

## **Bridging Digital Divides in the Learning Process: Challenges of Integrating ICTs in Learning**

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This study is investigating the phenomenon of digital divides, in the context of integrating one-to-one ICTs into the learning process. For this purpose, we are studying a 'bring your own device' (BYOD) initiative by a New Zealand School. This poster discusses the background and agenda of the study, as well as some of the initial findings from an analysis of the baseline data.

Keywords: ICT integration, digital divide, learning outcomes

### **Background of the Study**

Based on the potential benefits and opportunities that the introduction of ICTs can bring to students' learning, educational organizations have developed projects and policies to make the learning process more engaging and participative by integrating ICTs to generate better academic outcomes (Anderson, 2009; Prestridge, 2007). Although the introduction of ICTs provides potentially valuable resources for learners' educational and social development (Demiraslan & Usluel, 2008), previous digital opportunities projects in New Zealand show that it might end up contributing nothing more than just an effort to facilitate material access to ICTs (Rivers & Rivers, 2004). The Digital Opportunities Project was an initiative by the New Zealand government in collaboration with participating schools and associated businesses aiming to assist in bridging the digital divide in low decile schools by providing (a) material access (b) professional development, and (c) infrastructure to promote collaboration. Despite good strategy and infrastructural support, the overall goal of bridging the digital divide was not achieved (Bolstad, 2004; Parr & Ward, 2004; Rivers & Rivers, 2004; Winter, 2004a, 2004b).

The results and experiences from the digital opportunities pilot projects raised several implications for future ICT interventions of a similar kind. It has also raised the question of whether we are doing everything required to attain the goal of achieving digital inclusion for every student in the learning process. In other words, is achieving digital inclusion in access and capability sufficient, or is there any other aspect that needs to be taken into account when integrating ICTs into the learning process? To address the concerns that emerged from the initial digital opportunity projects, the Ministry of Education announced an ICT strategic framework for education in 2006. The goal of ICT strategic framework was to develop a more student-centered learning culture where education agencies and organisations focus on the students' learning outcomes rather than the technology. However, even after the strategic framework for education there are still some unanswered questions around why these projects are still not very successful in equalising digital inclusion in the context of integrating ICTs into the learning process.

### **Agenda for the Study**

Investigation of past and current digital opportunities projects shows that these projects are not very successful in achieving equalised digital inclusion for every student. Therefore there is a need to rethink the digital divides in learning underpinning the concept of ICT initiatives.

The opportunity to have equitable material access to ICTs and digital capability can be the necessary first step towards digital inclusion for every student, but is not sufficient. Therefore, to attain the complete digital inclusion for every student and to bridge digital divides in the learning process, we need to look at aspects of the digital divide beyond just access and capability, which has not been taken into account by the previous initiatives. This additional aspect is the learning outcomes of the student participating in the ICT mediated learning process. According to Wei, Teo, Chan, & Tan (2011), as ICT adoption advances there arise newer forms of digital divide, and even after ensuring the equalised digital access and digital capability, there is a possibility of having differences in the outcomes achieved by the individuals (in saying this, the access and capability aspects are still important because these divides are still persistent and could impact negatively on digital inclusion and students' learning outcomes). Based on the relevant literature and the investigation of past and current ICT initiatives in New Zealand, we have been able to identify some factors which have the potential

to affect the learning process mediated by one-to-one ICTs, and might also impact the digital inclusion of every student from the perspective of learning outcomes. These factors are: (a) attitude and motivation of individual learner towards ICTs, (b) nature of ICT usage, and (c) learners' capability of meaning making. Therefore, these factors should be investigated in depth to find the impact of these on digital inclusion. The BYOD project provides an opportunity to investigate these factors in a real world context of integrating one-to-one ICTs into learning.

## Findings from Baseline Data

The baseline data has already been collected and analysed. This helped us to draw some preliminary conclusions. Some key findings of the analysis of the baseline data, which are of significant interest to us, are as follows:

### Top 5 Positives:

1. Students can gather information quickly and easily from various sources.
2. Students don't need to carry books etc., just one device.
3. Engagement of students in learning activities has improved.
4. Students carry and use their devices anytime and anywhere they want.
5. Students do many other activities to improve their learning experience. E.g. take photos and record videos of their performance in dance, drama, and physical education.

### Top 5 Negatives:

1. Distraction and lack of control in the classroom.
2. Internet problems and non-recommended devices disrupt learning activities.
3. Digital devices do not prepare students for written exams.
4. Negative impact on the students' critical thinking.
5. Increased teacher workload.

### Top 5 Findings:

1. Some students do not have adequate access to ICTs, including one-to-one device ownership
2. More than half the students spend most of their digital time in activities other than learning
3. There is a significant difference in the level of digital and information literacy among students
4. Teachers tend to focus on one specific device
5. Teachers are continuing with their old method of instruction (i.e. teacher to classroom).

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