The Effects and Benefits of 1:1 Learning from a Teacher's Perspective

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Abstract: This literature review was written to communicate the findings uncovered after thorough research was conducted to determine the effects one-to-one (1:1) computing initiatives can have on teaching and learning. The studies utilized for this literature review connect a wide range of topics pertaining to 1:1 computing that include student motivation and achievement, preferred devices, educator perspectives and perceptions, professional development, inclusive environments, and collaborative learning. At the end of the review, it was determined that in all areas of 1:1 computing it is evident that strong professional development and careful planning is needed to properly implement a successful integration program that supports teaching and learning. The findings of this review determine the need for further, more specific research to be conducted on ways in which 1:1 technology can continue to improve and transform 21st century learning in K-12 environments.

Introduction

To support 21st century learning, one-to-one (1:1) device initiatives are becoming increasingly popular in classrooms across the globe. Because technology has started making a more prominent presence in teaching and learning, many school leaders and stakeholders have started considering the transition to provide individual devices for students to better support learning. As this trend becomes more popular and gains more traction, there are many key factors that must be considered before making the costly investment to put devices in the hands of students more regularly. This review of literature closely examines studies that have been conducted to provide evidence supporting the effectiveness 1:1 computing can have on both teaching and learning practices, as well as provide the viewpoints and perceptions on the initiatives from both teachers and students.

In a world where the traditional learning atmosphere has unsuccessfully sustained students' positive attitudes towards learning, it is important to begin analyzing the essential role 1:1 technology can play in engaging students in learning (Varier, et al., 2017). However, it is equally vital that careful attention be paid to the many crucial components that come with 1:1 computing. Providing educators with

proper professional development that pertains to content and pedagogical practices is a key factor in successfully launching this type of program. (Lawrence et al., 2018; Harris et al., 2016; Musgrove et al., 2021; Morrison, 2019; Varier et al., 2017). Much of the information communicated through this review revert back to the importance of sufficient professional development being provided for teachers before devices are given to students in order to positively impact teacher perceptions and confidences when it comes to implementing technology in teaching.

Synthesis

In the educational realm, 1:1 computing can be identified as a movement in which each student is given a device to use for individual learning purposes in a whole group, small group, or solitary learning atmosphere (Lawrence et al., 2018; Varier, et al., 2017). One-to-one computing efforts really began making a presence in classrooms after the No Child Left Behind Act of 2002 worked to decrease the digital divide happening among student populations and instill digital literacy skills in all students creating equality in learning (Harris et al., 2016). Now, two decades later and post-Covid, it is almost impossible to implement effective teaching practices without the use of technology.

With the vast majority of today's students identifying as digital natives, it is important to begin tailoring instruction to students in the technological language that is embedded into their daily lives (Morrison, 2019). By engineering instruction in a way that speaks to our students, 1:1 learning is thought to have the potential to activate student engagement and increase motivation in learning. Harris et al. (2016) describes how recent technological innovations have been designed to differentiate learning in ways that allow students to experience success on personal levels. In a study conducted on the impact 1:1 usage has on middle school students, Downes & Bishop (2015; as cited in Lamb & Weiner, 2018) found that the integration of technology for middle school students is an effective method used to connect many core practices used in the middle grades to boost engagement.

While technology does have the ability to enhance teaching and learning, the effectiveness of 1:1 learning is not just the presence of technology, but rather the skill level of the teacher integrating the tech tools into learning (Lawrence et al., 2018). In many device integrations, an educator's perceptions of the implementation are major indicators of the success of the program (Lawrence et al., 2018; Morrison, 2019; Musgrove et al., 2021). To mold teacher perception in a positive manner, studies showed that relevant professional development that pertained to specific content areas contributed greatly to how a teacher perceived 1:1 learning initiatives (Musgrove et al., 2021; Morrison, 2019; Varier et al., 2017; Harris et al., 2016; Lawrence et al., 2018). in order to better incorporate technology in teaching and learning (Morrison, 2019).

The installation of 1:1 computing requires a rewiring of current pedagogical practices. It has been proven that merely providing devices does not improve teaching and learning. Pedagogical changes must be prominent above technological advances in order for these initiatives to be successful (Powers et al., 2020). A shift in pedagogy consists of an altered focus in which learning gravitates from teacher-centered to student-centered. Studies support the notion that 1:1 computing affects teachers' practice and control variables and can create a role reversal moving learning from teacher-centered to student-centered (Bergström, 2019). By modifying teaching practices to include technology as a tool for learning, student learning can be improved (Lawrence et al., 2018). Proper training concerning pedagogical shifts in instruction is vital in launching and sustaining 1:1 computing initiatives (Morrison, 2019). By implementing training that pertains to pedagogy, content, and technology, teacher self-efficacy can be raised, and greater implementation methods can be carried out in the classroom (Morrison, 2019).

Conclusion

One-to-one device integration is a trend that is only just beginning. As classrooms continue to revolutionize around technology, many districts will begin making larger investments in proposals that support the use of individualized learning through devices. With devices becoming more affordable, the possibilities for more schools to implement 1:1 initiatives are more attainable than ever (Morrison, 2019).

While device choice is an important aspect of these programs, studies have shown that professional development that properly equips teachers in utilizing the devices is the most important factor that contributes to the sustainability of a new implementation (Varier et al., 2017; Haris et al., 2016; Lawrence et al., 2018; Musgrove et al., 2021; Morrison, 2019; Lamb & Weiner, 2018).

Technology in and of itself will not create transformative learning environments that are conducive to student-centered learning. Rather, teachers who perceive technology as purposeful and impactful will lead the charge in developing learning opportunities that support students and foster 21st century learning skills (Musgrove et al., 2021). As 1:1 initiatives become more and more popular, it is imperative that more research be conducted on what kinds of professional development best support teachers and raise their self-confidence when it comes to utilizing technology. Throughout all of the articles included in this literature review, the lack of research to support the vision of proper implementation across content areas was highlighted by many of the authors.

With the 1:1 trend rising, there is a dire need to not just invest in devices but make a wise investment in equipping educators with both skills and confidence that allows them to properly prepare students for a world that does not yet exist (Morrison, 2019). As this movement progresses, it is important that school leaders begin developing opportunities that support educators in their collaborate efforts to create positive cultures that foster an understanding and love for learning and technology (Lamb & Weiner, 2018). By refocusing the lens and prioritizing the need to equip our teachers with confidence and skills, our students will come out better prepared for the world they are helping to establish.

Methodology

Data was collected for this study using mixed methods of research to collect information from teachers in grades 3-6 that are currently teaching in1:1 environments. Questions were presented in a Likert scale form that gauged participants knowledge, opinions, and experience with 1:1 learning. The end of the survey encouraged participants to demonstrate their ideas of pros and cons of 1:1 learning.

Interview Questions:

Age Range: (Choose One)

Content Area Taught:(Choose all that apply)

Years Teaching: (Choose One)

Likert Scale Questions:

1. My students use their individual devices daily.
2. The use of 1:1 devices is beneficial to my job as an educator:
3. I know how to best utilize the devices I have for learning:
4. My students know how to properly use the individual devices we have for learning:
5. My students are using individual devices for collaborative learning experiences:
6. The use of digital learning programs enables me to collect appropriate data more efficiently:
7. I feel confident about using implementing 1:1 learning in my classroom:
8. The use of 1:1 learning benefits the subject areas I teach:
9. Implementing 1:1 learning simplifies how I plan instruction for my students:
10. 1:1 learning is beneficial for students with 504/SPED accommodations:
11. My students enjoy learning in a 1:1 setting:
12. 1:1 learning has increased engagement in learning in my classroom:
13. My students are able to utilize higher order thinking through the use of individual devices:
14. My students are more motivated to learn when they are using individual devices:
15. The use of personal devices in my classroom has increased the efficiency of learning:

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