

# How should our pedagogy keep up with rapidly changing technology?

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## Abstract

The place and potential of e-learning technology in education is in a state of constant development. Previously ‘cutting edge’ articles and books for teachers are quickly obsolete, as these resources, written for the age of Myspace and desktops, did not prepare educators for the arrival and popularity of tablets, smart-phones, and social media applications. This literature review explores six different articles on this subject addressing a range of perspectives in this area. They were found searching academic databases with the terms “e-learning”, “pedagogy” and “technology”. To keep the articles relatively current- to reflect the development of web 2.0 and 3.0 and other recent trends- the search parameters were restricted to 2011 onwards. The overwhelming position in the literature is that pedagogy must guide our e-learning. While some articles focussed on applying this in a classroom, others preferred to construct a framework to guide educators in their e-learning design.

**Keywords:** *e-learning, pedagogy, technological change, ICT, education*



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## Case Study Approach

One common approach to this issue was to conduct research on e-learning tools within classroom practice. These studies were motivated by attempts to anchor e-learning within pedagogy that promoted relevant skills, “social learning”, “collaborative skills” and “real-world connections” while exploring what was the impact on both the learning and attitudes of the students towards their learning (Apergi, Anagnostopoulou, & Athanasiou, 2015; Wang, Yu, & Wu, 2013). The two studies included in this literature review comprised of a broad range of ages, (‘6th Graders’ – University students), technologies (Web 2.0 and 3.0), and cultural contexts (Apergi et al., 2015; Wang et al., 2013). The ‘6th Grader’ study was based around a classroom’s use of Google Drive, and the university study was conducted around a course module based around “mobile assisted social e-learning” (eMASE) which included the following apps: Facebook, LINE, WeChat, Skype, and Google+ Hangouts (Wang et al., 2013). Additionally, these studies were underpinned by the separate but related theories of Project Based Learning and Social Constructivism, which harness the collaborative learning power of the student while transferring the teacher to more of a facilitation role (Apergi et al., 2015; Wang et al., 2013). These two studies resulted in some pertinent findings that demonstrate the potential gains achieved through

thoughtful e-learning strategies. Higher interest, closer relationships fostered between students, reinforced cooperative skills, and improved critical and problem solving skills were reported in the students within the Greek study (Apergi et al., 2015). The students involved with the Taiwanese study also found the integration of eMASE tools improved learning outcomes, collaborative skills, effectively helped scaffold learning, and improved engagement away from campus. However, face-to-face interaction was still their preferred method of collaboration, while applications that the students were less familiar with (like Google+ Hangouts) were the least utilised in the course (Wang et al., 2013). These results suggest the potential positives of e-learning constructed upon a strong pedagogical framework for student empowerment and learning outcomes.

## Theoretical Approach

Another popular theme, reflected within this literature study, is a theoretical approach to the issue of pedagogy in e-learning. This has many advantages, especially when we consider rapid technological change, alongside the even faster development of apps with educational potential. Among the literature surveyed, e-learning was often analysed within a constructivist perspective. (Apergi et al., 2015; Keengwe, Onchwari, &

Agamba, 2014) Others surveyed broader trends, covering many approaches from a historical and cultural perspective (Hillen & Landis, 2014). What united these articles was the underlying premise that effective e-learning needed to be firmly rooted in pedagogy, or always had some underlying theories behind them (Hillen & Landis, 2014; Keengwe et al., 2014; Rourke & Coleman, 2011). The overall trend over the years has been from “behaviouristic... e.g. drill and practice” towards more realistic, “cognitivist and constructivist... situation-based learning” (Hillen & Landis, 2014, p. 216). Rourke and Coleman (2011) argue that “[p]edagogy for good teaching has always led the curriculum and syllabuses”, while posing the question: “when did... new technologies take over the primacy of pedagogy in teaching and learning?” (p. 265) Additionally, they assert that new technology has, at times, driven education away from “communities of practice” towards more “cost-effective” versions of learning where the teacher’s role can be marginalised (p. 265-266). Keengwe et al. (2014) agree that technology has further empowered teachers to move away from being “the Sage on the Stage” towards being a “Guide on the Side”, which has a drastic effect on what classroom teaching looks like (p. 893).

Unfortunately, this development has been hijacked by parties that wish to see skilled teachers becoming obsolete or replaceable, as ‘digitally native’ students are assumed to be both proficient and motivated by technology, thereby changing the role of the teacher (Rourke & Coleman, 2011). However, according to Herrington, Reeves, and Oliver (as cited in Rourke & Coleman, 2011, p. 267) surveys show that “students are much less engaged... than expected” and may need to be scaffolded to appropriately use e-learning tools. Rourke and Coleman (2011), alongside Keengwe et al. (2014), both take the position that thoughtful e-learning practice underpinned by constructivist theory is the more effective for “authentic...[and] transferable” e-learning (Keengwe et al., 2014, p. 897). Hillen and Landis (2014), in their analysis of the European and American perspectives, argue for a “multi-theory” approach (p. 217). They propose that educators take advantage of the many methodologies and technologies available to create a learning programme that best responds to diverse learners, providing a “variety of paths for the benefit of individual learners” (p. 218). For example, they argue that many learners are not ready for self-directed learning, a concern which is also echoed by the constructivist authors (Keengwe et al., 2014; Rourke & Coleman, 2011). What unites these authors is their position that learning needs to be tailored to suit pupils.

Beside their clear theoretical basis, these articles suggest many considerations for educators as they implement pedagogically driven e-learning. These include: Is the technology pedagogically motivated? (Rourke & Coleman, 2011) Does it encourage real-world/relevant learning? Are there opportunities for learner autonomy, so students can contribute when they are ready? Is it interactive and co-operative? Is it usable? (Keengwe et al., 2014) Does it suit my learners? Is the e-learning “[adding] value?” (Hillen & Landis, 2014, p. 213). Their considerations could be summarised as purposeful e-learning: learning that meets students’ needs, providing both cooperative and independent study opportunities, while making real-world connections. This theoretical perspective is presented as a helpful framework that assists educators to appropriately adapt to technological advances.

## An Alternative Theoretical Perspective

Although the overwhelming weight of the literature around the relationship between pedagogy and technology follows the primacy of the former over the latter, an outlier did surface during the search process. Jon Dron (2012) proposes that this “widely held belief” is not correct, due to the idea that pedagogy itself is, in the broader sense, a “[tool] for learning” (p. 23). Dron argues that, when clearly defined, pedagogy is itself a technology. Considering this idea and technology in the broader sense, he infers that pedagogy, as a technology, is part of an “assembly” of other technologies that constantly interact with each other. For example, “facilities...whiteboards...learning management systems... are interdependent” of each other (Dron, 2012, p. 27), they do not exist in isolation. Clearly all these ‘technologies’ need to work together to achieve the desired results.

Additionally, and most importantly, Dron focusses on the part of the educational system that is the most crucial; “The teacher and the learner” (p. 32). The teacher’s “passion, breadth or depth of knowledge, creativity, ... humour,” and communication skills are all vital parts of what makes someone a great teacher. These characteristics are not taken into account often enough in studies, as it is very “hard to quantify” a teacher’s true ability, or how much a great teacher can perform despite inadequate or outdated resources (Dron, 2012, p. 32, p. 35). This reality slants research results that seek to show the benefits of any particular pedagogical approach or technology. Due to this issue, Dron (2012) proposes that different kinds of research need to become more common place to better uncover what pedagogies are most successful. Soliciting student voice, “deliberately increasing passion and commitment” (p. 34), and assessing why certain content better enthruses students, are the three proposals made to address this gap in the research. This counter-point to the prevailing perspective of pedagogy before technology challenges educators to consider what factors from their educational structure as a whole should influence their pedagogical and ‘technological’ decision-making (Dron, 2012).

## Conclusion

In conclusion, there are two predominant approaches to this question within the literature, with a notable outlier. The overwhelming position is that pedagogy must guide our e-learning. While some articles focus on applying this in a classroom-based study (Apergi et al., 2015; Wang et al., 2013), others prefer to construct a framework to guide educators in their e-learning design. (Hillen & Landis, 2014; Keengwe et al., 2014; Rourke & Coleman, 2011) In contrast, Dron (2012) proposes that questions of pedagogy and technology need to be considered within a theoretical framework that acknowledges that both are ‘technologies’ that need to be implemented within a broader educational system. All three views regarding this subject could be reconciled if we regard them as snapshots with different foci on the teaching process. For example, case studies are ‘zoomed-in’ looks at e-learning as an isolated part of classroom practice (Apergi et al., 2015; Wang et al., 2013). Those arguing for ‘pedagogy before technology’ (Keengwe et al., 2014; Rourke & Coleman, 2011) create a broader blueprint for e-learning success. Dron’s (2012) perspective serves as a reminder of the over-arching context that surrounds and affects both blue-print and ‘zoomed-in’ e-learning implementation.

## Areas for further research

Dron's concept of 'pedagogy is technology' could be put into practice in a schooling context. It would be fascinating to see how his theory would affect a school's decision-making processes. Additionally, more exploration as to how this idea could be packaged helpfully for educators, as they navigate through the issues related to course/curriculum construction would be helpful. Continuing to trial e-learning pedagogy within new learning contexts and with new technology is vital to test if our pedagogy is responding appropriately to our changing world. It is vital for educational researches to continue to hone and explore the best ways that educators can implement ICT within their teaching.

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