Examining the Potential for Tablet Use in a Higher Education Context

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# Agenda

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Our Study Evaluates the Potential for Tablet Use in Higher Education

• **Motivation:** More and more individuals are adopting tablets for entertainment purposes. But are tablets also useful in schools and universities? Are they “ready” for curricular use?

• **Research Question:** Can students’ learning processes be effectively supported by tablet devices?
The Paper is Embedded in Existing Mobile Computing and E-Learning Theory

**Mobile Computing**

**Technological background**

- Mobile Computing = ”Capability to physically move computing services with us” (Lyytinen, 2002)

- Apple’s iPad has heralded in a new generation of computing devices (Difference Tablet PC ↔ Tablets; Atkinson, 2008)

**Computer-Mediated Learning**

**Educational framework**

- Here: Defined as technology-enabled learning (rather than restricted to “distance learning”) as tablets can be used in class, at home, and in physical team meetings (Behar, 2011)

- Virtual classrooms, automatic machine transcription of lectures, and computerized delivery of exams are revolutionizing traditional classroom teaching. Such possibilities could potentially be further disseminated and gain greater acceptance through student tablet use (Krakovsky, 2010; Lin & Zhang, 2008; Alltizer & Clausen, 2008)

- Technological advances in universities (esp. in terms of infrastructure) should make the adoption of tablets more feasible
The Data Collection Consisted of two Complementary Phases

1. Longitudinal Test User Group
   - 5 test users (1 instructor, 1 doctoral student, 2 MBA students, 1 undergraduate student)
   - Bi-weekly feedback sessions to evaluate progress and experience

2. Focus Group Study
   - 5 Focus groups with ~5 participants each (1 doctoral students group, 2 MBA groups, 2 undergraduate student groups)

Why Focus Groups?

- Rich, detailed discussions
- Collaborative brainstorming
- Possibility to evaluate prototype device

(Powell & Single, 1996)
Results (1/3)

### Issues with current laptop devices

- Short battery life, heat, dependence on wires
- Bulky form-factor, heavy, fragile
- Long boot time
- Interoperability issues between OS X and Windows

### Would a tablet help? Advantages & Disadvantages

- Good alternative for taking notes, scheduling meetings, improved communication
- No physical text input method → Good for consumption of media, not production of it
- E-Reader (e.g. Kindle) may be the cheaper alternative for reading e-textbooks
- Lacks applications for analysis of data (e.g. Excel, SPSS) and typical student tasks (PowerPoint for presentation slides)

### Three Main Use-Cases

1. Media Consumption
2. Media Creation
3. Collaboration
Results (2/3)

Changes in processes and working practices due to tablet use (Yoo, 2010)

- “Always-on”-mentality (emails from professors & teammates can be checked on the go)
- Expected availability increases (Fewer “excuses”, as being away from a stationary PC doesn’t count anymore for being absent from virtual meetings)
- Tasks can be worked on in a more streamlined fashion (The same document can be initially created on a laptop, edited on the tablet, reviewed on a smartphone, and submitted to the professor using a library PC)
# Results (3/3)

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Evidence from Focus Groups</th>
<th>Evidence from Test User Group</th>
<th>Bottom Line</th>
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<tbody>
<tr>
<td><strong>Media Consumption</strong></td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>• Convenient form factor</td>
<td></td>
<td></td>
<td>Not enough textbooks are available in digital format yet</td>
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<tr>
<td>• Some file formats cannot be opened yet</td>
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<td></td>
<td></td>
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<tr>
<td>• Long battery life</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Collaboration and Social Interaction</strong></td>
<td>+</td>
<td>-</td>
<td>+</td>
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<tr>
<td>• Increased ease of access to web services (to e.g. organize meetings)</td>
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<tr>
<td>• n/a</td>
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<tr>
<td>• Easy initiation of video meetings</td>
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<tr>
<td>• Simple sharing and collaborative editing of documents</td>
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<tr>
<td>• n/a</td>
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Discussion

Feasibility of Tablets in Higher Education for...

...Media Consumption
- Convenient form factor, long battery life
- Some file formats can’t be opened (yet)
- Not enough textbooks are digitized yet

Beneficial with caveats

...Media Production
- No physical keyboard for text input (but available as accessory)
- Screen too small for some uses
- Not enough apps available (data analysis, slide production, document formatting)

Not beneficial

...Collaboration
- Simple initiation of video conferences
- Sharing and collaborative editing of documents possible
- Faster, easier access to web services (e.g. scheduling of group meetings)

Beneficial

Contribution to Theory: The three presented „use cases“ are helpful to delimit results, esp. in situations where usage spans multiple contexts („soft“ border between what is curricular and private use)

Contribution to Practice: Practical recommendations regarding the potential of student and instructor tablet use in higher education institutions
Conclusion

• Tablets in educational institutions are a theoretically promising approach (environmental responsibility, leveraging technology skills of incoming students, alleviating the frustration with laptop devices)

• In practice: Not yet ready, as media production is a central curricular use case

• Limitations: The study was conducted at a very early stage in the lifecycle of modern tablet devices and students were likely not yet familiar with this class of devices; Only one specific device was examined, which we judged – however – as being representative of the entire device class

Textbook publishers are likely to release forthcoming editions as e-books

With the growing adoption rate of tablets among consumers, a larger number of apps will come naturally

Additional form factors (larger screens, built-in hardware keyboards) are becoming available
Where do we go from here?

- **Diverging Theory Base** (what exactly is subsumed by “mobile computing”? How do ubiquitous and pervasive computing fit in?)
- **Do our results also apply to different contexts?** (e.g., organizational and societal use)

**Literature review** on the impact of mobile, ubiquitous, and pervasive computing on individuals, organizations, and society.
The mobile computing context framework by Scheepers and Scheepers (2004) served as a reference framework for the analysis.

A person may use the same mobile device while acting as an individual, as a member of an organization, or as a member of society. Each context warrants different research questions and approaches.

Source: Scheepers and Scheepers (2004)
Our review reveals a number of research streams dealing with the concepts of mobile, ubiquitous, and pervasive computing.

- **Adoption of mobile information systems**
- **Behavior changes**
- **Value creation (Productivity, effectiveness, and efficiency)**
- **Process improvements**
- **Usability optimization**
- **Ethical consequences of mobile computing**
- **Collaboration opportunities in society changes**
- **Impact of the digitization of previously non-technical artifacts**

**Context as a moderating factor**

**Organizational Context**

**Societal Context**

N=95
Thank you for your attention!
Kontakt

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Literature Sources