

Tablets for Learning in Higher Education: The Top 10 Affordances

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Abstract: Based on a small-scale literature review this paper identifies the top 10 affordances of post PC tablets (sometimes referred to as ‘tablet computers’) for higher education in settings where the technology is used for learning. The review shows that the predominant affordances of the technology are related to its ability to support engaging, inclusive, and/or collaborative learning, to provide flexibility in place, and to include multimedia and interactive content in teaching practice. However, performing the review also revealed that the notion of tablets for learning is equivocal. As a consequence, the concepts of *tabletcasts* and *tabletcasting* are introduced as one possible framing for future research on tablets as an educational technology.

Mobile Learning with Tablets

As a consequence of the rapidly growing penetration of post PC tablet technologies such as iPads, Android tablets and similar among students and teachers in higher education and the large public interest in the matter, it is relevant to scrutinize their educational potentials (here referred to as ‘affordances’, cf. Norman, 1988). The latest issue of the Danish journal *Learning and Media* revealed a diverse usage of post PC tablets in university teaching in Denmark and identified eight affordances of learning with mobile devices such as tablets (and smartphones) (Christensen & Godsk, 2013). In Denmark, as well as globally, higher educational institutions are currently experimenting intensively with or have already adopted tablets for teaching and learning. Some use the technology for classroom activities, some for lab and fieldwork, and others for supervision and assessment (ibid.). However, as the literature revealed early in the review process, there is only limited research on the technology’s affordances and, furthermore, the definition and understanding of tablets as educational technology is equivocal (cf. Brand & Kinash, 2010). Therefore, this paper seeks to address these issues by phrasing and addressing one - also frequently asked - question: what are the top educational potentials of tablets in higher education?

Top 10 Affordances

In order to answer the posted question I have conducted a small-scale literature review. The literature review is focused on identifying affordances (or ‘educational potentials’ or ‘advantages’) of post PC tablets such as iPads, Android tablets, Blackberry Playbook, and HP Touchpads in higher education teaching and learning practice from 2010 to May 2013. The search takes starting point in the aforementioned issue of the journal *Learning and Media* and expands to a search on Google and Google Scholar. Only journals and conference papers with case studies and similar related to higher education plus references in literature reviews reporting about the use of tablets for learning are included. Technical advantages that only vaguely can be linked to the teaching, as for instance high battery life, support for many file formats, durability, form factor etc. are disregarded in this context. Additionally, only settings of learning are included. This means, for instance, that studies of the prevalence of tablets among students or its use for non-study-related activities do not qualify to be included in the review. The search string was: ‘ipad OR playbook OR tablet OR "hp touchpad" affordances OR potentials "higher education"' with the interval 2010 to present (i.e. the day of the search, which was May 15th 2013), and the engines were the Danish Google Scholar and regular Google. The 10 most relevant references according to Google’s ranking were chosen for a closer look. Each search was carried out with Google Chrome in ‘incognito mode’ so that previous searches would not influence the results.

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The identified affordances were then listed starting with the eight affordances from the aforementioned journal (cf. Christensen & Godsk, 2013) as starting point. Each new affordance was added to the list and support for existing affordances was registered. After the review was carried out, the identified affordances were ranked after the number of supporting articles resulting the in Top 10 listed in Table 1. As a relatively small number of studies are included, and, as inevitable, some of the affordances are somewhat overlapping, while others are imprecise and broad or have a small actual impact on teaching and learning, the ranking should be subject to reservations. Nevertheless, the top 3 and top 5 affordances seem to be significant. Notice: some of the lower ranking affordances are only vaguely related to learning.

Rank	Affordance	Keywords and Designations	Supporting Studies
1	Engaging, inclusive, and/or collaborative learning	Students as producers, teachers as producers, student-teacher/student-student interaction, communication with teacher, sharing ideas, easy production and sharing of materials	Walters (2011), Hansen & Johnsen (2013), Svanholm & Dahl (2013), Bansavich (2011), Learning Exchange (2010) ¹ , cf. Gong & Wallace (2012) ⁴ , Oldfield & Herrington (2012) ² , cf. Lam & Duan (2012) ⁴ , cf. Johnson et al. (2012), cf. Oosteven et al. (2011), eun Oh & Gwizdka (2011), cf. Cochrane et al. (2013).
1	Mobility/flexibility in place	Inside/outside classroom, portability, connectivity, 'authentic learning'/learning in context (cf. Oldfield & Herrington, 2012), portable, lab and fieldwork, situated learning, user-generated content, location-based information, mobile access to information, perceptual contact	Walters (2011), Simonsen et al. (2013), Hansen & Johnsen (2013), Bansavich (2011), Learning Exchange (2010) ¹ , cf. Melhuish & Falloon (2010). Oldfield & Herrington (2012) ² , cf. Lam & Duan (2012) ⁴ , cf. Johnson et al. (2012), cf. Cochrane et al. (2013), Alyahya & Gall (2012), cf. Dalsgaard et al. (2013).
1	Use of multimedia/ interactive content and apps in teaching	Showing multimedia, annotation and note taking, apps, app-based learning, apps for meetings and use in classroom, sketching, support for advanced interaction	Simonsen et al. (2013), Murphy & Williams (2011), Bansavich (2011), Walters (2011), Bates (2010), cf. Gong & Wallace (2012) 4, cf. Lam & Duan (2012) ⁴ , cf. Johnson et al. (2012), cf. Oosteven et al. (2011) ² , eun Oh & Gwizdka (2011), cf. Cochrane et al. (2013), Alyahya & Gall (2012).
4	Student satisfaction	Motivation, appeal, engagement, learner experience, subjective satisfaction	Simonsen et al. (2013), Learning Exchange (2010) ¹ , Jennings et al. (2011), Bansavich (2011), cf. Gong & Wallace (2012) ⁴ , Beebe (2012), cf. Lam & Duan (2012) ⁴ , cf. Johnson et al. (2012), cf. Oosteven et al. (2011).

5	Personalization and student-centered learning	Adaptive, personalized, student-centered ways of learning, support for various learning styles	Pedersen et al. (2013), Murphy & Williams (2011) ² , cf. Melhuish & Falloon (2010), cf. Lam & Duan (2012) ⁴ , cf. Johnson et al. (2012), cf. Dalsgaard et al. (2013).
6	Use of e-books	For reading electronic textbooks/e-books in general	Hansen & Johnsen (2013), Bansavich (2011), Beebe (2012), cf. Cochrane et al. (2013), Alyahya & Gall (2012).
7	Resource saving ³	No need for purchasing textbooks, cheap to develop and distribute	Simonsen et al. (2013), Beebe (2012), cf. Johnson et al. (2012), Alyahya & Gall (2012).
8	Flexibility in time and pace	Just-in-time learning, learn according to learner's pace	cf. Melhuish & Falloon (2010), cf. Lam & Duan (2012) ⁴ , Alyahya & Gall (2012).
9	Eco-friendly ³	Reduces printing, saves energy	Jennings et al. (2011), Alyahya & Gall (2012).
9	Competitive resource ³	Branding of institution as being innovative, recruitment of new students, globalization, competition	Jennings et al. (2011), cf. Lam & Duan (2012) ⁴ .

Table 1: The Top 10 affordances of tablets for learning. ¹Indicates that the author has identified the affordance in another educational context, and ²indicates that the identified affordance is somewhat equivalent to the listed affordance. ³Indicates that the affordance is not directly related to learning. ⁴Indicates that the affordance is related to mobile technologies in general including tablets.

Besides the top 10 other affordances such as ‘easy distribution of materials’, ‘learning digital competencies’, support for ‘repetition and rote learning’, ‘efficient learning’, ‘useful for organizing and registering data’, ‘for giving presentations’, and ‘for working on assignments’ were identified but less significant.

‘Tabletcasting’ for Learning

During the review it became clear that the identified affordances highly depend on each study’s conception of ‘learning with tablets’ and that this usually entails more than simply having or providing access to the technology. The majority of the studies reported about an active use of the tablets for ‘producing’ and/or ‘sharing’ content instead of merely ‘accessing’/‘consuming’ information. As an operational consequence and in logical parallel with concepts such as ‘screencasting’ and ‘podcasting’ (Wikipedia, 2013), I suggest the introduction of the concepts of ‘tabletcast’ and ‘tabletcasting’. A ‘tabletcast’ is the digital media and content produced on the tablet and ‘tabletcasting’ denotes the production and/or sharing (or ‘broadcasting’) of tabletcasts. Though the notion of ‘tabletcasting for learning’ would disregard some relevant learning situations where the technology is used for solely consuming content, it could potentially help framing the future some research on tablets as educational technology. Considering the 10 affordances in Table 1, the notion ‘tabletcasting for learning’ immediately discards the more arguable learning affordances such as ‘resource saving’, ‘eco-friendly’, and ‘branding of organization’. Furthermore, the concept would help the scrutiny of other affordances such as ‘use of multimedia’, ‘student satisfaction’, and ‘personalization’, as it could help

clarifying which characteristics or underlying affordances that lead to these and whether they are related to how the digital media are shared and/or produced in the teaching practice in question.

Conclusions

As this review is small-scale, the classification of affordances is somewhat imprecise, and the prevalence of tablets and their usage is undergoing a rapid development, the results should be subject to reservations. Nevertheless, the existing studies clearly show that there are already many and relevant affordances of post PC tablets in higher education. In particular, the top 5 affordances in Table 1 are prominent in most studies. These 5 affordances are: the technology's potential to provide engaging, inclusive, and collaborative learning, to provide flexibility in place, to include multimedia and interactive content in the teaching, its appeal and thus motivational effect on students satisfaction, and its potentials for personalization and student-centered learning. It is less clear how the technology should be actually used, comprising what entails a good usage, and, thus, it is difficult to identify and/or prioritize what the top educational potentials/affordances of the technology really are. As a consequence, this paper suggests framing the scrutiny of the technology by introducing the concepts of 'tabletcasts' and 'tabletcasting' for learning, implying a usage where the technology is used for production and/or sharing of digital media and content related to learning.

In order to provide more solid and conclusive data about the affordances of tablets in higher education, future work should comprise an up-scaling of the literature review and at the same time frame the understanding of the technology. This framing could for instance be guided by the introduced concept of 'tabletcasts' and the notion of 'tabletcasting for learning'.

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