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1:1 Technology Programs Impact on Iowa Schools

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INTRODUCTION

1:1 technology programs have demonstrated improvement in students' learning, academic performance, and engagement. However, the impacts of 1:1 programs for students with disabilities and the consideration of instructional and technological accommodation for all students were little studied. From this point of view, the purpose of this research is to examine the nature of 1:1 technology in the schools, how the 1:1 technology shapes the teachers' skills to meet the needs of all students, and students' outcomes as a result of 1:1 technology.

METHODOLOGY

- Qualitative
 - Case study design
 - Interviews with superintendents, principals, directors, and students
 - Focus groups with teachers
 - Classroom observations.
 - Two districts were selected from a pool of respondents of an online survey who showed interests in a follow-up case study.
 - A third district was approached by researchers for case study.

PROFILE OF DISTRICT 1

Demographics

Number of schools	5
Enrollment	2,103
Race/Ethnicity	White: 84.78%
	Hispanic: 4.76%
	Other: 10.46%
ELL	1.66%
Free and Reduced Lunch	19.16%
Special Education	12.60%

1:1 Characteristics

	Grades	
Middle school	Grades	6th - 8th
	Academic year of launch	2014 - 2015
	1:1 device	Chromebook
High school	Grades	9th - 12th
	Academic year of launch	2015 - 2016
	1:1 device	Chromebook

DECISION MAKERS & STAKEHOLDERS

- Student initiated
 - “We had kids heavily involved.”
 - “When a student’s voice is leading that the change is greater and quicker.”
- Parents
 - “If we could get a higher percentage of parents involved in that, that would help tremendously.”
- Teachers
 - “...leadership team which is made up of 7-8 teachers at this point that help lead everything.”

PROFESSIONAL DEVELOPMENT

- Back loading vs. Front loading
 - “Some training after you’re into it for 2-3 weeks would really be helpful.”
 - “...”the technology and the elements were kind of beyond our typical PD.”
 - “I don’t know if computers should have been put in our hands until we actually front loaded a time.”
- Differentiation
 - “I think that differentiating our PD would be nice.”
 - “So how to use the technology in our rooms, we haven’t been necessarily trained on when is it effective and when is it not effective.”
 - “We’re trying to use Read and Write. It’s still got some bumps. It’s not always working.”

UDL, AIM/AEM, & AT

- Variable perceptions/practices for IEP eligible students
 - “It hasn’t changed their life a great deal.”
 - “I feel like I’m able to modify stuff a little bit more for specific students who have specific needs.”
 - “One of our biggest concerns is how do we get them access to gen. ed. curriculum that comes with that gen. ed. textbook or article or whatever.”
 - “There’s no issue of looking different if you’re using assistive technology.”
 - “It (1:1) changed how kids can get accommodations.”
 - “We really look at and work with the teachers, the special ed. teachers, within their IEPs, to match the device.”

PURPOSES, IMPLEMENTATION, & OUTCOMES

- Purposes
 - “...technology should not be driving your instruction... It should be “Here’s my goals. Here’s an easy way to facilitate that using technology.”
 - “We’re not looking for the device to make huge changes in our student achievement or anything like that. It’s not even our goal. Our goal is to try to level the playing field for all the kids in our school so they all have the same access and same device.”
- Varied implementation (teachers)
 - “I changed my whole curriculum due to this (1:1).”
 - “But for me, a lot of the things are pretty similar so it (instruction) hasn’t been a big drastic change.”
- Outcomes
 - “I think it (1:1) gives them (students) a confidence boost to some of those kids that are more disorganized.”
 - “[1:1] has put a pretty good workload on us (teachers).”
 - “[Teachers] are able to check it (assessment) immediately, they (students) get the feedback.”

CHALLENGES & CONCERNS

- Behavior management
 - “I’m sitting in class and I know kids are geeking out over some website or on a game and they’re supposed to be listening to me or doing something. It’s very difficult to stop what you’re doing, redirect, redirect only to have them doing it again in five minutes.”
- Instructional material
 - “Math still misses the interactive component without the tablet.”
 - “I think that we need to have available to us some experts in science one to one implementation and literacy one to one because it looks different, it feels different and it creates different.”
 - “The computer program Smart Music works on computers, but it doesn’t work on Chromebooks.”
- Social interaction of students
 - “My biggest worry comes from when I see them before and after school not interacting with one another.”
 - “...when you walk in in the morning... [students are] not socializing with other people. The year before, the gyms were full.”
 - “Literally probably 70% of the kids in the cafeteria are on their machines, but they are interacting.”
- Teacher-student interaction
 - “I feel like I sometimes lose the social aspect of the collaboration and the real reading out of a book and talking about it and doing the interactive stuff.”
- Infrastructure
 - “[Our building is] not made for that many computers.”
 - “We spent a lot of money getting that bandwidth to the point that we don’t struggle with speed and all that.”

RECOMMENDATIONS

- Increase teachers’ and parents’ involvement in planning.
- Increase uploading professional development on both 1:1 devices and instructional tools introduced with 1:1.
- Increase differentiated professional development for teachers based on their content areas.
- Imperative to include students in both planning and implementation.
- Implement device monitoring system to limit student distraction from using 1:1 device.
- Provide opportunities for students to socially interact without 1:1 device presence.
- Utilize available AT resources to best serve student needs.
- Evaluation of 1:1 effectiveness in terms of student outcomes and teacher instruction.

