

BEST PRACTICES IN TEACHING DIGITAL LITERACIES

LITERACY RESEARCH, PRACTICE AND EVALUATION

Series Editors: Evan Ortlieb and Earl H. Cheek, Jr.

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LITERACY RESEARCH, PRACTICE
AND EVALUATION VOLUME 9

BEST PRACTICES IN TEACHING DIGITAL LITERACIES

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Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2018

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-78754-434-5 (Print)

ISBN: 978-1-78754-551-9 (Online)

ISBN: 978-1-78754-720-9 (Epub)

ISSN: 2048-0458 (Series)



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Certificate Number 1985
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FOREWORD

Living in a digital era with constant dynamic flux means that we must stay up to date with the ever-changing approaches to teaching literacy both in PK-12 settings and teacher preparation. Texts, curriculum, and literacy practices both in and out of educational spaces in PK-12 and teacher education are moving toward paperless, interactive, multimodal, and generally high-tech mediums. No longer is technology an add-on to instruction; it is essential to communication and creates new platforms and possibilities for learning. Indeed, classroom instruction and teacher preparation must embrace the digital turn to stay current and relevant. It is essential that we seek to understand and implement meaningful digital-based literacy instruction in the classroom and understand both the benefits and constraints of such practice within teacher education programs.

This volume showcases cutting-edge research that focuses on aligning PK-12 instruction and teacher education with digital pedagogies and literacy learning. The research setting varies from elementary and secondary classrooms (field-based research), pre-service teacher preparation (university-based settings), and cyberspace (e.g., social media). Across the chapters, the authors seek to connect theory to practice toward innovative teaching with emerging technology tools, digitally connected curricula, and reimagined teacher preparation processes. This volume is mindful of the possibilities of technology-based literacy learning while offering caveats and cautions when implanting this type of practice.

Peggy Semingson

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CHAPTER 1

DISRUPTIVE INNOVATIONS FOR TEACHER EDUCATION

Evan Ortlieb, Annalisa Susca, Jean Votypka, and
Earl H. Cheek, Jr

ABSTRACT

Purpose – The purpose of this chapter is to understand how disruptive innovations related to digital literacy can improve traditional approaches of teacher education.

Approach – First, the evolution of teacher education from tradition to the digital era is discussed, highlighting the evolution of various traditions, theories and models of teacher education. The authors then ask the questions, “Why do teacher education programs continue to lag in the creation of a true alignment with the current needs of modern students?” and “How can this be done and where should we begin?”

Findings – The authors believe that professional growth is the key to teacher success. Reformed teacher education programs where digital literacy is grounded in relevant contexts, collaboration, and multimodal designs will promote collective collaboration among students and teachers. Digital literacies curriculum should draw on multimodalities and position students as producers of knowledge for a public audience. These disruptive forces function to improve traditional notions of teacher education, providing a catalyst to the democratization of knowledge for teacher development.

Practical Implications – Collaboration across digital platforms promotes learning through crowd-accelerated learning, rhizomatic learning, citizen inquiry, massive open social learning, maker cultures, and blockchain platforms. These approaches can foster genuine and relevant learning in teacher education programs, modernizing and matching instructional techniques with the teacher preparation demands of today and tomorrow.

Keywords: Digital literacy; teacher education; blockchain; crowd-accelerated learning; rhizomatic learning; citizen inquiry; social learning; maker culture

It has long been known that technology has the potential to revolutionize the field of teacher education through the connectedness of content. Coupled technologies will reinvent how we seek, find, evaluate, use, and create information. The ability to teach students how to utilize these digital literacies in digitally connected environments will largely determine a teacher's effectiveness. These changes must begin in preparation programs and if teacher education programs do not begin to evolve accordingly, they will soon be obsolete.

The field of teacher education has experienced a myriad of changes over the last century much like most ways of life have evolved alongside the introduction of new technologies. The Internet, in particular, changed the world forever in the 1990s when it became widely accessible; however, it is predicted that blockchain technologies, or jointly managed databases of information, will dwarf the change experienced with the advent of the Internet (Edelman, 2017). The ways in which this technology will impact teacher education and in particular, the teaching of digital literacies, will be further discussed after a review of the traditional approaches to teacher education in an effort to situate historical, present, and future contexts.

THE EVOLUTION OF TEACHER EDUCATION: FROM TRADITION TO THE DIGITAL ERA

Historical approaches to teacher education and advances in industry/technology have contributed in varying degrees to prevailing pedagogies today. David Labaree of Stanford University (2008) purported that “teaching has existed long before teacher education,” noting that the phenomenon of formal teacher education programs only became a norm around the turn of the twentieth century. Prior to this time, a liberal arts education was thought to provide a sufficient knowledge base for educators to learn how to teach others, and most teachers earned their credentials via apprenticeships under the tutelage of more experienced professionals (it is worth noting here that for this reason, among countless others, that teaching is indeed a craft to be honed).

Onward from the days when the educational setting was the home or the church, the birth of the public school in the mid-seventeenth century marked the

beginning of a very long period of transition in the standard protocol of teacher education. While Boston Latin School (founded in 1635) is still recognized to be the oldest public school in the United States of America, progressive reforms in education did not occur until the turn of the twentieth century, with John Dewey spearheading this movement.

Dewey's theories of progressive education can be thought of as the turning point in the polemic between teacher-centered and learner-centered education, as Dewey's pragmatism highlighted the importance of meaningful activity in the classroom, moving away from the tradition of social efficiency that pervaded the widespread pedagogical culture. According to theories of social efficiency, teacher selection was based upon an individual's skill level in areas such as analyzing literature and/ or morality (Schalock, 1979); classroom instruction was a mirror of the teacher's preparation in that it was focused on the imparting of these traits and skills so that students could one day fulfill the needs of society. Little attention was paid to the needs of the individual learner or the holistic educational needs of students in a classroom and thus, Dewey's emphasis on self-direction and community in the classroom was a welcome response to the tenets of social efficiency.

The Developmentalist tradition was ushered in most notably by Jean Piaget and his theories on cognitive development, which have impacted both teacher education programs and their embedded pedagogies. With a focus on psychology and brain development, Piaget's model contextualized a learner's ability and focused on one's needs, rather than the former teacher-centric focus on a generic skills set outlined by the needs of society. Furthermore, Piaget's model emphasized the need to treat the developing brain appropriately as a clinical response to the commonly asked question of how can we speed up learning. Piagetian education models suggest that premature teaching of complex concepts results in a lack of true cognitive development (May & Kundert, 1997).

While both Dewey and Piaget's theories modernized the crucial role of the individual in the educational process, other educational thinkers of the first half of the twentieth century expressed concern over the disconnect between learning in and outside the classroom. Dewey (1916) wrote that the true purpose of the classroom was "to shape the experiences of the young so that instead of reproducing current habits, better habits shall be formed, and thus the future adult society be an improvement on their own" (p. 92). This idea of social reconstruction is still present today, with contemporary reconstructionists calling for curriculum changes that lead to more democratic contexts in schools (Evans, 2015).

Spanning more than 300 years, the various traditions, theories, and models of teacher education have surely evolved for the purpose of educating students in a way that effectively enables them to learn, and to partake in a metacognitive awareness to function as contributing members of society once they are no longer in the classroom. However, while efforts have been made to reflect on the criteria needed to learn, or the approaches for learning content, teacher education programs continue to lag in the creation of a true alignment with the current needs of modern students nationwide. And so, as educators with centuries of history to look back on for insight, we must ask the question: *Why?* Despite upcoming improvements to standards, change needs to happen before educators are placed

in their classrooms, while they are still learning how to teach. Research supports the idea that changes in pedagogical education are far more effective when they are included as part of teacher education programs.

And thus new questions arise: *How can this be done and where should we begin?* The first steps will always be linked to an understanding of history and tradition that sheds light on how we have gotten as far as we have, and reflection on how we can do better. For example, in past years, teacher education programs relied upon professors to lecture, while expecting that students read required texts, partake in classroom discussion, attend labs, reflect on practicum experience, evaluate their personal teaching effectiveness, plan for necessary interventions, and the like. In addition, teacher learning has so often been contingent upon factors such as observational analysis, preparation, participation, professor quality, and the inherent desire to learn. Without the perfect conditions of these factors “aligning like stars in the night,” the result could often be wasted time, unread chapters, and therefore a loss of valuable learning opportunities. Just as educators want to fully prepare their students for their success in the world beyond the classroom, teacher educators should aim for the same, with one difference being that teachers stay in the classroom. Therefore, professional growth is the key to teacher success.

DIGITALLY CONNECTED ERA

Digital literacies were originally defined as the ability to understand and use information inclusive of digital sources (Gilster, 1997). At the core of digital literacy was mastering ideas, not keystrokes, and requiring one to use and make sense of networks. Sparks, Katz, and Beile (2016) stated that to grow our capacity, we must build a reliable aggregate of information; possess retrieval skills and the ability to critical think and evaluate the information; read and understand non-sequential and dynamic materials; combine tradition tools in conjunction with networked media and people as sources of advice; filter incoming information; and publish and communicate information effectively (Lankshear & Knobel, 2014). Blockchain platforms through constant communication and information building provide truly an open-access technology for all learners. But these designs must be integrated within reformed teacher education programs.

According to Price-Dennis and Matthews (2017), there are four tenets for teacher education in the digital age:

- (1) Digital literacies should be grounded in relevant contexts that incorporate students' in-school and out-of-school identities (Castek & Beach, 2013);
- (2) digital literacies promote collective collaboration among students and teachers (Hagood, Provost, Skinner, & Egelson, 2008; Price-Dennis, Holmes, & Smith, 2015);
- (3) digital literacies curriculum design should draw on multimodalities (Price-Dennis, Fowler-Amato, & Weibe, 2014); and
- (4) digital literacies should position students as producers of knowledge for a public audience (Hagood et al. 2008; Price-Dennis et al., 2015).

These tenets of relevant contexts, collaboration, multimodal designs, and digital literacies can be facilitated by a number of approaches in teacher education

programs including crowd-accelerated learning, rhizomatic learning, citizen inquiry, massive open social learning, and maker culture to set the stage for student empowerment in K-12 contexts.

Crowd-accelerated Learning

Crowd-accelerated learning facilitates learning settings in which students learn from the experience and expertise of others (Lund, Furberg, Bakken, & Engelién, 2014). Those with common interests come together to share and compete and improve. The bigger the crowd, the greater the chance of innovation, and the more people who witness and benefit from that innovation. Anderson (2011) stated that crowd-accelerated learning is a self-fueling cycle of learning that could be as significant as the invention of print.

One of the goals of crowd accelerated learning is to bring enough people with a common interest together and they will start to share, compete, and improve. The bigger the crowd, the greater the chance of innovation, and the more people who witness and benefit from that innovation. The system feeds upon itself. Teachers can greatly benefit from crowd-accelerated learning though digital tools in the classroom, because they are founded upon principles that are naturally engaging and interesting for students.

What if every teacher tweeted one thing a day that they did in their classroom to a school hashtag, and they took five minutes out of their day to read each other's tweets? What impact would that have on learning and school culture? Not only would we get a daily window into each other's classrooms and accelerate learning, but also this could accelerate relationships among staff, students, and community. We would not only share our stories, but also partake in short reflection every single day. Other pedagogies that accelerate learning include:

- Open Facebook, Twitter, and YouTube (and other social, 2.0, and video networks) and encourage their use throughout our schools, for both teachers and students. If we seek educational innovation among our educators and among our students, we need to support and encourage, not block or discourage them, to be online, networked and networking, and watching, being inspired by, and contributing to YouTube (etc.).
- Teach and learn video-production skills throughout our schools, and by we, I mean both adults/educators and kids/students. Adults need to learn this too and students can teach them.

Rhizomatic Learning

Rhizomatic learning uses the botanical metaphor of the rhizome to describe the complex and often messy nature of learning. It is a way of thinking about learning based on ideas described by Gilles Deleuze and Felix Guattari (1987) in *A Thousand Plateaus*. A rhizome, sometimes called a creeping rootstalk, is a stem of a plant that sends out roots and shoots as it spreads. Rhizomatic learning shifts attention away from fixed meanings and toward action and the new "becomings"

that are an important part of literacy performances. As a theory, which implicitly questions established power structures and social organization, it has existed on the fringe of academic discourse and used largely in research to suggest alternative perspectives across a range of fields from geophilosophy to healthcare education (Gough, 2005; Holmes & Gastaldo, 2004).

Teacher education is primed to maximize the utilities of rhizomatic learning from decentralized databases of knowledge, whereby pre-service teachers can share and co-create understandings of content, pedagogy, and the evolving field (e.g., children’s literature portfolios, bibliographies of key resources, best practices for addressing diversity in literacy instruction; Ortlieb & Cheek, 2017), and even strategies for leveraging student experience and emerging expertise (Rennie & Ortlieb, 2013) come together to form the “Wikipedia” of teacher education. The primary point of difference is that as the field changes, historical trends remain, showcasing how blocks of information build upon one another in a decentralized fashion as compared to a traditional centralized system that extends from an original source (see Fig. 1).

This is particularly important for teacher education as current and contextual learning is what is lacking many times, where pre-service teachers are exposed to a snapshot of the history, shifts, trends, and hot topics in the field in literacy. As such, pre-service teachers fail to develop deeply rooted expertise and the ability to connect and contextualize that learning by zooming out from a current event to relate its relevance more widely to other issues and even time periods. An example would be when teaching pre-service teachers about close reading strategies that were re-popularized with the advent of the Common Core State Standards, it would be relevant to also relate this strategy to the three-level study guide, popularized by Herber (1978). Why? Because it demonstrates that new ideas are not always novel, they are simply reformulated ideas for a current context. The idea of re-reading is not new nor is the idea of reading for a purpose. The combining of the two practices is what makes close reading an effective strategy for incorporation across all disciplines.

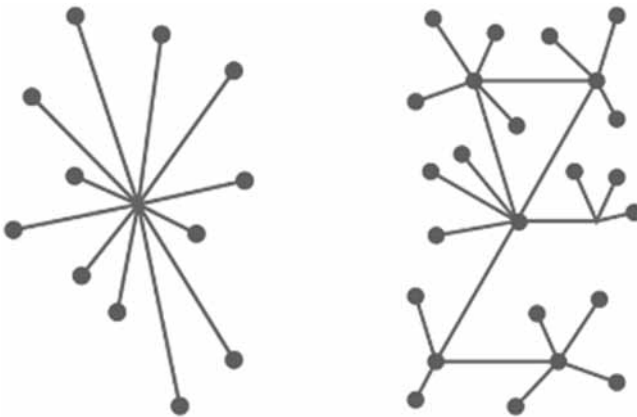


Fig. 1. Centralized Versus Decentralized Networks.

So with that in mind, one might push the envelope further and hypothesize that changing the speed at which we read during multiple readings of a text might provide for a different reading experience. Ortlieb (2014) proposed that reading twice as fast as one might ordinarily during an initial read provides the footing for building upon with a secondary read at a slower pace than normal. Thus, the same amount of time is devoted to the total reading experience but the varied speed provides the mind with a different experience each time. These sorts of ideas can be linked to an over-arching topic of re-reading through blockchain databases whereby pre-service teachers organize and collectively create knowledge, which has or will become the epitome of being a teacher in the digital age.

Citizen Inquiry

We preach regularly about the importance of meaningful learning to our pre-service teacher candidates but how many times do we forget to engage in just that with them? Citizen inquiry projects embed relevancy into current events from a standpoint of advocacy and social justice. For instance, many of our pre-service teachers are concerned with how well teachers cultivate environments in K-12 schools whereby teachers give voice to students. We can do the same through citizen inquiry projects that promote the development of ethical and socially conscious teachers within our teacher education programs. Digital networks in online arenas are a hotbed for social movements to grow and be cultivated.

For instance, Project Citizen is a curricular program administered by a national network of coordinators that promotes competent and responsible civic participation by giving students a vehicle to influence and monitor public policy (Center for Civic Education, 2017). Might pre-service teachers want to make some changes to their own development? Would not students appreciate an opportunity to co-design a teacher education class for their peers or selves, or even have a platform to vocalize their informed opinions on what they need and how to meet those evolving needs. The idea of an inquiry that directly impacts one's development seems not only sensible but also appropriate for building a transparent and fruitful program.

Pre-service teachers who are studying to be content area teachers can implement these same practices, whether they are teachers of English (social media campaigns and digital writing skills), social studies (digital advocacy and civic engagement), or mathematics/science teachers (analytical thinking and scientific inquiry in digital environments). Project Citizen aims to empower students to express their opinions, decide which part of government is most appropriate for dealing with problems they identify, and influence policy decisions at that level. By incorporating methods for interacting with others through cloud-based shared documents or forums whereby students can work with each other, their teachers, and other volunteers as they identify a problem to study, gather information, examine solutions, develop public policy positions, and create action plans. These collaborative projects that reside in digital spaces have lasting impacts on the lived world; truly, the development of democratic values and principles and political efficacy can be fostered through maximizing the impact of inquiries carried out in

communal, collective, and increasingly in cloud-based environments ([Center for Civic Education, 2017](#)).

Massive Open Social Learning

What Is It?

Social learning goes beyond just learning from one another. The ways in which content and information is organized weighs heavily upon the ability of an educator to position students for quality learning experiences. In the military, collective training occurs through informal learning through games and socially; not run by teacher specialists; fosters social bonding for the complexity of “battle.” With more and more simple and complicated work being automated, people need to engage in complex and chaotic work to develop emergent and novel practices as they begin to navigate new environments.

Jarcho (2015) said, “Integrating learning at work ensures that we can adapt to a changing workplace. Through communities of practice and social networks, we can support social learning.” Human relationships fostered through social networks provide the vehicle for evolving practices to develop as the field and societal demands change (see [Fig. 2](#)).

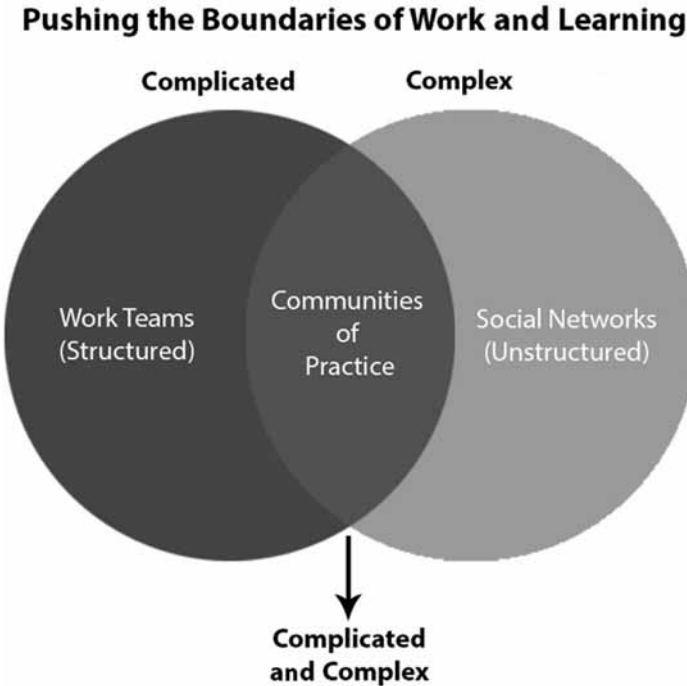


Fig. 2. Communities of Practice.

Foster Peer-to-Peer Learning

Work tasks often involve embedded learning necessitating talking out loud or narrating one's work in socially connected circles, as much of social learning happens outside of the classroom. People learn informally 80% of what they know to know through on the job training and experiences (Henschel, 2001). Part, but not all of informal learning, is done socially. Today, the participation of social learning involves content creation and dissemination, often times in the format of videos (Ortlieb, McVee, & Shanahan, 2015; Ortlieb, Shanahan, & McVee, 2015).

The challenge becomes how can teachers effectively support and encourage informal and social learning. Hart (2015) provides some tips for modern learning environments including: reducing the size of content from hours to minutes; tap into the power of video and animation; ensure content is accessible from any device; helps students build learning mindsets, extract learning from their work, and become independent learners in the physical and digital world.

Moreover, massive open online courses, can be integrated into teacher education courses, doubling the teacher's opportunities to be present in the physical and digital classroom. Some students can learn on campus while others can learn from afar in an effort to parallelize the teaching (Nortvig, 2017). Peer learning across mediums also has far reaching implications for deep learning from and with others. Popov's (2009) research found that programs rely highly on the functionality of Information and Communications Technology (ICT) tools for students to create mediated artifacts. On teaching digital literacy skills and communicative tools, students can thrive in all learning environments is of the utmost importance.

Maker Culture

Some pedagogies use multiple mediums to contextualize learning within the modern era. Just like the slow food movement that values foods cooked from scratch, the maker culture encompasses opportunities to stop and reflect on both social and individual learning. An increase in access to digital forms of technology has shifted the pedagogical landscape from making useful, physical objects such a sewing a garment, building a birdhouse, or constructing a model airplane to instructing young people in communicating, researching, and creating via interactive computing (see Chapter 13). Even new currencies or digital forms of property can be "mined" (Antonopoulos, 2015), blurring lines of conventional banking and financial systems. Needless to say, current times are in need of current pedagogies that prepare learners to thrive in a multitude of contexts.

Educators are revisiting making as a valuable site for teaching and learning. This does not mean excluding modern advancements in technology but rather bridging physical processes of construction and making with digital media. The "maker movement" describes the wave of interest in constructing and sharing personal inventions and creative artifacts, reconfigures the learner as a producer rather than a consumer. Creating is a next-generation digital literacy skill; pre-service teachers can create songs to teach multiplication tables, or video skits of what guided reading looks like that can be easily shared on digital platforms as permanent mainstays for widespread consumption.

The learning that occurs through the experience of making and the learning that occurs through instruction in new media share an unexpected kinship. Groff (2013) points out that “we are reaching a period where it is just as easy for young people to produce multimodal, multimedia content as to consume it” (p. 23). Makers contend that the process of imagining, creating, refining, and sharing a custom artifact offers a unique form of both collaborative and self-directed learning for youth and adults.

CONCLUSION

Learning across physical and digital spaces looks very different than it did in years past. The history of teacher education is littered with pedagogies ranging from teacher-centered to student-centered foci, with varying targets for meeting standardized and individual outcomes. Today more than ever, collaboration across digital platforms promotes learning through crowd-accelerated learning, rhizomatic learning, citizen inquiry, massive open social learning, and even a maker culture. These approaches can foster genuine and relevant learning in teacher education programs, modernizing and matching instructional techniques with the teacher preparation demands of today and tomorrow. Disruptive forces like those aforementioned function to improve traditional notions of teacher education, providing a catalyst to the democratization of knowledge for teacher development.

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