Integrating ICT into classroom pedagogies: an overview of barriers within the modern classroom

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Abstract

The evaluation of current literature regarding Information Communication Technology (ICT) in education reveals the most significant obstacles facing its successful incorporation into schools and teachers' pedagogies. As with any pedagogy, ICT is constantly changing and developing, and it is crucial, now more than ever, that great consideration is put towards how pedagogies involving ICT might evolve. In order for pedagogy to keep up with the ever widening chasm between technology that is available to use, and what is actually incorporated into pedagogical practice, the barriers to successful integration must be considered.

Introduction

For effective teaching to occur in New Zealand classrooms, practitioners must adopt a stance where constant evaluation and reflective practice is evident. Effective pedagogies insist that consideration is placed on the implications of different methods of practice, and how these methods are affecting the students (Ministry of Education, 2007). A particular method of teaching which has been an area of contention is the integration of ICT within the classroom. ICT might be defined as "Information Communication Technologies" (Ministry of Education, 2007, p.66) and includes devices ranging from laptops through to tablets and beyond (Pegrum, Oakley & Faulkner, 2013).

The main difficulty with ICT integration is its inability to align with current pedagogical practices. A number of research papers have investigated the most prominent barriers to its successful integration. These include; a lack of support and professional development (Bebell & O'Dwyer, 2010; Pegrum et al., 2013), issues with assessment (John, 2005; Shapley, Sheehan, Maloney, & Caranikas-Walker, 2010), and issues with funding (Cristol & Gimbert, 2013; Thomas & O'Bannon, 2013).

Understanding these barriers is crucial, as many teachers will achieve successes in their ICT integration, but all will come across difficulties (Schoepp, 2005).

Support and Professional Development

When assessing the barriers of ICT integration into pedagogy, the most problematic area is the innate lack of support and professional development that teaching practitioners receive prior to, and during integration of ICT initiatives. A common theme throughout the work of many educationalists (Bingimlas, 2009; John, 2005; Salehi & Salehi, 2012; Schoepp, 2005) is that teachers have an inherent "fear of failure, caused by lack of confidence" (Bingimlas, 2009, p.238). Teachers become foreign to the concept of ICT integration, and lose confidence in themselves as practitioners, and ICT as a pedagogical tool. John (2005) suggests a number of conditions that are necessary when integrating ICT into schools. One of these conditions is that teachers "must have confidence that the use of technology will meet existing…and higher level learning goals" (John, 2005, p. 483). The importance in this confidence is echoed by Bingimlas (2009) and Salehi and Salehi (2012). Bingimlas (2009, p. 238) highlights the severity of the issue, acknowledging that the issue spans from the Middle East to Europe, but concedes that the lack of confidence varies greatly from location to location.

A factor which has led to the lack of confidence expressed by teaching practitioners is the absence of leadership and technical staff to call upon. Schoepp (2005), Bingimlas (2009) and Levin and Schrum (2013) all express that the lack of leadership and support is a pivotal issue in schools. The absence of tech support and "tech facilitators who can lead professional development"…"at each school" was something identified as a

major barrier to successful ICT integration (Bingimlas, 2009, p.239; Levin & Schrum, 2013, p.40). Only discussed in Levin and Schrum's (2013) article is the importance of leaders and facilitators as also being procurers of "resources for starting up and sustaining technology initiatives" (p.44).

Shapley et al. (2010), Bebell and O'Dwyer (2010), and Pegrum et al. (2013) all concede that high-quality, responsive professional development is required to ensure teacher confidence, and the successful integration of ICT into teachers' pedagogies. Pegrum et al. (2013) challenges this view, and goes further to state that the professional development regarding ICT must be "targeted and contextualised" (p.76). Levin and Schrum (2013) add that the speed at which professional development is deployed must be in line with ICT as it "changes constantly" (p.41). These points are crucial if the integration of ICT is to become 'student centred' and part of inquiry practice.

ICT and Assessment

Another barrier to ICT integration is the highly problematic area that ICT holds in assessment. There are two distinct views on the matter in current literature. The first is that "the relationship between assessment and ICT is not straightforward" (McCormick, 2004, p.115) and that the "'pencil and paper driven assessment structures" (John, 2005, p. 477) do not lend themselves well to the ICT driven pedagogies being adopted in schools. This view is held by the majority of research which has been presented, and its strongest advocates include McCormick (2004) and Pegrum et al. (2013). The contrasting view adopts the premise that, even though there is room for improvement, there are already positive effects occurring "in regards to student performance on standardised assessments" (Cristol & Gimbert, 2013, p. 5).

For those that see ICT integration in assessment as a barrier, there are a number of factors at play. The first is that students are not able to utilise the "communicative skills…gained through…new technologies" (Pegrum et al., 2013, p. 73) when it comes to assessment. Although this trend seems to be gradually changing with the aging of our 'digital natives' (generation Y and Z), it is still a present issue (Pegrum et al., 2013). The second, presented by McCormick (2004), is the question of how you actually measure the communicative skills Pegrum et al. (2013) describes. For instance, how does a teacher measure the achievement level obtained in a cartoon designed by a student when it is beyond the breadth of what the assessment allows?

A pertinent barrier when contrasting the use of ICT alongside assessment is the initial design of the devices, that is, what they were initially intended to be used for. Often, the devices used in schools were not created to be used as pedagogical tools. This creates a number of issues. The first is identified by Pegrum et al. (2013). They highlight that a number of the 'apps', even when considering their 'general' application in the classroom are "pedagogically limited" (p.73), as their creation was not initially for educational purposes (Melhuish, 2010). These 'apps' then are certainly unusable in the confines of student assessment. McCormick (2004) too holds this sentiment. She concludes that "those dealing with ICT rarely deal with assessment" (p.115) and conversely that "the field of ICT in education at school level has much to learn from the developments in ICT" (p.118). All of the aforementioned educators agree, that applied correctly, and ensuring that assessment with ICT is "sensitive to the needs of particular

pupils and shows them how to improve" (McCormick, 2004, p.129), that ICT can be a durable pedagogical tool.

Issues with Funding and Equity

Funding and equity present barriers that are deep rooted and double-edged. The issue of funding is completely reliant on the breadth and depth of ICT adoption. In cases where ICT has been purchased as part of a school led 1:1 initiative, educationalists argue that "the financial burden is large" (Cristol & Gimbert, 2013, p.2; Schoepp, 2005) and that this has caused many schools "to adopt a Bring Your Own Device…policy" (Cristol & Gimbert, 2013, p.2). This however has not solved the barrier, only transferred the responsibility, and it is partially responsible for the importance of getting parents and caregivers on board with ICT initiatives early (Levin & Schrum, 2013). There are some who try to invalidate the claim that funding is a barrier to ICT. Melhuish and Falloon (2010) argue that iPads and other mobile technological devices are "affordable" and provide "ubiquitous access" (p.4). This goes against the grain of the majority of research, and certainly raises questions of equity if these devices are meant to be as 'ubiquitously accessible' as they claim. In similarity to Melhuish, Thomas and O'Bannon (2010) argue that because of the drastic drop in cell phone prices over the last five years, that student's access to "app driven and educationally transferable mobile devices has risen" (p. 17).

Equity has become a barrier to integration of ICT in teachers' pedagogies. Many practitioners have taken the view that if devices are not available for all students to use, then ICTs presence as a pedagogical tool becomes problematic (Cristol & Gimbert, 2013; Pegrum et al., 2013). In the study performed by Cristol & Gimbert (2013), a coordinator in one of their target schools identified that their "biggest concern was when a BYOD program is implemented" and "not every child can financially afford their own device" (p. 2). Similarly, Pegrum et al. (2013) found that teachers often used ICT as part of class sets and "in some cases, there are not enough for an entire class, which causes inequity and questions of equality" (p. 74). The question of equality in ICT implementation has led to hesitation of schools and teachers to adopt ICT in their practice, and in some cases, has halted the process of integration all together.

Conclusion

The three areas discussed; professional development, funding, and issues with assessment, make up a huge proportion of the reasoning behind the lack of ICT integration (Salehi & Salehi, 2012; Schoepp, 2005). Within these three areas there seems to be a consensus among scholarship that they are the most influential barriers to ICT integration. It is important however to understand that there are many other factors which contribute to the integration of ICT, and through time constraints and breadth of research, have not been able to have been explored in detail. Practitioners must be content that ICT will never become 'perfectly' integrated due to its constantly changing status, but for forward movement to occur, teachers must be prepared to experience "some trial and error" (Levin & Schrum, 2013, p. 39) within their pedagogies, and reflect on what has worked, and what has not. The understanding that it is ok to make mistakes when using technology must be present. Further study into the barriers present, and how they are developing, would lend itself well to developments within the field of ICT, and a study

focusing on positive mechanisms to overcome these factors would also be important.

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