

D. Digital Technologies

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Definition of Research Area and Terms

For the purposes of this review, we defined digital technologies as digital tools, strategies, and resources that are used to improve teaching, learning, and creative inquiry. The New Media Consortium organizes these technologies into seven categories: (a) consumer technologies; (b) digital strategies; (c) enabling technologies; (d) Internet technologies; (e) learning technologies; (f) social media technologies; and (g) visualization technologies (Johnson, Adams Becker, Estrada, & Freeman, 2015). Understanding the role of digital technologies holds particular relevance for middle grades education, given that some of the largest digital technology initiatives in United States schools in the past two decades have occurred in grades five through eight (e.g., Lowther, Strahl, Inan, & Bates, 2007; Texas Center for Educational Research, 2009) and also that young adolescents are among the greatest users of computers and the Internet (Bishop & Downes, 2015; Lenhart, 2015; Rideout, Foehr, & Roberts, 2010).

Literature Review Process

The group conducted its work over the course of eight virtual meetings. We began by reiterating the charge presented to us by the MLER SIG: To identify the most important areas to study within digital technologies in the middle grades

within the next three to five years. Then, we determined where we should draw the boundaries around our particular area, such as in school vs. out of school use, year span, types of documents, adult mediated vs. non-adult mediated, and content area emphasis. Next, we sought publications or other resources that already existed in terms of literature reviews on technology in the middle grades.

Based on our own research, reading, and experience in the field, we identified four appropriate sub-groups for the work:

1. Middle grades student use of digital technology for school-related learning
2. Middle grades teacher use of digital technology for teaching
3. New directions in digital technology use with middle grades learners
4. Systems and structures of digital technology use in the middle grades

We divided our group by area of interest and reviewed hundreds of studies. Databases included ERIC, JSTOR, Scopus, ProQuest, Google Scholar, A+ Education, Humanities & Social Sciences Collection, Australia and New Zealand Reference Centre, Index New Zealand, MasterFILE, ScienceDirect. Keywords included combinations of the following: middle grades, middle school, middle schooling, middle level, junior high, students, young adolescents, teachers, digital technology, educational technology, technology, assessment, formative assessment, summative assessment, literature review, equity, digital divide, access, access to information, student voice, and social media.

From the review, we identified potentially useful studies and compiled them into a shared archive based on sub-group. Finally, we identified a set of recommended research questions we believe to be most important areas to study within digital technologies in the middle grades within the next three to five years.

Research Questions

Middle Grades Teachers

1. How do middle grades teachers use technology
 - a. for formative, authentic, and summative assessment purposes?
 - b. to advance student learning within content areas?
 - c. to promote interdisciplinary learning?
 - d. to involve families in the education of their young adolescents?
 - e. to promote community-based learning?
 - f. to improve team efficacy and effectiveness?
 - g. to personalize learning in the middle grades?
2. What is the nature of teacher learning and professional development
 - a. through the use of social media?
 - b. in technology integration into content area instruction?
3. How do teacher educators
 - a. model technology use for teacher candidates?
 - b. use digital technologies within specific content areas?
4. What effect does teachers' knowledge of technology integration have on instruction and assessment in the content areas?
5. How do middle grades teachers perceive the integration of technology into instruction and assessment? In what ways are these perceptions changing?
6. What is the impact of digital media on the role of the middle grades teacher?
7. What new forms of middle schooling pedagogy are opened up by the advent and affordances of emerging technologies?

Middle Grades Students

8. What are the most effective uses of technology for improving middle grades students'
 - a. achievement within specific content areas?

- b. personal efficacy?
 - c. school engagement?
 - d. cognitive and emotional motivation?
 - e. digital literacies?
 - f. higher order thinking skills?
 - g. 21st century skills?
9. How are middle grades students using technology to direct their own learning?
 10. What is the role of gamification and/or badging in middle grades students'
 - a. achievement?
 - b. engagement?
 - c. cognitive and emotional motivation?
 11. How do middle grades students leverage social media for learning?
 12. How and to what extent are middle grades students engaged in new technologies, including
 - a. blended learning?
 - b. flipped classroom?
 - c. makerspaces?
 - d. wearable technology?
 - e. 3D printing?
 - f. augmented reality?
 - g. virtual reality?
 13. In what ways does students' in-school and outside-school use of technology for learning differ?
 14. How do students make connections between content/concept and technology use?
 15. What factors impact middle grades students' equitable access to technology in and out of classrooms?

Influential Readings

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