

What Urban Middle School Students Say - Technology Integration Pros And Cons

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Abstract

In order to determine the perspectives middle school students have concerning technology integration pertaining to engagement and global empathy, a qualitative case study was used with 16 participants in a private school in an urban setting. The research employed questionnaires and focus groups to address a significant gap in research as previous studies concentrated on the perceptions of either administrators or educators. Four themes materialized from the thematic analysis: positive technology engagement, negative technology engagement, global empathy, and technology use and application. Students expressed an increase in engagement when technology use fostered creativity, efficiency, and user-friendly experiences. Conversely, engagement was reported to be diminished when there were technical difficulties, complicated software, or an educational application of drill-and-kill experiences. Students overwhelmingly reported the presence of global empathy as technology provided pathways to understand diverse cultures, communities, and global challenges through multimedia resources, virtual interviews, and cross-cultural communication tools. The findings of the study establish a need for careful technology tool selection, adequate training for educators, and pedagogical approaches that prioritize student agency and creative expression. This research adds to the body of existing educational technology literature by providing authentic student perspectives on digital learning experiences and offers practical implications for educators, curriculum designers, and educational leaders seeking to optimize technology integration for meaningful learning outcomes.

Keywords: Cognitivism, global empathy, middle school education, qualitative research, student engagement, student perspectives, student voice, technology integration

Background and Context

Technology use in learning environments has transformed the student experience exponentially over the last two decades. Learners are able to delve deeply into a multitude of subject areas as a result; science, technology, engineering and mathematics are easily integrated into other core subject areas where students are able to develop solutions to problems using simulations and other technologies (Zapille et al., 2017). Technology is ubiquitous and allows students immediate access to learning content, global problems, and problem-based activities (Spiteri & Chang Rundgren, 2017). Through educational technology, students can now access learning opportunities that extend beyond traditional classroom limitations. These technologies facilitate cross-cultural engagement with international communities, enable comprehensive investigation of specialized topics, and foster students' development as informed advocates for global causes (Widodo, 2023). Civic action is a potential result when students are able to experience learning through technology that promotes the enhancement of student global perceptions, and authentic educational activities that bring content to life (Yang & Baldwin, 2020).

In light of the meaningful potential that technology offers to the student learning experience, there must be an intention to do so (Yang & Baldwin, 2020). Overreliance on technology, especially when it is the only mode of accessing learning content, can lead to poorer performance on assessments as compared to those who have multi-modalities in the learning approach (Wexler, 2019). Students have reported using technology for three to four hours a day which also has led to weaker academic outcomes (Sampasa-Kanyinga et al., 2022). Technology also must be monitored by the instructor as almost half of 400 students reported misusing electronics during class time (Hazelrigg, 2019).

The Problem with Technology Integration

The challenges with integrating technology is twofold. Educators are often using technology for experiences that resemble functionality tasks such as using software for writing papers and editing, data sorting, graphic presentations,

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and basic internet use (Gray et al., 2020). Additionally, the absence of forward-thinking planning prevents technology from being used strategically in instruction. Rather than serving as a deliberate means to expand students' learning horizons and enhance their understanding, technology remains underutilized due to this planning deficit (Carver, 2016; Tamerat, 2020). The use of technology integration is a missed opportunity for educators as the embedment of technology thoughtfully through a learning unit can lead to improved student engagement and instructionally focused innovation experiences which then impacts student learning (Conradty & Bogner, 2022). The misstep that presents itself is the lack of planning on the part of educators when implementing technology when the wrong technology is selected, resulting in students not achieving outcomes, low engagement levels and stunted originality of the students' final product (Bereczki & Kárpáti, 2021).

The Missing Student Voice

The term student voice refers to the presence of the students' role, perspectives or impressions at it applies to the instructional practice or policy in the educational setting (Holdworth, 2000). When student voice is linked to a presence of power, then agency is constructed that is student-centered (Ashton-Hay, 2025). Student voice can be developed in various aspects of education such as providing data, focus of respondents, co-researchers or researchers themselves (Fielding, 2004). The practice of using student voice in research is valuable as it provides a fulcrum to enact change in the learner experience positively; it is not merely the presence of student input (Ashton-Hay, 2025). Increasing student voice and agency has a plethora of positive potential outcomes such as emboldening the students' engagement to learning experiences and their educators (Ashton-Hay & Williams, 2023). Understanding student voice requires that the educational community understands its parameters clearly. When student voice is present, the incorporation of a view that students are important stakeholders is present, the clarity of the student perspective is apparent to them, there is not a treatment of tokenism on behalf of the student, the use of the student perspective is an agent of change, and the participation of the students is made voluntarily (Garwe, 2025; Kaur-Aujla, 2021; Partridge & Sandover, 2010; Young & Jerome, 2020).

Research Questions and Study Purpose

The development of the research questions were thoughtful and designed in order to discern the insights that students have when using technology in their learning environments through the lenses of engagement and a connection to global issues that lie beyond their daily experiences. This research addresses two primary questions: (1) How do middle school students in the Midwest United States describe their experiences of technology-integrated learning activities regarding engagement during a unit of study? (2) How do middle school students in the Midwest United States explain their experiences of technology-integrated learning activities regarding global empathy during a unit of study?

The impetus for the research has a foundation rooted in the understanding that students need learning experiences that provide engagement that allow for the development of new understandings, the creation of their own solutions to problems, and interaction with learning content using technology (Khlaissang & Yoshida, 2022). The purpose of the qualitative case study was to explore the experiences of technology integration for urban, middle school students in the Midwest United States regarding engagement and global empathy.

Theoretical Framework

The study employed a dual framework inform the conceptual foundation: engagement theory and cognitivism. Engagement theory emphasizes the need for a structure of educational experiences to embody a process where students *relate* (engage deeply and authentically to a topic being studied), *create* (develop solutions to problems related to the learning content), and *donate* (take action to employ their solutions previously developed) (Kearsley & Shneiderman, 1998). Engagement theory allows students to be integral participants in their learning experiences and facilitates engagement (Kearsley & Shneiderman, 1998). Vygotsky's cognitivism (1978) constructs an understanding where learning is broken up into smaller components (schemata), and that each moment of the educational experience such as view thoughts and principles are of great importance. Henceforth, the integration of engagement theory and cognitivism provides a comprehensive framework for understanding both the mechanisms and rationale underlying the student learning process. This theoretical synthesis creates the nuanced pedagogical moments that

addresses the research questions and reveals deeper insights into the students' perspectives regarding technology integration within the educational context under investigation.

Methodology

A qualitative case study methodology was used to capture rich, detailed perspectives of middle-school students regarding their experiences with technology integration in their learning activities encapsulated in a unit of study. Employing this methodology provided essential descriptions in which students could explain their interactions with technology regarding engagement and global empathy. The nuanced, detailed descriptions granted access to the students' lived experiences to be used for analysis to develop themes and analysis (Creswell & Creswell, 2018; Merriam, 2016).

Participants and Setting

Sixteen middle school students (grades 6-8) from an urban, private K-12 school in Chicago, Illinois participated in the study through convenience sampling. The school utilized a 1:1 student-to-technology ratio and regularly integrated various digital tools across curricular areas. Participants had recently completed a unit of study of communication incorporating 8-10 different technology tools focused on global themes. Recruitment began as soon as IRB approval was gained. Once participant assent and parent consent were granted, data collection was able to begin. The students used various kinds of technology as determined by the topic under the umbrella of communication, including creating podcasts, television programs, and published periodical works. The technology selected was determined by educators for the purpose of executing a final product. Convenience sampling is a non-probability sampling technique frequently used for qualitative studies in which participants are selected based on availability, accessibility, and ease in recruitment. Figure 1 outlines the timeline of participant recruitment.

Figure 1
Timeline of Recruitment



Data Collection Tools

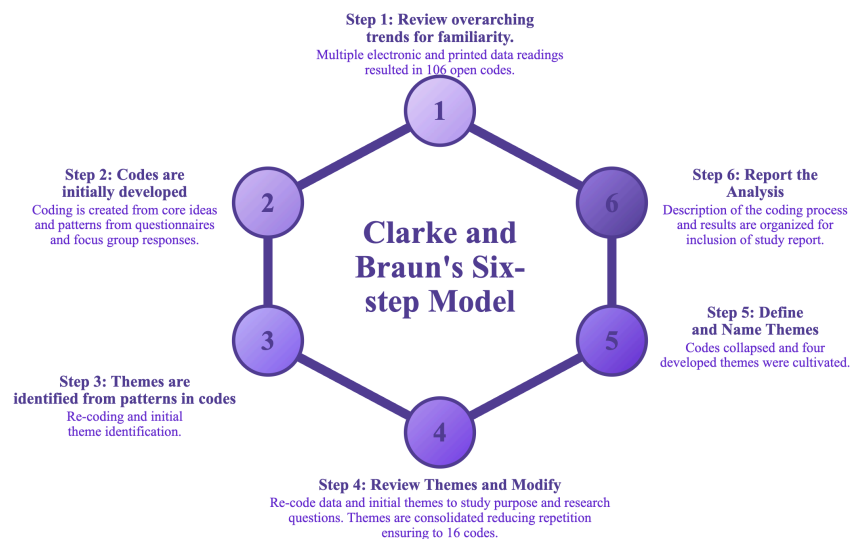
Two data collection tools were used to gather insights into middle-school perceptions of technology integration regarding engagement and global empathy: online questionnaires and focus groups. Questionnaires containing 15 open-ended written probes were utilized to acquire trends, attitudes, or opinions of the middle-school population being studied (Creswell & Creswell, 2018). Questions addressed both positive and negative aspects of technology use, engagement factors, and connections to global content. Four focus groups were developed to allow for a deeper exploration of questionnaire responses; focus groups provide more in-depth sets of data where participants are able to elaborate further on their initial responses (Creswell & Creswell, 2018, Merriam, 2016). Focus group protocols included 14 questions designed to elaborate on technology experiences and global empathy development, with particular attention to specific tools and applications that influenced student perspectives.

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Data Analysis

Data analysis utilized Clarke and Braun's (2013) six-step thematic analysis model. Initial coding identified 106 preliminary codes, which were subsequently refined through axial coding into 16 categories and ultimately consolidated into four major themes. The process for analyzing the data followed six steps offered by Clarke and Braun (2013) for data analysis: (1) Initially, data from the questionnaires and focus groups was reviewed for overarching trends to become familiar with data collected; (2) meaningful codes were developed for the process of chunking the data as they pertain to the research questions; (3) thematic patterns were established to facilitate the identification and analysis of relevant data; (4) review of previous themes was conducted and/or modified; (5) trends in the data pertaining to each theme were identified; and (6) finally, the learnings from the research were presented. Figure 2 presents the data analysis model used to determine themes to answer the aforementioned research questions.

Figure 2
Clarke and Braun's Six-step Model



Findings

Four emergent themes derived from data analysis that addressed the research questions concerning student experiences with technology integration regarding engagement and global empathy. Saturation occurs when participant responses reoccur, offering no new insights; a participant pool for a qualitative study of 15 to 20 individuals achieved saturation (Hennink et al., 2020; Merriam, 2016). Saturation was achieved at approximately the 10th questionnaire response and the 15th and 16th focus group participants as response began to repeat themselves.

Theme 1: Positive Technology Engagement (Pros)

The first theme reflected on positive attributes of technology which elucidated the students' thoughts, feelings and behaviors with respect to how the use of technology promotes engagement in learning activities (Schindler et al., 2017). Participants expressed positive engagement interactions with technology through terms such as *fun*, *enjoy* or *like*. The use of technology to produce artifacts where students had creative agency were also indicative of favorable sentiments in so much the use of technology-based produced like using a camera, editing a video or audio clip, or producing a podcast. One participant explained, "There was a plethora of things you could do to enhance the overall quality of podcasting in editing. It was fun experimenting." While another elaborated,

I enjoy learning about new tools because they're particularly helpful even in other classes... it's an authentic way of sharing a voice so I know how to use a microphone like a proper microphone when

giving an interview because it just helps my audio quality improve, and it makes a more enjoyable experience.

When students were able to use personal devices such as their own computers, phones, or devices, pleasurable experiences were also reported; such views were in direct reference to using specific applications or creating digital content directly related to their learning content.

Theme 2: Negative Technology Engagement (Con)

The second theme provided insight into the participant experiences when technology was viewed with negative responses. When technology usage is unsuccessful it was described as unhelpful, inherently precipitating undesirable outcomes leading to a sense of vulnerability or sensitivity (Selwyn, 2016). Participant frustration followed suit as common problems of complexity of the programs, quality of the technology of microphones or devices, limitations on usage of programs, privacy, and headaches, or eye strain. One participant explained, "Sometimes I had to use technology that was completely new to me and that could be a little intimidating at first." While another stated, "I have problems with getting headaches from being on technology." Yet additionally topics of program glitching, freezing and poor internet connection were noted as conclusionary points of frustration. Another expressed,

Sometimes the internet quality isn't very good and it's really hard to access sites, so it'll take a minute to load a website, and if it's the wrong one or if it isn't helpful it's going to be more and more time waiting just going through website make which some projects a bit harder.

Theme 3: Global Empathy Development (Pro)

Global empathy encapsulates the capacity for one to connect with those outside the realm of lived experience, view different perspective through a new lens, comprehending the feelings of others and communicating or applying those to worldwide contexts (Zapille et al., 2014). Overwhelmingly, participants expressed a better understanding of those who have different lived experiences, communities, and cultures directly as a result of using technology in their academic activities. One participant expressed, Participant 1 said,

I feel like sometimes you can <visually> see how and read an article about a person from another place in the world is going through something and that person is talking about it and it has an impact on you.

Other positive aspects of technology that foster global empathy included support in writing, engaging with individuals through video conferencing, reading through the modality of technology, and viewing visual images and video. As one participant explained, "I feel like whenever we did interviews using video conferencing and recordings, that was definitely more exposure to different people in the world and that made us care more about it." Additionally, technology promoted global empathy as explained an ease of research foreign topics, experiencing how things different in various areas of the planet, experiencing social media, and the power of the internet. The power of technology provided a pathway for participants to learn and care about the world.

Theme 4: Technology Use and Application (Con)

The outcomes of student learning can be directly impacted by the kinds and the methodology educators use when designing learning experiences (Lei, 2010). Student responses regarding use ranged topics such as kinds of technology, uses, and frequency and duration during the day. While various applications and programs were identified, all participants referred to their use of technology as, "all day and every day." One participant expressed, "I use technology in school every day, all day. I also use it outside of school a lot." Another stated the duration of use

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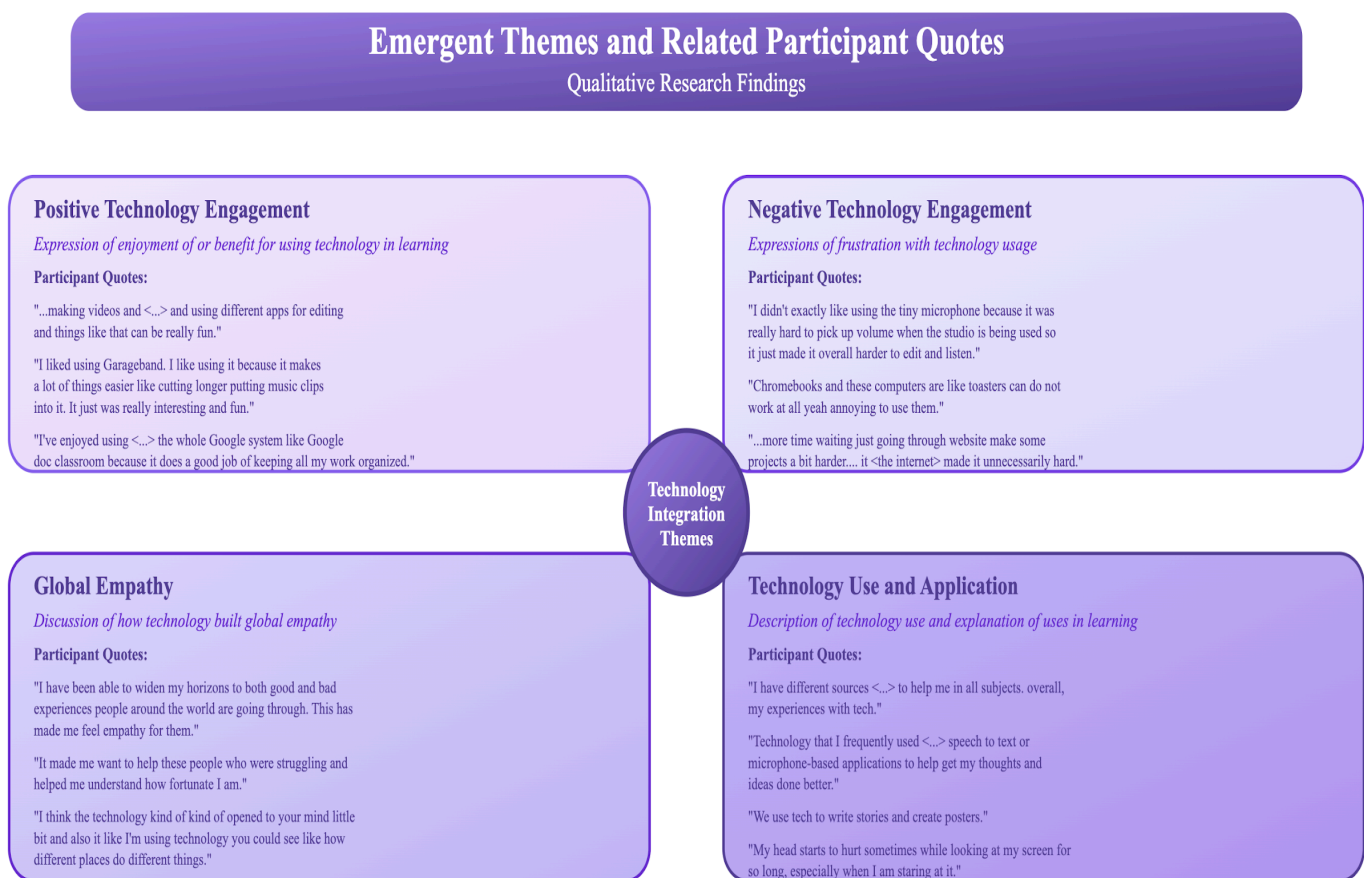
as, “about 6 to 7 hours.” Many participants elaborated they use technology when they get home and voiced responsibility for what they felt was excessive use of technology at times. Negative sentiments of technology integration expressed by participants stated that using computer programs for drill-and-kill learning experiences, antiquated technology, glitching or overly complicated programs. Participant 2 shared,

I hate IXL. It's bad and it's just so annoying because the teachers are basically using it to teach us and not teaching themselves. I just can't stand IXL because you get up to 90% and then all of a sudden, the program bumps you back down to 45% because you missed one question.

Figure 3 illustrates the four emergent themes related to technology integration, highlighting both positive and negative perspectives as expressed by study participants.

Figure 3

Emergent Themes and Related Quotes Regarding Technology Integration



Discussion

Student Agency and Technology Selection

Technology has transformed the educational landscape in the past twenty years. As a result, there is an increasing need for educators to prioritize not only the selection of the technology being used but their own knowledge of the technology to ensure effective implementation (Baltynova et al, 2023). Students currently live in a world where technology is ubiquitous (Spiteri & Chang Rundgren, 2017). Incorporating technology that works properly and is developmentally appropriate can lead to pathways that promote student agency, research, exploration, and

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engagement from an immersive and authentic learning perspective (Hui, 2024; Moradi & Mahdia, 2023). The findings found that the efficacy of the technology selected played a significant role from the perspective is usability and practicality. As a result, if the participants did not find the technology to be reliable or usable, there was the propensity to find other technological solutions to meet the needs of the learning task. Such challenges lead to students wasting time and having increased levels of frustration with the activity which can be viewed as a negative impact on learning.

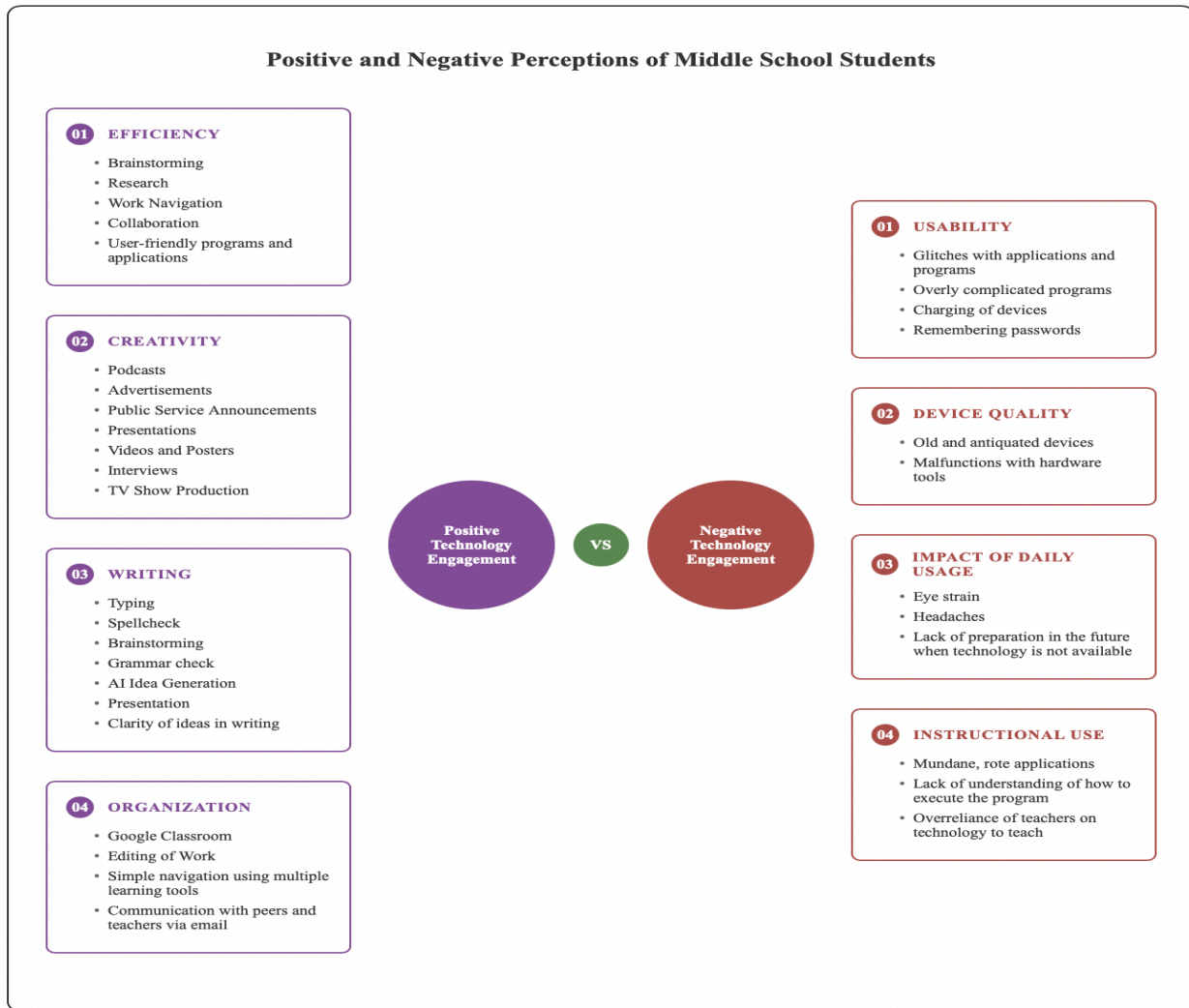
The Importance of Technical Reliability

The need for technology to have the capacity to provide students with experiences that facilitate inventive, original products is one of the aspects of integration that promote student engagement (Bereczki & Kárpáti, 2021; Conradt & Bogner, 2022). When technology presents challenges that impede the students' sense of locus of control, there are negative implications (Jamil et al., 2021). Participants overwhelmingly reflected frustration when there was a lack of connectivity with the internet or malfunctioning software. Supporting this was testimony of resentment when the technology was poorly selected to meet the needs of the learning experience, had over complicated components, repeated software malfunctions suggesting a lack of vetting, or ineffective application (Jamil et al., 2021; Werang & Leba, 2022).

A common topic offered by participants was when "glitching" occurred with various technology tools resulting in a disconnect from the learning objective overall; such experiences lead to impede learning, reduce focus, and put unintended gaps in active engagement (Kostaki & Karayianni, 2020). Such challenges extend the amount of time students are using technology resulting in overuse; negative implications occur as a result and were reported as eyestrain, headaches and fatigue (Abou Hashish et al., 2022). A strong recommendation for vetting the developmental appropriateness, reliability, and need for excessive screentime is a result of participant responses when making technology integration decisions (Jamil et al., 2021; Kostaki & Karayianni, 2020; Werang & Leba, 2022). Figure 4 presents the positive and negative perception of the use of technology in learning experiences.

Figure 4

Positive and Negative Perceptions of Technology Use



Global Empathy Through Digital Connection

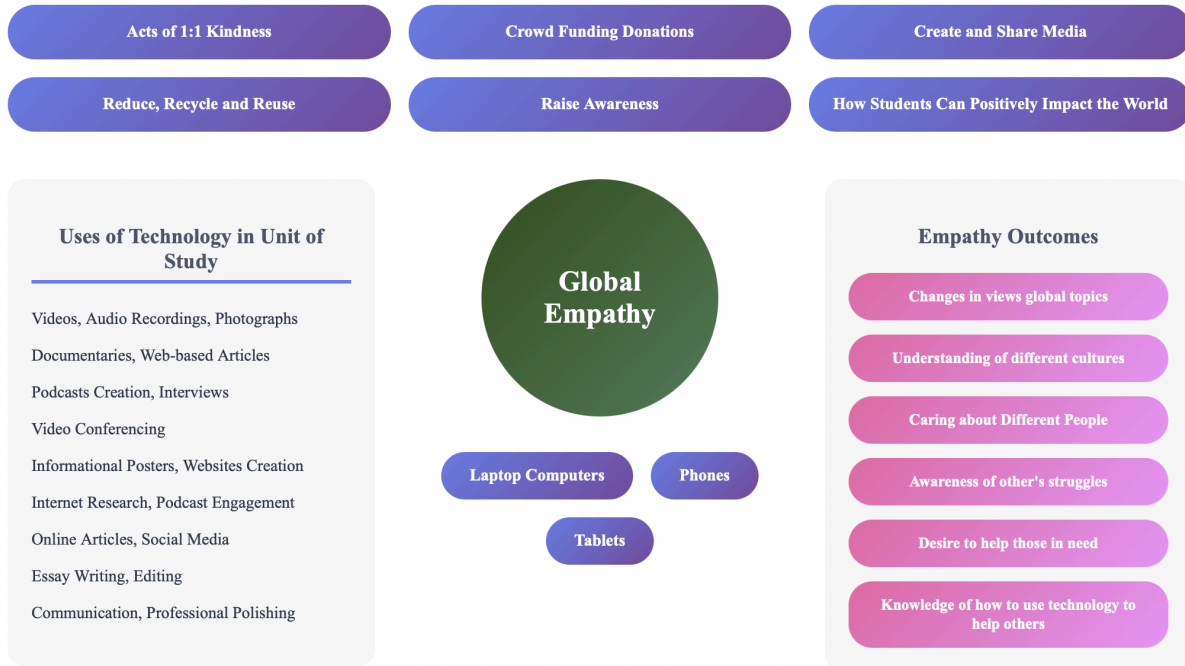
With the premise that global education provides the opportunity for students to develop empathy for the world, there is a strong argument that intentionally utilizing technology can improve students' sense of connection to the planet (Ahmed & Mohammed, 2022). Participant responses overwhelmingly confirmed the philosophy that the use of digital technologies provides a greater sense for experiencing and creating a greater understanding and appreciation as a result of interacting with diverse perspectives and communities. Human interconnectedness, synonymous with global citizenship, correlates with empathy emphasizing an ability to see the world from multifaceted viewpoints and this was, again, emphasized by participant responses (Jamil et al., 2021). Utilizing technology to explore real-world problems were noted by participants as a reason that amplified care, concern for the world and a belief of having the capability of making a positive impact. Simultaneously, participants spoke to the impact of the use of online videos, video conferencing, translation programs, and digitized resources to bridge the divide of linguistic, cultural, and social barriers to foster global compassion (Adedokun et al., 2015; Boboc et al., 2022). Importantly, the education community should note that there was a belief of participants to make a positive change in the world utilizing technology as a result of their amplified care, and concern for the global community well beyond their immediate community. Figure 5 presents the development global empathy as a result of technology integration.

Figure 5

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*Impact of Technology Integration Regarding Global Empathy***Technology-Enhanced Learning & Global Empathy**

Understanding Middle School Students' Perspectives

**Challenging Negative Assumptions**

While there are negative implications of technology integrations (Ahn, 2022; Sampasa-Kanyinga et al., 2022), this study revealed the propensity for students to distinguish and reflect upon the beneficial and detrimental impacts of technology applications both academically and personally. Students expressed the capacity to appreciate the power that technology possesses to enhance their learning and explore global topics, both in a formal academic setting and informally through the use of multiple social media applications. When educational experiences are connected to students' lives, a self-belief in the ability to positively impact the world is fostered (Wyner & Doherty, 2022). Students identified many opportunities to effect change such as conducting local acts such as recycling, organizing or participating in park cleaning, or being kind to strangers as potential courses of action. Literacy skills developed through technology integration embolden participants' beliefs in using technology to serve other purposes; there is a connection between literacy abilities and all other core learning subjects (Kim et al., 2022; Mead et al., 2019). Many participant responses supported the use of technology as they described previous uses of technology in other classes and lessons related to their unit, suggesting that creating digital content, such as posters or informational public service announcements, were additional avenues to advocate for others in need. The findings also contradict concerns about technology widening achievement gaps when students are given agency in technology selection and use creative applications rather than drill-and-kill programs. Participants spoke directly to the lack of vetting of technology impacting the learning experience negatively and suggested a resentment when technology is used as the modality to primarily teach academic content, which was described as "lazy teaching." Such an observation should be noted by the education community. This supports Bereczki and Kárpáti's (2021) argument that educator selection of appropriate technology is crucial for positive outcomes.

Recommendations for Educational Practice

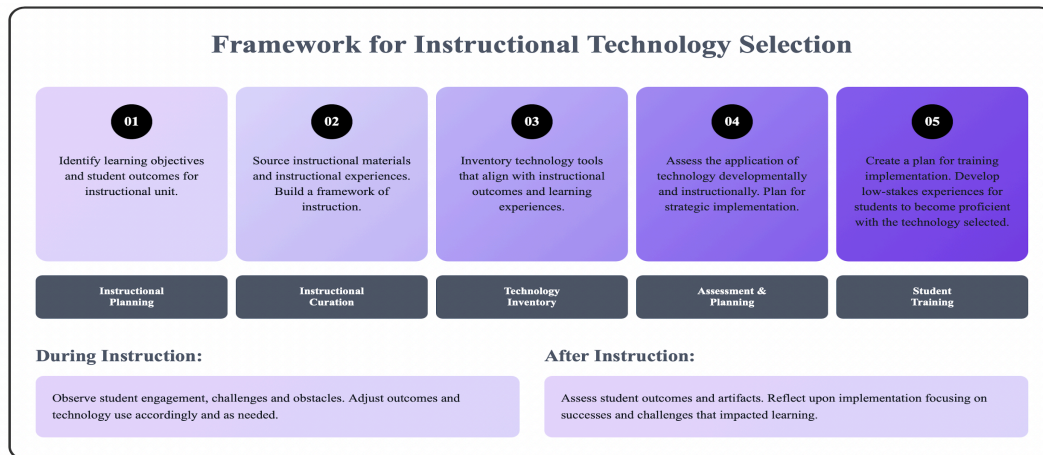
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The study examined and explored a gap in the literature by putting student voice into the forefront of contemplation for how technology is leveraged in the classroom. As technology has taken a consistent presence in classroom environments and is constantly evolving, a recommendation is for educators to explore instructional technology pertaining to curricular objectives, learning outcomes, developmental appropriateness, quality standards, and creative potential (Williams et al., 2023). When technology was relied upon to teach content, was overly sophisticated, digital tools resembled *drill and kill* experiences, or digital tools were antiquated, participants expressed a tendency to become disengaged. If learning activities were planned with learning objectives, exposure, investigation, timing, quality, and digitally creative student learning outcomes in mind, the promotion of engagement and connectedness to the world could be an outcome; planning must be thoughtful.

As the need for planning and appropriate use was highlighted by participant responses, the identification of the instructional objectives and student outcomes for an instructional unit provides an initial overarching umbrella for the development could embolden the learning experience (Ozden, et al., 2024). Then, a systematic curation of instructional materials should occur to plan a course of action for students to move through learning activities to align with the targeted learning objectives. Planning could be more effective if a library of potential technology tools was developed to amplify the authenticity and intellectual richness of learning experiences across content areas. Developmental and useability appropriateness, and a determination should be a priority for evaluation to determine as to when and how technology will be strategically implemented. Concurrently, the vetting and exposure of technology to students should be enacted in a low stakes setting to provide an opportunity for application mastery before commencing upon academic endeavors. When using technology instructionally, Educators should observe student engagement, assess potential obstacles, and adjust the lesson activity when using technology instructionally (Lei, 2010). Figure 6 illustrates the framework for optimal technology integration experiences.

Figure 6

Framework for Optimal Technology Integration Experiences



Limitations

There were limitations that present constraints upon the generalizability of the study, thus impact its strength. The size of the institution is the first limitation as it impacts the overall participant pool potential; therefore, transferability of the results must be taken into consideration. There was a need, as a result, to include a multi-band sampling pool. In doing so, the participant population was expanded as much as possible. The representations that were portrayed by the participants were indicative of the subset of individuals available for the study. Efforts to expand the study to include more participants, different socio-economic backgrounds and geographic areas would fortify the reliability of the study.

Conclusion

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This study contributed important insights to educational technology literature by centering student voices in discussions of technology integration engagement and the development of global empathy. The findings revealed that students possess sophisticated understanding of how different technology applications support or hinder their learning experiences, challenging prevailing assumptions about technology's impact on learning. The research demonstrates that effective technology integration requires careful attention to tool selection, technical reliability, and pedagogical approach. Students respond most positively to technology that enhances their creative capacity and enables meaningful interaction with content and global communities. This supports both engagement theory and cognitivism by showing how technology can facilitate the "relate, create, and donate" framework while building schemata through meaningful learning experiences. By focusing on what students say about their technology experiences, rather than adult assumptions or educator reflections about technology effectiveness, the research provides authentic insights into how digital tools actually function within learning contexts. The findings offer guidance for educators, administrators, and technology coordinators seeking to improve educational technology integration. Key recommendations include prioritizing student perspectives in technology selection processes, investing in reliable technical infrastructures and tools, and designing technology-enhanced learning experiences that promote creativity and global connection. By attending to student perspectives on technology integration, educational leaders can make more informed decisions about digital tool selection and implementation, ultimately creating more engaging and effective learning environments for all students. This study demonstrates that students are valuable partners in educational technology initiatives and their insights should inform future integration efforts.

Biography

Thomas Szymanski, EdD is a National Geographic Teaching Fellow (2014) and Fund for Teachers Fellow (2012) as well as a Golden Apple Finalist. He has taught grades 1st through 8th in Chicago, serving Gifted, Multi-lingual, and Diverse Learner Populations. His interest in technology and global empathy is rooted in his exploration of Antarctica through his National Geographic fellowship and the engagement of his students as he blogged daily. His students' interaction with his blog inspired his research as they followed him daily, often posing questions to be asked of scientists and environmentalists with him on the expedition.

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