing, and synthesizing the data to arrive at the findings and conclusions of the research (Seliger & Shohamy, 1989). However, preliminary analysis started at the beginning of the study to enhance the refinement of data collection strategies by applying "iterative" and "emergent" data analysis (Dörnyei, 2007). The data analysis was based on transcribed data from observations and dairies of narrative frames, interviews, and video records. This study's data includes both "narrative" and "non-narrative" forms of data. On the one hand, "narrative" is in spoken story form, consisting of narrative frames and videotapes completed by the twins. On the other hand, "non-narrative" is in written story form compiled from interview transcripts, observations, and memos (Barkhuizen et al. 2013).

The codes taken from the data, or the existing patterns, were imposed on the data. Namely, they were derived from the data itself or based on prior knowledge of the data, accepted ideas, or the findings of a recent study (Corbin & Strauss, 2014). That is, two main types of techniques were adopted from both textual and oral resources: (a) deriving a set of categories for dealing with text segments from the text itself through the inductive procedure, (b) an ordering system of categories already existed at the beginning of the process, and the researcher applied this system to the data. The former was applied to the remainder of the data, refining the categories and finding new similarities or patterns, which served as an ordering system for the data content. The latter was derived from a conceptual framework in the literature; namely, the segments were selected and categorized according to the existing system and the pattern derived in the current study. In other words, the segments were taken from the data inductively and adopted from predetermined categories from other sources deductively. By doing so, the salient features were identified and highlighted in different sets under specified categories in MAXQDA software for analyzing qualitative data. It identified and analyzed codes, synthesized the categories, and inductively managed themes.

In the second step, the commonalities, patterns, and differences were taken across the various textual and oral data. As such, the categories will be investigated, for instance, by cross-referencing, to check the possible relationships contributing to the understanding of the phenomenon under study (Seliger & Shohamy, 1989). In essence, the identified units of meaning collected from the participants' viewpoints and the researcher's memos or other multimodal data were compared and contrasted to create more similar and inclusive conceptual notions, broadening the analysis subsequently. The synthesis of these meaning units with a related thematic core emerging as final themes encompassed the findings and answered the research questions (Heigham & Croker, 2009).

Finally, the credibility and trustworthiness of descriptions of the content analysis were validated and verified by the researchers when they returned to the data to ensure the codes' suitability and avoid bias. Moreover, the participants checked the identified patterns through member checking or deductive analysis, and the researchers provided the consistency of the codes through the independent reviewers or intercoder reliability using Holsti's coefficient of reliability (O'Connor & Joffe 2020).

Findings and Discussion

In this narrative inquiry, the researchers specified, delimited, and sorted the related segments of the written and spoken data at different stages of analysis. Accordingly, the categories were synthesized. Eventually, three major themes emerged from the data analysis: digital multimodal composing and language skills, digital natives and sociocultural theory, and digital multimodal composing and multiple literacies. The following sections present the emergent themes and their associated discussions.

Digital multimodal composing and language skills

The first set of analyses indicated that new generations' innovative use of audio-visual resources enriches various skills using specific learning strategies. Concerning the different multimodal modes, the twins relied on visual learning, imagery, and aural, wherein they linked verbal material with sound, motion, and composition. Drawing on digital and multimodal tools, they produced language with different channels. The twins used various techniques and active strategies through DMC and recalled linguistic and content area information. In agreement with Zhang et al. (2021), the findings of this study showed that narrating and composing imaginative stories provided situations in which the learners can practice oral proficiencies, writing skills, and reading abilities.

Good language learners use multiple strategies that help them be more productive than those who stick to one particular strategy (Chamot & O'Malley (1987). The following excerpt illustrates how they are engaged in recording and playing roles in their videos while focusing on the language to attain satisfactory recordings. In other words, integrating DMC into language learning made them scrutinize the content and grammar to produce sound stories.

"Although we had practiced our role-play before recording the videos, we repeated our role and checked everything such as sound, grammar, pronunciation, and the correct spelling of captions," Mazyar mentioned.

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In addition, the present study supported Lee's (2020) results that language development was aided by using productive skills, namely oral abilities, as a medium for composing stories digitally. The results supported previous research by Hava (2019) and Yang et al. (2020), demonstrating that DMC and digital storytelling (DST) were practical literacy education techniques for speaking, writing, and visual imagery despite unfavorable software defects. Composing and narrating digital stories enabled them to practice and learn the language by doing, namely, by reviewing at intervals and with spaced repetition instead of rote repetition, which resulted in attaining procedural or automatic knowledge and meaningful learning. The following excerpt from the diaries illustrates how preparing and repeating a preliminary outline contributed to practicing speaking and pronunciation.

"To create a video, we mix and edit several audio and video sources. When we mix multiple videos, we can repeat some parts to pronounce the words correctly and check the pronunciation through GT," Mahyar and Mazyar stated.

In a similar spirit, Churchill (2020) noted that telling and composing the stories digitally allows the learners to share their real-life experiences and answers to their challenges while developing their communicative competence through feedback from others. Despite technological difficulties, the study showed how DMC offered a multimodal learning environment for interaction and language development.

"We talk with language learners about Mindcraft game, which we had created a story about how to play them," Mahyar mentioned.

Regarding writing skills in a quantitative study, Maghsoudi et al. (2022) showed that the multimodal group outperformed the monomodal group in content, communicative achievement, organization, and language. Self-efficacy also affected multimodal and monomodal writers' writing skills, regardless of type. Moreover, the participants had a positive perspective about DMC. The results support the finding of this study in that DMC contributes to the learners' self-efficacy in the composition. The following OC shows how the twins work on writing by doing.

"Each time the twins write subtitles or compose content relating to the story, they check spelling, grammar, and pronunciation," OC.

However, in contrast with this study, Kim and Belcher (2022) utilized a within-group comparison design to compare DMC and traditional writing on the same topic of their choosing. The results demonstrated that traditional writing elicited syntactically more complex writing than DMC. However, there was no significant difference between the two conditions regarding the accurate clause rate. Most students viewed DMMC favorably, particularly in terms of its function in meaning construction. Regarding the usefulness in enhancing writing abilities, however, perceptions were mixed.

Digital composition practices and narrating stories in this study resonate with Fernandez Malpartida's (2021) study, denoting that almost all components of language learning strategies—memory, cognitive, compensation, metacognitive, affective, and social strategies—contribute to language proficiency. By sharing their social and cultural heritage with others on social media (e.g., Instagram) through DMC, the twins benefited from visual imagery and aural learning style

preferences and verbal material with sound, text, motion, and images, which calls for 21st-century skills.

Digital natives and sociocultural theory

The seven DST steps, the umbrella term of DMC suggested by Robin (2006), were used to create and compose a storyline, record voices, listen to the voiceovers, refine the language and pronunciation, and act out this process. During this process of DMC, the learners developed digital literacy with the assistance of mediatory artifacts, e.g., language interaction with other modes in terms of writing process and product, which motivates the learners to write more, whereby writing systems and associated structures are enhanced. In this line, Hava (2019) and Xu (2023) suggested that storytelling and composing fosters writing and speaking skills and nurture digital literacy. However, this study also demonstrated the role of mediatory tools in fostering new literacies. Namely, they checked their production and refined their language abilities with online applications like Grammarly, Google Docs, and GT. The following excerpt shows how the twins studied their writing with different digital tools:

Mahyar mentioned, "We prepare several scripts, add some texts, edit drafts with Grammarly, and use GT to translate and correct our writing and spelling."

This research suggested various mediational means, namely physical tools (hardware including computers, websites, and apps for telling stories) and psychological or symbolic tools (language) (Lantolf et al., 2015), contributed to employing various literacies. As such, the storytellers relied on DMC as a physical tool, contributing to multi-literacy and language acquisition. In essence, different tools have been identified as an object to regulate learning in a productive learning environment, resulting in self-regulation. Drawing on other regulation, the twins were instructionally scaffolded and gained knowledge through collaboration and communication with their virtual friends. The following excerpt from the diaries shows how they gained knowledge through "research-based teaching materials" (Sauro et al., 2020, p.1) and another person leading to self-regulation.

"I try to find the required information by searching on the net and discussing it with our virtual friends in English, so now we can ask others and search the net better than before," Mahyar said.

The findings corroborated that of Yang et al. (2020), who reported that multi-literacies learning opportunities afforded by the DMC project resulted in self-regulation, cooperation abilities, self-monitoring, and autonomy. DMC offers an effective tool and medium enabling students to pick up various literacies while they become involved in learning by doing. By creating DSs, the twins could search the materials, communicate with others, and independently evaluate their knowledge on the Internet, leading to nurturing new literacies. As Mazyar stated below, they resorted to different ways to create DSs.

"While Mahyar collects different information online and finds out how to use other applications, I search for a specific topic on YouTube. After checking our final production, we share them with others."

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This study differs slightly from the study of Yang et al. (2020) in that the twins, as digital natives, need almost no instruction on using digital technologies. They could manipulate applications and digital devices (e.g., computers, tablets, mobile phones), regarded as critical competency in 21st-century skills and self-efficacy for long-life learning (Ulfert-Blank & Schmidt, 2022). Although the findings of this study corroborate Hava's (2019) findings that reported the positive effects of DMC on language proficiency and new literacy, it contradicts a part of their study in that DMC is demanding. Working with different tools and websites in groups or individually to create DSs is a worthwhile experience whereby the storytellers' gains are more valuable than the demands. As can be inferred from the excerpt below:

"Using different tools such as Inshot, Powtoon, and Samsung Notes on our PC and mobile is easy peasy lemon squeezy," Mahyar mentioned.

Following constructivism, DST emphasizes learning by doing (Jonassen, 1999), requiring "digital natives" (Prensky, 2001) to acquire experience and new literacy through DMC. The existing corpus of research suggests that technology should be used to activate young learners' language domains (González-Carriedo & Esprvalo Harrell, 2018), an essential component of 21st-century skills. In this study, the twins appeared to be becoming more technologically proficient and adept at gathering information and acquiring new skills via the Internet; as a result, they were inclined to engage in more digitally-focused activities. Namely, these digital natives are born in the era of digital technology; therefore, using technology to maximize its potential remains a concern (Chapelle & Shannon, 2017; Thomas et al., 2013). In addition, they appreciate the process of creating DS, which results in independent learning. The following excerpt from the diaries shows how the twins are comfortable and adept at employing digital tools and enjoy learning.

"We download some images from the Internet because we cannot use actual photographs for young learners, so we use funny ones instead. Above that, we are delighted that we don't have to read only books to memorize the story or to do homework because it is more enjoyable and easier to make digital stories," Mahyar and Mazyar Mentioned.

Digital multimodal composing and multiple-literacies

The 21st-century literacies identified in this study included skills encompassing "information," "digital, "technology," "communication," "visual," and "language" literacies. However, these new literacies resulting from DMC do not contradict traditional literacies, such as the ability to read and write (Street, 2003); instead, they appear complementary. Similar to the findings of Zhang et al. (2021), this study identified DMC as a promising instructional strategy for incorporating personal, instructional, and social stories with digital multimedia. Namely, cultural and social practices are bound to multiple literacies (Cervetti et al., 2006), wherein the content material must be ideological and meaningful for the learners and society.

It could be argued that the twins enjoyed creating DSs and contributed to their language proficiency, information, digital, computer, global, and technology literacies. The current findings partially aligned with Churchill and Barratt-Pugh's (2020) study in that DMC enables the learners

to produce their learning materials and value-laden instructional content for others through social and cultural practice. Making animations with a social takeaway regarding conforming to societal regulations, the twins informed people of the danger of not obeying the rules. Such social activities can prevent unwanted social repercussions and pave the way for community-building development. Moreover, by raising cultural awareness and respecting others' traditions, they moderated their interaction with social and cultural norms and made the DSs relevant to the immediate context.

"We help students learn the English alphabet for free by teaching moral issues like protecting animals or respecting individuals' rights and informing people to protect themselves and others against Coronavirus," Mahyar said.

Lim et al. (2022) indicated cultural and social skills, communication, self-efficacy, and transliteracy skills are the salient constructs identified in different studies of DMC. Similarly, Hava (2019) suggests that telling stories with digital tools can contribute to developing students' literacy and digital skills in EFL education and integrating cultural identities into English. Similarly, the twins merged the videos, audio, text, and animation and mixed all the story elements to interpret, reply to, and contextualize messages from a global viewpoint. Drawing on global literacy, they adapted new modes of narrating the stories with animations to make them understandable. The visuals can anchor new meanings symbolically and metaphorically with intimacy to stories, contributing to comprehension and communication (Hakanurmi et al., 2021). The excerpt from the interview implies that regardless of the low proficiency level in English, the readers could understand and communicate through visual modes.

"We combined colorful images with captions to make the storylines easy to follow and to adjust our story to our audiences' proficiency level and appealing for learning," Mazyar said.

The multi-literacies identified in the study were an opportunity to handle the different tasks and solve the problems of modern life, mainly related to technology, which has changed their way of learning (Cope & Kalantzis, 2009). Multiple literacies identified in this study were considered as a response to the demands of new learning techniques and the effect of COVID-19 so that digital citizens can adapt to new learning methods accordingly. Not only did the twins manage to search the content on the Internet, but they could evaluate and manipulate those materials to contextualize them. The following excerpt from diaries shows how they searched content to make the input fit the context.

"We can use apps even if we are unsure about their function and limitations, but there is always an alternative way of telling stories.

Like O'Byrne's (2018) study, the twins utilized multiple semiotic resources in their DSs, including text, image, soundtrack, and narration through planning, following steps, and performing conscious actions to organize and declare their ideas and knowledge collaboratively. In agreement with Rahiem's (2021) findings, this study showed digital stories nurture imagination and creativity and provide situations wherein children can express their thoughts and emotions. In line with González Mesa (2020), who surpasses the classification of learning strategies, this study considered the whole process of DMC as an innovative strategy. The following excerpt

taken from the observation indicates shows how the participants presented the abstract concept with the help of digital tools

"Creating short videos on specific topics like what "over cloud nine" means, the twins used Powtoon's characters, uploaded images, added voiceover and music, and text to express their ideas."

Similarly, Allagui (2022) examined students' multimodal vs. typical essay writing experiences concerning semiotic facilities. They identified various affordances for multimodal writing and found it more exciting than essay writing, although they resisted using every semiotic resource to demonstrate their writing skills. He suggested that students' comprehension of multimodal writing as a creative design can be enhanced by developing explicit knowledge of various modes. The twins searched the Internet to find appropriate images and soundtracks for one flashcard to fit the soundtracks with the images.

"We check all English-related problems like pronunciation, grammar, and spelling mistakes on the net and GT while attaching the soundtrack and visual effects to the records. We aren't satisfied with the first image downloaded from the net since we need more interesting images," Mahyar and Mazyar said.

In agreement with the findings of Zhang et al. (2021), which examined the digital composing practices in the L2 learning context, this domain has relied on various data sources primarily informed by multimodality and multi-literacies theories. This research suggested various multimodal features of DMC contributed to the practice of digital and language skills. Their findings endorsed multiple-literacy pedagogy, which enabled young learners to use multiple semiotic resources as a medium to accelerate various literacies. Similarly, the theories of multimodality and sociosemiotics emphasize the significance of a wide array of semiotic resources in making meaning. This highlights the potential of digital storytelling as a valuable context for studying how learners effectively coordinate many communication modalities. The excerpt from the diaries below presented how DMC led to creativity in using visual and aural effects.

"I use an app to make flashcards by which I can select the colorful colors and appropriate fonts for the text and upload the image and soundtrack to make them suitable for the related content," Mazyar mentioned.

According to Nguyen et al. (2020), narrating and composing digital stories can be a flexible technique supported by participation and authentic learning. That is, multimodal resources enabled the storytellers to talk about their routines and feelings, eliciting various associations and reinforcing learning. Furthermore, the symbolic utilization of colors in narrations could aid in focusing on form. The example revealed through the interview shows that contrary to monotonous repetitions, selecting proper colors, graphics, and wording has given vibrant vibes to their purposeful activities.

"I use lively frames to make the brochures interesting and energetic voiceover and soundtrack with new sentences and vocabulary to talk about our class conversation today," Mazyar stated.

The aforementioned semiotic system was predicated upon using signs or symbols to communicate or convey meaning. In general, the various manifestations of multimodality encompassed linguistic modalities, visual illustrations, aural components, and nonverbal signals. Hence, these many modalities have played a significant role in facilitating communication through digital technologies.

Conclusion

The DMC practice conducted in this study was identified as an instructional activity that engages the learners by integrating texts with other semiotic modalities, such as images, audio, text, and voice, using digital tools. This process includes selecting a topic, planning a plot, collecting authentic resources, composing the context, voice-overing, integrating digital multimedia, and revising for quality. This qualitative study employs narrative inquiry, which entails collecting data from the experiences of young twins and observing them while creating DMC. The findings highlight DMC's substantial contribution to linguistic proficiencies and the development of nonlinguistic competencies encompassing "information," "digital," "technology," "communication," "visual," and "language" literacies.

Regarding research approaches, DMC studies seem to be dominated by exploratory qualitative inquiries, such as case studies by Zhang et al. (2021); therefore, for future research, it is recommended that instructors and researchers investigate the relationship between DMC and creativity. Additionally, it is suggested that research be conducted on the influence of DMC on critical thinking and problem-solving. While the study's findings showed that the DMC could contribute to linguistic and nonlinguistic outcomes, this narrative inquiry was conducted with identical twins, which may have hindered its applicability to other educational contexts. The relevance of these findings to a broader context or a different learner population must be confirmed by additional research. This study has implications for instructors seeking to implement DMC in English language classrooms, with a greater emphasis on collaboration and cooperation. Likewise, the findings can benefit the reluctant learners to apply traditional learning strategies who are more patient about technology.

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References

Alcantud-Díaz, M., & Pérez-Garc ía, A. (2020). United by Generations through Digital Storytelling: Elder's Life Stories in Intergenerational EFL Teaching. In Nami, F. (Ed.). *Digital storytelling in second and foreign language teaching* (pp. 131-154). https://doi.org/10.3726/b15897

Ary, D., Jacobs, L. C., Irvine, C. K. S., & Walker, D. (2018). *Introduction to research in education*. Cengage Learning.

Barkhuizen, G., Benson, P., & Chik, A. (2013). *Narrative inquiry in language teaching and learning research.* Routledge.

Barkhuizen, G., & Wette, R. (2008). Narrative frames for investigating the experiences of language teachers. *System, 36*(3), 372-387.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, *54*(1), 579-616.

Cazden, C. B. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–92. https://doi.org/10.17763/haer.66.1.17370n67v22j160u

Cervetti, G., Damico, J., & Pearson, P. D. (2006). Multiple literacies, new literacies, and teacher education. *Theory into Practice, 45*(4), 378–386. https://doi.org/10.1207/s15430421tip4504_12

Chapelle, C. A., & Sauro, S. (2017). Introduction to the handbook of technology and second language teaching and learning. *The handbook of technology and second language teaching and learning*, 1-9.

Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Sage publications.

Cho, H., & Kim, Y. (2021). Comparing the characteristics of EFL students' multimodal composing and traditional monomodal writing: The case of a reading-to-write task. *Language Teaching Research*, 13621688211046740.

Churchill, N. (2020). Development of students' digital literacy skills through digital storytelling with mobile devices. *Educational Media International, 57*(3), 271–284. https://doi.org/10.1080/09523987.2020.1833680

Churchill, N., & Barratt-Pugh, C. (2020). The Digital Entanglement of Humanities, Literacy, and Storytelling (pp. 141–154). *Springer, Singapore.* https://doi.org/10.1007/978-981-15-4642-6_9

Cope, B., & Kalantzis, M. (2013). "Multiliteracies": New literacies, new learning. In *Framing Languages and Literacies* (pp. 105-135). Routledge.

Dornyei, Z. (2007). Research Methods in Applied Linguistics (p. 336).

Fernandez Malpartida, W. M. (2021). Language Learning Strategies, English proficiency and Online English Instruction Perception during COVID-19 in Peru. *International Journal of Instruction, 14*(4).

González-Carriedo, R., & Esprívalo Harrell, P. (2018). Teachers' Attitudes Toward Technology in a Two-Way Dual-Language Program. *Computers in the Schools, 35*(2), 111–133. https://doi.org/10.1080/07380569.2018.1462634

González Mesa, P. A. (2020). Digital Storytelling: Boosting Literacy Practices in Students at A1-Level. HOW, 83–104. https://doi.org/10.19183/HOW.27.1.505

Grapin, S.E., & Llosa, L. (2020). Toward an integrative framework for understanding multimodal L2 writing in the content areas. *Journal of Second Language Writing, 47,* 100711.

Hafner, C. (2015). Remix culture and English language teaching: The expression of learner voice in digital multimodal compositions. *TESOL Quarterly, 49*(3), 486–509. https://doi:10.1002/tesq.238

Hava, K. (2019). Exploring the role of digital storytelling in student motivation and satisfaction in EFL education. *Computer Assisted Language Learning, 0*(0), 1–21. https://doi.org/10.1080/09588221.2019.1650071

Heigham, J., & Croker, R. A. (2009). Qualitative research in applied linguistics: A practical introduction. In Qualitative Research in Applied Linguistics: *A Practical Introduction. Springer.* https://doi.org/10.1057/9780230239517

Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of research in education, 32*(1), 241-267.

Jewitt, C., and G. Kress. 2003. *Multimodal Literacy*. New York, NY: Peter Lang Publishing Inc.

Jewitt, C., & Kress, G. (2010). Multimodality, literacy and school English. *The Routledge international handbook of English, language and literacy teaching*, 342-353.

Jiang, L. J., & Luk, J. (2016). Multimodal composing as a learning activity in English classrooms: Inquiring into the sources of its motivational capacity. *System, 59*, 1–11.https://doi.org/10.1016/j.system.2016.04.001

Jiang, L., & Ren, W. (2021). Digital multimodal composing in L2 learning: Ideologies and impact. *Journal of Language, Identity & Education, 20*(3), 167-182.

Jiang, L., Yu, S., & Lee, I. (2022). Developing a genre-based model for assessing digital multimodal composing in second language writing: Integrating theory with practice. *Journal of Second Language Writing,* 100869.

Lantolf, J. P., Thorne, S. L., & Poehner, M. E. (2015). Sociocultural Theory and Second Language Development. In B. van Patten & J. Williams (Eds.),. *Theories in Second Language Acquisition, January,* 207–226.

Lee, S. Y. (2020). Showing professionalism: edTPA, technology-mediated observation, and visual politics in teacher education. *Teaching and Teacher Education, xxxx*, 103234. https://doi.org/10.1016/j.tate.2020.103234

Liang, W. J., & Lim, F. V. (2021). A pedagogical framework for digital multimodal composing in the English Language classroom. *Innovation in Language Learning and Teaching, 15*(4), 306-320.

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.Nguyen, T. H., Hwang, W. Y., Pham, X. L., & Pham, T. (2020). Self-experienced storytelling in an authentic context to facilitate EFL writing. *Computer Assisted Language Learning, 0(0)*, 1–30. https://doi.org/10.1080/09588221.2020.1744665

O'Connor, C., & Joffe, H. (2020). Intercoder Reliability in Qualitative Research: Debates and Practical Guidelines. *International Journal of Qualitative Methods, 19.* https://doi.org/10.1177/1609406919899220

Patton, M. Q. (2002). Two Decades of Developments in Qualitative Inquiry: *A Personal, Experiential Perspective. Qualitative Social Work, 1*(3), 261–283. https://doi.org/10.1177/1473325002001003636

Kim, Y., & Belcher, D. (2020). Multimodal composing and traditional essays: Linguistic performance and learner perceptions. *RELC Journal, 51*(1), 86-100.

Prensky, M. (2001). Digital Natives, Digital Immigrants (Vol. 9, Issue 5). NCB University Press.

Robin, B. R. (2006). The Educational Uses of Digital Storytelling What Is Digital Storytelling? Proceedings of Society for Information Technology & Teacher Education International Conference 2006, 1, 709–716. http://digitalliteracyintheclassroom.pbworks.com/f/Educ-Uses-DS.pdf

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory into Practice, 47*(3), 220–228. https://doi.org/10.1080/00405840802153916

Sauro, S., Buendgens-Kosten, J., & Cornillie, F. (2020). Storytelling for the foreign language classroom. *Foreign Language Annals, 53*(2), 329–337. https://doi.org/10.1111/flan.12467

Shin, D. S., Cimasko, T., & Yi, Y. (Eds.). (2021). *Multimodal composing in K-16 ESL and EFL education: multilingual perspectives.* Springer Nature.

Seliger, H. W., Shohamy, E. G., & Shohamy, E. (1989). *Second language research methods.* Oxford University Press.

Street, B. (2003). What's "new" in New Literacy Studies?: Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education, 5*(2), 77–91.

Thomas, M., Reinders, H., & Warschauer, M. (2013). Contemporary Computer-Assisted Language Learning.

Ulfert-Blank, A. S., & Schmidt, I. (2022). Assessing digital self-efficacy: Review and scale development. *Computers & Education*, 104626.

Vygotsky, L. (1978). Sociocultural theory. Etec.Ctlt.Ubc.Ca. http://etec.ctlt.ubc.ca/510wiki/Sociocultural-Constructivist

Wu, W. C. V., Yang, J. C., Scott Chen Hsieh, J., & Yamamoto, T. (2020). Free from demotivation in EFL writing: the use of online flipped writing instruction. *Computer Assisted Language Learning, 33*(4), 353–387. https://doi.org/10.1080/09588221.2019.1567556

Xu, Y. (2023). Investigating the effects of digital multimodal composing on Chinese EFL learners' writing performance: A quasi-experimental study. *Computer Assisted Language Learning*, *36*(4), 785-805.

Yang, Y. T. C., Chen, Y. C., & Hung, H. T. (2020). Digital storytelling as an interdisciplinary project to improve students' English speaking and creative thinking. *Computer Assisted Language Learning, 0*(0), 1–23. https://doi.org/10.1080/09588221.2020.1750431

Zhang, M., Akoto, M., & Li, M. (2023). Digital multimodal composing in post-secondary L2 settings: A review of the empirical landscape. *Computer Assisted Language Learning, 36*(4), 694-721.

Yi, Y., Shin, D., & Cimasko, T. (2020). Special issue: Multimodal composing in multilingual learning and teaching contexts. *Journal of Second Language Writing, 47*, 100717–100716. doi:10.1016/j.jslw.2020.100717

Appendix

Narrative Frame

I remember once I was adding voiceovers, I had tried to pronounce the words accurately

_____

_____

_____

_____. The main reason for repeating was that _____

_____

_____.

I tried to solve the problem by _____

_____

_____.

_____. It would have been very helpful if _____

_____

_____

_____. In relation to the quality of the video,

_____

_____

_____.

A major constraint, though, were that _____

_____

_____.

Instructions: (1) Read the whole page BEFORE starting to write.

(2) Write a coherent narrative; i.e., link each idea to the next like you would in a story.