Technology for Learning in the Middle Grades: Editorial Remarks

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Over the past decade, middle grades education scholars have observed the steady increase in technology integration in schools. When we issued the call for this special issue to focus on technology for learning in the middle grades, we could not have imagined how many high-quality manuscripts we would receive. We are encouraged by the amount of quality research being conducted in this area, particularly as so many studies addressed questions within *The MLER SIG Research Agenda*, which calls for investigation into middle grades students' use of digital technology for school-related learning; middle grades teacher use of digital technology for teaching; new directions in digital technology use with middle grades learners; and systems and structures of digital technology use in the middle grades (Mertens et al., 2016).

While some praise the effectiveness of technology integration in today's classrooms, others express concern that technology may interfere with practices that are responsive to the nature and needs of young adolescents. Still others note that the myriad ways in which technologies are integrated have greater influence on outcomes than the tools themselves. For these reasons, it seemed appropriate to open this theme issue with two essays that invite us to broaden our scope as middle grades researchers, the first in terms of what constitutes 'technology,' and the second in terms of the lenses we select to study it.

Warner, Bell and Odom's essay, "Defining Technology for Learning: Cognitive and Physical Tools of Inquiry," launches our issue-long conversation about technology for learning in the middle grades. What is technology? And what is educational technology in particular? Warner, Bell and Odom assert that the commonly held view of educational technology as digital computing devices is problematically narrow. They argue for a more expansive consideration, to include more generally "tools that facilitate the process of learning." Grounding their concerns in middle level practices, Warner et al. urge "caution and deliberation when bringing technology into the middle grades to ensure that such integration does not supersede promotion of student voice, developmentally appropriate instruction, and integrative curriculum." In particular, these authors note the potential for technology integration to reinforce pedagogies that position students as recipients, rather than constructors, of knowledge, noting the preponderance of teacher-centered practices that exist in contemporary schools. They assert that, for technology to support learning, it must be defined as a problem-solving tool and they call for leaders to promote a definition that includes both cognitive and physical tools for solving problems.

We are similarly invited to broaden our perspectives by Lamb and Weiner, who argue in their essay, "Extending the Research on 1:1 Technology Integration in Middle Schools: A Call for Using Institutional Theory in Educational Technology Research," that institutional lenses are an important and largely absent component of understanding how 1:1 technology programs effect change in the middle grades. Through their review of research on 1:1 programs, they make a compelling case that many of our current understandings are constructed around the individual, rather than the institution, as the unit of analysis. Given the complex institutional environment in which educators attempt to create change, Lamb and Weiner assert that, "if we want to understand how and why technology is used in middle school classrooms, and whether it is worth our continued collective investment, we need to understand not just the technology, classrooms, and schools in which they sit, but also the unique and long-standing norms and structures in middle schools' institutional environment."

Following these essays are five robust studies that investigate technology use in the middle grades. Hughes and Read provide a mixed-methods, multiple case study of students' experiences in their article, "Student experiences of technology integration in school subjects: A

comparison across four middle schools." Through descriptive survey and focus groups, these researchers examined middle schoolers' technology use in school subjects, providing a helpful window into students' access to, use of, and perspectives on digital technologies for learning. With a sample of over 1500 young adolescents, this study offers important and nuanced insights for middle grades educators, illustrating the need for more equitable technology integration across schools and subject areas. Hughes and Read provide a set of recommended strategies for those involved in making decisions about technology adoption; at the same time, they remind us that, while we might start with understanding students' perspectives, we must also "push deeper to understand other conditions within the classroom, school, or district ecology that may support or undermine movement toward digital equity and future ready learning in subject areas to ultimately develop holistic change."

Kline and McCarthey take up this focus on equity in their study, "Mediators of Inequity: Online Literate Activity in Two Eighth Grade English Language Arts Classes." Using Cultural Historical Activity Theory, these researchers deftly explore the nature of online literate activity and examine the mediators operating in two classes taught by the same teacher in a school with a diverse and low-income population. Noting the differential influence of accountability policies at play, Kline and McCarthey provide a detailed look at the online curricula and observe that "while some students may have access to online activity that will offer the development of a wide range of literate identities, other students' online activity may be restricted by the identity of 'struggling learner.'" They challenge the oft-held assumption that an online format promotes equitable opportunities, reminding us that the promise of digital technologies cannot be understood without an examination of the wider reforms in our educational institutions and hearkening back to Lamb and Weiner's argument for attending to institutional environment.

Moran also grounds her research in the English Language Arts (ELA) classroom as she tackles a question of technology integration in her study, "'Just Don't Bore Us to Death': Seventh Graders' Perceptions of Flipping a Technology-Mediated English Language Arts Unit." In this mixed methods study, Moran examines the difference in engagement between 183 middle schoolers studying English Language Arts in a traditional classroom and those same students in a flipped classroom. Employing a hybrid embedded design and student interviews, Moran assesses students' cognitive, behavioral, and emotional engagement. Despite the popular claim that the flipped classroom reengages reluctant learners, quantitative results determine (spoiler alert) that overall student engagement decreased during the flip, and qualitative findings suggested that students were ambivalent, with most agreeing that the flipped classroom model was inappropriate for everyday use in ELA. Like Moran, we were struck by the study's quantitative finding indicating that "African-American and Hispanic students could be the ethnoracial groups most engaged by the flipped method." While Moran rightly observes that the sample size was very small and not generalizable, it does invite important questions for future research, in keeping with several of the earlier articles' emphases on equity.

The focus on literacy learning continues with the next research study included in this issue, Mackay and Strickland's "Exploring Culturally Responsive Teaching and Student- Created Videos in an At-Risk Middle School Classroom." Using Culturally Responsive Teaching (CRT) as their theoretical framework, Mackay and Strickland acknowledge the importance of valuing and drawing upon the cultural identities and languages shaped by students' families and communities in classroom instruction, focusing in particular on adolescent digital identities. As 18 middle schoolers and their teacher created iPod videos of their lives outside of school, this study explored the "culturally responsive pedagogical pursuit of relationship and relevance in the classroom" in the context of summer school English classes. By illustrating the influence of student-created video on bridging the home and school disconnect, the study also sheds a powerful light on the potential for students' contribution to creating culturally responsive classrooms.

With the final research piece in this issue, Hollands and Pan move us out of literacy and into mathematics with their study, "Evaluating Digital Math Tools in the Field." Although their focus is not exclusively within the middle grades (they include third through sixth grades in this study), these researchers examine two digital math tools that are widely adopted in middle schools. Hollands and Pan analyze if the use of

each tool is associated with student performance gains and identify the resource requirements and costs of each tool. They observe, "Digital tools that are adaptive and require students to report out on what they have learned may be more helpful than tools that simply allow students to practice math skills in a more engaging way than pen and paper worksheets." Given that technology integration is often costly, school leaders must make careful choices about expenditures and attend to the many hidden costs that are present when adopting something new. We note that studies examining resource requirements and implementation costs are too rare in middle grades education and we appreciate these researchers' willingness to tackle these challenging questions.

The final piece in this theme issue on technology for learning in the middle grades is a practitioner perspective on "Leveraging Technology toward Family Supports for and Development of Middle Schoolers." In this article, Gil illustrates the use of a community-based technology program geared toward Latinx immigrant families to influence middle school students' familial support, social capital, and identity development. With a trifold purpose of teaching digital skills to families, fostering parent/guardian/child connections, and motivating college completion, the program addressed the needs of three stakeholder groups. Like other authors in this issue, Gil calls upon us to look at "the context in which the technology is being learned and utilized. We must consider what larger goals we might address for our students using technology as a lever." We are also reminded that technology learning- and learning in general- for young adolescents is not confined to the school walls or school day.

Although this theme issue was focused on technology use, we are struck by these authors' emphasis, explicit in some articles and implicit in others, on broadening the collective scope of middle grades educational research. They call on us as researchers to adopt new definitions, theories and methodologies. They invite us to revisit assumptions about equity and where learning happens. In these ways, they represent what we hope *Middle Grades Review* can embody, a vehicle to move our mutual field forward with new and diverse voices, disciplines, and perspectives.

References

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