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The Daily Smile: Phatic Contact and Meta-cognition in Asynchronous Instruction

Marc A. Ouellette, OCT
mouellet@odu.edu

Abstract: The pivot to online instruction in 2020 due to the Covid-19 Pandemic necessitated asynchronous teaching for students who had been in face-to-face environments exclusively. One of the challenges was adapting the routine of "The Daily Feature," a fun, relevant, easy-to-grasp practical and material example of relevant course concepts pulled from the news and/or pop culture, into asynchronous instruction. Luckily, the course I was teaching at the time of the pivot, an upper year undergraduate class on Digital Writing, takes Marshall McLuhan's axiom, "the medium is the message" as a starting place (1964, p. 23). Given that the consequences of any medium are caused by the change in scale, pace, or pattern, The Daily Feature changed into "The Daily Smile" by making use of the LMS to post material containing humourous or sentimental—that is, smile inducing—subject matter. By carefully choosing examples containing material that could also be applied to course content—and vice versa—each Daily Smile offers entry points for meta-cognition, or strategies for learning, in and through the phatic gesture. What seems like a quick note to say "Hi. Thought you'd enjoy this" has the added benefit of being a potential "teachable moment." Moreover, the daily pattern of the phatic message and its ostensible content becomes part of a ritualized pattern, which serves as a further reminder that the medium changes the way we perceive and experience the content. Thus, my paper discusses the way course content can be woven into daily phatic contact to sustain student engagement. Sharing a smile also has the corollary outcome of humanizing the instructor, which is important because the pivot to online teaching and its subsequent widespread adoption makes establishing a rapport more difficult and more vital.

Keywords: Asynchronous teaching, phatic gestures, meta-cognition, online learning, play, seriality

Introduction

As has been well documented, the pivot to online instruction due to the Covid-19 Pandemic in March 2020 necessitated asynchronous teaching for students who had been in face-to-face environments exclusively. In what was a functionally new prep, one of the challenges was adapting "The Daily Feature," a fun, relevant, easy-to-grasp practical and material example of relevant course concepts pulled from the news and/or pop culture to asynchronous delivery. Moreover, The Daily Feature almost always appears at the start of face-to-face sessions and gives a talking point, a set of connective threads, and sometimes pre-write or similar activities. Perhaps serendipitously, then, the course in question, Digital Writing, focuses on the study of digital media and (as I have come to teach it) proceeds from Marshall McLuhan's (frequently misunderstood) axiom, "the medium is the message" (1964, p. 23). Here, the medium refers to any extension of the self and not simply the mode of communication. More important, the message refers to the "changes or effects that are enabled, enhanced, accelerated or extended by the new thing" (Federman 2004). Mindful, then, that the consequences of the medium result

from any change arising from a new apparatus—both intended and otherwise—I altered The Daily Feature into "The Daily Smile" by making use of the announcement function in the Learning Management System (LMS) to post material containing relevant but also humourous or sentimental—that is, smile inducing—subject matter.[1] Class favourites include "Gran-aldo" a British grandmother whose soccer trick shots went viral, a retired couple whose dancing videos similarly went world-wide, and group of painters dressed in superhero costumes to paint the Pittsburgh Children's Hospital. Like every one of the hundreds of Daily Smiles I have sent, each of these subtly offers a way to discuss the medium and how we experience it, but first and foremost it starts as a shared moment of contact.

Not only was a smile needed in the midst of the first wave (and subsequent waves) of the pandemic, what quickly became clear was that the postings offer opportunities—then and now—to increase contact with asynchronous students through daily, brief, phatic exchanges. In the last instance, Daniel Chandler, in his essential textbook, *Semiotics: The Basics* (2002), defines the phatic function of signs as "the construction of a relationship" between the sender and the receiver (p. 191). Crucially, phatic messages and utterances establish and also maintain contact. As Wedananta and Sudarmawan (2023) relate, the "emotive function of language is essential for motivating students" (p. 73). Indeed, an important aspect of the announcement feature of the LMS is its in-built phatic function. Like The Daily Feature, then, The Daily Smile starts each "day" and has become an essential part of each class, one that I have built upon since its initial implementation in and through its phatic function. This is an important consequence of the medium because a phatic gesture is no more contentless than McLuhan's notorious lightbulb example, whereby the lightbulb is a communication and information technology. The phatic post is pure contact—not pure as in innocent, but pure as in free from extraneous elements. Moreover, as Vetere et al (2005) explain, phatic messages become important due to "the degree to which they contribute to a feeling of ongoing connectedness" (n.p.). Deploying them in a threaded thematic manner makes The Daily Smile an easy, quick way of fostering continued connectedness even as it delivers course content. Moreover, Gradinaru (2018) details the way "phatic technologies" such as social media sites and instant messaging "are designed to sustain social interaction" (p. 463). I now treat the announcement function much like a social media post. By carefully choosing examples containing material that could also be applied to course content—and vice versa—I am also able to facilitate entry points for meta-cognition, or strategies for learning, in and through the phatic gesture.

What seems like a quick note to say "Hi. Thought you'd enjoy this" has the added benefit of being a potential instance of the proverbial "teachable moment." Moreover, the daily pattern of the phatic message and its ostensible content becomes part of a ritualized pattern, which serves as a further reminder that the medium changes the way we perceive and experience the content. Here, Turner et al (2020) note that the pivot to online instruction revealed the need "to

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[1]One of the things I try to do is use the word "apparatus" or "device" when referring to a piece of technology, whether it is a television or pencil. This helps distinguish from uses of "medium" and to avoid confusion. Here, it actually derives from my first language, French. For example, "à *l'appareil*," quite literally "on the apparatus" is a common mode stating that one is having a telephone conversation.

compensate for the invisible work that the campus infrastructure did in the traditional face-to-face environment" (p. 96). This is another way of saying the medium shapes the content and the experience of it. The ritualized aspect incorporates a key element of rituals that Tambiah's field-defining study of ritual (1985) adds to McLuhan's thinking, particularly because the performance of ritual is not "simply mechanical," but rather occurs in "*recursive* fashion to start new sequences or combine with units into different 'syntactic' sequences within the same rite" (p. 143). What differs, then, is that students receive the message from their professor, not a "friend" on social media. Even so, the in-built informality of phatic messages helps to temper, if not break down, the distance between professor and student, thereby enhancing the perception of connectedness or "engagement," in the popular pedagogical sense. Ultimately, the structure and the repetition of the messages combined with the combination of course content and a level of informality balances the kinds of "presences" Turner et al (2020) advise instructors to consider when planning online course delivery. Indeed, students come to expect the smile and, in a poignant—given the initial timing—reminder that the medium is the message, they know the "content" before they see it.

Building on or remediating as Bolter and Grusin (2000) would call it, an existing medium offers a reminder that the content of a medium is always another medium (McLuhan 1964, p. 23). Again, the announcement feature of the LMS provides a ready-made entry point. McLuhan puts it most simply by reminding us that the content of writing is speech and the content of speech is thought. However, he also cautions that it is necessary to trace the content to its germinal source. In this case, the content of The Daily Smile simultaneously offers the greeting students receive when they walk into the room, a remediation of The Daily Feature, and (hopefully) a smile inducing moment. Thus, regardless of its ostensible "content," the content of The Daily Smile becomes the phatic engagement with the instructor so that students look for and react to the daily transmissions as much as they respond to the information—for example, a Daily Smile video of children on the New York subway singing "We don't talk about Bruno"—that has been sent. The content of a text message, for example, is very frequently the message itself. That it was sent, received, and acknowledged becomes as if not more important than anything it contains. Meta-cognition occurs in through that engagement for as McLuhan (1964) writes presciently, automation will not end learning; rather it will end subjects because as "the age of information demands the simultaneous use of all our faculties, we discover that we are most at leisure when we are most intensely involved" (p. 301). As a corollary, then, I was also able to establish and—especially in subsequent purely asynchronous situations since the original pivot—maintain a level of daily instructor contact that demonstrates an ethic of care, even as the content of the medium was instruction and opportunities for meta-cognition. Indeed, the latter only occurs because the medium shapes and informs the experience. Thus, my paper illustrates related theoretical and pedagogical principles underlying the selection and delivery process and the way course content becomes woven into daily phatic contact to foster sustained student engagement. Moreover, inviting students to submit their own suggestions (within the bounds of the school code of conduct) leads to further opportunities for engagement and for meta-cognition by capitalizing upon the medium's ability to shape and condition the experience of the content. It also offers opportunities to discuss the suggestions and the related course content. Finally, the choice of sharing a smile also has a further corollary outcome of humanizing the instructor, which is important because the pivot to online learning and the subsequent and continued

widespread adoption makes establishing a rapport more difficult and more vital.

Bringing it all back home: Background and rationale

On Sunday, 8 March 2020, I left Boston and the Northeast Modern Language Association conference and returned to Norfolk via New York's La Guardia Airport. I mention this because NeMLA shared its conference facilities that year with a group of physicians who were meeting to discuss a new virus: SARS CoV-2. By the time I got to La Guardia, Boston had its own outbreak of the new virus, one centered on that hotel. I was lucky. Monday was supposed to be the start of my spring break and like many, I had plans that were curtailed by the 11 March 2020 announcement of a global pandemic by the World Health Organization. Initially, spring break was extended by a week and then we were told that we were not going back. Luckily, given that my home institution was already heavily invested in online teaching, I had already delivered versions of both of my classes—one graduate seminar and one third-year undergraduate class—using both synchronous and asynchronous digital means in addition to face-to-face teaching.

This raises two key issues: just because the course could be delivered asynchronously, as was the case, does not mean it is functionally the same prep; moreover, just because I was familiar and comfortable with each mode of delivery does not mean any of the students would be familiar let alone comfortable with those modes, particularly when I conduct my face-to-face classes as an ongoing set of conversations with activities, exercises, demonstrations, and other low stakes formative means of participatory instruction. In asynchronous classes, I replace activities with a weekly check-in message that forms part of the participation component. Students are asked to contact me (at least) once each week to let me know one thing they engaged with in the smiles, exercises, tasks, clips, activities, etc. or to ask me a question about those, or just to check in because the online medium itself is always already part of the course content and its use occasions opportunities to discuss its presence. In addition, I pride myself on one thing: the classroom is a safe and equitable space and everyone student is welcome. I generally know every student by name within two weeks of the start of a term. My current classes are capped at twenty-three and the room is small. To be sure, my record is 127 names in one section of one course offering.[2] Anecdotally, a small class can be more challenging in terms of discussion. Conversely, the opportunities for direct student-instructor exchanges can be greater in number and therefore maintaining the same level of contact and engagement becomes more difficult to replace when faced with an immediate pivot to asynchronous delivery. In face-to-face classes and even in a hybrid or synchronous graduate class, that contact begins with a greeting and The Daily Feature. Early in my teaching career I learned the power of ritual and phatic cues. Especially in large classes, I have played music during change over times since I started full-time teaching in 2003. Students learn quickly: when the music stops the day's class is about to start. Every class starts the same way. When a gifted graduate student gave a great guest lecture on urban skateboard culture, my countercultures class was almost non-responsive. It was not that he

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[2]Here, the power of ritual of part of my process of learning students' names. I learned from a sociologist colleague, who was also a member of my dissertation committee, that students will develop their own seating plan in the first two weeks of a semester. Knowing this, I developed my own algorithm for learning and remember all of their names, even at 127.

was awful; rather, their ritual had been disturbed, which was revealed given that disrupting "normal" is an element of countercultures. I mention this because it is my habit to note and capitalize on entry points for "teachable moments" and especially discussions that include students in their own learning; that is, moments for meta-cognition.

Typically, every class starts with The Daily Feature, which I try to structure so that it offers a recap of previous topics and lessons as well as to introduce or foreshadow the topic of the day. For example, a relevant choice might be something seemingly trivial the punctuation of text messages (Gunraj, et al 2016; Houghton, et al 2018). Apparently. "k." has a rather immediate and chilling effect and therefore makes a fantastic example of the medium—any extension of the self—being the message—the change of scale, pace or pattern of human affairs. That one letter and one period can convey the entire set of emotions, reactions and interpretations of the "content" offers a stark and powerful reminder that the medium shapes and alters our experience and perception. This is especially the case if I tell students that when my spouse ends a text message with a period, I simply think she has good punctuation habits, Moreover, the fact that this is a conventionalized understanding rather than a codified and institutionalized official rule affords an opportunity to highlight the change in human affairs. It is the social aspect and not the technology that determines the outcome. Likewise, the brevity of text messages and the increasing brevity of social media posts should not be a surprise to anyone who has studied the "chrono-economic" effects of Internet communication, beginning with email (Millard, 1997). In McLuhan's terms, the effect of email was the cause of text-speak. Importantly, I use these social and cultural changes to everyone's advantage by applying them even as I teach students how to analyze and understand the relevant processes McLuhan and subsequent scholars detailed. Here, the approach implements another of Tambiah's (1985) insights about any ritual performance through its Austinian aspect as a "constituitive act" (p. 135). Here, Tambiah takes a cue from J. L. Austin's (1962) description of such an act as "the outward and visible sign, for convenience or other record or for information, of an inward and spiritual act" (p. 9). Simply put, the statement is also its own action.

In the introduction to subsequent printings of *Understanding Media* (1964), McLuhan clarifies further his frequently misunderstood aphorism, with the detail that "any technology gradually creates a totally new human environment. Environments are not passive wrappings but active processes. [. . .] 'The medium is the message' means, in terms of the electronic age, that a totally new environment has been created. The 'content' of this new environment is the old mechanized environment of the industrial age" (p. xiii-ix). Here we see the "whole new environment" produced by the text or instant message. The proviso is that it is so formulaic, so easily repeated, so very mechanized. It is depersonalized but not impersonal.

Early in my experience of teaching online I noted that I receive more telephone calls from sixty-to-seventy students than I ever did from 800 in a fully face-to-face environment. McLuhan would have predicted this and adds a key insight. The medium—online education—is actually relatively low in participation. It renders contact obsolete and yet it retrieves the phone call—something so-called Millennials and Gen Z eschew even more readily than they eschew vaccines—from the obsolete precisely because the content of the medium is removal of worker input that is a key hallmark of the factory model of capitalism and education since the 1800s, as

Sir Ken Robinson (2008) offers in his famous "Changing Paradigms" talk. Indeed, as McLuhan (1964) writes,

> the new environment reprocesses the old one as radically as TV is reprocessing the film. For the 'content' of TV is the movie. TV is environmental and imperceptible, like all environments. We are aware only of the 'content' or the old environment. [. . .] Each new technology creates an environment that is itself regarded as corrupt and degrading. Yet the new one turns its predecessor into an art form. (p. xiii-ix)

We only need to look as far as Jeremiads about the lost art of cursive, "the letter," and the rise of courses on how to make a phone call, to see the predecessor's transformation from mundane to high art (Reyes, 2022; Ward, 2024). Predictably, then, the phone call has become the subject of The Daily Feature and The Daily Smile. In addition, students are encouraged to offer suggestions provided they adhere to the code of conduct and course content. These sometimes wind their way through an entire class period and I might stray from the lesson plan to capitalize on teachable moments.[3]

How're you now: Phatic elements

Initially, the goal of sharing any Daily Smile was initially just to establish contact: I am still here and I still care. Almost immediately, though, I became mindful of the entire change of environment; one which highlights the absence of contact. Thus, the goal becomes finding a means to simulate and/or stimulate contact through phatic messages. Indeed Malinowski's (1923) original definition of phatic messages definitely applies "a type of speech in which ties of union are created by a mere exchange of words" (p. 151). However, Malinowski and others discount the value and meaningfulness of the content of phatic exchanges. In contrast, Jakobson (1960) builds on Malinowski's premise and suggests a phatic function as one of the important purposes of language, one which is "primarily serving to establish, to prolong, or to discontinue communication, to check whether the channel works [. . .] to attract the attention of the interlocutor or to confirm [their] continued attention [. . .] on the other end of the wire" (p. 355). Jakobson cites Shakespeare's "Friends, Romans, countrymen" as a ubiquitous example. In more mundane settings, Kulkarni (2014) highlights that both Malinowski and Jakobson would agree that "uttering a polite phrase on seeing someone or saying something to avoid silence are examples of establishing contact" (p.119). Breaking an awkward silence at a dinner gathering is another ubiquitous and important example. My own semiotics professor gave a further caution that saying someone's name in the middle of an exchange is another way to establish connection, but sometimes that can be for the purpose of control and/or deploying power.

In their study of WhatsApp users in Spain, Italy, and the Netherlands, Hagedoorn et al (2024) found that the phatic element was a key factor in the social media use of young, working adults

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[3]For example, the question of the amount of reading assigned is always up for debate among professors and students alike. Thus, I do wonder whether the online medium changes the perception and reception of the reading list, including whether a physical reader is assigned even in asynchronous classes.

during the Covid-19 Pandemic. Crucially, the reasons behind the messaging "range from sharing experiences from everyday life and showing care to coping strategies" (p. 665). While Sudar (2024) also notes the importance of the phatic in "expressing solidarity and empathy" between students and instructors, the particular study that led to this conclusion involved the addition of Snapchat and/or WhatsApp messages (p. 111). Admittedly, in March 2020, I had neither the time nor the resources to accomplish either a WhatsApp or a Snapchat group chat arrangement, but these studies of the very same time period (Hagedoorn et al 2024; Sudar 2024; Wedananta & Sudarmawan 2023) confirm the role of the phatic function in social media messaging and highlight its pedagogical potential, whether in a formal setting or a public one, as in sharing coping strategies. Moreover, I did have the LMS and previous experience (Ouellette 2020) in using it with my graduate students to establish and maintain contact in a synchronous online environment. In both cases—synchronous and asynchronous—my intent was and remains, finding a means to continue and to maintain contact, while keeping it brief and measured and always related to everyday life (Hagedoorn et al, 2024). In terms of the asynchronous online delivery of educational material, Kulkarni (2014) offers a key reminder that the importance and the challenge of the phatic gesture online is that the parties may not actually be online at the same time and even if they are, the chances of contact might be reduced to coincidence or serendipity. This is the contingency of asynchronous classes. Thus, the "ping" or opening message, has a special purpose (p. 122). Each Daily Smile then becomes a ping that offers an entry point into indirect pedagogy. Here, I remain mindful, as someone who has studied and published extensively on games and play that both of these would be important aspects, as well. Again, McLuhan (1964) offers a key proviso, "when the social rules change suddenly, then previously accepted social manners and rituals may suddenly assume the stark outlines and the arbitrary patterns of a game" (p. 211). All of the social rules changed on March 11, 2020, up to and including social distancing.

Many of the changes are still being felt, if not enforced. Moreover, as with games, rituals have a dual aspect because even with recursion and repetition, each performance is different (Tambiah, 1985). Contact—even basic phatic "pings"—suddenly mattered a great deal. While I had not yet thoroughly investigated the phatic function, I was aware that, as Kulkarni (2014) highlights, it is "the language used to build ties of union with other members of the community" (p. 117). Moreover, as I have written elsewhere (Ouellette, 2020), I have successfully adopted and adapted the means of social media and social media play to online instruction. This approach, proceeding from Deumert's (2014) insight that "playfulness is visible in the types of interactions people engage in online-they play games, joke, flirt, or just hang out with one another-as well as in the language and multimodal imagery they use" (p. 23). Such is the importance of playfulness in these interactions that Deumert stresses the "primacy of play" in social media spaces (p. 23). Thus, The Daily Smile posts typically take the pattern of tweets, which are (at the time of writing) limited to 280 characters, but also contain a link to a clip—e.g., a viral video short of a pair of tennis players hitting balls from rooftop to rooftop during lockdown—or articles and images. Moreover, I have a habit, learned during my early years in programming, on using dot matrix printers, and in using primitive email editors, of typing entirely in lower case. As mentioned above, brevity and informality have been hallmarks of Internet communication since the original email editors of the 1960s. As well, the emphasis on speed and brevity produces an effect, or consequence, of the medium, which Millard (1997) refers to as "chrono-economic

stress" (p. 159). The perceived need to get through as much information as quickly as possible contributes to the brevity and informality, as well as shrinking attention spans. Having researched and studied this tendency since my MA Thesis gave me insight on how to utilize chrono-economic stress to advantage while being mindful of deleterious effects. One way to accomplish this is to immediately deformalize the contact and highlight the playfulness within an overarching structure based on ritual and repetition since rituals come with rules by definition.

Here, it was not surprising then, to learn that Gradinaru (2018) finds that while "telephony inserted levels of phatic use [. . .] the rise of the social software as the Internet developed conducted to another degree of phaticity" (p. 463). This not only recalls the earlier observation about telephone calls, it reflects the increasingly phatic nature of online communication. Indeed, following from Jakobson (1960), however, Radovanovic and Ragnedda (2012) find "the phatic function that tries to maintain contact with the receiver is important on [social networking sites] for maintaining and strengthening existing relationships" (p. 11). Likewise, there is a tendency to discount the value, propriety or even existence of playfulness in teaching. However, as I document elsewhere (Author 2019, 2020), games and play need not be serious in order to teach. Quite the contrary, games an excellent medium for meta-cognition because of the in-built affordances of strategies and strategies for learning (about learning). Likewise, Radovanovic and Ragnedda (2012) argue that while many theorists discount short social media posts as having "no practical information value, we argue that they have semantic and social value [. . .] determined by sociotechnological and cultural factors such as online presence and social awareness" (p. 10). Part of the importance for The Daily Smile lies in the fact that as de Mul (2015) observes, games and play need not have any sort of narrative closure. Instead, games "that have no or hardly any narrative content [. . .] invite us to play again" (p. 259). Games and social media are both insistent technologies, ones that remind us of their presence constantly through myriad means (Middleton, 2013). The obvious example is the notification, but the score—via the like button— also matters and insists that we continue.

The LMS includes the option for likes. These can be a source of formative feedback for the instructor but also offer a draw to other students by mimicking the way likes lead to more views (and more likes) on social media platforms like Instagram and TikTok (Peyton, 2013; Siddiqui, 2021; Hogsnes et al, 2023). More than just a social media practice, maintaining a presence (Turner et al, 2020) is also the very contingency of the phatic function, for as Radovanovic and Ragnedda (2012) note, "it is crucial because what really counts in human interaction is to stay in touch and let others know that 'I'm here too'" (p. 11). The process of letting students know that an actual, rounded person is "here too" starts the day classes begin. As part of that process, I include a "read me" file with each syllabus. The "read me"—perhaps the history of the type is worth a study in its own right—contains a playful *précis* of the course, the syllabus, expectations, etc. and it always begins with my own interpretation of the latest viral meme as it can be applied to the course.

Viral memes incorporate the traits of playfulness and the tendencies of the phatic. Moreover, they exist in and through the medium being the message. As it progresses through the semester, then, The Daily Smile actually has more purchase than even Radovanovic and Ragnedda (2012) allow for phatic gestures when noting that these messages "tend to reinforce existing

relationships and facilitate further relation without giving information or adding to the messages" (p. 11). Rather, the playfulness and the dailiness allow me to incorporate more than offering a message of "I'm here, too." The additional content is delivered not only through play, but also through the repetitive, ritualized nature of the routine and student's general familiarity with social media.

Back where we started: The role of ritual and seriality

Such is the importance of the combination of ritual and play that Tambiah (1985), in his landmark study of ritual, adopts the so-called "magic circle" developed by Huizinga (1955) as a means of understanding the importance of the performance of the ritual as equal to the significance of the code that the ritual enacts. While the ritual may draw from that code, "no one performance of a rite, however rigidly prescribed, is exactly the same as another performance because it is affected by [. . .] certain variable features such as the social characteristics and circumstances of the actors" (p. 125). Simply put, each edition of The Daily Smile is at once the same—it contains a "smile"—and also differs from the previous one(s) while deferring to the next. It is the play of differing and deferring that contributes to the insistence. Moreover, the sameness contributes to and builds on the seriality that Maeder and Wentz (2014) argue is a key factor in online playfulness. As I showed previously (Ouellette, 2020), the dual aspects of seriality—at once both a serial, as in following one after another, but also bearing traces and imprints, as in a serial number—map readily onto online teaching, particularly by adopting and adapting means of social media. As Maeder and Wentz (2014) explain, a key effect is that the "serial processuality, on coupling, doubling, repetition, replication and more" makes the messages flow like a narrative rather than like a mechanical output (p. 130). The seriality of the messages offers yet another instance of the medium becoming the message, which is key to their reception and the resultant cognitive and affective responses.

However, it is well worth mentioning that ritual also offers its own set of reassurances and comfort. In his reading of Tambiah (1985), Manning (2012) notes that any ritual "has a conventionalized performative dimension that is constant for all instances of it (all weddings are affective, performative, in that they marry people, for example, regardless of whether they take place in Las Vegas or not)" (p.155). Therefore, it is not surprising that ritual, play, and seriality work in concert in an online message pattern like The Daily Smile. It draws a cognitive and affective response whether meta-cognition occurs or not because of its content and because of the medium. Moreover, Deumert (2014) enumerates that "the predominant tendency" in social media playfulness "is an increase in openness [which is] a creation of our imagination that creates real like effects in our daily lives" (p. 261). By including things that evoke emotion I have let my students in on the proverbial secret: I let them know what makes me smile even as I let them know "I'm still here." Allowing students to know even a few things that make me smile through the LMS postings produces an online version of an Austinian speech act because its statement, a smile, is its own action. Here, the importance is at least twofold. First, Brown's (2021) literature review of successful student engagement methods developed during the Covid-19 Pandemic indicates that professors need to "set the example" in terms of developing a social presence (p. 2). In the second case, Brown also finds that developing a "high social presence" occurs most readily by using actual examples from daily life (p. 2). Each instalment of The Daily

Smile manages to do both and engage students "across multiple sensory platforms" Brown suggests will produce the sorts of learning and strategies for learning that derive from enhanced engagement. Moreover, it did so independently and prior to Brown's survey which is important because Brown's wider literature review confirms what would otherwise be my own anecdotal or even idiosyncratic practice. In combination, then, these provide a basis not only for understanding what my students and I have been experiencing since March 2020, it also provides a basis for further elaboration and adaptation as I continue to develop the strategy.

In fact, the sheer quantity—roughly seventy over a fifteen-week term—do more than just offer daily contact. They reflect a key element of the semiotic and the material effects of rituals, which are, as Tambiah (1985) maintains, "constituted of patterned and ordered sequences of words and acts, often expressed in multiple media, whose content and arrangement are characterized [. . .] by formality (conventionality), stereotypy (rigidity), condensation (fusion), and redundancy (repetition)" (p. 129). The seriality of any ritual is also one of the key means through which knowledge is passed on, but the fact that each instance is different then becomes part of the meta-cognitive processes involved, particularly through the added elements of play and humour (Author 2019, 2020). Ritual and play both provide mechanisms for learning through repetition, practice, and rehearsal. Further, the humanizing aspect of the posts further reinforces the key structuring element that each Daily Smile comprises without having any explicit teaching routines. Again, the utterance or message is its own (basis for) performance, both cognitive and affective by producing contact in an otherwise virtual and liminal space.

I can still smile: Conclusions

Admittedly, I feel and fear it may still be necessary to offer an apology of sorts for the inclusion of play as something more than an occasional entry point or aside for teaching. Rather, play— especially in an online space—should be foregrounded, deployed, adopted, adapted, and exploited. Here, I am always mindful that play seems almost intrinsically incorporated into internet interactions. Indeed, Deumert (2014) details that there has been a generally playful "mood in the digital world from its inception," one which contributes to a "playful, experimental, yet social, state of mind" (p. 26). Here, I would again highlight the social consequences of the medium, as McLuhan (1964) would insist. At the same time, the experimental aspect of play and playfulness becomes its own entry point into the pedagogical. What Deumert (2014) characterizes as the "ritual construction of the internet as a place of enjoyable and playful interaction" is more than a means of breaking the ice. It offers a method for sustained engagement, interaction, and has the in-built formal features that help get past resistance while also developing a sense of community. This is not at all the same as pandering to a generation that will never learn to write in cursive and will always be fearful of a phone call, nor is it in any way a denigration or a diminution of learning, teaching, or the subject matter.

Quite the contrary, I am doing my job every way I know how, especially by recognizing that the environment has turned its predecessor, if not into an art form, at least into an artefact of undeserved nostalgia. McLuhan (1964) explains that the railway did not introduce movement, but it did create "totally new kinds of cities and new kinds of work and new kinds of leisure" (p. 24). So, too, has the internet. One only need to look at the closure of malls and High Street Shops which have come even as Uber and Lyft have increased the number of cars on the road. The

pivot to online teaching was only as simple as opening Zoom until someone actually opened Zoom. Teaching online is not the same work. It is more work and different work and *new work*. McLuhan foretells this, too

> Electricity does not centralize but decentralizes. It is like the difference between a railway system and an electric grid system: the one requires railheads and big urban centers. Electric power, equally available in the farmhouse and the Executive Suite, permits any place to be a center, and does not require large aggregations. This reverse pattern appeared quite early in electrical "labor-saving" devices, whether a toaster or washing machine or vacuum cleaner. Instead of saving work, these devices permit everybody to do [their] own work. (p. 47)

Zoom, Google Meets, and/or any Learning Management System requires new kinds of work and not only because they are decentralized. As an instructor during and after the pandemic the aspect of everybody doing their own work was front and center every day. Some took the risk of going into places of work because that was the only source of reliable wifi and they needed the income. Others took advantage of hotspots provided by schools and cities. Many instructors became tech support, academic advisors, counselors, and more because that is what our students needed.

Here, I would politely disagree with Brown's (2021) findings about "personalized communication" and its importance by way of an extension (p. 2). Recalling the example of telephone calls becomes key and also offers a hint to the next study, one which will require IRB approval and more closely trace the responses to my efforts to improve the sense of connection in online learning environments. Students might prefer personalized contact but they might also still prefer not to be singled out in the process. More than one student attended a Zoom session or office hours while wearing a mask, even while at home alone. Others positioned the camera so I could only see a pair of eyes. Still others emailed questions or submitted work at various times of the night knowing an immediate reply was impossible. Personalized communication, then, needs to take multiple forms, but starting with personalizing the instructor and sharing a smile is a key step forward; that is provided the instructor is mindful of the changes caused by decentralization. The LMS, then, is not a "labour-saving" device' rather, it is a device that requires new kinds of work. It is no accident that I have been nominated for and received three separate awards for my teaching and mentorship since this started. In the nomination packets, students frequently note the ethic of care and the feeling of being included. In a more material example, my summer doctoral institute students, all of whom are distance students through the normal academic year, have a pair of asynchronous weeks either side of two weeks of face-to-face sessions every June-August. The significance lies in the fact that they "met" me online through the smiles before they come to campus and so I have to live up to the promise of the smiles and also maintain the contact once they return home for the final two weeks of asynchronous delivery. They have brought me treats, a host of thank you notes, and pictures, clips, and other things inspired by, responding to, or recreating daily smiles. Thus, I remain very confident that while The Daily Smile seems a quick and easy puddle because of the smile, it is knowingly corrupt and degrading. That is part of its appeal and its ability to produce cognitive and affective responses. I

also know that the next technology will turn social media and derived approaches like The Daily Smile into an art form. My students already think it is.

References

Bolter, J.D. and Grusin, R. (2000). *Remediation: Understanding new media*. Cambridge, MA: MIT Press.

Brown, W. S. (2021). Successful strategies to engage students in a COVID-19 environment. *Frontiers in Communication*, 6, 1-3.

Chandler, D. (2002). *Semiotics: The basics*. London: Routledge.

Deumert, A. (2014). The performance of a ludic self on social network(ing) sites. In P. Sargeant & C. Tagg (Eds.), *The Language of social media*, (pp. 23-45). London: Palgrave Macmillan UK.

de Mul, J. (2015). The game of life: Narrative and ludic identity formation in computer games. In L. Way (Ed.), *Representations of internarrative identity* (pp. 159-187). London: Palgrave Macmillan.

Federman, M. (2004). What is the meaning of the medium is the message? http://individual.utoronto.ca/markfederman/MeaningTheMediumistheMessage.pdf.

Gradinaru, C. (2018). Small talk in our digital everyday life: The contours of a phatic culture. *Meta: Research in Hermeneutics, Phenomenology and Practical Philosophy*, 10(2), 459-472.

Gunraj, Da.N., Drumm-Hewitt, A.M., Dashow, E.M., Upadhyay, S.S.N., & Klin, C.M. (2016). Texting insincerely: The role of the period in text messaging. *Computers in Human Behavior* 55, 1067-1075.

Hagedoorn, B., Costa, E., & Esteve-del-Valle, M. (2024). Photographs, visual memes, and viral videos: Visual phatic news sharing on WhatsApp during the COVID-19 Pandemic in Spain, Italy, and The Netherlands. *Digital Journalism*, 12(5), 656-679.

Hogsnes, M., Grønli, T. M., & Hansen, K. (2023). Unconsciously Influential. Understanding sociotechnical Influence on social media. *Scandinavian Journal of Information Systems*, 35(2), 1-34.

Houghton, K.J., Upadhyay, S.S.N., & Klin, C.M. (2018). Punctuation in text messages may convey abruptness. Period. *Computers in Human Behavior* 80, 112-121.

Huizinga, J. (1955). *Homo Ludens. A study of the play-element in culture*. Boston: Beacon Press.

Jakobson, R. (1960). Closing statement: Linguistics and poetics. In T.A. Sebeok (Ed.), *Style in language* (pp. 350-377). MA: MIT Press.

Kulkarni, D. (2014). Exploring Jakobson's "phatic function" in instant messaging interactions. *Discourse & Communication*, 8(2), 117-136.

Malinowski, B. (1923). The problem of meaning in primitive languages. In C.K. Ogden and I.A. Richards (Eds.), *The meaning of meaning. A study of the influence of language upon thought and of the science of symbolism* (pp. 296-336). London: Kegan Paul.

Manning, P. (2012). *Semiotics of drink and drinking*. London: Continuum.

McLuhan, M. (1964). *Understanding media: The extensions of man* 2nd ed. New York: Signet.

Middleton, C. A. (2013). Always-on environment: a case study of BlackBerry users. In G. Goggin (Ed.), *Mobile phone cultures* (pp. 28-42). New York: Routledge.

Millard, W.B. (1997) I flamed Freud. In D. Porter (Ed.), *Internet culture* (pp. 145-160). New York: Routledge.

Ouellette, M.A. (2019). I'm controlling and composing: The role of metacognition in *The Incredible Machine*. *inVisible Culture: An Electronic Journal for Visual Culture*, 30. https://doi.org/10.47761/494a02f6.c4fd9bb5

Ouellette, M. A. (2020). I told you that to tell you this: Metagaming and metacognition in the hybrid classroom. *Journal of Literacy & Technology*, 21(4), 58-85.

Peyton, T. (2013). Emotion to action? Deconstructing the ontological politics of the "Like" button. In T. Benski and E. Fischer (Eds.), *Internet and emotions* (pp. 127-42). New York: Routledge.

Radovanovic, D. & Ragnedda, M. (2012). Small talk in the digital age: Making sense of phatic posts. In *2nd Workshop on making sense of microposts*. Lyon (France), 16-20 April 2012. [Conference paper]. http://eprints.rclis.org/24377/.

Reyes, R. (2022). Woman dubbed "The Phone Lady" charges $480 an hour to help Gen-Z staff overcome their fear of "micro-aggression" - otherwise known as talking on the phone! *The Daily Mail*, online edition, 28 Dec. 2022. https://www.dailymail.co.uk/news/article-11579377/The-Phone-Lady-charges-480-hour-help-Gen-Z-staff-overcome-ferear-talking-phone.html.

Robinson, K. (2008). "Changing Paradigms." https://www.thersa.org/video/events /2008/06/

changing-paradigms.

Siddiqui, A. (2021). Viral videos and their impact on society. *Journal of Socio Economic Research Studies*, 1(2), 01-10.

Sudar, S. (2024). Speech function by lecturers and students in the communication using *Whatsapp*: Sociopragmatics study. *English Review: Journal of English Education*, 12(1), 105-116.

Tambiah, S.J. (1985). *Culture, thought, and social action: An anthropological perspective*. Cambridge, MA: Harvard University Press.

Turner, J.W., Wang, F., & Reinsch, N.L. (2020). How to Be Socially Present When the Class Becomes "Suddenly Distant." *Journal of Literacy & Technology*, 21(2), 76-101.

Vetere, F., Howard, S., & Gibbs, M. (2005, April). Phatic technologies: Sustaining sociability through ubiquitous computing. In *Workshop paper, Ubiquitous Society Workshop*, ACM CHI.

Ward, M. (2024). "It feels exposing": Teaching Gen Z to pick up the phone. *Sydney Morning Herald*, online edition, 7 Apr. 2024. https://www.smh.com.au/national/it-feels-exposing-teaching-gen-z-to-pick-up-the-phone-20240403-p5fgzj.html.

Wedananta, K. A., & Sudarmawan, I. P. Y. (2023). Emotive language function as a medium to motivate students. *Widya Accarya*, 14(1), 73-78.

Multiliteracies in the Making – Multidisciplinary Conceptualization

Tomi Laapotti
tomi.laapotti@uwasa.fi
University of Vaasa

Päivi Iikkanen
paivi.i.iikkanen@jyu.fi
University of Jyväskylä

Tero Kerttula
tero.t.kerttula@jyu.fi
University of Jyväskylä

Aino-Kaisa Koistinen
aino-kaisa.koistinen@uniarts.fi
University of the Arts Helsinki Research Institute

Anne Martin
anne.m.martin@jyu.fi
University of Jyväskylä

Niina Sormanen
niina.sormanen@utu.fi
University of Jyväskylä, University of Turku

Correspondence concerning this article should be addressed to: tomi.laapotti@uwasa.fi

Author Note

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Abstract

This article focuses on the concept of multiliteracies from a multidisciplinary point of view. By analyzing texts that were created to discuss differing research foci and relationships with the concept, a nonhierarchical and dynamic model, a wheel of multiliteracies, is formulated for understanding the processes of multiliteracies. Communication, temporality, and contextuality form the hoop of the wheel and the spokes include agency, competencies, expressions, individual experiences, and collectivity. The intertwined spokes can be examined through the tensions connected to communication, contextuality, and temporality: individuality/relationality, local/global, and the tensions built in the concept of time, respectively. The conceptualization reflects recent discussions on multiliteracies and develops the concept further through the dynamics emerging from the built-in tensions in the wheel. Furthermore, this text is an exploration of collective knowledge production through academic writing and the processual quality of multiliteracies – or multiliteracies in the making.

Keywords: collective writing, literacy, multiliteracies, multiliteracy, relationality

Introduction

"We are the chosen ones... But how does our work really relate to multiliteracies?"

The purpose of this article is to explore the concept of multiliteracies from a multidisciplinary point of view and to inductively formulate a co-produced conceptualization of multiliteracies. Worldwide challenges such as climate change, increasing political radicalization, neoliberal capitalism, and rising numbers of refugees and displaced people continue to shake the foundations of our environments (Anstey & Bull, 2018). In particular, technological advances, such as developments involving online platforms, exchange of information or the use of generative AI, offer unforeseen opportunities but may also seem daunting. We argue that open dialogue, engaging in collaborative, multidisciplinary knowledge production processes and developing multiliteracies, critical thinking and teamwork skills can be of assistance in attempts to circumvent the potential negative effects of these phenomena. This, in turn, can hopefully pave the way for collaborative efforts in promoting social change in the face of technological developments. Thus, a multidisciplinary exploration of multiliteracies is important for reaching a better understanding of the concept itself as well as the potential it holds in terms of research and practical implications. Equipping people with more advanced multiliteracies skills for designing their social futures is now perhaps timelier than ever, since due to increasing complexity and accelerating development of technologies, it is becoming more and more difficult to predict what the future will bring (see also The New London Group, 1996; Anstey & Bull, 2018).

The structure of this text pays tribute to the inductive process of knowledge-production (for a critique for deductive writing logic in inductive research, see Tracy, 2012). At the time the text started to take shape, all six authors worked at a research hub gathered under the concept of multiliteracies, called MultiLEAP (Multiliteracies for social participation and in learning across the life span). Not all of us had, however, used the concept of multiliteracies as such in our research before and approached it from varied disciplinary backgrounds as well as with a diverse understanding of literacies. Thus, when engaging in the process of applying for a job in the research hub, some of us had to explicate and emphasize the connections between our earlier work and multiliteracies more than others. MultiLEAP itself was a result of science political

decisions aimed at strengthening the core fields and research profiles of Finnish universities (for discussion on a similar research hub, see Sarangi et al., 2019). The objective of the hub was to bring together scholars from different disciplines, such as social sciences, humanities, and education, to focus on multiliteracies as skills needed in the mediatized and digitalized world of the 21st century.

MultiLEAP aimed at strengthening the overall research output of the university under 'the very wide umbrella of multiliteracies'. Since the concept now was a central part of our academic lives, we wanted to give it a go, but do it on our own, exploratory terms. In short, our goal was to form our own definitions and understandings of multiliteracies based on what we *do*: meet multiliteracies in the making, and to analyze our conceptualization against the existing literature on multiliteracies. This, indeed, is the starting point of the present article. Working at the research hub, we noticed that our approaches to and understandings of multiliteracies varied, and we wanted to see, if different approaches and frameworks could be brought together in formulating a novel way for understanding multiliteracies. Thus, instead of a typical literary review or conceptual analysis (see Nuopponen, 2010; Snyder, 2019), this text explores what we as a multidisciplinary collective think the concept of multiliteracies stands for and what it has to offer for our own work and beyond. Only after producing a shared vision of our own, it will be examined against earlier definitions of multiliteracies and the contributions of the multidisciplinary conceptualization for the field(s) will be pondered.

That said, to help the reader, some earlier understandings of multiliteracies will first be discussed before diving into our own concept formulation. Broadly speaking, multiliteracies can be characterized as a means to understand the world (Anstey & Bull, 2018). The concept originates from literacy pedagogy but, ever since the beginning, the initiative has had more far-reaching societal objectives (New London Group, 1996; Cope & Kalantzis, 2009). The scope of multiliteracies can be illustrated for example, by expanding the traditional understanding of literacy as basic reading and writing skills to include the ability to engage in various forms of literacy practices associated with specific tasks. Thus, multiliteracies entail the ability to adapt to always evolving social, cultural and technological environments (Anstey & Bull, 2018). Multiliteracies also encompass the ways in which people learn to navigate cultural norms and practices related to everyday and working life through socialization (Cook-Gumperz, 2006). In other words, "the concept of multiliteracies attempts to address both the definition of literacy and the implications of the practices needed for the many and diverse contexts of 21st-century life" (Hong & Tan, 2020, p. 43).

For us, the most central characterization of multiliteracies was the one provided by MultiLEAP. Besides the "skills needed in the mediatized and digitalized world of the 21st century", the research hub's description of multiliteracies emphasized different contexts and the temporal dimensions of learning. This overarching characterization was the starting point towards formulating a collaboratively constructed and multidisciplinary definition for multiliteracies.

The Process of Knowledge Production

The inductive approach used may be somewhat atypical, but it is built on well-established ontological and epistemological principles introduced in literature focusing on collaborative knowledge production and inductive research. Haraway (2004) critiques scientific writing for producing a false, disembodied notion of objectivity. Instead of the singular form, knowledge, Haraway (1988; 2004) argues for *knowledges*, claiming that knowledge is not disembodied but situated, embodied, cultural, historical, and societal. Knowledge-production – and writing as part of it – is therefore always relational, embedded in messy and entangled networks consisting of both human beings and nonhuman beings/forces/actors, which, in our case, becomes evident in multidisciplinary knowledge production processes (see also Peters et al., 2019).

In practice, the relational knowledge-production used in this study leaned on collective writing. Richardson (2000, p. 923) considers writing as a "method of inquiry", meaning that it functions as "a way of 'knowing' – a method of discovery and analysis". Richardson argues that: "By writing in different ways, we discover new aspects of our topic and our relationship to it. Form and content are inseparable." (p. 923). The writing process therefore shapes knowledge-production and should not only be considered as reporting of findings (Richardson, 2000; Lykke et al., 2014). For Haraway, situatedness is about "the joining of partial views and halting voices into a collective subject position that promises a vision of the means of ongoing finite embodiment, of living within limits and contradictions – of views from somewhere" (1988, p. 590). The practice of knowledge production is, hence, already collective and situated. Thus, situated ways of producing *knowledges* need to be acknowledged in academic writing as well (see also Lykke et al., 2014). This text is a result of such a collective writing process.

We put forth our situatedness specifically in relation to our varied disciplinary backgrounds and research foci that bring with them varied theoretical and methodological traditions. This approach is in line with Peters and colleagues (2019) who question the single author as the standard in academic writing in the humanities. This kind of study could also be called a collective autoethnographic experiment (cf. Noel et al., 2023), where collective sense-making materializes in the practice of collective writing (Chang, 2016; Turunen et al., 2020). As Turunen et al. note, interdisciplinary knowledge-production includes serendipity that "allows us to relax our conceptions of knowledge, facilitating the emergence of new forms of knowledge out of the combination of different interdisciplinary backgrounds and our own affective experiences" (p. 6; cf. Lie, 2014a). Moreover, the practice of collective writing questions the humanist ideal of the lone academic scholar/author and places emphasis on the importance of collaboration in implementing social change (Peters et al., 2019).

The writing started with individual textual descriptions of our work and then collaboratively built our path towards a multidisciplinary conceptualization of multiliteracies through joined discussions and collective writing. Because of this, this text also serves as a description of writing as processual knowledge-production where the writing process functions as – borrowing from Richardson (2000) – a method of inquiry.

The Steps Towards the Conceptualization

First, each author of this article produced an approximately 1000-word text (in English) where our individual backgrounds, research and approaches to multiliteracies were ruminated. The questions that guided us in formulating the texts were agreed on collaboratively and included the following: What is your discipline/background?; How do you understand/use the concept of multiliteracies?; How does your (theoretical) approach connect to multiliteracies?; How does your research contribute to existing research on multiliteracies?

The texts were read by the authors and discussed in a seminar with other scholars affiliated with the MultiLEAP research hub. Initially, the plan was to include these short texts in the article as fragments displaying our individual voices. As these texts were not coherent enough for this purpose, they were instead used as data for analyzing the concept of multiliteracies. Thus, at this point, there were approximately 6000 words of multidisciplinary, semi-free-flowing thoughts around the concept. Choosing to use texts created by the researchers themselves as data follows earlier research on creative academic writing practices. Koobak (2014), for example, has suggested that unfinished thoughts and reflections may be useful as the basis of academic writing. In addition, Lie (2014a, 2014b) has argued for the importance of free writing as a strategy guiding the research process, and suggested that producing new *knowledges* may require novel ways of writing. To put it simply, the short descriptions of multiliteracies were deemed as a suitable starting point for the formulation of a collaborative understanding of multiliteracies – a dataset from which new conceptualizations might emerge. The main ideas of the texts and our scholarly backgrounds are summarized in Table 1.

Table 1 Description of the Data

Researcher	Background	Title of the Individual Text	Approach to Multiliteracies
Laapotti	Organizational communication	Multiliteracies as relations in organizing	Multiliteracies as competence-based relational phenomenon
Iikkanen	Applied language studies	Multiliteracies and migrant professional integration	Social aspects of multiliteracy, cultural literacy, investment, intersectionality
Koistinen	Literary studies, film and media studies, gender studies, cultural studies	Creative writing as environmental literacy	Creative writing as part of ecological/environmental literacy, ecological/environmental literacy as part of multiliteracies

Sormanen	Communication and media studies, social sciences	Young people's online expressive civic and political participation and its connections to multiliteracies	Young people's literacy skills of political expression and engagement in digital and social media spaces
Martin	Educational research and writing studies	Creative writing as a means for teacher development – a narrative and multiliteracies perspective	Creative writing as a part of multiliteracies and a means for teacher development
Kerttula	Contemporary culture studies	Super Mario politics – multiliteracy, transmedia and contemporary issues	Media literacy, cultural literacy, social literacy

The analysis started with the first readings and discussions on the texts. In this initial reading, connections were established (i.e., similar themes or theoretical approaches) between texts by different authors. After making the decision to use these texts as a dataset, an inductive approach was chosen to find out how researchers from different disciplinary backgrounds understand the concept of multiliteracies collectively – or, to see what we can make with the concept. The first step was the preliminary analysis. Here we wish to acknowledge that collective knowledge-production relies on material realities, and not all the authors were able to take part in every meeting. Online discussions were nevertheless continued on email threads. In the first collective preliminary analysis of the data, each author went through the data and wrote down 'keywords' that seemed important for each text. In other words, the task was to find words and concepts that were the core of our approaches to multiliteracies. We collected these keywords in a shared file and discussed the process briefly.

Although everyone had collected similar words, the keywords were on diverse levels of abstraction (i.e., in thematic analysis they could be characterized as themes, sub-themes, or codes). Furthermore, due to our different academic backgrounds, the keywords could have different meanings in different texts: for example, the word *agency* had several meanings in the texts (see Table 2). This notion led to the first result of our quest: As a multidisciplinary concept, multiliteracies is based on non-univocal concepts that need to be defined situationally and, thus, multiliteracies is a concept with embedded definitional tensions or conceptual continuums. Just to give an example, with a term such as agency, the tension could be between individual/collective/relational agency (as will be discussed later in more detail).

Table 2 Approaches to Agency in the Data

| Researcher	Agency as
Laapotti	Human and nonhuman, relational (sociomaterial, materialization, relational ontologies/non-distinguishable agents)
Iikkanen	Human, individual (professional agency, distinguishable agents)
Koistinen	Human and more-than-human (sociomaterial, distinguishable and non-distinguishable agents)
Sormanen	Human, collective (distinguishable agents)

With this new understanding of the nature of multiliteracies, we decided that one of us would serve as the first author and, as the next step, continue with analyzing the keywords, drawing together our joined insights from the preliminary analysis. The decision was made mostly due to time constraints, and it would not endanger the collectiveness of our knowledge-production because we would return to collective writing after the initial analysis. After cleaning up duplicate keywords, I (as now it is only me, the first author who conducted this part of the analysis) ended up with 145 keywords from the texts. I continued by categorizing, merging, and relabeling the keywords into categories and sub-categories (when applicable) by interpreting the meanings and hierarchies between the keywords and categorizing them accordingly. Technically, this was a simple process as described in the literature on qualitative content analysis or thematic analysis (e.g., Braun & Clarke, 2006). I interpreted the importance of the keywords within our original texts based on how focal the keywords were as concepts in the texts. Furthermore, the quantity mattered; if a certain keyword was mentioned multiple times in several texts, it was interpreted as important even if it was not qualified as a key concept in the individual texts (i.e., it was important considering the whole data instead of individual texts).

During the analysis process, I discussed the initial version of the categorization with the co-authors and received support for my thinking in addition to some valuable comments for integrating the categories. As a result, I formed three quasi main categories and five quasi sub-categories, and organized these in the shape of a wheel, as I saw them inherently interconnected and dynamic in nature. I use the term 'quasi' here because the categorization does not form a linear main category – subcategory continuum. Instead, the higher-level categories are more like a conceptual or theoretical background for the other categories. Thus, the wheel should be interpreted as a nonhierarchical system where all the parts are related to one another and interact with one another.

The analysis resulted in three main categories, *Communication*, *Temporality*, and *Contextuality*, followed by five sub-categories *Agency*, *Competencies*, *Expressions*, *Individual experiences*, and *Collectivity*. During the analysis, I interpreted the concept of *process* as especially important, and as part of almost all the categories. Thus, it was clearly crucial in terms of the whole, which can be seen as the second key result of our quest. As a result, the main heading, or the center of the wheel, was changed from *multiliteracies* to *processes of multiliteracies*. The processual view will

be discussed in detail later. The result of the analysis, the Wheel of multiliteracies, is presented
in Figure 1.

Figure 1 The Wheel of Multiliteracies
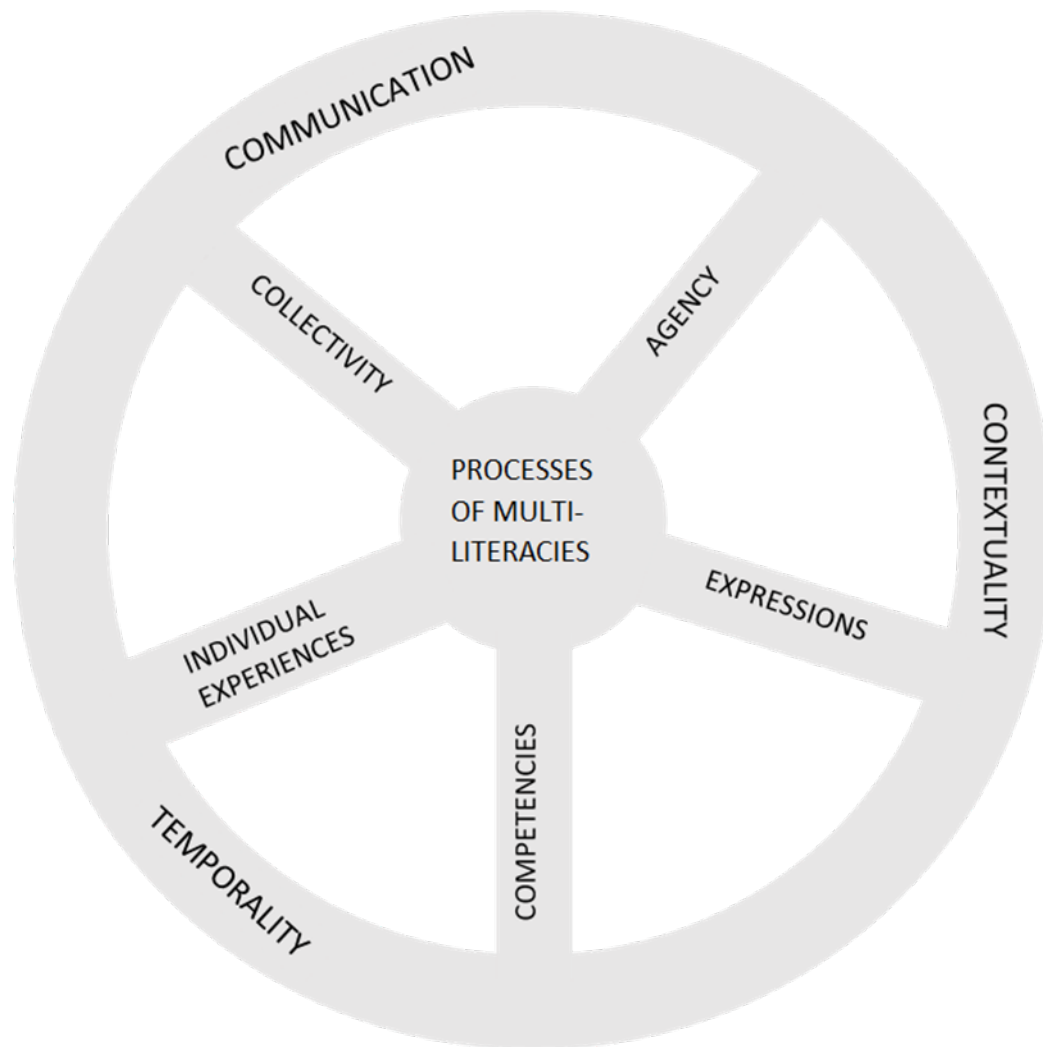
On top of these categories forming the concept different kinds of *literacies* were mentioned in
the texts of the dataset. In addition to multiliteracy and literacy, the terms digital literacy,
ecological literacy, media literacy, and social literacy were referred to. These different forms of
literacy serve different purposes. They can be viewed as different disciplinary and/or discursive
contexts where multiliteracy emerges, used as devices for focusing research under the umbrella
of multiliteracies, or seen as pieces of the larger whole that eventually forms our core concept,
multiliteracies.

Discussing the Wheel of Multiliteracies

After the wheel of multiliteracies was crafted, I (still only the first author) returned to the original texts with the wheel as a tool for more in-depth analysis. As a result, I drafted a skeleton-like "findings and discussion" section which included the categories from the wheel as subheadings and some notes from the original texts as bullet points under each category. Then, I shared the text again with the co-authors for discussion, critique, and co-writing. In other words, *we* returned to a more concrete practice of collective writing and knowledge-production, making sure that even though the analysis was carried out by only one of us, the collective voices were still there. Next, the outer circle, or the hoop, of our wheel of multiliteracies: communication, contextuality and temporality will be discussed. The most important take from these three fundamental parts of the conceptualization of multiliteracies are the *tensions* (e.g., Bakhtin, 1981) or continuums built in or originating from all these concepts. The tensions do not imply that the wheel is normative or exclusive; the idea is that one should be aware of these and form one's own relationship or position one's research with each tension. One can position their research at one end of a continuum or imbricate many dimensions of each continuum.

The Hoop of the Wheel

Communication has been one of the key elements of multiliteracies (e.g., Kalantzis & Cope, 2023) and this is also evident in our data. Whereas earlier literature on multiliteracies has treated communication mainly as transfer of information, the wheel of multiliteracies includes *both* the information exchange, or the transmissive, as well as the meaning-making, or constitutive, dimensions of communication (e.g., Frey et al., 2000; Cooren, 2020). Thus, the essence of communication is *relational* because of its mediating quality; communication is the relation between beings (Cooren, 2020). Nevertheless, if communication is reduced to sending, receiving, and interpreting messages (the so-called information-centered view on communication), the outcome is very individual-centered. In the wheel, the relationality of communication brings forward a tension between individuality and relationality, which is visible in many sub-categories in the conceptualization, as will be discussed later. This tension reflects ontological questions around materiality and relationality that are connected to communicative processes, so-called relational ontologies (e.g., Barad, 2003; Kuhn et al., 2017). When operating with multiliteracies, one must accept the deeply communicative nature of the concept and, if necessary, position one's research ontologically and conceptually somewhere along the continuum between individuality and relationality.

Contextuality was very much present in the original texts throughout the different foci in each of our studies. This can be seen as echoing the concept of *situated literacies* familiar from literacy research (see Barton et al., 2000), *situated practice* in the original pedagogy of multiliteracies by the New London Group (1996), as well as Haraway's call for situated *knowledges* (1988; 2004). For example, youth, activism, education, environment, migration, and games were mentioned as contexts where multiliteracies are seen as meaningful. However, the ways in which context was presented varied from more detailed (e.g., memes, employment opportunities) ones to more general (e.g., art, language, work-life). From this notion, the tension or continuum pertaining to contextuality was drawn: the continuum between the local and the global (i.e., detailed vs. general; micro vs. macro). Thus, when operating with the concept of multiliteracies, one must be aware of the contextual or situated nature and the scale of the concept. Furthermore, one should

define the context(s), and their scale, important for the study, theorizing or teaching/learning situation at hand.

The third concept on the hoop of the wheel of multiliteracies is *temporality*. Temporal elements in the texts emerged as discussions of situatedness, when it was pointed out that the same sets of skills may not apply the same way in other times and places. Furthermore, other time-related phenomena, such as lifelong learning and the ever-increasing pace of cultural and technological development, or in short, change, are central issues connected to the temporal dimension. The tension arising from temporality connects to the tension between the situation at hand (i.e., the here-and-now), the past, and the future, but also to other time-related issues such as pace, synchrony/asynchrony, and linearity/nonlinearity. Thus, context and temporality are separated from each other even though both include characteristics of situatedness. For example, in interpreting cultural texts (here, texts are understood broadly, encompassing not only written texts but also other forms of cultural expression), time and temporality relate to the questions of when something is created and when something is read/interpreted; however, it also is important *where* these texts are created and interpreted, and this is a different question from *when*. Thus, when operating with the concept of multiliteracies, one must be sensitive to temporal issues around the focus of the study or the ways in which these are being theorized.

Communication, contextuality, and temporality form the hoop of the wheel of multiliteracies. With this, we wish to express that these are present in all the concepts of the spokes and the center of the wheel, too, and they are the conceptual prerequisite for the phenomenon of multiliteracies to exist. To put it simply, the ever-intertwined subcategories in the realm of multiliteracies need communication to emerge, exist in a context, and are affected by temporal issues. Analytically, all the categories in the spokes can be explored through the tensions or continuums related to communication, contextuality, and temporality: individuality/relationality, local/global, and the tensions built in the concept of time, respectively. The hoop of the wheel highlights how our collective thinking resulted in multidisciplinary, contextual, and situated *knowledges* because of the tensions that can affect ontological and epistemological issues.

The Spokes of the Wheel

Agency

In the data, agency emerged as an important concept with regard to multiliteracies. However, agency was understood in diverse ways. First, whereas for some authors of this article agency only refers to human skills and capabilities, and thus implies the Giddensian idea of the knowledgeable agent (e.g., Giddens, 1984), for others it is also a nonhuman (e.g., Latour, 2005), or more-than-human (e.g., Pearson, 2015) question. Second, the tension between individuality and relationality is apparent, because agency was understood as individual, collective, or relational. All these differ substantially from one another and, thus, make a difference in terms of the overall understanding of multiliteracies. For example, are multiliteracies something an individual person can 'possess' or execute or is it a collective accomplishment? Collective agency is usually connected to social structures, and relational agency sees agency and action as something that exists only between different beings or entities; no one or nothing can act on their

own as there is always a relation to someone or something (Barad, 2003). The difference between individual and collective agency can also be examined through the tension between the micro and the macro.

These views on agency can, however, mix. Online expressive political participation, such as signing or forwarding online petitions, displaying campaign slogans on personal websites, and posting, commenting, and liking political messages (Gil de Zúñiga et al., 2010), becomes a channel of agency for people through communicative power (Habermas, 1962). Social and digital media environments consequently create communication spaces enabling, for example young people with often restricted access to political debate, the agency to negotiate, express, and contest societal issues and power hierarchies (Castells, 2007). Hence, the term agency here refers to both individual and social circumstances. Furthermore, in the context of language learning, agency can be examined both from an individual as well as from a social perspective. Each language learner and user has their own unique social and cultural trajectory, highlighting the contextuality of multiliteracies. At the same time, individual language repertoires are shaped by the various contexts in which language learners have picked up the resources they have at their disposal (Dufva & Aro, 2015). Thus, both individual agency, that is, how people appropriate the linguistic resources they have acquired, as well as the social circumstances that have allowed them to add particular expertise to their repertoire, play a role in language learning and use.

Connecting individual agency and relational agency to materiality, the material practices of writing in and with nature (e.g., Neimanis, 2016), for example, should be considered as part of today's multiliteracies (Koistinen & Bister, 2023). Writing as a creative process is located in the practice of the writing individual but the materials, tools, and surroundings where one writes, always make it a relational socio-material process. This relationality is highlighted when writing collectively in a human collective or when for example utilizing natural elements – such as leaves, rocks, or pinecones – as part of writing in nature. One of the authors considered materializing processes crucial for organizing in this digital age and tightly embedded in agency. Cooren (2020) defines these processes as "ways by which various beings come to appear and make themselves present throughout space and time" (p. 1). For example, AI tools materialize in communicative processes even when they are not used, and, thus, express their agency in relations between humans. This viewpoint leans on so-called strong socio-materiality which sees everything existing both in social and material forms and that existence in itself is relational (Barad, 2007; Cooren, 2020). From a relational perspective, agency is highly dynamic in nature, which forefronts the contextuality and temporality of multiliteracies, because the meaningfulness of different kinds of agencies materializes through time and space.

Competencies

Competencies reflect the hoop of the wheel perfectly because they can be seen both as individual attributes and relational phenomena; they are contextual because the same skills do not necessarily apply the same way in different contexts. They also have a temporal dimension through learning and development. When looking at the individual level, things like expertise, education and work experience often form the core of a person's competencies. In

communication studies, communication competence traditionally consists of three dimensions; the cognitive, the affective, and the behavioral dimension that are usually connected to the individual (e.g., Spitzberg & Cupach, 2002). Some research on communication competence has taken a relational stance by suggesting that communication competence can be treated as a team level phenomenon (Jablin & Sias, 2001; Shockley-Zalabak, 2016), and as such, is seen as something that exceeds the individual. Competencies can also be viewed through the lens of the social world. For instance, in the context of migration, a degree in higher education or years of work experience may lose their potential when transferred to a different context. The same applies for language proficiency. In Finland, skills in European languages, and English in particular, are considered valuable, and even a very high competence in for example Asian or African languages is often devalued (Laitinen et al., 2023).

Multiliteracy (in a singular form) as such can be considered also narrowly as a competence, as has been done in particular in the field of education. For example, in the Finnish curriculum for basic education (Finnish National Agency for Education, 2014), multiliteracy is one of seven transversal competences. Schools are expected to integrate these competences in their teaching. Thus, each teacher in Finnish basic education is a teacher of multiliteracy. In the Finnish national core curriculum (Finnish National Agency for Education, 2014), multiliteracy is defined as the skills of interpreting, producing, and evaluating different texts (verbal, written, visual, auditive, numeric and kinesthetic). In Finland, multiliteracy plays a significant role in all national curricula from early childhood education to upper secondary education. In this context, multiliteracy (in a singular form) is tied to competence and distinct forms of literacies, and not seen as widely as the wheel of multiliteracies suggests.

Collectivity

Collectivity and various kinds of collectives can be examined both from individual and collective points of view, and the focus can be either on the micro or the macro level of the collective. Collectivity is organized temporally and exists in a specific time frame. Thus, all the tensions stemming from communication, contextuality and temporality become evident in collectivity. Collectivity can be present for example in learning and development, expertise, and collaborative construction of knowledge – such as collective writing. Today's social and digital media environments have further created a new communication space where many actors, such as media organizations, political decision makers and people with extensive online horizontal networks, negotiate, express, and contest societal issues and power collectively (Castells, 2007). Such a space allows people to independently share personalized content related to common civic/political themes on various social networks (i.e., collectives) and platforms, which can have political significance as connective action (Bennett & Segerberg, 2012). This can be interpreted in such a way that multiliteracies are needed in navigating and acting in a network of various agencies.

For many of the authors, creative expression is at the core of our research. Traditionally, creative expression, such as writing, has been considered a solitary act. However, for example, Sawyer (2012) as well as Gilbert and Macleroy (2020) argue that creative expression is a socially embedded activity and a social process, even when we are writing on our own. The creation of

art is always impacted by already existing work, and it often aims at reaching an audience, hence drawing lines according to all the three sources of tensions mentioned above: communication, contextuality, and temporality. In addition, organizing is always constituted communicatively through various human and nonhuman beings (e.g., Cooren, 2020). Furthermore, when people express civic and political issues online, individuals are the ones producing and evaluating others' texts (and visual material), and through this exchange, social networks are formed.

Expressions

Here, expressions mean the production, creation, and expression of meanings through visual, auditive, kinesthetic, or textual means, such as metaphors or stories that can be communicated via varied mediums such as written texts, music, visual art, or dancing and performance art. For example, production, presentation and sharing of written text, or combining written and other types of texts creatively (e.g., drama, picture books, podcasts, video art) can be seen as a part of engaging in multiliteracies (Rasi et al., 2019). Again, all three tensions become evident, because of the viewpoint of the performer (individual) vs. the audience (collective), different contexts such as social media, and temporality in a form of intertextuality are involved.

In the texts, creativity was often described as the driving force behind expressions. Creative expression can also be seen as a means for learning and growth (Bolton, 2011; Mead, 2024). For example, literacy approaches to writing can offer new insights and perspectives, invite the use of metaphors, and help zoom in and out of a lived experience (Bolton, 2011). Through creative expression people can (re)build their identity, participate in organizing, and develop their competencies, for example.

Contemporary participation in politics often happens through engaging in "online political expression" such as posting, liking, and commenting on political content, rather than through traditional (collective) activism (Keating & Melis, 2017). Social/digital media enables young people to express their civic/political selves in many traditional ways (writing), but, at the same time, also in a novel and engaging manner (liking, reposting etc.). Expressions of *affect* can be explored (among agency, collectivity, and expressions), for example in the context of girls and young women's online political expressive participation that involved engaging in practices requiring multiliteracies skills.

Individual Experiences

The individual experiences spike/category focuses naturally on the experiences of an individual in their environment. At the same time, however, these experiences result from interactions within an environment and, thus, the relational dimension can also be present in individual experiences. Earlier experiences are reflected on current ones and guide people's actions in the future (e.g., Ahmed, 2014). Individual experiences refer for instance to identity formation, emotions and affects, and aesthetic experiences. Individual experiences in multiliteracies can be analyzed, for example, through storytelling and narrative identity work; people (re)build and (re)negotiate their understanding of themselves and the world through storytelling (Brockmeier & Carbaugh, 2001; Bruner, 1987). Some of the authors of this article operate in contexts of migration and identity. Understood in post-structuralist terms, identity is a highly fluid construct

(see e.g., Norton & Darvin, 2015). Since migration can be characterized as movement through social space, it is important to consider how identity formation is affected by a potential conflict between an individual's habitus, and the new field migrants enter (Bourdieu, 1999). In other words, people may struggle with integrating the individual (how they see themselves) and the social (how they are seen by others) aspects of identity formation in a novel environment.

In studies under the umbrella of new materialism or sociomateriality, affect is increasingly the focus of study, for example in organizational studies (see Gherardi, 2019; Kuhn et al., 2017). Thus, when adopting the relational view of multiliteracies, these should not be left out when applying the concept. It has been argued that aesthetic experience of nature can lead to a stronger connection with the environment, evoking a desire to safeguard nature (e.g., Thiele, 2013); therefore, connecting the human individual to the collective, the broader natural realm. This sort of aesthetic experience can also be mediated through art or emphasized by the process of making art (Thiele, 2013), and art and aesthetic experiences can, in turn, be utilized as part of multiliteracies (Koistinen & Bister, 2023).

Centre of the Wheel

Now we have reached the hub of the wheel: the processes of multiliteracies. Analyzing the texts about our individual research and our understandings of multiliteracies revealed intertwined concepts all of which are processual in nature. This leads us to a conclusion that multiliteracies as a concept is a process and, as such, a fluid, dynamic, and living construction the origins of which can be interpreted and discussed through various theoretical underpinnings. This constantly evolving concept can be grasped analytically by considering the perspectives presented above and by demarcating one's own stance or position within these processes that constitute the field of multiliteracies.

The tensioned foundations, or the hoop of the wheel, support the processual view: communication is a process by definition: contexts materialize in (socio-cultural and/or natural) processes, and temporality equals the complex, processual essence of time. The spinning movement of the wheel highlights the dynamics within the continuums between the individual and relational, local and global, micro and macro, now, then and in the future, and those of linearity and nonlinearity. The hoop is not a wheel yet; all the spokes, or sub-categories, are based on the hoop of the wheel and because of this link, they are processual by nature, too.

Next, the key processes introduced in our original texts are described. One process that has already been discussed is the process of storytelling which connects with many of the sub-categories. The processes of meaning-making and knowledge-production (of which this text illustrates) were mentioned in the original texts many times. In addition, learning and development of practices were present from a pedagogical point of view as well. Another important part of multiliteracies is the continuing and dynamic process of materialization, a process in which agency and communication are crucial. This material point of view could be placed under the umbrella of new materialities. These approaches argue, for example, that the way reality is organized by societies is highly dependent on how people make sense of physical locations, such as different spaces or geographical areas (Ennser-Kananen & Saarinen, 2023).

Therefore, various assemblages of the socially constructed *and* the material features of societal phenomena, including the interaction between the two, should be studied *together* rather than focusing on each of these individually. To sum up the hub of the wheel, it is all about the process of change. Many changes in knowledge, position, body, place, state of mind, point of view, ages, networks, and so on, are rigidly connected to the processes of multiliteracies. This concurs with the notions of Hong and Tan (2020) in their review of theories and practices of multiliteracies in the classroom; they conclude that especially technological developments result in changes in literacies, mindsets, and pedagogies.

Contributions and Conclusions

This exploration of the concept of multiliteracies started with the authors wondering how their different approaches to multiliteracies can be brought together to expand the current theories and conceptualizations of multiliteracies. We were also wondering why *we* were the ones chosen to strengthen a certain university's research on multiliteracies. In the very beginning of our journey, which is typical for inductive approaches, there was no clear understanding of the forms of contributions this research and theorizing could offer – the results were yet to emerge. To be successful, this study should accomplish something that a) echoes with earlier theorizing of multiliteracies (i.e., the focus of analysis was multiliteracies and not something else), b) brings something new to the field, and c) benefits future studies, teaching, working life, and theorizing. In this section, the findings are compared with earlier understandings of the concept and the contributions are outlined.

Wheel of Multiliteracies Contextualized

The basic idea of multiliteracies in the context of education and learning has been reduced to the idea of two dimensions of multi, the multisituational and the multiform (Kalantzis & Cope, 2023; multilingual and multimodal still in Cope & Kalantzis, 2009). *Multisituational* means that meaning is connected to situations (Kalantzis & Cope, 2023) and, as such, links directly to contextuality in the hoop of our wheel, but also to competences and communication as explained above. Elsewhere, Gee (2017) argues for a balance between 'system and situation' by non-normative elastic approaches. The wheel of multiliteracies furthers this development through its dynamic form that is visible already in our first finding: multiliteracies is based on non-univocal concepts that need to be defined situationally. *Multiform* refers to multimodality which is not explicitly visible in the wheel but built in every spoke and the hoop, accentuated in competences, agency, contextuality (i.e., a communication technology as a context), and communication, which is inherently multimodal. Because the hoop of the wheel is a prerequisite for the spokes, multimodality is firmly present in our conceptualization but in a more implicit manner than presented by Kalantzis and Cope (2023).

Thus, we argue that our approach exceeds the limits of the multisituational and multiform. We do not abandon the two multi's but see them from new perspectives, and add new contents, especially through the theorizing about relationality. This is not surprising because we come from many disciplines and the research hub (MultiLEAP) focused on the overall skills needed in the digitalized and mediated 21st century, not limited to education and learning. Understanding a

complex world requires complex models, and our multidisciplinary approach complexifies multiliteracies in a systematic manner through the wheel of multiliteracies. Perhaps, to answer the demands of this complex and technology-centered world, multidisciplinarity should be the third 'multi' within multiliteracies.

In 2004, Kalantzis (member of the New London Group) pondered the developments of multiliteracies and discussed the increasing complexity around the concept, mostly connected to new technologies. When talking about the professional role of the teacher, Kalantzis concluded:

> They have to be more scholarly; they have to know more; their practitioner role is much more complex than ever before; and they have to work in collaboration with others. The one teacher, one classroom, one group of kids … is becoming less and less viable in delivering real world knowledge and forming world relationships and experiences relevant to real world needs. (Cloonan, 2004, p. 51)

These notions are visible in the wheel of multiliteracies almost 20 years and many technological evolutions later. A (re)conceptualization of multiliteracies must be versatile and dynamic by design to answer to the complexity-challenge posed by the contemporary world. That is exactly what the wheel of multiliteracies provides through the dynamics embedded in its structure. In the quote above, communication, agency, collectivity, individual experience, and temporality are clearly visible in such terms as collaboration, forming, relationships, and experiences. Furthermore, the all-around change that is condensed in the hub of the wheel seems important in the quote (also Hong & Tan, 2020).

In their more recent work, Kalantzis and Cope (2023) review research on multiliteracies and sum up and update their understanding of the concept as key authors in the field; it is thus reasonable to discuss the wheel of multiliteracies with their thinking. They define contemporary times as a cyber-social era characterized by "differentiated meaning-making practices in social media, affinity group formation, multifarious identities, and the increasingly specialized domains of work, professional, and technical discourses" (p. 5). For Kalantzis and Cope, these are the reasons *why* the multiliteracies approach is needed. In our wheel, these points are reflected, for example, in competencies, collectivity, communication, and, most of all, contextuality. When discussing the *what* of multiliteracies, Kalantzis and Cope (2023) configure participation in meaning through thinking (representation), speaking (communication), and listening (interpretation). From the point of view of communication studies, thinking, speaking, and listening are obvious parts of the communication process, even though very much concentrated on the individual. We argue that a more comprehensive view on communication as a process and as both transmissive and constitutive (for definitions of communication, see Cooren, 2020; Kuhn et al., 2017) serves the overall concept of multiliteracies well. This is because communication constitutes the contexts, interpretations, meanings, and collectives we live in.

Kalantzis and Cope (2023) use the term *transposition* to describe "the transformations that occur in the meaning and the role of social agents in those transformations" (p. 7). This process comprises arrangements in place and time and the forms or modes of meaning, including text, image, space, object, body, sound, and speech. They have operationalized the transposition

process (of meaning) through five questions concerning reference (what?/things and their properties), agency (who?/actions, roles, and conditions), structure (how?/cohesion, design), context (when?/where?/time and place), and interest (why?/purposes, rhetorical appear) (p. 8). This conceptualization of transposition bears great resemblance to the wheel of multiliteracies. At the same time, however, there are many fundamental differences. The main difference is the notion of tensions and the diversity in the meanings of the concepts/terms within the conceptualization. This makes the wheel of multiliteracies a more dynamic and multidimensional tool in understanding not only multiliteracies but also the different approaches to multiliteracies.

Contrasting our conceptualization of agency with that of Kalantzis and Cope (e.g., 2023), for example, we find that even though they use the concept of agency, they do not really demarcate their viewpoint on this debated concept. The built-in tensions of the wheel of multiliteracies offer tools for understanding the possibilities for using the concept of agency in different (but overlapping) ways in various contexts. Especially relational agency and its close-knit connection to the processes of materialization (Cooren, 2020) differ from the points made by Kalantzis and Cope (see also Leander & Boldt, 2012). However, relational ontologies, including the viewpoint of agency, have been acknowledged as important in literacy studies as well: Kuby (2017) for example argues for more-than-human ontologies in literacy studies by building their thinking on Barad's (2007) agential realism. In addition, Jokinen and Murris (2020) approach literacies as inhuman by focusing on the concept of touch.

Furthermore, the wheel of multiliteracies converges with the analysis by Leander and Boldt (2012). In their influential article, they "reread" the pedagogies of multiliteracies through the philosophy of Deleuze and Guattari (1987) and divided it into three categories:1) text and bodies; 2) change, design, and identity; 3) and temporality. This very relational viewpoint with emergent assemblages has similarities with the wheel of multiliteracies through the contextuality, temporality, and materiality dimensions of the processes of multiliteracies. Leander and Boldt (2012) describe (the pedagogy of) multiliteracies as ongoing, or as we would say, processual. They also comment on affect and emotion, which are also visible in our conceptualization. However, their argument is built heavily on Deleuze and Guattari's thinking and, as such, provides a specific theoretical perspective, whereas the wheel of multiliteracies is more inclusive and versatile (less normative) through its multidisciplinarity and the built-in tensions it evokes. Furthermore, Leander and Boldt leave out or do not emphasize some of the elements and properties the wheel of multiliteracies has, such as agency, competencies, and communication per se.

When reading the key contributors in recent multiliteracies literature, such as Kalantzis and Cope or Leander and Boldt, we can conclude that our conceptualization reflects and contributes to the thinking of both the original creators of and the re-readers of the concept. Thus, we argue that we have achieved the first step for an adequate contribution in our analysis and in creating the wheel of multiliteracies; it echoes earlier theorizing on multiliteracies. Furthermore, we have outlined the added value of the wheel in terms of earlier points of view; the multidisciplinary, dynamic, and multilevel wheel of multiliteracies introduces new perspectives around the concept. Thus, we argue, we have reached the second step by bringing something new to the field, and thus making a genuine contribution.

In their influential paper, Dafouz and Smit (2016) outlined a multidisciplinary framework for analyzing English-medium education in multilingual university settings. This conceptual framework, called ROAD-MAPPING, consists of six dimensions that are "inherently complex, contextually bound, and intersecting dynamically with one another" (p. 397). They argue their framework helps in describing, analyzing, and comparing research in different contexts. Similarly, the wheel of multiliteracies can work as such a framework for multiliteracies research because of its complexity, contextuality and dynamicity embracing features rooted in multidisciplinary *knowledges*. Furthermore, the wheel of multiliteracies could work as a framework for a systematic review: findings of studies focusing on (whatever) literacy could be collected within the wheel according to the themes of the studies (in line with the concepts in the wheel). Then, these findings could be analyzed together and interpreted as *multi*literacies and, therefore, a more comprehensive understanding could be achieved.

Finally, the focus of many taxonomic approaches to multiliteracies is in various forms of distinct literacies, such as digital, visual, media, or health literacy (for a review of taxonomies, see Marzal, 2020). The wheel of multiliteracies enables the analysis and comparison of different forms of literacies. Altogether, the wheel of multiliteracies can work as a methodological tool for studying, observing, and theorizing multiliteracies. With these notions, we claim that the wheel of multiliteracies also contributes to future studies and theorizing, and overall understandings of the field. Furthermore, the wheel provides practical implications for researchers (e.g., as a methodological tool) and practitioners (e.g., as an umbrella tool for understanding different dimensions of multiliteracies). Thus, the third step for adequate contribution is achieved.

Collective Production of Knowledges

Our nascent conceptualization has many connections and similarities with the ideas of the authority figures in the field of multiliteracies. This can be viewed as validating collective writing/knowledge-production as a methodology to approach multiliteracies. The fact that the findings of this study converge with earlier understandings of multiliteracies, indicates that the very starting point of this exercise, which is bringing scholars from various disciplinary backgrounds together, has resulted in *knowledges* that none of us could have produced on our own. Our collective exploration foregrounds the multidisciplinary value of multiliteracies and the value of a multidisciplinary approach. Just reflecting on what has been said before has value through strengthening the existing theory, but the wheel of multiliteracies also contributes to theory-development of multiliteracies in a novel way.

As authors of this article, we have engaged in a learning process, an exploration of collective writing and collective knowledge-production: multiliteracies-in-the-making, as we call it. This collective knowledge-production and collective writing experiment works as an example of the many dimensions of multiliteracy. As a group of researchers with diverse backgrounds from versatile fields, brought together by a research hub born out of science politics, we lived through all the tensions, concepts, and phenomena introduced on the wheel of multiliteracies. One could say that we learned both from the process and from each other, as well as about the concept. For example, one of us studies the role of algorithmic technologies in organizing, and the collective

knowledge-production and the wheel of multiliteracies has strengthened the analysis of these algorithmic technologies.

Time and change have been present in writing this text. For example, during the finalizing of the text only one of us still worked in the research hub that brought us together. Three of us already worked in other universities and three in different positions within the same university we all started in. We had to communicate, define new contexts we operated in, and feel the pressure of time to finish this manuscript while working simultaneously on other projects and in varying positions. At times, the writing was very much collective but at other times it was more on the shoulders of an individual (usually the first author) or a smaller group.

The process was indeed messy and as the wheel of multiliteracies shows, the result was more an entanglement of *knowledges* than one shared knowledge (cf. Haraway, 2004). If someone pictures the wheel as focused on an individual at the micro level and only on one point in time (e.g., Usanova & Schnoor, 2022), it is a very different image when compared to a wheel that is understood as relational, context-sensitive, and takes development over time into consideration (e.g., Socolovsky, 2018). The wheel changes according to the position one takes to the concepts on the hoop of the wheel. We think this reflects the reality in the processes of multiliteracies. A similar conceptually unsettling and processual view on theory in literacy studies has been promoted by Snaza (2021) in the context of affect theory. The method and the form of this text played a substantial role in the learning process we all went through; we had not written together before nor had we been engaged in similar projects (yet some of us had more experience in writing non-traditional academic texts than others – and, during our writing process, one of us even ended up researching collective writing, although not in connection to multiliteracies, in a strategic profiling project of another university). Stretching the conventions of academic writing in a project like this necessitated having an understanding of those conventions. Acknowledging the differences in our backgrounds was crucial, for example, for the use of concepts and terms; we had to negotiate for shared meanings considerably. Altogether, we had to implement our competencies and learn new skills during this project.

The path from the start of our process of knowledge-production to the wheel of multiliteracies is described in Figure 2, which was formed into a comic strip to bring more multiliteracies into this multiliteracies article. The wheel of multiliteracies both carries us (as cartwheels) and helps us guide our way (as a driving wheel) through our research work and life in the 21st century.

Figure 2 The Process of Knowledge-Production
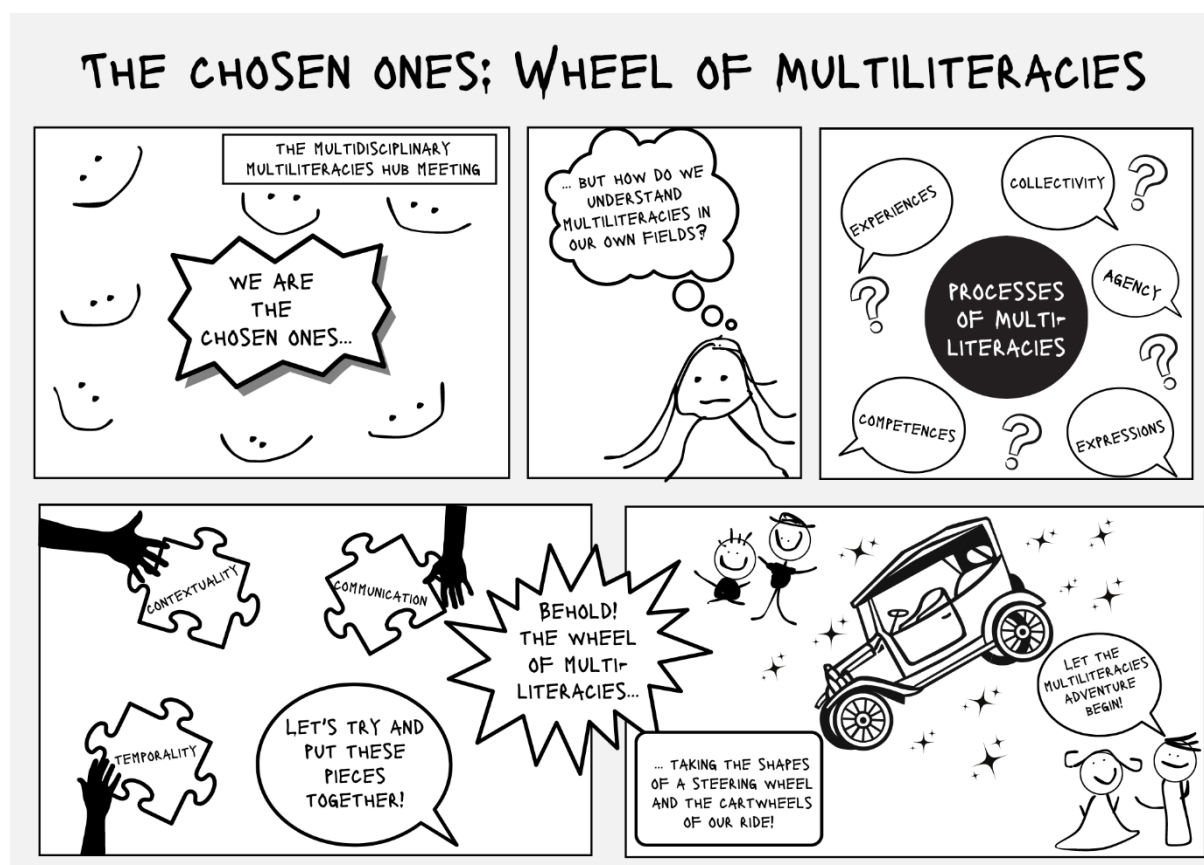
We are aware this article touches only slightly on some enormous concepts (agency, competence, affect, philosophy of Deleuze and Guattari, etc.); it is beyond the scope of this text to explain these concepts thoroughly. We are also aware that although we place emphasis on situated *knowledges*, our approach to positionality is quite narrow, as – even though we discuss affect briefly – it mostly leaves out embodied experiences (of i.e. class, race, gender, sexuality, age, and dis/ability) outside of our scope (cf. Haraway, 1988; Haraway, 2004). Further research should take up this challenge and continue the theorizations of this article with a more complex and intersectional understanding of positionality. Additionally, even though multidisciplinary, we represent various disciplines in a quite narrow sense (see Table 1). We do not claim that multiliteracies has been covered fully here; this was an exploration on what *we do* from the viewpoint of the concept, and the aim of this project was to present one multidisciplinary approach to making meaning of the concept of multiliteracies. For example, pedagogies in general are not the focus here and the analysis of the four components of the pedagogy of multiliteracies (situated practice, overt instruction, critical framing, and transformed practice) (New London Group, 1996) are left out on purpose. Furthermore, the issues of accessibility and inclusion (see Kalantzis & Cope, 2023) are not explicit in the wheel of multiliteracies, and this is one of the developments our approach should see through. For example, Drewry et al. (2019) show how a multiliteracies approach supports inclusivity in literacy learning through multimodality.

This conceptualization moves from pedagogies to more holistic understandings of multiliteracies and offers the concept as an overall multidisciplinary tool for exploring and understanding the skills needed in the 21st century, across contexts and the lifespan. We would like to see the usefulness of our conceptualization discussed and argued actively because we believe the processes of multiliteracies play a key role in tackling many significant challenges of our time. Understanding especially new technologies and their role in society demands knowledge of multiliteracies both on practical and theoretical levels. As new technologies continue to evolve, multiliteracies offer the critical framework needed to navigate and shape the complex and disperse (communicative) landscapes of the future. By recognizing multiliteracies, individuals can comprehend and critically engage with the technologies that shape our contemporary and future societal structures. As researchers, we must engage with multidisciplinary collaboration to build robust yet adaptive theoretical models that embrace the complex and dynamic nature of this technology-instilled world.

References

Ahmed, S. (2014/2004). *The cultural politics of emotion*. Edinburgh University Press.

Anstey, M. & Bull, G. (2018). *Foundations of multiliteracies: Reading, writing and talking in the 21st century*. Routledge. https://doi.org/10.4324/9781315114194

Bakhtin, M. (1981). *The dialogic imagination*. University of Texas Press.

Barad K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. *Signs, 28*(3), 801–831. https://doi.org/10.1086/345321

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Barton, D., Hamilton, M., & Ivanič, R. (2000). *Situated literacies: Reading and writing in context*. Routledge.

Bennett, W. L., & Segerberg, A. (2012). The logic of connective action: Digital media and the personalization of contentious politics. *Information Communication and Society, 15*(5), 739–768. https://doi.org/10.1080/1369118X.2012.670661

Bolton, G. (2011). *Write Yourself: Creative Writing and Personal Development*. Jessica Kingsley.

Bourdieu, P. (1991). *Language and symbolic power*. Polity Press and Harvard University Press.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brockmeier, J., & Carbaugh, D. (2001). *Narrative and identity: Studies in autobiography, self and culture*. John Benjamins Publishing. https://doi.org/10.1075/sin.1

Bruner, J. (1987). Life as narrative. *Social Research, 54*(1), 11–32.

Castells, M. (2007). Communication, power and counter-power in the network society. *International Journal of Communication, 1*(1), 238–266. https://ijoc.org/index.php/ijoc/article/view/46

Chang, H. (2016). Individual and collaborative autoethnography as method. A social scientist's perspective. In T. E. Adams, S. H. Jones, & C. Ellis (eds.) *Handbook of autoethnography* (pp. 107–122). Routledge.

Cloonan, A. (2004). Multiliteracies: The story so far. Professor Mary Kalantzis and Dr. Bill Cope in interview with Anne Cloonan. *Australian Screen Education*, 35.

Cook-Gumperz, J. (2006). *The social construction of literacy* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511617454

Cooren F. (2020). Beyond entanglement: (Socio-)materiality and organization studies. *Organization Theory, 1*(3), 1–24. https://doi.org/10.1177/2631787720954444

Cope, B., & Kalantzis, M. (2009). "Multiliteracies": New literacies, new learning. *Pedagogies: An International Journal, 4*(3), 164–195. https://doi.org/10.1080/15544800903076044

Dafouz, E., & Smit, U. (2016). Towards a dynamic conceptual framework for English-medium education in multilingual university settings. *Applied Linguistics, 37*(3), 397–415. https://doi.org/10.1093/applin/amu034

Drewry, R. J., Cumming-Potvin, W. M., & Maor, D. (2019). New approaches to literacy problems: Multiliteracies and inclusive pedagogies. *Australian Journal of Teacher Education, 44*(11). https://doi.org/10.14221/ajte.2019v44.n11.4

Dufva, H., & Aro, M. (2015). Dialogical view on language learners' agency: Connecting intrapersonal with interpersonal. In P. Deters, X. (A.) Gao, E. R. Miller, & G. Vitanova (eds.) *Theorizing and analyzing agency in second language learning: Interdisciplinary approaches* (pp. 37–53)*.* Multilingual Matters. https://doi.org/10.21832/9781783092901-005

Ennser-Kananen, J., & Saarinen, T. (eds). (2023). *New materialist explorations into language education*. Springer. https://doi.org/10.1007/978-3-031-13847-8_1

Frey, L. R., Botan, C. H., & Kreps, G. L. (eds). (2000). *Investigating communication: An introduction to research methods* (2nd ed.). Allyn & Bacon.

Finnish National Agency for Education. (2014/2016). *Finnish national core curriculum for basic education*. English version 2016. Finnish National Board of Education. Publications 2016:5.

Gee, J. P. (2017). A personal retrospective on the New London Group and its formation. In F. Serafini, & E. Gee (eds.) *Remixing multiliteracies: Theory and practice from New London to New Times* (pp. 19–30). Teachers College Press.

Gherardi, S. (2019). Theorizing affective ethnography for organization studies. *Organization, 26*(6), 741–760. https://doi.org/10.1177/1350508418805285

Giddens, A. (1984), *The Constitution of Society*, Polity Press.

Gilbert, F., & Macleroy, V. (2020). Different ways of descending into the crypt: Methodologies and methods for researching creative writing. *New Writing, 18*(3), 253–271. https://doi.org/10.1080/14790726.2020.1797822

Gil de Zúñiga, H., Veenstra, A., Vraga E., & Shah, D. (2010). Digital democracy: Reimagining pathways to political participation, *Journal of Information Technology & Politics, 7*(1), 36–51. https://doi.org/10.1080/19331680903316742

Habermas, J. (1962). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society*. [English Translation 1989]. MIT Press.

Haraway, D. J. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies, 14*(3), 575–599. https://doi.org/10.2307/3178066

Haraway, D. J. (2004). Modest Witness @Second_Millennium. In D. J. Haraway: *The Haraway Reader* (pp. 223–250). Routledge.

Hong, A. L., & Tan, K. H. (2020). A review of theories and practices of multiliteracies in classroom: Issues and trends. *International Journal of Learning, Teaching and Educational Research, 19*(11), 41–52. https://doi.org/10.26803/ijlter.19.11.3

Jablin, F. M., & Sias, P. (2001). Communication competence. In F. Jablin, & L. Putnam (eds.) *The new handbook of organizational communication: Advances in theory, research and methods* (pp. 819–864). Sage.

Jokinen, P., & Murris, K. (2020). Inhuman hands and missing child: Touching a literacy event in a Finnish primary school. *Journal of Early Childhood Literacy*, *20*(1), 44–68. https://doi.org/10.1177/1468798420904115

Kalantzis, M., & Cope, B. (2023). Multiliteracies: A short update. *The International Journal of Literacies, 30*(2), 1–15. https://doi.org/10.18848/2327-0136/CGP/v30i02/1-15

Keating, A., & Melis, G. (2017). Social media and youth political engagement: Preaching to the converted or providing a new voice for youth? *The British Journal of Politics and International Relations, 19*(4), 877–894. https://doi.org/10.1177/1369148117718461

Koistinen, A.-K., & Bister, S. (2023). "Luonto on lyyrinen mahdollisuus": Luova kirjoittaminen osana ympäristölukutaitoa. ["Nature is a Lyric Possibility" – Adult students' Experiences of Writing and Literature in the Time of Climate Crises.] *AVAIN - Kirjallisuudentutkimuksen aikakauslehti, 20*(4), 40–59. https://doi.org/10.30665/av.128930

Koobak, R. (2014). Six impossible things before breakfast. How I came across my research topic and what happened next. In N. Lykke (ed.) *Writing Academic Texts Differently. Intersectional Feminist Methodologies and the Playful Art of Writing* (pp. 95–110). Routledge.

Kuby, C. R. (2017). Why a paradigm shift of 'more than human ontologies' is needed: Putting to work poststructural and posthuman theories in writers' studio. *International Journal of Qualitative Studies in Education, 30*(9), 877–896. https://doi.org/10.1080/09518398.2017.1336803

Kuhn, T., Ashcraft, K. L., & Cooren, F. (2017). *The work of communication: Relational perspectives on working and organizing in contemporary capitalism*. Routledge. https://doi.org/10.4324/9781315680705

Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

Richardson, L. (2000). Writing: A method of inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.) *The Sage Handbook of Qualitative Research*. Sage. pp. 923–49.

Laitinen, M., Leppänen, S., Rautionaho, P., & Backman, S. (2023). Englanti Suomen kansalliskielten rinnalla: Kohti joustavaa monikielisyyttä. [English alongside with the national languages: Towards flexible multilingualism.] *Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 2023:59*. Helsinki: Finnish government. http://urn.fi/URN:ISBN:978-952-383-055-4

Leander, K, & Boldt, G. (2013). Rereading "A Pedagogy of Multiliteracies": Bodies, texts, and emergence. *Journal of Literacy Research, 45*(1), 22–46. https://doi.org/10.1177/1086296X12468587

Lie, S. (2014a): The infinite resources for writing. In N. Lykke (ed.) *Writing Academic Texts Differently. Intersectional Feminist Methodologies and the Playful Art of Writing* (pp. 111–125). Routledge.

Lie, S. (2014b): From and empty head to a finished text: the writing process. In N. Lykke (ed.) *Writing Academic Texts Differently. Intersectional Feminist Methodologies and the Playful Art of Writing* (pp. 126–141). Routledge.

Lykke, N., Brewster, A., Davis, K., Koobak, R., Lie, S., & Petö, A. (2014). Editorial introduction. In N. Lykke (ed.) *Writing Academic Texts Differently. Intersectional Feminist Methodologies and the Playful Art of Writing* (pp. 2–13). Routledge.

Marzal, M.-Á. (2020). A taxonomic proposal for multiliteracies and their competences. *Profesional de la información, 29*(4), e290435. https://doi.org/10.3145/epi.2020.jul.35

Mead, N. (2024). Creative righting: Autoethnographic creative writing as a tool to prevent teacher burnout and attrition. *Teachers and Teaching*, 1-14. Advance online publication. https://doi.org/10.1080/13540602.2024.2351962

Neimanis, A. (2016). Weather writing: A feminist materialist practice for (getting outside) the classroom. In P. Hinton, & P. Treusch (eds.), *Teaching with Feminist Materialisms* (pp., 141–157). ATGENDER.

New London Group (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–92. http://dx.doi.org/10.17763/haer.66.1.17370n67v22j160u

Noel, K., T., Minematsu, A., & Bosca, N. (2023). Collective autoethnography as a transformative narrative methodology. *International Journal of Qualitative Methods, 22*, 1–9. https://doi.org/10.1177/16094069231203944

Norton, B., & Darvin. R. (2015). Identity and a model of investment in applied linguistics. *Annual Review of Applied Linguistics, 35*(1), 36–56. https://doi.org/10.1017/S0267190514000191

Nuopponen, A. (2010). Methods of concept analysis-a comparative study. *LSP Journal-Language for special purposes, professional communication, knowledge management and cognition, 1*(1), 4–12.

Pearson, C. (2015). Beyond 'resistance': rethinking nonhuman agency for a 'more-than-human' world. *European Review of History: Revue européenne d'histoire, 22*(5), 709–725. https://doi.org/10.1080/13507486.2015.1070122

Peters, M. A., Besley, T., & Arndt, S. (2019). Experimenting with academic subjectivity: collective writing, peer production and collective intelligence. *Open Review of Educational Research, 6*(1), 26–40. https://doi.org/10.1080/23265507.2018.1557072

Rasi, P., Kangas, M., & Ruokamo, H. (2019). Promoting multiliteracy in the Finnish educational system. In M. Paksuniemi & P. Keskitalo (eds.), *Introduction to the Finnish educational system* (pp. 96–157). Brill.

Sarangi, S., Nikula, T., & Pitkänen-Huhta, A. (2019). Practising applied linguistics and the change agenda. *Journal of Applied Linguistics and Professional Practice*, 16(1), 109–133. https://doi.org/10.1558/jalpp.18894

Sawyer, R. K. (2012). *Explaining creativity: The science of human innovation*. Oxford
    University Press.

Shockley-Zalabak, P. S. (2015). Communication competence in organizations and groups:
    Historic and emerging perspectives. In A. F. Hannawa & B. H. Spitzberg (eds.)
    Communication competence (pp. 397–430). Walter de Gruyter.
    https://doi.org/10.1515/9783110317459-017

Snaza, N. (2021). Vagueness and care: On affect and literacy. *Reading Research
    Quarterly*, 56(2), 253–256. https://doi.org/10.1002/rrq.364

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines,
    Journal of Business Research, 104, 333–339.
    https://doi.org/10.1016/j.jbusres.2019.07.039

Socolovsky, M. (2018). Material literacies: Migration and border crossings in Chicana/o
    children's picture books. *MELUS*, 43(4), 148–174. https://doi.org/10.1093/melus/mly057

Spitzberg, B. H., & Cupach, W. R. (2002). Interpersonal skills. In M. L. Knapp, & J. A. Daly
    (eds.) *Handbook of Interpersonal Communication* (pp. 564–611). Sage.

Thiele, L. P. (2013). *Sustainability.* Polity Press.

Tracy, S. J. (2012). The toxic and mythical combination of a deductive writing logic for
    inductive qualitative research. *Qualitative Communication Research, 1*(1), 109–141.
    https://doi.org/10.1525/qcr.2012.1.1.109

Turunen. J., Čeginskas, V. L. A., Kaasik-Krogerus, S., Lähdesmäki, T., & Mäkinen, K. (2020).
    Poly-Space: Creating new concepts through reflexive team ethnography. In T.
    Lähdesmäki, E. Koskinen-Koivisto, V. L A. Čeginskas, & A.-K. Koistinen (eds.)
    Ethnography with a Twist. Routledge.

Usanova, I., & Schnoor, B. (2022). Approaching the concept of multiliteracies: Multilingual
    writing competence as an integrated model. *Canadian Journal of Applied
    Linguistics*, 25(3), 144–165. https://doi.org/10.37213/cjal.2022.32598

The Theory and Methodology underpinnings of Artificial Intelligence Research for Classroom Integration a Literature Review

Emmalyn Green
egreen2013@fau.edu

Victoria Brown
vbrown22@fau.edu

Abstract

To move the field of artificial intelligence (AI) into educational settings forward, a comprehensive review of the literature will provide an understanding of the framework used to conduct research. This literature review reveals the theoretical foundation of past and current research which can then inform the development of future study. The review of the literature also identifies the types of methodologies used to gather data. This information allows future researchers in the field to build upon previous research to further our understanding of best practices in the integration and implementation of AI in the classroom.

Keywords: *artificial intelligence, AI, entrepreneurial education, theory, methodology*

Background

Since its inception in the mid-20th century, artificial intelligence (AI) has evolved as a pivotal subfield of computer science. It is primarily concerned with the creation of intelligent machines capable of learning, problem solving, and making decisions that can potentially exceed human abilities (Surdiman & Rahmatillah, 2023). In fact, AI has progressed to the point where it not only processes vast data sets but also answers questions posed in natural language, akin to human interaction (Surdiman & Rahmatillah, 2023). However, the journey of AI, from a theoretical concept to its practical applications resulted in significant debates and milestones. After formal recognition in the academic field in the mid-1990s (Alqahtani, 2023), a debate began about the best uses of AI. This era marked a transition from theory to practice, setting the stage for its integration into fields such as education. Recognizing the potential of AI in reshaping educational practices requires a synthesis and evaluation of existing literature to better understand strategies for the application of AI in classrooms and the impacts of this technology upon students. This review aims to provide clarity on the current state of AI integration in such educational contexts and its implications for fostering

self-efficacy and/or critical thinking. It delves into the nuances of AI applications in education, exploring the benefits and drawbacks, with a focus on entrepreneurship education.

This systematic literature review focuses on the current use cases of AI in entrepreneurship education and the connection to self-efficacy and/or critical thinking. By doing so, it aims to bridge the gap between theoretical potential and practical application and offer insights into how AI can transform traditional learning environments. This integration can allow students to become active learners and users of AI tools in their educational journey. The studies provide insight into how AL enhances critical thinking and self-efficacy for students by using AI within an educational context. While the integration of AI into educational settings shows immense promise, its application within the domain of education, particularly in entrepreneurship education, is an emerging area that warrants deeper exploration and insight. To maximize and effectively leverage AI in education, this study aims to investigate the strategic integration of artificial intelligence within entrepreneurship education to augment self-efficacy and critical thinking competencies, addressing a critical component of contemporary education.

Methodology for Literature Search

The literature review focuses on papers featuring studies which gathered data and analyzed to yield results. The emphasis placed upon the study's relevance to AI integration in education and its contributions to enhancing self-efficacy and/or critical thinking. The structure of this review is chronologically to underscore the evolution of AI applications in this context. It prioritizes studies offering actionable insights, while omitting those with no direct applicability or without any connection to educational settings to maintain the review's relevance and applicability.

To conduct this comprehensive review, the researcher used educational databases including ERIC (EBSCO) and Google Scholar, as well as SearchWise, a meta-search database serviced by Florida Atlantic University. Accessing databases occurred between August 28th, 2023, and September 18th, 2023.

The search terms included:
- Artificial intelligence OR AI, AI tools, using AI in the classroom, generative AI
- Critical thinking OR problem-solving, problem-based learning, reasoning
- Self-efficacy OR confidence, academic self-efficacy, self-esteem, motivation, personal empowerment, 21st-century skills
- Entrepreneurship OR entrepreneurship education

Initially, the researcher collected 186 articles. After removing duplicates, 155 articles remained. Using an Excel sheet, the research conducted a broad analysis and recorded the title, year, author(s), search terms, database, whether or not a study was conducted, the type of study, its inclusion of AI, inclusion of education field, inclusion of healthcare field, relevance to critical thinking and/or self-efficacy, the academic level, region, country, and important notes were all meticulously documented. The following criteria to further reduce the number of articles to review the researcher used the following criteria.

Inclusionary criteria applied in the following order:

1.   The paper had to feature a study that collected and analyzed data to produce results, leaving 127 articles. It was essential to ensure credibility and evidence behind the conclusions drawn.
2.   The study needed to investigate or measure AI use for supporting education and/or entrepreneurship, thereby refining the count to 33 articles.
3.   The study needed to investigate or measure students' critical thinking and/or self-efficacy, resulting in only 18 articles meeting this criterion.

Exclusion criterion applied:

▪   The researcher excluded studies exploring AI applications in fields like healthcare or those focusing on the general impact of technology with specifically addressing AI due to their lack of direct relevance.

The researcher worked independently to review each article, utilizing ATLAS.ti, a computer-assisted qualitative data analysis software. This software facilitated the labeling and categorization of data through its coding tools. Additionally, ATLAS.ti can create quotations from the data, using the twelve coding criteria created by Boote & Beile, the researcher coded the articles. This process was instrumental in isolating significant data segments for detailed analysis. Throughout this process, a research journal document ideas, hypotheses,
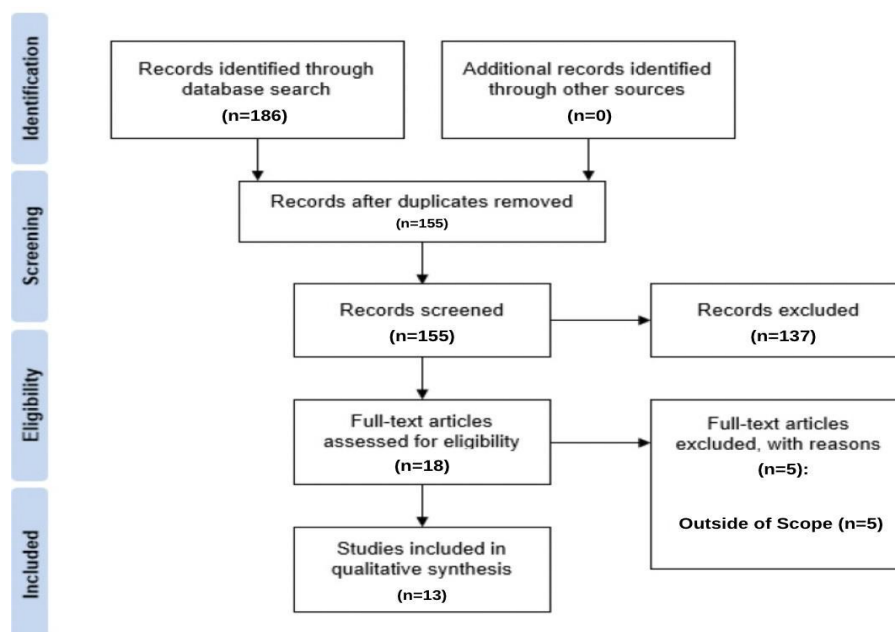
interpretations, and reflections on the data. The researcher then reviewed and refined the initial set of codes, enabling a more nuanced understanding of the data. This involved splitting broad codes into more specific ones and discarding irrelevant ones. The meaning and significance of each theme revealed and then reviewed to ensure they were distinct and supported by data. Categorizing the related codes into methodological trends/patterns, theoretical trends/patterns, and results/findings occurred. Upon further analysis of these 18 articles, only 13 fully met all the set Boote & Beile criteria.

Theoretical Trends/Patterns for AI Support of Entrepreneur Education

Through the review of the literature, constructivism was a prominent theory in relation to AI and education. Rooted in this theoretical foundation, there has been a documented shift in student learning experiences from passive absorption of knowledge to active engagement and construction. According to studies by Lee et al. (2022) and Nazari et al. (2021), from a constructivist perspective, AI is not just as a tool but also as a potential enhancer for opportunities in critical thinking when students interact with AI technology. Studies have highlighted the importance of AI literacy and digital literacy as prerequisites for this active engagement and critical thinking. Kong et al. (2021) viewed AI literacy as essential for effective human-machine collaboration in various domains. Huang & Qiao (2022) found that students, after an 8-week course covering four AI modules, had enhanced computational thinking skills. Enhancing the digital literacy of both teachers and students is crucial (Wang et al., 2023). Lesinskis et al. (2023) noted the increasing relevance of digital skills, especially in the workplace.

Research revealed numerous constructive learning processes incorporated with AI tools that fostered active learning and, consequently, enhanced critical thinking. These include:
- Discovery Learning: Focuses on student-driven investigation rather than teacher-led instruction (Surdiman & Rahmatilah, 2023).
- Inquiry-Based Learning: Students initiate learning through questions and group explorations of AI applications, guided by teachers (Huang & Qiao, 2022).
- Double Loop Learning: Learners adjust their strategies based on feedback in iterative learning processes (Liu et al., 2021).
- Project-Based Learning: Encourages active exploration and collaborative activities.
- problem-solving, increasing classroom participation and innovative thinking (Zhu & Zhang, 2022).
- AI with STEAM Learning: Enhances creativity, cooperation, critical thinking, and problem-solving in CT skills (Huang & Qiao, 2022).

While delving into the theoretical underpinnings of AI in education, research also revealed the significance of Social Cognitive Theory, particularly emphasizing the pivotal role self-efficacy plays in shaping AI-enhanced learning experiences. As defined by Bandura (1982), self-efficacy is an individual's assessment of their capability to address future challenges. In the context of AI literacy, higher self-efficacy correlates with confidence in executing AI tasks (Kong et al., 2021). Some students remain hesitant toward AI-enhanced digital technologies due to motivational, satisfaction, and self-efficacy factors. AI Literacy courses may help mitigate this and enhance students' self-efficacy (Alqahtani, 2023). Wang et al. (2021) reaffirms the significant impact of self-efficacy on computer and information literacy development.

AI Literacy is not only foundational for active learning but could also be significant in influencing students' self-efficacy. Multiple studies indicate that the integration of AI enhances self-efficacy due to its relevance to individuals' present and future goals. According to Kong et al. (2021), the concept of "meaningfulness" pertains to AI's perceived value and relevance in learners' daily activities, and its benefits are broadly acknowledged throughout the literature. The same study suggests that individuals who view AI as meaningful are more inclined to exert greater effort and feel a sense of empowerment. Structured brainstorming, divergent thinking, and planning in AI projects can notably enhance student self-efficacy, as outlined by Huang & Qiao (2022).

The underpinning of Social Cognitive Theory in AI education emphasizes the role of self-efficacy, suggesting that as students gain proficiency in AI tools and concepts, their belief in their capabilities to use them effectively in various contexts increases (Kong et al., 2021). The current landscape constructivists principles are influential in the integration of AL. From the constructivists perspective students are seen not as passive recipients but as active participants in their learning journey. Constructivism should serve as the foundation for AI integration in entrepreneurship education, emphasizing that students can actively shape and co-construct their knowledge when utilizing AI tools (Lee et al., 2022 & Nazari et al., 2021). Furthermore, there is a growing acknowledgment of AI literacy as foundational to fostering this active learning environment. The significance of constructivist learning processes, such as inquiry-based learning, highlights the multifaceted ways AI can optimize educational outcomes.

While the current literature highlights the transformative potential of AI in education through Constructivist and Social Cognitive lenses, there seems to be gaps in addressing the challenges educators and students might face in this shift. For instance, the role of the educator in an AI-enhanced classrooms warrants further research. Additionally, the implications of differing levels of access to technology and AI tools across various educational contexts and demographics is another consideration worth further study. Future researchers should delve deeper into understanding the challenges of AI integration, especially concerning the potential for digital divides. An opportunity exists to investigate the long-term effects of AI on students'

critical thinking skills, self-efficacy, and overall academic outcomes. As the field is rapidly evolving, studies that capture the experiences and feedback of both educators and students in the real-world, diverse classroom settings would be invaluable.

Methodological Trends/Patterns for AI Support of Entrepreneur Education

The most prevalent strategy used to evaluate the effectiveness of AI use involved integrated methods to determine the influence of AI in entrepreneurship education throughout the selected articles. Alqahtani (2023) crafted an integrated theoretical framework, examining the intricate ties between AI and entrepreneurial education. This approach assists in unraveling the complex relationship between technological advancements and entrepreneurial skill development. Short & Short (2023) illustrated the application-driven approach, utilizing ChatGPT to produce and modify entrepreneurial pitches. Their study sheds light on the practical applications of AI in enhancing entrepreneurial communication skills. Lesinskis et al. (2023) analyzed the digital evolution of entrepreneurial education, emphasizing how an AI-embedded tool can elevate educational outcomes, specifically boosting entrepreneurial intentions. This research highlights the transformative potential of AI tools in shaping an entrepreneurial mindset. Sonia et al. (2020) conducted an in-depth review of academic and innovation in the field of AI, studying their effects on entrepreneurial activities and the wider global market. Their findings highlight the broader implications of AI integration beyond the classroom.

Surdiman & Rahmatillah (2023) researched the infusion of AI-driven discovery learning in the classroom to help prepare the next generation of tech entrepreneurs. This study provides valuable insights into how AI can revolutionize learning methodologies in entrepreneurship education. Zhu & Zhang (2022) pursued an integrative research approach, examining the fusion of AI-centric research and entrepreneurship education, highlighting their collective societal benefit. Their work illustrates how the integration of AI can extend its influence to advance societal progress through entrepreneurship.

As the researcher reflected on these diverse studies, it become evident that the evolving landscape of entrepreneurship should include fluency in digital tools. When students have a deeper understanding and practical experience of learning how to apply digital tools, such as ChatGPT, they can better understand how to utilize it to foster critical thinking. This is why foundational classes in computer science are important. In these classes, students learn key digital literacy skills and tools they can use in the classroom. This synthesis of studies suggests that when students better understand how to use such tools, the integration of artificial intelligence into entrepreneurship education could prove to be instrumental.

The majority of the analyzed studies leaned towards quantitative methods. Alqahtani (2023) utilized an experimental quantitative design, leveraging questionnaires tailored for the study to gather data from Qatari university students. This method effectively assessed students' perceptions and experiences with AI in their academic endeavors. Kong et al. (2021) and Lesinskis et al. (2023) employed pre- and post-workshop surveys. These surveys were instrumental in evaluating the immediate impact of AI tools in educational workshops.
Sonia et al. (2020) utilized a quantitative algorithm, Mosaic, to evaluate a plethora of global start-ups. This approach provided an analysis of the influence of AI in the entrepreneurial ecosystem. Huang & Qiao (2022) and Surdiman & Rahmatillah (2023) surveyed students using questionnaires. These questionnaires offered valuable insights into students' attitudes and competencies in AI-enhanced learning environments. Zhu & Zhang (2022) also distributed electronic questionnaires to research their perspectives as they transitioned to employment and entrepreneurship. This method sheds light on the role of AI in shaping students' career readiness and entrepreneurial skills. Nazari et al. (2021) conducted a structured randomized controlled trial to draw a comparison between an AI-based educational intervention group and a non-AI control group. This approach highlighted the tangible benefits and limitations of AI in educational settings.

Within the selected articles, a notable group of studies incorporated mixed methods to study the relationship between artificial intelligence and students' self-efficacy and/or critical thinking skills. Lee et al. (2022) utilized post-measurement forms and posttests, complemented by interviews with students to measure student perceptions on AI-based chatbots in public health courses. Liu et al. (2021) combined EFL writing tests, questionnaires on self-efficacy, and interviews to capture participants' learning experiences while using AI. Wang et al. (2023) collected data using both questionnaires and individual interviews for comprehensive feedback. Elhajjar et al. (2021) employed semi-structured interviews with marketing professionals, questionnaire pretests with students, and additional interviews with academic leaders from multiple business schools.

The reviewed studies focused on participants from Asian and Middle Eastern regions, reflecting diverse educational contexts. For example, studies by Kong et al. (2021) in Hong Kong and Huang & Qiao (2022) in Beijing involved students in urban and highly competitive academic settings, influencing the studies' focus on technology adoption and AI's role in enhancing educational outcomes. Similarly, research conducted in Indonesia, Taiwan, and China by Sudirman & Rahmatillah (2023), Lee et al. (2022), and Wang et al. (2023), respectively, may also reflect regional educational trends and priorities.

In the Middle Eastern region, studies such as those by Alqahtani (2023) in Qatar and Nazari et al. (2021) provide insights from a different context. Nazari et al.'s research across the Middle

East captures a broad spectrum of educational perspectives, influenced by diverse cultural and infrastructural factors unique to the region. Lesinskis et al. (2023) included university students from Central and Eastern European countries and Southern European countries. This diverse European context might have brought varying digital literacy levels into focus. Elhajjar et al. (2021) conducted their research with professionals, educators, and university students from Lebanon, Greece, France, and Turkey. The cross-cultural nature of this study provided a broader perspective on AI in education, encompassing diverse educational systems and practices.

This diversity in participant groups and settings from European, Asian, and Middle Eastern regions suggests a regional emphasis in AI educational research. The contextual nuances of each region potentially shaped the design and focus of the respective studies. These regional distinctions underscore the importance of considering cultural and educational differences when interpreting the findings, raising considerations about the generalizability of these studies to other global contexts. While these studies provide valuable insights into AI's application in education, their findings are deeply rooted in their specific regional contexts. This raises questions about the applicability of these results in different cultural or educational settings.

Both Kong et al. (2021) and Elhajjar et al. (2021) discussed the gender disparities in AI. However, it is notable that many of the studies did not include gender in their participant demographics. The OECD (2018a) highlights that gender disparities in AI knowledge and experience can result in uneven participation in learning programs and potential biases in application design. Elhajjar et al. (2021) suggest that cultural factors could perpetuate male dominance in technology due to stereotypes that associate technological professional culture with values traditionally deemed more appropriate for men than women.

Additionally, most of the studies mention the importance of addressing diversity and the inherent bias of technology in their research. However, only two of the thirteen studies directly referred to working with diverse populations. Liu et al. (2021) and Nazari et al. (2021) studied the impacts of AI on English as a foreign language (EFL)/English as a second language (ESL) student. The gap between the acknowledgment of diversity's importance and its actual inclusion in research is significant. While many studies highlight the significance of addressing diversity and technological bias, only a limited number genuinely engage with populations diverse beyond gender distinctions. This suggests a need for broader inclusiveness in AI research, particularly involving varied linguistic and cultural backgrounds.

The literature paints a vivid picture of the methodological preferences in studying the influence of artificial intelligence in entrepreneurship education. The predominantly approach

within the research in this area leans towards quantitative methods, as evidenced by the multiple studies employing surveys and experimental designs. A smaller yet notable portion adopted a mixed-methods approach, blending qualitative interviews with quantitative measures. The heavy reliance on quantitative methods suggests that the field prioritizes objective, numerical data, and outcomes. There's a clear underrepresentation of qualitative methodologies. Such methods could be helpful to understanding individual experiences and challenges of AI integration. Furthermore, the lack of diversity in AI development and application highlights a pressing concern in the field. Despite the mention of gender disparities and biases in AI, many studies omitted gender from their demographics. The literature also falls short in addressing other aspects of diversity, with only two studies referencing populations beyond gender diversity.

Future researchers should strive for a balanced mix of quantitative, qualitative, and mixed-method studies. Embracing qualitative approaches could provide rich insights into user experiences, cultural contexts, and AI's holistic impact on education. It's paramount that future studies intentionally include and highlight gender, ethnic, cultural, and socio-economic diversity. Diverse perspectives could reveal biases and uncover richer findings about AI's role in education. Given the geographic trends noted, additional cross-cultural studies could offer intriguing insights into how AI in education manifests differently across regions. In conclusion, while the field shows promising strides in understanding AI's role in entrepreneurship education, there's a clear need for broader methodological diversity, deeper cultural introspection, and a renewed focus on inclusive representation.

AI and Critical Thinking

In exploring how AI enhances critical thinking, the literature review revealed a direct connection between critical thinking to students' opportunities to engage in reviews, reflections, as well as asking questions and receiving real-time feedback. Research highlighted how AI tools, such as ChatGPT, can create instantaneous opportunities for students to receive feedback and guidance. Liu et al. (2021) noted the role of reflective thinking in achieving successful learning outcomes by emphasizing its regulatory function. Similarly, a study by Sudirman & Rahmatillah (2023) revealed that ChatGPT assisted students in delving into their entrepreneurial ideas, refining them, and evaluating the feasibility of translating these ideas into mobile applications. Huang & Qiao (2022) also identified the potential of AI-enhanced learning to bolster critical thinking, especially when students questioned AI applications, considered their real-world consequences, and associated ethical concerns.

Another approach to analyzing the best practices within the utilization of ChatGPT is viewing the program as a tool to bridge AI and critical thinking. For example, chatbots fostered various

developmental aspects in students, including problem-solving, creativity, and communication (Lee, 2022). Nazari et al. (2021) point out the transformative nature of AI in enhancing student engagement, describing it as a tool for generating more personalized learning experiences through real-time feedback accompanied by practical examples. Similarly, Lesinskis et al. (2023) consider AI's role in education as revolutionary, offering students access to an unparalleled breadth of information beyond what a single educator could provide.

In addition to these insights about AI utilization, Lee et al. (2022) advocate for the integration of modern technology to ensure students receive immediate, quality feedback, noting the particularly stimulating effect of chatbots on various dimensions of student development, including problem-solving and creativity. The integration of AI tools like ChatGPT in educational settings significantly enhances students' critical thinking by promoting reflective learning and real-time engagement. While research revealed the potential benefits of AI to enhance critical thinking through immediate feedback, the studies also emphasized the importance and role of the educator in this process. Research underscored the importance of educators teaching students how to interact with AI assisted technology, as well as the need for them to provide guidance throughout the interaction.

Lee et al. (2022) advocate for educators to provide timely guidance and stimulate student thinking while using the AI tool, emphasizing the importance of real-world applications. Zhu & Zhang (2022) discuss teachers' role in actively guiding students in collaborative, problem-solving, enhancing classroom participation and innovative thinking. Furthermore, Huang & Qiao (2022) highlight the educator's role in assisting with inquiries and fostering problem-solving capabilities. Finally, Surdiman & Rahmatillah (2023) recommend that teachers exemplify the effective utilization of tools like ChatGPT and encourage students to critically assess the information they gather. In the effective application of AI in education, the role of the educator is pivotal. When utilized correctly, AI-assisted feedback guided by educators supports them, not replacing their feedback.

As AI becomes a fundamental component of the future, students will begin to recognize and value its connection to their daily life and future careers. This realization was explored and discussed in several studies, highlighting how self-efficacy is directly connected to students finding meaning in their work.

The significance of AI literacy in the contemporary digital era is underscored by its perceived value and applicability in daily life, promoting lifelong learning (Kong et al., 2021). AI technologies are instrumental in fostering student skills beyond traditional classroom settings (Alqahtani, 2023). However, many universities lack comprehensive strategies for digital transformation in education (Lesinskis et al., 2023). This gap presents both a challenge and an

opportunity in the educational landscape. In line with this, universities face the pressing responsibility to equip professionals for a future where machines and informational communication technologies are poised to replace routine human tasks (Elhajjar et al., 2021). The incorporation of AI in educational contexts links directly to workforce readiness and the enhancement of digital skills, which could lead to an increase in student self-efficacy.

Several of the studies supported a positive connection between AI and self-efficacy. Lee et al. (2022) found that the group that utilized an AI-based chatbot during the review process demonstrated superior self-efficacy. Huang & Qiao (2022) found that the integration of AI education with STEAM (Science, Technology, Engineering, Arts, and Mathematics) was found to elevate student self-efficacy. Wang et al. (2022) findings suggest that enhancing Artificial Intelligence Curricula (AIC) within Higher Education Institutions (HEIs) can lead to improvements in students' creativity, learning performance, and self-efficacy. Liu et al. (2021) results from their study indicated that students who engaged with AI in the experimental group had notably higher self-efficacy compared to those in a control group. Kong et al. (2021) found that participants had a rise in their sense of AI empowerment, particularly in how they perceived the meaningfulness of such empowerment. The strategic integration of AI in educational contexts could significantly boost students' confidence and self-perception of their abilities, as they begin to recognize the pivotal role AI could play in their daily life and future careers.

The current literature generally supports the integration of AI in education to enhance critical thinking and self-efficacy among students. Findings from Sudirman & Rahmatillah (2023), Huang & Qiao (2022), Liu et al. (2021), and Lee et al. (2022) among others establish that AI, especially tools like ChatGPT, could support student feedback and reflection and as a result critical thinking. Research from Kong et al. (2021), Wang et al. (2022), and Liu et al. (2021), appear to support that AI could play a pivotal role in fostering student confidence, primarily by making learning more relevant and meaningful in today's digital age.

These results can have profound implications on the future use and creation of AI tools for education. The benefits of AI suggest that the integration of such tools into curricula can lead to richer, more interactive learning experiences that not only foster critical thinking but also strengthen students' self-efficacy. Furthermore, with AI being integral to today's work environment, teaching students about its potential helps them be better prepared for the future and to enter the workforce. While many studies advocate for the positive role of AI in enhancing critical thinking and self-efficacy, there are outliers. For example, the study by Lesinskis et al. (2023) found no statistically significant benefit from the AI-infused tool, KABADA, in entrepreneurship education. This discrepancy underscores the need for more

research. Not all AI tools may be universally effective, and their utility might be contingent upon specific subjects, learning styles, or cultural contexts.

Instead of generalizing the benefits of AI, we should differentiate among the various AI tools and technology available and understand their specific advantages and limitations, such as the specific examples provided of ChatGPT. While current studies showcase immediate advantages, long-term research is required to assess if these benefits have enduring impacts on students' career and entrepreneurial ventures. Instead of solely focusing on the positives, future research should equally delve into potential challenges, such as ethical implications or inequalities in access, ensuring that the integration of AI is holistic and responsible. The current findings strongly advocate for the integration of AI tools in education to cultivate critical thinking and self-efficacy. However, it's equally important for future research to be contextual and comprehensive to ensure that AI safely supports students from all backgrounds.

Conclusion

While still in its early stages, the existing literature on the integration of artificial intelligence AI in entrepreneurship education is already making important contributions to the field. As the educational landscape continues to undergo profound technological changes, the insights provided by these studies become increasingly invaluable. Researchers have explored the potential of constructivist learning processes to encourage active thinking, enhance critical-thinking and foster self-efficacy. Literature offers an insightful view into the evolving nature of education, emphasizing the importance of constructivist principles and Social Cognitive Theory. These insights are vital for educators as well as for those creating the future AI tools that students will be using. The discussions around AI literacy serve as foundational knowledge for those aiming to further the development and implement educational AI tools.

One of the key strengths of this work is its grounding in established educational and psychological theories. By linking AI's influence with constructivism and Social Cognitive Theory, literature goes beyond trends, grounding its points in well-established and supported academic ideas. One weakness is that there's not enough focus on personal stories from both students and educators, which could provide important insights for teachers trying to fully incorporate AI and for those modifying or creating AI tools for the classroom. This gap might mean we are missing the unique ways students interact with technology. Their unique interaction with technology also connects to the need for more diverse representation among future participants. There's not enough focus on the teacher's role when AI is part of the classroom. Although the teacher role as the guide to students while implementing AI, a better understanding about the meaning of that role with the technology continues to evolve.

As the field of AI in education is in a state of transformation, the demand for more research and understanding of its application and impact on students will increase. First, the sharing of personal stories from both students and teachers will assist in understanding how AI works in classrooms. This can help everyone from teachers to educational technology developers. Additionally, studies that incorporate broader range of participants, not just based on gender but also considering other demographics including geographical location and socio-economic status will enhance our understanding of how AI will support learning. In conclusion, although initial studies on AI in education have laid a foundational groundwork, it will be important for future researchers to broaden the scope to encompass diverse perspectives and prioritize the role of educators in AI-infused education.

References

Alqahtani, M. (2023). Artificial intelligence and entrepreneurship education: A paradigm in Qatari higher education institutions after covid-19 pandemic. *International Journal of Data and Network Science,* 7, 695-706. doi: 10.5267/j.ijdns.2023.3.002

Bandura, A (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.

Elhajjar, S., Karam, S., & Borna, S. (2021). Artificial intelligence in marketing education programs. *Marketing Education Review, 31*(1), 2-13. https://doi.org/10.1080/10528008.2020.1835492

Huang, X., & Qiao, C. (2022). Enhancing Computational Thinking Skills Through Artificial Intelligence Education at a STEAM High School. *Science and Education, 33* https://doi.org/10.1007/s11191-022-00392-6

Kong, S., Cheung, W., & Zhang, G. (2021). Evaluation of an artificial intelligence literacy course for university students with diverse study backgrounds. *Computers and Education: Artificial Intelligence,* 2, 100026, 1-12. https://doi.org/10.1016/j.caeai.2021.100026

Lee, Y., Hwang, G., & Chen, P. (2022). Impacts of an AI-based chatbot on college students' after-class review, academic performance, self-efficacy, learning attitude, and motivation. *Association for Educational Communications and Technology*, 70, 1843–1865. https://doi.org/10.1007/s11423-022-10142-8

Lesinskis, K., Mavlutova, I., Spilbergs, A., & Hermanis, J. (2023). Digital transformation in entrepreneurship education: The use of a digital tool KABADA and entrepreneurial intention of generation Z. *Sustainability*, 15, 10135, 1-20. https://doi.org/10.3390/su151310135

Liu, C., Hou, J., Tu, Y., Wang, Y., & Hwang, G. (2021). Incorporating a reflective
thinking promoting mechanism into artificial intelligence-supported English
writing environments. *Interactive Learning Environments*, 1-19.
https://doi.org/10.1080/10494820.2021.2012812

Nazari, N., Salman, M., Setiawan, R. (2021). Application of artificial intelligence powered
digital writing assistant in higher education: randomized controlled trial. *Heliyon,* 7, 1-
9. https://doi.org/10.1016/j.heliyon.2021.e07014

Short, C., & Short, J. (2023). The artificially intelligent entrepreneur: ChatGPT, prompt
engineering, and entrepreneurial rhetoric creation. *Journal of Business Venturing
Insights*, 19, 1-10. https://doi.org/10.1016/j.jbvi.2023.e00388

Sonia, N., Sharmaa, E., Singhb, N., & Kapoorc, A. (2020). Artificial intelligence in business:
From research and innovation to market deployment. *International Conference on
Computational Intelligence and Data Science*, 167, 2200-2210.
10.1016/j.procs.2020.03.272

Sudirman, I., & Rahmatillah, I. (2023). Artificial intelligence-assisted discovery learning:
An educational experience for entrepreneurship students using ChatGPT.
IEEE,0786-0791. DOI: 10.1109/AIIoT58121.2023.10174472

Wang, S., Zhuo, S., & Chen, Y. (2023). Effects of higher education institutes' artificial
intelligence capability on students' self-efficacy, creativity and learning
performance. *Education and Information Technologies*, 28, 4919–4939.
https://doi.org/10.1007/s10639-022-11338-4

Zhu, Q., & Zhang, H. (2022). Teaching strategies and psychological effects of
entrepreneurship education for college students majoring in social security law
based on deep learning and artificial intelligence. *Frontiers in Psychology*, 13
(779669), 1-17. doi: 10.3389/fpsyg.2022.779669

Analyzing, Creating, Then Sharing Messages about Cyberbullying in the Middle- and High-School Classroom

Sam von Gillern
Assistant Professor of Literacy Education
University of Missouri

Laura Obubo
Doctoral Candidate
University of Missouri

Amy Lannin
Associate Professor of English Education
University of Missouri

Amy Hutchison
Fayard Endowed Chair in Literacy Education
University of Alabama

Abstract

As children today spend a vast amount of time online, it is important for them to understand and engage in responsible behaviors. Unfortunately, cyberbullying is highly prominent in many digital spaces amongst youth and can lead to devasting consequences. This qualitative case study examines the artifacts, experiences, and perceptions of students in a rural school in the Midwestern U.S. who engaged in an educational unit in which they analyzed, created, and shared digital messages on the topic of cyberbullying. The students in this study demonstrated their understanding of what cyberbullying is, its consequences, and advocated for actions to address the issue. These findings connect with and build upon existing scholarship in media literacy, digital literacy, digital citizenship, and cyberbullying and demonstrate how children can examine problematic social issues and seek to improve their communities through creating and sharing digital messages.

*Keywords***:** media literacy, digital literacy, digital citizenship, cyberbullying

Introduction

As children today spend vast amounts of time online, including engaging with social media, it is important for students to develop strong media literacy and digital citizenship skills to help them navigate online environments in safe and productive ways (International Society for Technology in Education, 2016). Teachers are crucial purveyors of media literacy and digital citizenship skills and need to help children understand ways they can effectively and responsibly use digital technologies, including to improve their communities. While research has explored in-service and pre-service teachers' perspectives on media literacy and digital citizenship (Ata & Yıldırım, 2019; Snyder, 2016; von Gillern et al., 2024a), further research is needed to understand specific classroom activities teachers can use to support their students' development of these crucial skills. This study aims to illustrate how teachers can use the Analyze, Create, Then Share (ACTS) Framework (von Gillern et al., 2022) to help their students learn about and address cyberbullying. The ACTS Framework is a useful structure for helping students study socially relevant topics because it integrates three areas of importance: media literacy, digital literacy, and digital citizenship.

Literature Review

Media Literacy

Media literacy refers to "the ability to access, analyze, evaluate, create, and act using all forms of communication" (National Association of Media Literacy Educators, n.d.). In other words, students use media literacy skills when they critically evaluate the relevance and validity of information accessed through any form of media, including print media, websites, social media, images, art, and more. Likewise, students employ media literacy skills to create media that follows norms for each type of media and communicate in ways that are effective for each genre (Hobbs, 2007). As digital technologies emerge and evolve, media literacy skills need to adapt and develop accordingly. Online communication, including via social media, has influenced the media literacy opportunities and challenges faced by individuals and societies (Cho et al., 2022; Manca et al., 2021).

Media literacy scholars have used the perspectives of protectionism and empowerment to understand the ways media literacy skills are used and taught (Potter, 2022). Protectionism focuses on supporting individuals and students to safely navigate media environments and use critical evaluation skills to determine the credibility of media messages (Friesem, 2018). Empowerment, on the other hand, emphasizes the importance of helping people productively participate in and enact change in their communities (RobbGrieco, 2014). Both perspectives are valuable for media literacy, and its underpinning processes of accessing, analyzing, evaluating, and creating with all forms of media, skills that are influenced and accompanied by digital literacy skills.

Digital Literacy

Digital literacy refers to the skills needed to "navigate and participate in a variety of digital environments" (von Gillern et al., 2022, p. 146). Scholars in digital literacy recognize that the emergence of new technologies necessitates new types of literacy skills that are often multimodal, interactive, and non-linear in nature (Lankshear & Knobel, 2008). Digital literacy differs from media literacy in the current context in that it refers to the technical and navigational skills for effectively using digital tools, understanding the norms of digital environments, and understanding aspects of online reading such as formulating appropriate search terms and questions, toggling between different tabs and tools, and choosing the best type of digital tool for the task. Further, as O'Brien and Scharber (2008) note, digital literacy involves determining and utilizing effective strategies and tools for goal-driven behaviors in digital spaces as well as being able to effectively bridge and navigate both digital and non-digital media messages and spaces. While overlap exists between digital literacy and media literacy skills (Wuyckens et al., 2022), they are distinct concepts that can play complementary roles in classroom learning and community participation, including as relates to digital citizenship.

Digital Citizenship

Scholarly perspectives on digital citizenship often align with conceptualizations of media literacy and digital literacy but often add an emphasis on civic engagement (Mossberger et al., 2008). The work of Choi et al. (2017) identified common themes in the digital citizenship literature including digital ethics, information and media literacy, and participation/engagement. von Gillern et al., (2024b) drew upon these ideas and conducted a confirmatory factor analysis of survey data from 860 secondary literacy and social studies teachers that established a four-factor model of digital citizenship with the following constructs: informed citizen, civic know-how, digital ethics, and participation and engagement. The construct of informed citizen focuses on the value of using digital technologies to learn about social and political issues and critically evaluating their credibility (Martens & Hobbs, 2015). Civic know-how focuses on the importance of understanding mechanisms and processes for participating in civil society (Mossberger et al., 2008). The work of Ribble and colleagues (2004; 2015) illustrates the value of digital ethics, including the importance of responsible, legal, and safe behavior in online environments. Participation and engagement focus on how people can use digital tools and platforms to build civic connections and effect change in their community (Mossberger et al., 2008). While digital citizenship is relevant to a myriad of issues related to learning and civic engagement, there is one topic connected to digital citizenship that is highly important yet has received limited attention: cyberbullying (Vlaanderen et al., 2020).

Cyberbullying

Unfortunately, cyberbullying is extremely common among children in the United States and around the world and can lead to "…low self-esteem, suicidal ideation, anger, frustration, and a variety of other emotional and psychological problems" (Cyberbullying Research Center, n.d.). Scholarship has explored cyberbullying from the perspective of media literacy and found the proliferation and omnipresence of digital technologies including the Internet, social media, and smartphones has led to high rates of online bullying (Arslan & Topal, 2023; Bhat et al., 2010). Notably, given the vast amount of time children spend with digital and online technologies,

cyberbullying can easily transcend school grounds and follow children home and wherever they go.

Existing scholarship illustrates strategies for helping students understand and mitigate cyberbullying in their lives and communities. Meyers and Cowie (2019), for example, demonstrates that is crucial for students to understand what cyberbullying is and its impacts. Such educational efforts can help students focus on cyberbullying in a broad sense as well as relates to their specific schools and communities (Cross et al., 2015). Additionally, research illustrates that it is valuable for students to reflect on their own digital experiences and ways that they may have engaged in and/or been a victim of cyberbullying, as this helps them become more aware of their actions and opportunities to address cyberbullying within their lives and among their peer groups (Lan et al., 2022). Finally, students benefit from learning about concrete actions they can take to address cyberbullying, including blocking cyberbullies, reporting harmful content on digital platforms, and informing trusted adults (StopBullying.gov, n.d.).

Given the high prevalence and severe consequences of cyberbullying and informed by existing scholarship on cyberbullying education, we wanted to have students explore these issues in an authentic way to promote awareness and mitigate its effects in their community. To do so, we recognized that students must have the necessary digital and media literacy skills and would likely benefit from a structured approach. Thus, we utilized an approach designed to promote digital citizenship, media literacy, and civic engagement for school children the Analyze, Create, Then Share (ACTS) Framework (von Gillern et al., 2022).

The ACTS Framework

Media literacy, digital literacy, and digital citizenship are different yet complementary concepts, as outlined above, which are often viewed and treated as separate concepts (Wuyckens et al., 2022). As noted by von Gillern et al. (2022), the ACTS Framework was developed as an approach to integrate these three concepts in a meaningful and productive way. As the name suggests, the ACTS Framework involves students analyzing, creating, and then sharing media messages to develop an understanding of civic issues and take action to raise awareness and advocate for change. Media literacy, digital literacy, and digital citizenship are all addressed in this set of processes, including accessing and evaluating media messages, developing and utilizing skills to produce thoughtful and compelling multimodal messages, and then sharing their work with their peers and community to promote change.

Study Purpose

Inspired by the aforementioned perspectives, we facilitated the following study and ACTS unit focused on the topic of cyberbullying, including its effects and ways to mitigate its impact. In the current study, we bring together media literacy, digital literacy, and digital citizenship with a socially relevant topic to understand how students can develop and utilize these skills to learn about and take action related to cyberbullying. Our research was guided by the following research question (RQs):

- In what ways does use of the ACTS Framework help students learn about cyberbullying?

Methodology

Study Context and Participants

Upon meeting at a professional development conference, Sam and Mr. Daniels (all participant names are pseudonyms) discussed the importance of children participating in community change. We passionately agreed that students deserve opportunities to investigate civic issues that affect their community and advocate for positive change. As the conference concluded, we went back to our respective roles as a literacy teacher educator and a middle- and high-school media teacher, but our mutual interest in identifying an opportunity for students to engage with meaningful real-life issues led to continued discussions.

Given that Open Plains School District (pseudonym) is located in a rural location in a Midwestern state, we considered issues that directly affect that community, such as pollution and water-quality. While these are worthy topics, Mr. Daniels suggested an issue that acutely affects his students and the community in a prominent way on an unfortunately regular basis: cyberbullying. Open Plains community members have recognized and discussed cyberbullying as an issue that affects their community, and occasionally, the topic is briefly addressed in classrooms. Yet, Mr. Daniels and his colleagues felt that something more could be done to address this insidious issue. After conferring with administration and colleagues, Mr. Daniels and Sam decided to facilitate activities on the topic of cyberbullying to promote awareness and advocate for change in the Open Plains community.

Sam and Mr. Daniels co-developed the unit by discussing the ACTS Framework (von Gillern et al., 2022), developing questions to guide student analysis, identifying valuable online materials, and considering available classroom resources. We facilitated the activity in four different classrooms (one middle-school and three high-school) by two teachers. The unit by introducing the ACTS Framework and discussing with students how it can be utilized to engage with digital platforms and promote digital citizenship and civic engagement.

Overview of ACTS Unit

Analyze

After we introduced each class to the unit and the ACTS Framework, we began the analysis stage of the activity. We developed a list of guiding questions that we presented in a handout to scaffold student thinking and learning. These questions included:

- What is cyberbullying?
- How does cyberbullying occur?
- Why is cyberbullying problematic?

- What are ways students, schools, and communities can prevent and address cyberbullying?
- What are valuable resources for students, teachers, and schools on cyberbullying

We presented students with a list of websites (including stopbullying.gov and cyberbullying.org) to help students learn more about the topic and analyze key features and facts about cyberbullying. Students were also encouraged to find additional resources online that would help them answer the guiding questions. As students browsed additional websites, we encouraged them to think about the credibility of the authors and organizations, including by examining their reputation, history, and expertise on the topic.

Students primarily worked individually while answering the guiding questions, but they occasionally shared interesting information, websites, and perspectives with their peers as they analyzed resources on cyberbullying. As students worked, we circulated to chat with students and learn about their findings and provide guidance when needed. The children were largely focused during this process, as they analyzed resources and developed their understanding of cyberbullying.

Create

On the second day of the ACTS unit, each class reviewed their analysis documents and as a group discussed key facets of cyberbullying to prime student thinking for creating an artifact focused on educating their school community on cyberbullying. Each class also discussed the purpose of and audience for their messages to help them tailor their artifacts. The central purpose, as the classes discussed, was to raise awareness of cyberbullying, including its prevalence, impacts, and methods for mitigation. The audience, they understood, was their school community. This not only included students in their classrooms, but the school community more broadly, including students, teachers, and administrators.

Mrs. Jones and Mr. Daniels took slightly different approaches for facilitating artifact creation. Mrs. Jones had recently worked with her students on Canva (canva.com). Her students had developed a strong foundation for creating compelling digital posters on Canva, and she wanted to provide her students an opportunity to refine and develop their skills further. Mrs. Jones expected each student to create their own artifact, and she also provided more structure for students, such as encouraging them to provide a clear overview of cyberbullying and ways to address it.

Mr. Daniels, on the other hand, allowed students to choose whatever creation platform students wanted. Mr. Daniels' students utilized a variety of platforms, including PowerPoint, Canva, Instagram, and even an animated .gif file generator. He gave students wide latitude on what they wanted to convey and how they wanted to convey it. Some of his students created more direct "stop bullying" artifacts, while others created artifacts that provided more information about what constitutes cyberbullying and how it harms victims. Mr. Jones also gave his students a choice to create artifacts individually, with a partner, or in a small group.

After students created a solid first draft of their artifacts, they had an opportunity to share their creations and receive feedback from peers and their teacher. This feedback typically addressed both content and style that then allowed students to revise their artifact before sharing with a larger audience. Both Mrs. Jones' and Mr. Daniels' approaches led to students developing creative and compelling artifacts that provided the audience with important information on cyberbullying and advocate for the audience to take action against it.

Share

After finalizing their creations, students shared their artifacts in various ways. All students shared with their classmates. Many students shared their artifacts with pride. They believed they created compelling artifacts on an important and authentic issue in their community. Students had the option, though, to share their messages more broadly. Mr. Daniels had discussed the project with the principal and received permission for his students to share their artifacts on the school announcement system that was broadcast to televisions stationed throughout the school. As the lead supervisor of the school newspaper, Mr. Daniels also arranged for interested students to share their artifacts on the newspaper website and its associated social media profiles. At least one student also shared her digital poster via her Instagram feed.

Data Collection and Analysis

This qualitative case study examines the artifacts, experiences, and perceptions of students in a rural school in the Midwestern U.S. Student data included 63 student analysis worksheets focused on cyberbullying and 29 digital artifacts, primarily in the form of digital posters. As illustrated in the description of the analyze portion of the activity above, the worksheets supported students in their analysis of media by providing guiding questions about what cyberbullying is and its consequences.

Data was analyzed qualitatively using MAXQDA qualitative coding application in a two-phrase process. In the first phase of coding, a research team member applied descriptive and process codes to the data (Saldaña, 2022). Descriptive codes were utilized for analyzing the student data, a process that involves identifying segments of data that are potentially valuable for addressing the research questions and applying nouns that capture a key idea of the data segment. Sample codes include *definition*, *consequences*, *actions*, and *resources*. In the second phase, two researchers independently examined all of the codes to identify potential themes for the research question. The two researchers then met to share and discuss their preliminary themes in a dialogic reliability check to ensure they identified similar patterns (Åkerlind, 2005) and then deliberated to finalize themes for each research question. After agreeing on these themes, a researcher contacted both participating teachers to engage in a member check (Creswell & Poth, 2016) to verify that the identified themes seemed accurate and authentic to the teachers. Collectively, these processes promoted reliability and trustworthiness of the data analysis and themes identified (Merriam & Tisdell, 2015).

Results

Collectively, students shared their messages on cyberbullying in a variety of ways with authentic audiences on an issue that students openly recognized negatively impacts their community. Through examining students' analysis documents and artifacts, we identified three themes related to students' knowledge about cyberbullying: 1) its definition and how it occurs, 2) consequences of cyberbullying, 3) actions to address cyberbullying.

Definition and How it Occurs

Student artifacts included definitions of cyberbullying and how and where it occurs (see Figure 1). Students examined and drew inspiration for their ideas via websites including stopbullying.gov and unicef.org. Students gave definitions that reveal varying levels of complexity and their understanding of cyberbullying. Some students had relatively basic definitions, such as "Cyberbullying is bullying that takes place online." Many students, however, had more robust definitions. A middle-school girl, Becka, wrote: "Cyberbullying is where you online bully someone using threats, harmful words, and making fun of someone." David, a high-school boy, provided a more detailed definition:

> It is when people target another person for something they can or cannot control such as how they look, live, or what they're interested in. Such as someone who dresses outside social norms, has a physical disformation or mental struggle, and judging someone for the condition of their home and belonging.

Many students also reflected on how and where cyberbullying occurs. They noted there are a variety of methods and platforms that people use to cyberbully. Stephanie, a high-schooler, wrote, "Cyberbullying is bullying that takes place through cellular devices such as cellphones, laptops, ipads, etc. It can take place on social media apps like TikTok, SnapChat, Facebook, Twitter, etc." Kara, a middle-schooler, wrote: "Cyberbullying is online bullying where you harass people, comment rude things and say rude things to someone over text, email, online games, social media, etc." Another student, Brian, specifically examined cyberbullying in video gaming (See Figure 2.)

Students largely gave definitions for cyberbullying that demonstrated their understanding of cyberbullying. While they may have relied on websites to give statistics and credibility to the artifacts that they created, defining cyberbullying and how it occurs for them was through their own words and perceptions. This activity created a platform for meaningful engagement for students as they were able to search for, locate, and analyze online sources and discover new insights about cyberbullying that they then conveyed in their own messages.

Consequences

Through this activity, students not only learned about what cyberbullying is and how it occurs, but they also learned about and reflected upon its consequences, which, as they noted, are vast and can be devastating (see Figure 3). Katie wrote that cyberbullying "can cause depression, sadness, angry, and frustration," and Layla wrote that "Cyberbullying is problematic because it could affect someone's mental health, making them suicidal or wanting to harm someone or

themselves." Billy, a high-schooler, noted "When teens get bullied they start getting insecure, and dont want to be social and in todays age where social acceptance is such an important part of the adolescent experience." While most students, understandably, focused on the consequences of the victim, a few also described consequences for the cyberbullies themselves. Nicki wrote that "The person who is cyberbullying can also lose future jobs since they choose to bully people online." Ultimately, students recognized the terrible consequences that can stem from cyberbullying.

Figure 1
Student artifact providing overview of cyberbullying

The activity gave students a space to think deeply about a phenomenon that is commonplace in their community and society more broadly. The fact that cyberbullying was a prominent issue in

Open Plains High School, as noted by Mr. Daniels and confirmed by many of the participating students throughout the unit, allowed students to analyze information from online sources alongside their own personal encounters, which produced valuable insights and meaningful learning. This activity helped them reflect on the emotional consequences of cyberbullying. Going beyond the immediate emotional distress that victims would experience, students highlighted that cyberbullying can lead to mental health issues, depression, and suicidality. Students further demonstrated consequences of cyberbullying go beyond the suffering of victims themselves, as it could also trigger victims to cause harm to others around them.

Students' perspectives on the consequences of cyberbullying additionally shed light on social exclusion that could happen from being a victim or a perpetrator of cyberbullying. Students highlight the importance of social acceptance for them and how being a victim of cyberbullying can cause teenagers to become insecure. This social anxiety can go well beyond the online world into how victims perceive themselves offline, leading to isolation and disrupting potential for supportive social connections. Additionally, their self-perceptions are influenced by cyberbullying, which can negatively impact their attendance in school and interfere with their academic experiences and achievements. Moving beyond the consequences for victims, cyberbullies themselves risk facing the repercussions of their behavior in the future when it comes to job opportunities, especially in situations where digital footprints of their online misconduct are still present and obtainable.

Figure 2
Student artifact on cyberbullying in video games
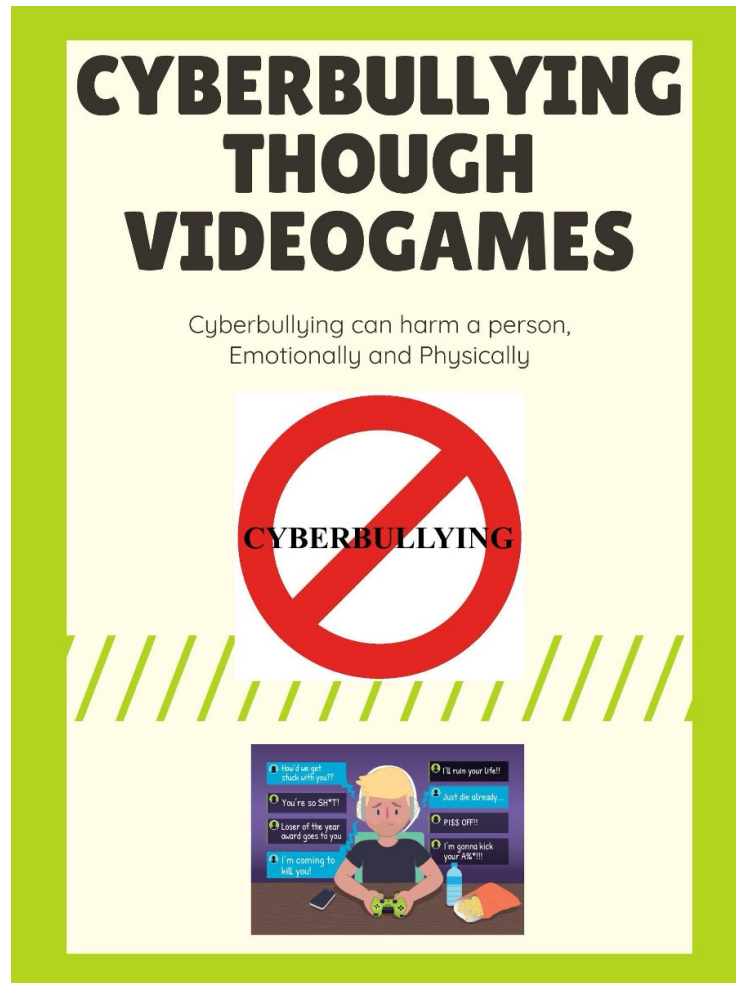
Figure 3
Student artifact on consequences of cyberbullying
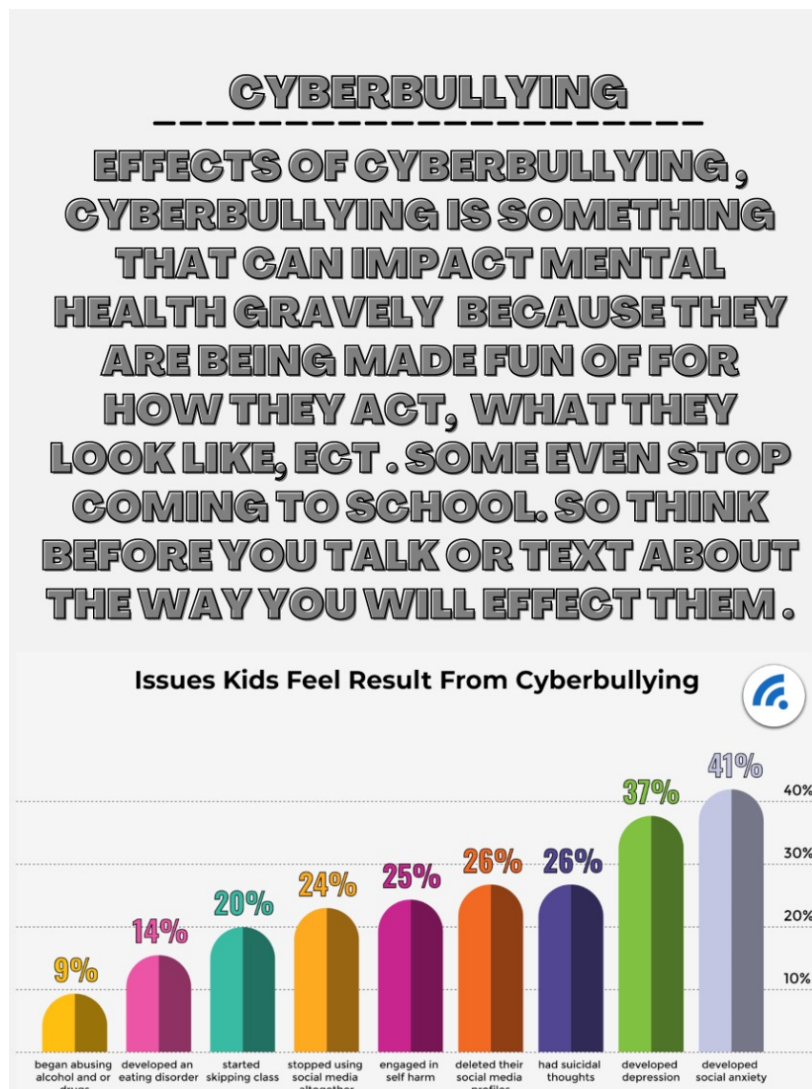
Actions

Given the severe consequences of cyberbullying, students reflected on relevant actions that people can utilize to mitigate cyberbullying. In their writing and digital posters, students shared specific actions that people, including victims and bystanders, can take to address cyberbullying. Tara wrote that students "should report [cyberbullying] to a teacher or the counselor and make sure and adult or authority is aware of what is going on, if they don't the problem will become a even bigger problem and will cause lots of issues." Kayla echoed this perspective and noted the value of "building a safe school environment, and creating a community-wide bullying prevention strategy."

Students also highlighted actions beyond the school environment. For example, Brayden noted "you can block [their account] or ignore it but if it gets out of hand report it." Similarly, Clayton wrote: "Block or delete accounts of that cyber bully." While blocking, deleting, and reporting

accounts may not be a comprehensive strategy, expert sources note these can be valuable and effective ways of reducing the frequency and impact of cyberbullying.

Student artifacts revealed the need for schools and communities to take cyberbullying more seriously. Students noted the responsibility falls on the school authority to create awareness within the school and the community, an awareness that creates safe spaces, counseling, and resources for victims of cyberbullying. Additionally, students also noted that schools should train teachers on how to respond when a case of cyberbullying is reported. This could involve school authorities identifying frequent platforms where cyberbullying occurs and monitoring and taking action as needed. Further, students illustrated that victims or potential victims can help prevent cyberbullying before it takes root by blocking, deleting, and reporting accounts that engage in harassment.

Collectively, these three themes not only helped students learn about cyberbullying themselves, but also create and share messages with the school community about cyberbullying, its impact, and methods for mitigation.

Discussion

The students in this study demonstrated their understanding of what cyberbullying is, its consequences, and actions to address the issue by analyzing online resources and creating and sharing their own digital messages. These findings connect with and build upon existing scholarship in media literacy, digital literacy, digital citizenship, and cyberbullying. The students' engagement with the social topic of cyberbullying connects with literature in media literacy, particularly as relates to the perspectives of protectionism and empowerment (Potter, 2022). As cyberbullying leads to direct harm to victims, examining and addressing cyberbullying aligns with the concept of protectionism and its efforts to reduce negative media experiences for students (Friesem, 2018). Helping students safely and responsibly navigate digital environments is central to protectionist perspectives, and the students in this study directly investigated cyberbullying to learn from expert sources on the topic on what it is, its consequences, and methods for mitigation. Relatedly, students' artifact creation and sharing processes reflect empowerment (RobbGrieco, 2014), as their efforts promoted agency to advocate for positive change in their community.

The study activity also complements perspectives on digital literacy. Multimodality is a central issue in digital literacy (Lankshear & Knobel, 2008), and the students' created multimodal artifacts as part of the unit. In their creation processes, students reflected on and made decisions to utilize different communicative modes to convey their messages. Different students made different choices about which communicative modes to include in their artifacts that occurred in various combinations. This is a valuable process and supported by the work of Klein et al., (2016) who found that students learned more content when blending the visual and the textual ideas, thus images with shorter written segments supported student learning. Students' processes involved both creating and sharing digital multimodal content, which are activities related to digital literacy (Spires et al., 2018). From the literature and from the findings in this study, we see the importance of teachers embedding multimodal composition into classroom instruction.

The results from this study connect with digital citizenship literature in a few important ways. Digital ethics, participation, and engagement are key concepts in the digital citizenship literature (Choi et al., 2017). Digital ethics permeated this ACTS Framework activity on cyberbullying. Online harassment and bullying issues are ethical issues, and students in this study examined what cyberbullying is and its consequences, which led to deeper understandings of this problematic issue and its effects. Additionally, by creating and sharing messages (i.e., participating in and engaging with their community), students advocated for more ethical online environments in ways that address and aimed to mitigate cyberbullying. This active participation and advocacy aligns with cyberbullying scholarship that recognizes effective programs provide students agency to address cyberbullying in their communities (Cross et al., 2015; Lan et al., 2022). The present study also contributes to the limited scholarship examining the relationship between digital citizenship and cyberbullying (Vlaanderen et al., 2020). The students in this study demonstrated that they could develop and utilize digital citizenship skills by examining and creating messages on the topic of cyberbullying to advocate for better and more respectful digital environments.

This study has additional connections to and implications for classroom practice, including as relates to students' engagement with authentic issues, reading with a purpose, and developing academic writing and communication skills. An additional implication is the use of authentic issues to build student engagement (Magnifico, 2010). Students in Open Plains recognized cyberbullying as a real issue affecting their community, which promoted their buy-in and engagement. Teachers and administrators also shared in this concern, so it became a good topic for collaborating around an authentic issue that reaches the context of place and time for their school and community. The project-based learning framework presented by Boardman et al., 2021 highlights the need for authenticity and recommends "connecting tasks that are authentic to students' lives and stories with tasks that are authentic to audiences and the tools of the professionals, in order to support students in understanding disciplinary skills as relevant to their own experiences" (p. 16). Their framework, which shares some features with the ACTS Framework, shows how authenticity reaches topics, genre, students' backgrounds, and relevant disciplinary connections.

Authentic activities and topics also facilitate purposeful reading. When curiosity is piqued and there is a need to know, then the reading, comprehension, and analysis of sources become more meaningful, and reading and annotating have a purpose. Another benefit is that purposeful reading can promote stamina, goal-directed comprehension, and successful engagement with complex texts (Schoenbach et al., 2012). Students' engagement with the texts and the teachers' instruction in the ACTS lesson provided the scaffolding for students to find, preview, read, annotate, and share. Students also noticed that the texts they examined could provide models for what they might produce, naturally integrating their reading and creation processes.

A final implication is the development of effective academic writing when students work towards a goal with their writing, are aware of their audience and context, and are clearly communicating their intended purpose (Graham et al., 2016). As we see in these students' experiences, the analysis of the texts didn't mean the end of the project. The real impetus for developing student understanding is in developing as communicators when students step into the

role of teaching others the important information and positions. Thus, students became civically engaged advocates, as demonstrated in their artifacts. Effective academic communication hinges on students making rhetorical decisions that are based on audience, purpose, and context. The students' processes and products of creating their artifacts were aligned with these aspects of effective communication. Because these were relevant topics to their school, the students had the added benefit and outcome of publishing their work, which synthesized the need for all of these implications. As students step into roles of being civically engaged, they realize their work has meaning and can lead to real-world impacts and improvements.

Lastly, while we believe the unit was successful and led to student engagement and learning, we occasionally had to navigate student comments that trivialized the topic of cyberbullying. There was a high-school boy who sometimes blamed cyberbullying victims. He said that if the victims cannot handle the hurtful comments they should just not go online. He also said that he sometimes cyberbullies novice players in online video games because their lack of skill causes his team to lose games. This was particularly challenging as other students' comments reflected their difficult experiences as victims of cyberbullying. We handled this boy's comments by facilitating a classroom discussion and allowing other students to respond. Sometimes other students pushed back by respectfully problematizing this boy's statements. For example, a few students responded by pointing out that simply not spending time online is not really a viable option in our modern and digitally-mediated society.

We, as facilitators, addressed these situations cautiously, as we did not want this boy's comments to set the tone for the activity. Nor did we want the boy to feel attacked by us problematizing his statements. Sam, for example, after providing an opportunity for students to respond to such comments, gently encouraged the boy and the class to consider the perspectives of victims to promote empathy and understanding. Ultimately, many people, including students, have differing perspectives on and experiences with various civic topics. When facilitating the discussions on such topics, it is valuable for educators to plan ahead and anticipate where disagreements may occur and develop a plan for addressing these issues.

While this study illustrates how the ACTS Framework activity on cyberbully facilitated meaningful learning for the students, it is not without its limitations. First, this study was conducted in a single rural school district in the Midwestern United States, and the results may have been different in a different location with different participants. Second, this study did not measure or examine the effects of cyberbullying in the period that followed the ACTS activity, which may have revealed if/how cyberbullying activities and impacts may have changed after the activity, and future research should examine not only the classroom experiences but also strive to measure and understand the community impacts of similar activities.

Conclusion

Although this unit focused on cyberbullying, teachers can focus on any authentic issues that are important in their communities, such as climate change, poverty, and LGBTQ+ rights. Through applying the ACTS Framework and analyzing, creating, and sharing civic media messages, teachers can help students learn about social issues and "grow as digitally savvy and civic-

minded citizens" (National Council of Teachers of English, 2019, n.p.). Collectively, English language arts educators are well-positioned to help their students develop their literacy skills and become well-informed citizens capable of promoting change in their community (Mirra, 2022).

References

Åkerlind, G. S. (2005). Variation and commonality in phenomenographic research methods. *Higher education research & development, 24*(4), 321-334.

Arslan, H., & Topal, A. (2023). A Critical Look on Cyberbullying and Cyber Harassment in the Digital Area Within the Scope of Social Media Literacy. In Sarı (Ed.) *Handbook of Research on Bullying in Media and Beyond* (pp. 215-233). IGI Global.

Ata, R., & Yıldırım, K. (2019). Turkish pre-service teachers' perceptions of digital citizenship in education programs. *Journal of Information Technology Education. Research, 18*, 419-436.

Bhat, C. S., Chang, S. H., & Linscott, J. A. (2010). Addressing cyberbullying as a media literacy issue. *New Horizons in Education, 58*(3), 34-43.

Boardman, A. G., Garcia, A., Dalton, B., & Polman, J. L. (2021). *Compose our world: Project-based learning in secondary English language arts*. Teachers College Press.

Cho, H., Cannon, J., Lopez, R., & Li, W. (2022). Social media literacy: A conceptual framework. *New Media & Society*, 14614448211068530.

Choi, M., Glassman, M., & Cristol, D. (2017). What it means to be a citizen in the internet age: Development of a reliable and valid digital citizenship scale. *Computers & Education, 107*, 100-112.

Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches. Sage.

Cross, D., Lester, L., Barnes, A., Cardoso, P., & Hadwen, K. (2015). If It's about Me, Why Do It without Me? Genuine Student Engagement in School Cyberbullying Education. *International Journal of Emotional Education*, *7*(1), 35-51.

Cyberbullying Research Center. (n.d.). Cyberbullying Facts. https://cyberbullying.org/facts.

Friesem, E. (2018). Too much of a good thing? How teachers' enthusiasm may lead to protectionism in exploring media and gender. *Journal of Media Literacy Education, 10*(1), 134-147.

Graham, S., Bruch, J., Fitzgerald, J., Friedrich, L., Furgeson, J., Greene, K., Kim, J., Lyskawa, J., Olson, C.B., & Smither Wulsin, C. (2016). *Teaching secondary students to write*

effectively (NCEE 2017-4002)*.* National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy*. Aspen Institute.

International Society for Technology in Education. (2016). ISTE Standards: Students. International Society for Technology in Education. https://www.iste.org/standards/iste-standards-for-students.

Klein, P. D., Arcon, N., & Baker, S. (2016). Writing to learn. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 243-256). Guilford Press.

Lan, M., Law, N., & Pan, Q. (2022). Effectiveness of anti-cyberbullying educational programs: A socio-ecologically grounded systematic review and meta-analysis. *Computers in Human Behavior*, *130*, 107200.

Lankshear, C., & Knobel, M. (Eds.). (2008). *Digital literacies: Concepts, policies and practices*. Peter Lang.

Magnifico, A. M. (2010). Writing for whom? Cognition, motivation, and a writer's audience. *Educational Psychologist, 45*(3), 167-184.

Manca, S., Bocconi, S., & Gleason, B. (2021). "Think globally, act locally": A glocal approach to the development of social media literacy. *Computers & Education, 160*, 104025.

Martens, H., & Hobbs, R. (2015). How media literacy supports civic engagement in a digital age. *Atlantic Journal of Communication, 23*(2), 120-137.

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.

Mirra, N. (2022). *Reading, writing, & raising voices: The centrality of literacy to civic education*. National Council of Teachers of English.

Mossberger, K., Tolbert, C. J., & McNeal, R. S. (2008). *Digital citizenship: The internet, society, and participation*. The MIT Press.

Myers, C. A., & Cowie, H. (2019). Cyberbullying across the lifespan of education: Issues and interventions from school to university. *International Journal of Environmental Research and Public Health*, *16*(7), 1217.

National Association of Media Literacy Education. (n.d.). Media literacy defined. https://namle.org/resources/media-literacy-defined/

National Council of Teachers of English. (2019). Definition of literacy in a digital age.
        https://ncte.org/statement/nctes-definition-literacy-digital-age/.

O'Brien, D., & Scharber, C. (2008). Digital literacies go to school: Potholes and possibilities.
        Journal of Adolescent & Adult Literacy, 52(1), 66–68.

Potter, W. J. (2022). Analyzing the distinction between protectionism and empowerment as
        perspectives on media literacy education. *Journal of Media Literacy Education, 14*(3),
        119-131.

Ribble, M. S., Bailey, G. D., & Ross, T. W. (2004). Digital citizenship: Addressing appropriate
        technology behavior. *Learning & Leading with Technology, 32*(1), 6.

Ribble, M. (2015). *Digital citizenship in schools: Nine elements all students should know.*
        International Society for Technology in Education.

RobbGrieco, M. (2014). Why history matters for media literacy education. *Journal of Media
        Literacy Education, 6*(2), 3-20.

Saldaña, J. (2021). The coding manual for qualitative researchers. Sage.

Schoenbach, R., Greenleaf, C., & Murphy, L. (2012). *Reading for understanding: How reading
        apprenticeship improves disciplinary learning in secondary and college classrooms.*
        WestEd.

Snyder, S. E. (2016). *Teachers' perceptions of digital citizenship development in middle school
        students using social media and global collaborative projects* (unpublished doctoral
        dissertation). Walden University, Minneapolis, MN. Retrieved from
        https://www.proquest.com/docview/1799599792.

Spires, H. A., Paul, C. M., & Kerkhoff, S. N. (2019). Digital literacy for the 21st century. In
        Khosrow-Pour (Ed.) *Advanced methodologies and technologies in library science,
        information management, and scholarly inquiry* (pp. 12-21). IGI Global.

Vlaanderen, A., Bevelander, K. E., & Kleemans, M. (2020). Empowering digital citizenship: An
        anti-cyberbullying intervention to increase children's intentions to intervene on behalf of
        the victim. *Computers in Human Behavior, 112*, 106459

von Gillern, S., Gleason, B., & Hutchison, A. (2022). Digital citizenship, media literacy, and the
        ACTS Framework. *The Reading Teacher, 76*(2), 145-158.

von Gillern, S., Korona, M., Wright, W., Gould, H., & Haskey-Valerius, B. (2024a). Media
        literacy, digital citizenship, and their relationship: Perspectives of preservice teachers.
        Teaching and Teacher Education, 138, 104404, 1-10.

von Gillern, S., Rose, C., & Hutchison, A. (2024b). How students can be effective citizens in the digital age: Establishing the teachers' perceptions on digital citizenship scale. *British Journal of Educational Technology, 55*(5), 2093-2109.

Wuyckens, G., Landry, N., & Fastrez, P. (2022). Untangling media literacy, information literacy, and digital literacy: A systematic meta-review of core concepts in media education. *Journal of Media Literacy Education, 14*(1), 168-182.