Perceptions of Digital Tools and Creativity in the Classroom

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ABSTRACT

We explore how digital tools can support children’s creativity in classroom. In response to a growing need for tools to support children’s digital literacy, we take a step forward to explore digital tools to support children’s digital creativity. We draw insights from interviewing twelve K-6 teachers about their experience using digital tools in the classroom. Findings uncover teachers’ perceptions of the role digital tools play in the classroom, intersections between accessibility, usability, and developmental appropriateness of digital tools. The article generates insights on the role of digital tools used by teachers, pedagogic methods, school contexts, and access to interactive technology.

KEYWORDS


INTRODUCTION

As children are becoming more familiar with computers, the Internet, and other digital technology from a young age, more emphasis is being placed on digital tools (Jenkins, Ito, and boyd, 2015; Martinez and Stager, 2013). Digital tools encompass both digital technology, like an iPad, and digital media, like YouTube or an iPad application (Jenkins, 2009). Digital tools include both physical and interactive technologies such as littleBits (“EDUCATORS – LittleBits,” n.d.), adafruit (adafruit, 2012), and micro:bit (“Micro:Bit Educational Foundation,” n.d.), which offer interventions for creating and learning. Additionally, the development of virtual technologies such as Google Classroom (“Google Classroom,” n.d.), Apple Classroom (“Classroom on the App Store,” n.d.), and other educational applications, (e.g., Epic) (“Epic!,” n.d.), offer digital alternatives for teaching, managing assignments, and monitoring classroom technologies (“Google Classroom” n.d.; “Classroom on the App Store” n.d.). All of these resources are developed to facilitate teaching or improve children’s digital literacy which refers to evaluating and composing information via digital media (Lankshear and Knobel, 2008; diSessa, 2000; Papert, 1980). Many studies focus on digital literacy and improving assignment and grading management, yet there is still a need to address how digital tools assist children’s development of digital creativity as an intersection of the creativity and digital media (Sefton-Green and Brown, 2014; Papert, 1994; Resnick, 2017). While digital tools exist for children to learn coding and problem solving, (e.g., ScratchJr) (Rusk, 2017; “Scratch – Home,” n.d.), there is still a need to identify, fund, and provide professional development for a model that successfully integrates digital tools to teach digital creativity to elementary age children (Papert, 1994; Resnick, 2017; Wagner and Dintersmith, 2015). One model that illustrates the integration of digital tools across curriculum is the Pedagogy Wheel

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The Pedagogy Wheel combines the cognitive categories of Bloom’s Taxonomy (Anderson et al., 2000; Bloom, 1956) (i.e., Remember, Understand, Apply, Evaluate, and Create) and a well-known pedagogical framework called SAMR (i.e., Substitution, Augmentation, Modification, and Redefinition) (Puentedura, 2009). This model can be used to provide professional development framework that emphasizes teaching critical and creative thinking skills by using digital tools.

To examine how digital tools are used to teach creativity to elementary students, we designed a qualitative study (Creswell and Poth, 2018) using a contextual inquiry approach (Holtzblatt and Beyer, 2016) to explore the role of digital tools in K-6 classrooms, regardless of level of proficiency in either digital literacy or creativity. Findings offer teachers’ perceptions on current digital tools used to improve digital creativity and literacy. We describe the study design process, insights into the usability and user experience of the digital tools, the understanding of the creative use of digital tools, and design considerations of digital tools to improve digital creativity and literacy. One aspect that received particular teaching attention was information abundance, surplus, and access (Flew, 2014; Jenkins, 2006). With the digital divide introducing inequality to access, use, and impact of information and communication technologies (ICT) across the globe as well as in the United States (Norris, 2001), we wanted to discover if and how the inequitable access to digital tools affects creativity in the classroom.

In this paper, we explore how digital tools and their accessibility influence children’s creativity as opposed to literacy. Specifically, we draw insights from interviewing twelve K-6 teachers to explore their experience using digital tools in the classroom. Creative work typically involves different schools of thought, however there is a discrepancy between the requirements of the creative process and the support tools necessary for creativity (Honey and Kanter, 2013; Resnick, 2017; Resnick et al., 2005; Robinson, 2011). The current research has demonstrated that creativity support tools should enable exploratory queries and collaboration and provide record-keeping. In addition, the metaphorical notion of “low thresholds, high ceilings, and wide walls” suggests that creativity support tools should be easy for novices while providing a wide range of functionalities for experts (Shneiderman et al., 2006).

Against this backdrop, our research explores: (i) how the trend of using digital tools in the classroom has evolved to influence children’s creativity, (ii) how and why do digital tools impact children’s digital creativity, (iii) what are the pros and cons of using digital tools in the classroom for creative activities, and (iv) how the digital divide impacts children’s digital creativity.

Examining similarities and differences between teachers’ visions, our findings contribute rich insights as to how digital tools can respond to variations in children’s creativity, and how these tools account for differences in creativity styles, pedagogical approaches, school contexts, and available resources. Furthermore, by demonstrating the value of digital tools in children’s creativity and literacy, we discuss the importance of the ‘equality’ not only for accessibility, but also for children’s creativity and literacy.

BACKGROUND

This review is organized in four parts. The first part reviews trends of teachers integrating digital tools into elementary classrooms. The second part provides an overview of digital technology and media in the classroom as pedagogical methods. This section also introduces a pedagogical framework, SAMR. The third part presents a definition of creativity and describes common digital tools used to assist in the development and practice of creativity, specifically for enhancing digital creativity. The final part provides a review of elementary students’ creative use of digital tools in addition to a snapshot of the influence that digital inequality may have on children’s creativity.

Integrating Digital Tools in the Classroom

Present Technology use, particularly in the early grades, remains infrequent (Vockley and Lang, 2011; Wartella et al., 2013). There are two basic barriers to teachers’ technology use in elementary
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