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Rhetorical and Motivational Values of Multimodality in Writing: A Case Study Examining L2 Writers' Participation in Multimodal Academic Writing

Engaging second language (L2) students in multimodal academic writing that leverages multiple semiotic resources has the potential to foster their awareness of audience, purpose, and other rhetorical features. This case study explores L2 students' engagement in a multimodal digital storytelling (DST) project. The study reports on how DST was integrated into undergraduate writing curriculum and how students' engagement in multimodal composition fostered their rhetorical awareness and influenced their perceptions of academic writing. The findings suggest that the process of transmediation (a process of translating meaning from one sign system into another) facilitated students' revision, directing their attention to rhetorical features of writing. Creating digital stories enabled students to make sophisticated and deliberate rhetorical choices to bolster their arguments and transmit their messages effectively. Students exhibited positive attitudes toward the integration of multimedia. The results suggest that thoughtful integration of DST and multimodality have unique affordances for L2 students' writing development.

Keywords: digital storytelling; multimodal and digital literacy, academic writing

"*Ohana* means family, and family means no one gets left behind or forgotten." This quote from Disney's animated science-fiction comedy-drama *Lilo & Stitch* was displayed on a screen as students were asked to relay the quote using gestures, actions, and body language. This warm-up activity was used to introduce students to the multimodal, multimedia project they would soon embark on. After the activity, the instructor made a connection to the lesson topic – transmediation (a process of translating meaning from one sign system into another) and multimodality (visual, audio, and other semiotic resources) – by posing the question: What is involved in this type of communication? Among other responses, students responded: "Visualizing ideas," "Selecting keywords," "Communicating without words," and "Visualizing abstract concepts."

The above snapshot of an undergraduate writing class in the middle of a busy quarter, encompassing several major reading and writing assignments, provides a glimpse into how students engaged in transmediation and multimodal composition. The course instructor integrated digital storytelling (DST) into his writing-intensive course curriculum to encourage students to communicate their ideas using multiple modes and to scaffold the revision process. After composing the first draft of an argumentative piece, the instructor asked students to create a short digital story on the same topic, incorporating current

research, narration, text, music, still images, and video. The DST project served as an alternative way to communicate ideas, get feedback, and support the revision process.

The DST project was incorporated into the curriculum of an undergraduate, upper-division disciplinary writing course as the literacy needs of new generations and the ways they communicate are evolving in an increasingly changing digital literacy landscape. In the early 2000's, Yancey (2004)—noting that the literacy landscape was undergoing a profound change due to technological shifts—urged writing instruction to move beyond print-only textual production to better serve the digital generation. Engaging students in composing practices that utilize multiple modalities and channels to complement alphabetic writing has many advantages. For example, studies have found that students who integrate infographics, involving multimodal design and composition, in their writing process show a deep understanding of their audience, purpose, and the rhetorical situation in which they compose (Dusenberry et al., 2015; Krishnan et al., 2020). Thus, integrating multimodality into the second language (L2) academic writing curriculum has the potential to foster students' awareness of audience, purpose, and rhetorical contexts. This is particularly important in a writing curriculum that not only places emphasis on academic writing skills but also fosters new literacy skills.

Although the use of digital technologies and the integration of different semiotic, visual, and audio elements in composition hold promise for improving students' attitudes towards academic writing, little is known about the rhetorical value of integrating multimodality and how it might foster knowledge of rhetoric and genre conventions. The case study described in this article explores these questions using qualitative data collected from three international students in an upper-division undergraduate writing course at a large public university in California. We closely examine how multimodality, specifically DST, is integrated into an undergraduate disciplinary writing course and systematically investigate how L2 writers' participation in DST influences their rhetorical choices and shapes their perceptions of academic writing. The study is guided by the following research questions:

1. How is digital storytelling, as a multimodal composing strategy, integrated into an undergraduate writing curriculum?
2. How does engaging in multimodal composition influence students' rhetorical choices and foster the development of their writing?
3. How does producing multimodal compositions influence students' perceptions of academic writing?

Using constant comparative methods and triangulation of various qualitative data (field notes of classroom observations, interviews with students, student artifacts, and reflections), we aim to provide insights into how composing multimodally might facilitate L2 students' academic writing development.

Conceptual Framework

This study is grounded in two broad conceptual frameworks of writing and literacy development: one is a socio-cognitive perspective towards writing and the other is writing and literacy development through a New Literacies lens (Coiro, 2008). Within these comprehensive theoretical frameworks, we zero in on L2 students' writing skill development through the use of digital technology and the integration of multiple semiotic modes in the writing and revision processes. We frame our study within academic writing discourse.

From the lens of sociocultural theory, writing is a communicative act and social activity that is shaped by socially constructed genre-specific conventions as well as cultural and discursive norms. It is a "complex social participatory performance in which the writer asserts meaning, goals, actions, affiliations, and identities within a constantly changing, contingently organized social world" (Bazerman, 2016, p. 18). Accordingly, writing effectively in an academic context is a complex, multifaceted process that requires

domain-specific knowledge, a high level of language proficiency, and in-depth understanding of rhetoric and genre conventions (Maamujav et al., 2019). Effective communication, thus, necessitates nuanced analytical skills, as well as the ability to present ideas in a clear and coherent way, using language that is appropriate within a specific discourse community (Defazio et al., 2014).

The complexity of academic writing and the dynamic processes that are involved in developing writing proficiency place cognitive strain on L2 writers. A writing task, whether crafting an initial draft or revising a subsequent draft, presents a host of cognitive demands, and writers often have to juggle a variety of mental activities (Flower & Hayes, 1980; Olson et al., 2015). The cognitive demands required for writing are often magnified for L2 students because of the linguistic and cultural constraints they experience during the writing and revision processes (Olson et al., 2015). On the other hand, composing in multiple modes, involving visuospatial processing, may serve as a semiotic mediator and procedural tool to facilitate the social act of writing and the cognitive processes that are involved in it (Maamujav et al., 2019). From a Vygotskian (1981) sociocultural perspective, using different types of mediational means (e.g., verbal language, visual arts, and tools) to represent ideas and concepts is critical because they interact with our cognition and facilitate learning. Therefore, the curricular integration of DST in process-based writing has a significant potential to support the communicative function while reducing the cognitive load of L2 writers as they strive to express their ideas.

In addition to the socio-cognitive standpoint of academic writing, we draw on a broader concept of New Literacies as we situate our study within the changing landscape of literacy. The New Literacies perspective raises the profile of written communication to be multiple, multimodal, and multifaceted (Leu et al., 2016). With literacy being redefined to include technological skills and proficiency to read, create, and critique visual and digital texts, there has been a push to shift from alphabetic textual production to composition that incorporates images, audio, video, and other semiotic and symbolic elements (Palmeri, 2012). As such, there is a growing need for students not just to learn to write alphabetic text within a specific genre but also to compose and communicate using different technologies and modalities in various contexts (Brandt & Clinton, 2002; Leu et al., 2016). According to Selfe (2004), a narrow focus on alphabetic writing runs the risk of "making composition studies irrelevant to students engaging in contemporary practices of communicating" (p. 72). Thus, the students' participation in the DST project described in this study is in step with the emerging pedagogical shift to recognize, legitimize, and validate multimodality.

Literature Review

Multimodal Composition in a Digital Age

The proliferation of technological inventions and convenient access to digital tools are revolutionizing the ways in which we collaborate, communicate, and construct knowledge, thus reshaping the terrain of literacy (Lotherington & Jensen, 2011; Warschauer & Grimes, 2007). Selfe (2009) contends that the increasingly digital environment has had a profound and far-reaching effect on "communication forms, practices, values, and patterns" (p. 636). In this evolving digital environment, where communication encompasses multiple modes, the term literacy has been redefined. Being literate today goes beyond the ability to read and write; it requires competence to discern ways in which various multimodal elements are coordinated and combined strategically to convey complex meaning (Snyder & Bulfin, 2008). The statement put forward by the National Council of Teachers of English (NCTE, 2013) declares, "Because technology has increased the intensity and complexity of literate environments, the 21st century demands that a literate person possess a wide range of abilities and competencies, many literacies" (p.1). The NCTE Framework (2013) emphasizes the need for teachers to help students develop proficiency in the use of technology by providing space and opportunity to create, curate, critique, analyze, and evaluate multimedia resources and multimodal texts.

The changing landscape of literacy and the digital revolution of the 21st century pose a unique challenge to traditional writing pedagogy. As literacy and writing practices are evolving with emerging new genres and contexts afforded by digital technologies, the conventional notions of writing and authorship are being challenged (Hafner, 2014). In her address at the Conference on College Composition and Communication (CCCC), Yancey (2004) questioned the very notion of writing in the era of digital literacy and put forward the argument that writing in today's social context goes beyond putting words on a page. Lunsford (2006) expands the definition of writing as "epistemic, multivocal, multimodal, and multimediated practices" (p. 169). This emerging argument for "new writing" is now "more commonly referred to as multimodal composition" (Kirchoff & Cook, 2016, p. 21).

Acknowledging this transforming terrain of literacy, prominent scholars and pedagogues in the field of composition call for a shift from alphabetic, print-only textual production to composing that incorporates images, audio, and video elements. The proponents of multimodal composition argue that the process of constructing meaning, in and of itself, is multimodal, and the affordances of multiple modes, including visual, auditory, and semiotic forms, not only complement alphabetic writing but help construct meanings and communicate messages more effectively (Kress, 2010; Smith et al., 2017). Similarly, Gee (2003) emphasizes the importance of semiotic domains, which he defines as "any set of practices that recruits one or more modalities" (p. 20) and posits that different modalities that carry different meanings are significant in the modern tech-driven world.

However, the movement toward multimodal composition has been slow in the second language (L2) writing context, and the field of L2 writing is not fully in step with composition and writing studies in the implementation of multimodality (Casanave 2017). L2 writing instructors often face a dual role in composition instruction--that of ESL teachers and of writing instructors—and, in these roles, they often have to address the diverse linguistic needs of L2 writers, which may lead them to prioritize the students' linguistic needs that are necessary to become effective writers and communicators (Belcher, 2017).

Despite the call to shift toward multimodal composition, little is known about the affordance and rhetorical value of integrating multimodality into the academic writing curriculum. There are gaps in our knowledge of how integrating multimodality in the writing process might influence the development of L2 students' rhetorical awareness and how it might shape their perceptions of academic writing. This study seeks to contribute to the emerging body of literature on multimodal composition by examining L2 students' engagement in writing multimodally in an academic setting and by uncovering the rhetorical and affective affordances of such engagement.

Method

Study Context

This study was conducted in an upper-division, discipline-specific academic writing course at a large public university in California. Multiple sources of data were collected in three consecutive cohorts of the same writing course from 2018 to 2019. All class sections were taught by the same instructor who implemented multimodal composition. The course was designed for Education majors and followed a process-based approach to writing, with an emphasis on integrating technology into writing. The students were from diverse linguistic and cultural backgrounds, reflecting the university population.

In this class, students engaged in both traditional academic writing and new forms of writing, such as collaborative writing and multimodal composition. Major assignments included writing multiple drafts of a literature review (2000-2500 words) and producing a multimodal project portfolio in the form of DST videos. DST was primarily used as procedural support for writing and was implemented between the first and second drafts of the literature review essays. Drawing on the first draft of the literature review essays, students created DST scripts and videos, and revised their essays to produce new drafts.

Participants

Based on a purposeful sampling approach, we selected focal students who were international students from Korea and China. The three students selected, Caishen, Jung, and Quinn (pseudonyms), were Education majors. Jung and Quinn were transfer students from community colleges and had not taken the lower-division composition series at the institution where we conducted the study, but they had taken ESL and composition courses in their community colleges. Both students completed and satisfied the lower-division writing requirements to transfer to a four-year university. The findings that are presented in this article focus on the students' participation in and experience with multimodal composition in this advanced academic writing course.

Data Collection

Multiple sources of data were collected, including individual interviews, background surveys, end-of-the-quarter reflection essays, classroom observations, student essays, and DST products (both scripts and videos). In this article, we report on the findings from weekly classroom observations, interviews with the three aforementioned international students, and their artifacts, including the first and second drafts of their essays, the DST project they produced, and their reflection essays.

Observations. One of the researchers observed the class on a weekly basis. The course met for 50 minutes three times a week. The researcher took detailed notes during the observation with the intent to document the class dynamics, teacher-to-student and student-to-student interactions during the course, and students' exposure to writing practice, writing concepts and collaboration, and multimodal composition practices. The observer was given access to the Canvas course, the online learning management system where all lecture slides, handouts, readings, and assignments were sequentially organized into weekly modules.

Interviews. The same researcher who observed the class conducted thirty-minute interviews with the three L2 students at the end of the academic term. The interview questions centered around the students' perceptions toward academic writing, DST experiences, L2 writing development, and differences between L1 and L2 writing. One of the interviews was audio-recorded and later transcribed. The other two interviews were written responses, as the interviewees requested to respond in writing via shared Google Doc (See the interview protocol in the appendix)

Student essays and reflections. As primary class assignments, students produced three drafts of literature review essays (2000–2500 words). Towards the beginning of the academic term (the first 3 weeks), students worked on composing a literature review on a topic of their choice related to education. Students began this process by choosing their topic and five supporting articles. After the first draft, students composed their DST scripts and videos for the next three weeks and then revised their draft to produce the second draft during the last three weeks of the term. After completing their DST project, students were asked to write reflection essays in which they discussed their use of DST, their experience and perceptions of it, and any benefits of DST or lack thereof. This free-write was done in class for about 10-15 minutes.

DST products. Students composed DST scripts and used multimodal means (video, image, sound, text) to produce videos based on their first draft of their literature review essays. In these videos, students were asked to argue for the need to conduct additional research on the same topic as their literature review. The videos had to be 3-5 minutes in length and edited through WeVideo (an online, cloud-based video editing platform). Besides integrating current research on the topic, the videos had to incorporate narration, text, music, still images, and other short audio and video clips. After completing the DST products, students had to revise their essay draft. The DST assignment was integrated into the writing process, between the first and second drafts, to scaffold the revision process.

Data Analysis

Constant comparative method. In order to understand the three focal students' experiences with multimodal composition, we followed the constant comparative method (Denzin & Lincoln, 2005; Glaser & Strauss, 1967). This approach helped analyze the data on comparable dimensions of learning, the relationship with students, and unique factors across the three cases (Denzin & Lincoln, 2005). For research questions 1 and 2, we closely examined the three focal students' essays, DST products, interviews, observations, and multiple reflections written by the students on their experiences of utilizing a variety of semiotic tools in their digital stories. These iterative processes enabled us to understand how students engaged in multimodal composition, what strategies and techniques they employed in the process of producing their projects, and whether the strategies were effective for particular rhetorical situations.

The careful review of the data provided insight into the specific modalities--image, audio, and video--students chose and the effectiveness of their choices to communicate ideas and convey meaning. The interviews, reflection essays, and observation data were primarily analyzed using the iterative steps of content analysis-- initial, axial, and thematic coding (Saldaña, 2009). Several themes that illuminated the participants' perceptions towards their DST experiences emerged from the bottom-up coding processes.

Triangulation. Complementary to the constant comparative method we used was the triangulation of different data sources. We had rich data sources that included observations, interviews, extensive written reflections, as well as the focal students' essay drafts and DST projects. Triangulation of these data was used not only to strengthen the credibility of the study but also to minimize research bias. We sought to develop "converging lines of inquiry" (Yin, 2016, p. 87) using "multiple forms of evidence rather than a single incident or data point in the study" (Creswell & Miller, 2000, p. 127). We combined relevant details from observations and analyses of interviews and student artifacts to amplify and corroborate our findings.

Member checks. The data collection, analysis, and findings of the study were shared with the course instructor (who is a co-author of this article). This process was important not only to obtain feedback but also to check for accuracy, consistency, and validity of interpretations. This process also allowed us to check and verify whether the participants were represented fairly and accurately.

Findings

The goal of the study was (1) to investigate how the integration of DST in the academic writing process influenced students' rhetorical choices and fostered the development of participant writing and (2) to understand how producing multimodal compositions influenced students' perceptions of academic writing. In addressing these questions, we identified three major themes: 1) transmediation and higher-order writing skills; 2) rhetorical moves and choices with audience awareness and authorial voice; and 3) the motivational value of DST in the students' writing. In the following section, we discuss each of these themes in detail.

Transmediation and Higher-Order Writing Skills

The findings of this study show that a unique affordance of DST in the students' writing development pertained to its potential to scaffold the students' revision process by directing their attention to higher-order writing aspects, such as content, key points, and organization. The opportunity to leverage multiple modes to communicate their ideas and to consider the distinct meanings each mode carried helped students in several ways. It allowed them to plan and reorganize their thoughts and carefully consider the sequential order of their ideas. All three students asserted that DST helped them improve the content of their literature review as it helped them identify key points and organize their ideas around them. For instance, Quinn pointed out that the DST task helped her to clearly see her ideas and the relationships

between them, to select relevant sources to support and develop the ideas effectively, and to convey thoughts through visuals. Similarly, Jung noted,

I will think about the key points that I would like to put into my digital storytelling projects and may focus more on these key points in written essays, so that my essays can show some highlights that can be impressed by readers, especially when writing long essays.

Jung's statement is consistent with remarks made by Caishen, the third participant in this study, who acknowledged that the DST task was crucial in his learning to extract key information both from his own writing and from other sources in support of his ideas and to focus on main-points in the final paper.

This finding is supported by observation data and students' artifacts, including what they stated in their reflection essays and how they refashioned their second drafts after their DST project. In a class discussion during the last week of the quarter, student participant Quinn pointed out that adding images and videos forced her to rethink her ideas as she had to consider "meshing images and ideas" and connecting her ideas to the visual representations in the DST project. Similar to what Quinn noted, Jung further explained,

Originally, in my first draft, I struggled how I organize my ideas and integrate sources materials in my paper, but when I create videos, all became very clear and it was a lot easier for me to sequence my thoughts better.

The analysis of Jung's essay and DST video revealed that he made substantial changes from his first to his second draft. Since the DST assignment was integrated between both drafts to scaffold the revision process, we compared the first and second drafts to examine the revisions the students made upon completing the DST project. Jung's essay draft, produced after the DST project, followed the same sequence and order of ideas as those reflected in his video project, indicating that his DST project helped him organize his thoughts when writing an academic essay. Some contextual and structural changes Jung made to his essay after completing the DST project included a more elaborate thesis statement, the rearrangement of ideas, as well as paragraph divisions, elaboration on ideas, multiple instances of references, integration of quotations with clear reference to sources, and extensive use of background information. As all three students' essay drafts integrated ideas from the DST scripts and followed the same organizational sequence of ideas as those presented in the script, it was apparent that their DST scripts and projects guided their revision process. Overall, the transmediation project embedded within the process-based writing (between the first and second drafts of traditional essay writing) allowed the L2 writers in the study to "reimagine" their writing and helped them acquire important skills--video editing and meshing multiple modes to construct and communicate meanings.

This reimagining of writing, as well as the rethinking of the revision process, are particularly important in the writing skills development of L2 students and emerging academic writers. Research shows that novice writers and L2 students tend to focus more on local, minor, lexico-grammatical issues when they revise and fail to see the necessity of making "global" changes at a macro level (Ferris, 2003; Lindemann, 2001; Sommers, 2013). Thus, the integration of DST in process-based writing can be one way to help students rethink their writing and revision processes as it engages them in a "new" way and "new" modes of communication that are "disruptive" to traditional, alphabetic, and academic writing. As shown in this study, the unique experiences the L2 writers had in creating a DST project as an "alternative draft" in their writing process seemed to effectively scaffold their revisions.

Rhetorical Moves: Audience Awareness, Authorial Voice, and Emotional Appeal

The analysis of the students' interviews, reflections, and artifacts suggests that integrating the DST project in the writing process helped students make rhetorical choices and moves with a focus on audience

awareness, authorial voice, and emotional appeal (pathos). Audience and voice are two recurrent words that students mentioned on several different occasions in their interviews, reflections, and class discussions. As the three L2 writers were creating their DST and composing multimodally, their conception of audience was reshaped, which in turn helped them discover their authorial voice. Quinn remarked,

When you are reading your script, I hear myself, and then replaying my video, I listen to not only my physical voice but how you present your ideas and how it all sounds. This helps me assess how clear my ideas are and how I want to project them to my audience.

Quinn's remark on how DST helped her assess the way she wanted to project her ideas to her audience was supported by Caishen's reflection, in which he wrote,

It is not easy to imagine my audience when I am writing a paper, although I know that I am writing it to my professor. It is not always clear what I want to communicate with my audience, but when you are doing video, it is clear. I adjust how I present my ideas.

A noteworthy point that can be made here is that Caishen showed awareness of audience, which helped him "adjust" his rhetorical choices, indicating an effort toward reader-centeredness or what Flower (1979) calls "a reader-based prose" that denotes stylistic choices considering the needs of the reader. Audience awareness was also realized for Jung, who put himself in the perspective of his audience and projected himself as the audience. During a class discussion, Jung pointed out that drawing on his own experience as a "subscriber," "consumer," and "YouTuber" helped him visualize and imagine his audience. "I saw myself as an audience, and I made changes based on what I wanted to see," he noted during a class discussion.

In their DST videos, the students in this study read their scripts and created voice-over text, images, and short video footage that was integrated into their DST. For example, in her reflection essay, Quinn wrote, "I have to record my scripts several times to make sure that my voice can be heard clearly," and "I feel like in the DST, I am more like a presenter or teacher to introduce my knowledge to my audience." Although putting in an effort "to be heard" in a clear manner, this student found in herself a more authoritative voice as she felt that she sounded "more like [a] presenter or teacher" rather than an L2 writer "struggling" to communicate her ideas. Students focused on finding and maintaining a distinctive authorial voice in an effort to reach their audiences and appeal to their emotions. The following remark made by Caishen is insightful in this regard:

I try to sound very exciting when I record my voiceover because I want my audience to feel my passion. If I sounded gloomy, my audience would not want to continue watching my video, and there would be no way to convey my messages to my audience.

This student's attempt to stir passion in her audience not only signals a rhetorical move based on emotional appeal (pathos) but also creates the image of a writer as an enthusiastic communicator.

Emotional appeal or "pathos" in the Aristotelian conception of classical rhetoric is a persuasion technique that was prevalent in all three students' DST videos. Students' choices of images and the inclusion of audio in the form of background music reflected their deliberate strategy to evoke emotion and appeal to pathos. For example, when discussing the challenges and complexities of academic writing, Quinn included video footage of a frustrated student pushing his notebook away. Such images were purposefully and cleverly used in a calculated attempt to appeal to the audiences' emotions. Although such emotional appeal, which is often suppressed in academic discourse that warrants logos and ethos, is evident in these students' DST videos, also supported by a comment Quinn made in class regarding her experience of creating DST. She asserted,

By using colorful pictures and engaging music, it is helpful to attract audience eyes rather than reading papers. You need to find suitable videos and pictures to match the audio. Moreover, by creating surprise parts are also required to attract the audience's eyes.

In fact, the DST videos show an intentional use of multimodal elements (i.e., audio and visual elements) for rhetorical effect, indicating a variety of distinct rhetorical moves at play in the students' DST videos. In creating their DST videos as a "new medium" of communication within academic discourse and as a procedural facilitator to scaffold their revision process, the L2 students made sophisticated, deliberate, and distinctive rhetorical choices that bolstered their argument and transmitted their messages effectively.

The Motivational Value of Digital Storytelling in Writing Development

Another recurring theme that emerged from the interviews of the three L2 students is the motivational value of DST in their writing development. Academic writing in English is a challenging and cognitively and linguistically demanding task for most L2 writers. The continued difficulty with academic writing may result in affective constraints in L2 students' writing development. In our study, the audio and visual aid used to convey and communicate thoughts not only complemented the students' alphabetic texts but also reduced their cognitive load since it involved "proportionally less phonological and more visuospatial processing than realizing this content as full sentences" (Torrance & Galbraith, 2006, p. 70). When cognitive demands and linguistic constraints are minimized, students are motivated to compose and are actively engaged in a challenging academic task they are required to complete. When asked to reflect on the process of creating his DST video, Jung remarked, "It is not boring." This simple remark Jung made about his engagement in the DST assignment indicates the motivational value of multimodal writing.

The motivational value of integrating multimodal elements and a DST video project to scaffold students' writing process and development extends to how students changed their perceptions of academic writing. For example, in response to a question about whether her experience with DST shaped how she saw academic writing, Quinn asserted,

I used to think academic writing is only about writing essays, which is boring and difficult for me. But digital storytelling project motivated my interest and lower the difficulty of academic writing. It motivated me to enjoy and finish writing.

Quinn's statement is consistent with Caishen's reflection,

It changed the way that I view academic writing as positive and interesting. I realized that academic writing can be used in various ways to convey and express. I learned academic writing in a creative way. I could enjoy the academic essay in different way.

In the same vein, Jung noted,

Because I used to think academic writing is just traditional way of writing in class or at home, I didn't think it could connect with technology. Using the DST is more interesting way to write the academic paper because if I only use the academic writing like write or type in the computer, it's boring.

Using images, sounds, symbols, and other semiotic modes helped students convey their ideas effectively, informed their thoughts, and made it easier to participate in academic discourse. Further, the positive attitude the participants exhibited toward this approach to writing development not only influenced their writing behaviors but, more importantly, affected their perceptions of academic writing. In fact, "It changed the way I view academic writing," a remark made by Caishen, is a rather powerful statement.

The stories of these three students and their experiences of engaging in multimodal remixing and a multimedia design project as part of process-based writing illuminate our understanding of the affordances of digital and multimodal tools to scaffold writing development. It is important to note that students in this class, including the three focal L2 writers, showed technological skills and know-how that facilitated their learning. Since this was an upper-division disciplinary writing course, the students reported prior experiences and proficiency in using digital and technological tools. Because of this, there was not much time spent on the technological components in the class. In other learning contexts, this may not be the case and a technological learning curve may need to be addressed through training, tutorials, and explicit instruction.

Discussion and Conclusion

Our findings suggest that multimodal composition, more specifically DST, has unique affordances in L2 students' writing development. It is, however, important to note that the three students' participation in multimodal composition in their upper-division writing course was carefully and thoughtfully orchestrated within the writing curriculum. In turn, the students were supported by instructional strategies, peer-review processes, and clear guidance and feedback from the instructor. Based on our findings, we conclude that well-devised integration of DST tasks and multimodal composition practices is pivotal in L2 students' writing skills development. On that account, we concur with the contention that a traditional approach to writing instruction that overemphasizes alphabetic writing fosters narrow and limited discursive modalities and thus fails to adequately motivate students in their academic literacy development and does not prepare them for the complex dynamics of communication in an increasingly digital environment (Belcher, 2017; Lunsford, 2006; Takayoshi & Selfe, 2007; Yancey, 2004).

Multilingual writers who are in the process of developing their L2 proficiency face linguistic challenges. This is often exhibited by the fact that L2 writers tend to give much more significance to local issues regarding grammar and language conventions in their writing and revision processes. What is neglected, when more emphasis is placed on micro-level local issues, is the complex rhetorical dynamics of composing and communicating as a social act. Transmediating ideas through DST addresses these issues. It allows L2 students to rethink their revisions, reimagine their writing, and extend their potential beyond the 'correctness' of their individual sentences. As students engage in composing in multiple modes, they think about their broader rhetorical situations, visualize their ideas, and envision their audience. This thinking shapes the rhetorical moves and choices they make as designers, content creators, oral communicators, and writers.

In this respect, multiple modalities in the composing process of L2 writers' serve as procedural facilitators and strategic tools that help them "organize mental reasoning by offloading aspects of thought or functions onto the tool and by making elements of the activity more visible, accessible, and attainable" (Englert et al., 2006, p. 211). Such procedural facilitation is particularly beneficial for L2 writers in their composing process where higher-order thinking competes with more local, linguistic processes involved in translating ideas into words. This idea is supported by a considerable body of literature that emphasizes the importance of utilizing procedural facilitators to assist emerging writers in regulating different aspects of the composing process (Englert et al., 2006; MacArthur & Graham, 2016). The integration of DST in mainstream academic settings, as shown in this study, can be an effective means to scaffold students' complex regulation of multiple writing demands.

Although the L2 students interviewed in this study expressed familiarity with digital technology, their exposure to DST in general and their use of DST in process-based writing, in particular, were new. Yet, to become "literate" in the 21st century digital era, it is crucial for all writers, particularly L2 writers like those in our study, to develop new literacy skills and learn the nuances of communicating in multiple modalities. As we navigate the changing landscape of literacy in a digital era, projects like DST that are

integrated into academic writing capitalize on the assets of multiple semiotic modes and can, thus, have a unique and far-reaching impact on how students think, communicate, and compose in an academic discourse.

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APPENDIX

Interview Protocol

Thank you for taking the time to help with our research and participate in the interview. The interview should take about 30 minutes. We appreciate your detailed answers to the following interview questions.

Name of Interviewee: _____

GENERAL:

Could you list writing courses you have taken at this institution?

Do you have experience with collaborative writing (e.g. Google Docs)?

Are you bilingual? If so, what other languages do you speak?

Are you an international student?

How often have you had experience with multimodal projects? (e.g. digital videos with images, sound)

Do you have experience with video editing software?

YOUR THOUGHTS ABOUT WRITING QUESTIONS:

In your opinion, what do good writers do when they write?

Why do you think some people have trouble writing?

When asked to write a paper for class or homework, what kinds of things can you do that help you plan and write your paper?

When you write, do you think about whether your reader can understand your writing?

Why do people write?

When you write, do you reread your writing? If so, why?

Imagine your friend has to write an academic essay for a class. What would you say the components of an academic paper are?

What else would you tell your friend is important when you write an academic essay?

YOUR CONFIDENCE IN WRITING:

On a scale of 0-5 (0 being strongly disagree, 3 being neutral, 5 being strongly agree), rate the following statements as it pertains to you. Please give a short explanation on why you rated it that way:

I can think of many ideas for my writing. 1-----2-----3-----4-----5

I can put my ideas into writing. 1-----2-----3-----4-----5

I can think of many words to describe my ideas. 1-----2-----3-----4-----5

I can think of a lot of original ideas. 1-----2-----3-----4-----5

I know where to place my ideas in my writing. 1-----2-----3-----4-----5

I can spell my words correctly. 1-----2-----3-----4-----5

I can write complete sentences. 1-----2-----3-----4-----5

I can write grammatically correct sentences. 1-----2-----3-----4-----5

I can begin my paragraphs in the right spots. 1-----2-----3-----4-----5

I can focus on my writing for at least one hour. 1-----2-----3-----4-----5

I can avoid distractions while I write. 1-----2-----3-----4-----5

I can control my frustration when I write. 1-----2-----3-----4-----5

I can think of my writing goals before I write. 1-----2-----3-----4-----5

I can keep writing even when it's difficult. 3 1-----2-----3-----4-----5

TOPIC	For the following questions, please respond in a short paragraph. We would like to know as much about your experiences as possible.
Background	<ul style="list-style-type: none"> ● How confident are you in your English-speaking skills? Writing skills? ● Is English your first language? ● Do you speak English at home? ● Do you use a language other than English in your schoolwork? ● Have you taken composition classes at before (prior to this class)? ● How do you perceive yourself as a writer? (writing self-efficacy, confidence, motivation) ● Could you share your experience with academic writing (how they've been taught and experienced academic writing) <p>Cultural background (FOR INTERNATIONAL/MULTICULTURAL STUDENTS)</p> <ul style="list-style-type: none"> ● For international/multicultural students-- how is it different to write academic essays in your own culture and in English? ● How are they taught differently? ● What are the challenges in navigating the two different language in writing?
Digital Storytelling	<ul style="list-style-type: none"> ● Did you prefer digital storytelling projects or the written literature review? Why? ● Did digital storytelling motivate you to write? How? ● Did digital storytelling help you understand the content better? How? ● Utilize all your skills? How? ● Help develop your writing skills? How? ● Help develop your computer/multimedia skills? How? ● Were your digital storytelling projects better than your written essays in terms of quality? Why? ● Were your digital storytelling projects better than written essays in terms of content? Why?
Digital Literacy Please answer these questions with regards to how you felt BEFORE the class and AFTER the class.	<ul style="list-style-type: none"> ● Are you confident about using technology? ● Were you familiar prior to this class with digital storytelling and how to do it? ● Are you comfortable using multimedia in your writing projects? ● Do you have access to multimedia resources? ● Have you done a digital storytelling project before? ● Have you used/experienced blogs, vlogs, fan fiction, etc? ● Have you used video editing software before? ● Have you used PowerPoint presentations before? ● Have you used photo editing software before? Have you used voice recording software before?
Written Essay	<ul style="list-style-type: none"> ● Do you have a strong understanding of your essay topic? Explain ● Do you have a firm grasp on the content of your essay? ● Trouble planning and brainstorming ideas for your writing? Explain. ● Trouble comprehending and synthesizing reading sources? Explain. ● Trouble with grammar and mechanic in writing? Explain. Revising and editing my writing? Explain.

<p>Post Project</p>	<ul style="list-style-type: none"> ● Was the digital storytelling project challenging for you? In what ways? <ul style="list-style-type: none"> ○ Transmediation? ○ Inexperience with tech? ○ Lack of knowledge of topic? ○ Limited writing and revision skills? ● How did digital storytelling help you improve? <ul style="list-style-type: none"> ○ Planning and idea brainstorming? ○ Comprehension and synthesis of reading sources? ○ Revision and editing? ○ Organization and structure? ● Any complaints about the digital storytelling project? Any suggestion for improvements for future classes?
<p>Perception</p>	<ul style="list-style-type: none"> ● How did the digital storytelling practices change the way that you view academic writing? ● How did it change the way that you learn academic writing? ● How did it change the way you approach and write academic essays?