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Event details:

The Third International M-Libraries Conference
Brisbane, Qld. Australia

Publication Date:

2011

DOI:

<https://doi.org/10.26190/unsworks/23>

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Space Oddity: Mobile Devices, Content & Australian Academic Libraries

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Presented at 3rd International M-Libraries Conference, Brisbane (May 2011)

Abstract

While the mobile environment has made it possible for academic content to be accessed at the point of need, this paper ponders what value scholars place on the content available via the mobile web. Through an in-depth, qualitative survey of academics from the University of New South Wales Faculty of Law, Faculty of Arts and Social Science and the University's Australian School of Business this paper aims to understand how academics are currently engaging with e-content in both teaching and research and how this has been altered by the mobile environment. The potential benefits and pitfalls for academic use of mobile content, the adaptations in information seeking behaviour necessary for academics to meet the changing technological demands, and the implications for collection development and content delivery in academic libraries is discussed.

Introduction

Through the rapid adoption of mobile devices we are approaching a ubiquitously networked academic environment. All around the world, users are expecting to be connected to content at the touch of a button, but what are the implications of these technological changes in the academic environment? While the literature explores uses for students with access to mobile devices and how academic libraries may respond to student mobile needs, there has not been a similar examination of how academics are using mobile devices for their teaching and research. This paper seeks to examine how academics are engaging with e-content, how the recent technological changes affect their information-seeking behaviour and to identify future directions for academics, content providers and libraries.

The market for mobile content appears to be rapidly expanding, however a focus on apps and mobile specific content is hiding a growing incompatibility between much of the available academic content and the current generation of mobile devices. We surveyed academics from the University of New South Wales Faculty of Law, Faculty of Art and Social Science and the Australian School of Business in an attempt to uncover the value of the mobile environment within an academic context. In addition, an application of Task Technology Fit theory is used to explore whether the enthusiasm of many for mobile technologies is justified by their utility in advancing learning and scholarship.

Academic content and the Mobile Environment

Survey

In January 2011, we surveyed the University of New South Wales Faculty of Law, Faculty of Arts and Social Sciences and the Australian School of Business using an anonymous electronic survey. The survey was distributed to approximately 580 academic staff members and we received responses from 100 of these academics. This creates a self-selected sample of 17% of the total academic staff

within those faculties. The aim of the survey was to gather information about current academic e-content behaviour and the effect that mobile devices has had, if any. Within our sample group, 64% accessed academic content electronically every day, with a further 26% accessing academic content electronically at least once a week. In addition, 57% had access to at least one mobile device, which was defined as a smartphone, tablet computer or e-reader. Several trends emerged within our survey responses including a significant dissatisfaction with the current fit between the emerging technology and perceived academic needs. These will be explored further throughout this paper.

Smart Platforms not Smart Phones

“The story of mobiles is no longer solely about the devices we carry. Mobiles – be they phones, iPads or similar ‘always-connected’ devices – are doorways to the content and social tapestries of the network and they open with just a touch” (Johnson, Levine, Smith, & Stone, 2011, p. 12). As these doorways become an increasingly dominant mode of academics engaging with academic content, the expectations placed on that content will grow exponentially. “According to a recent report from mobile manufacturer Ericsson, studies show that by 2015, 80% of people accessing the internet will be doing so from mobile devices. Perhaps more importantly for education, Internet capable mobile devices will outnumber computers within the next year” (Johnson, et al., 2011, p. 12). This extraordinary uptake “represents a transition from a world in which telephones were tethered, like goats, to a wall, to a world where communication is always possible” (Naughton, 2008). Furthermore, it suggests that it will no longer be acceptable to have content that is inappropriately formatted for use on mobile devices, as information seeking is increasingly driven by a desire to move seamlessly across locations and technologies. The question for the future is now how can we create smarter platforms that cope with the demands for flexible access across a multimodal information environment?

Academic Environment

Academics working in the university environment would seem the ideal target audience for the use of mobile devices. They have a flexible work environment and flexible work practices and many need little more than a computer and access to resources to prepare their teaching materials or undertake research (Chen & Nath, 2008). This flexibility is demonstrated in the report, *Researchers’ Use of Academic Libraries and their Services* (Key Perspectives, 2007, p. 24) a survey of 2250 researchers in the UK that indicated 79% of researchers identify the two most common places they accessed e-content was their offices and their homes. Very few mention the library. This trend towards more flexible information seeking was reflected in our recent survey: 81% of academics surveyed access academic content from home at least weekly. There was a significant uptake of mobile devices; 57% of academics in our survey group owned one or more mobile devices. However, the use of academic content on those devices ranked on average of only moderate importance. Current use of academic content on mobile devices highlighted a strong split, 41% accessed academic content using that device at least weekly, but 52% accessed academic content using their device only a few times a year or not at all.

Behavioural Trends and Electronic Content

Silipigni, Connaway & Wicht (2007, p. 7) suggest that “user studies indicate that the academic community wants full-text content that is easily discovered and delivered via the Internet”. However, our survey demonstrated that this simplistic approach hides a complex system of preferences based on user experiences and expectations. This is most clear in the contrasting feelings about e-journals and e-books. The use of electronic journals has vastly outstripped the use

of print journals for research and teaching, because the improved access and discoverability, combined with the choice to be able to print out and read articles as desired has given users the best of both worlds and as one academic pointed out, “photocopying is a waste of time.” However, in contrast, the popularity of e-books is still a long way behind the popularity of print books largely because of the lack of choice about how to engage with the material once they have found it. The additional benefits of discoverability are appreciated but the vast majority of information seeking behaviours relating to engaging with academic content in book form are linked to the physical experience of the book, either from the very general “hate reading on screen” to specific desires such as being able to highlight and annotate the material or “to flick back pages and remain aware of how the section I am reading fits into the whole book.” Many of these comments may be generated by a lack of knowledge and confidence with regards to using e-books and mobile devices within their existing work practices.

Others were more positive about their experiences. Academics that owned a tablet computer or e-reader expressed this process changing for them as they began to use their mobile device as one aspect of a multi-modal content experience. As one academic commented, “sometimes I use both a desktop and an iPad at the same time. Reading is better on an iPad because you can enlarge small prints, you can annotate and highlight (and not have to struggle with dried up highlighters).”

Importance of Considering Context

Content in Context

Advocates of user centred design have long espoused the merits of scenario-based design, essentially exploring the needs of the user in context. When “producing mobile content, it is important to consider the context of use and that the learner should be able to receive personalised information ‘that is valuable to her in the given context’.” (O’Malley et al., 2003, p. 32) Value is a complex but very important measure of the way individuals relate to information objects, placing the desirable and undesirable characteristics in a relative scale. In a mobile environment context can have a significant impact on perceptions of value as priorities change based on situational needs.

Task-Technology Fit (TTF) Theory is one of a number of models that puts an emphasis on context. The Thompson and Goodhue and Thompson (1995) model of TTF, or the Technology-to-Performance Chain, states that in order for information technology to positively influence individual performance, then the technology must not only be used, but be a “good fit” with the tasks that it purports to support. This is identifying “the difference between the user-perceived requirements (i.e., importance) regarding various functional and non-functional features and the corresponding performance of the technology” (J. Gebauer & Tang, 2007, p. 3).

Thanks to an increased number of technologies accessing content is no longer tethered to a fixed time and place. There is a shift in focus from creating content for a mobile platform, to one in which content is developed to be adaptable to a range of contexts including desktop, mobile, home or in the field. Similarly, with the proliferation of dedicated readers and tablet computing, e-books can increasingly be considered to be in the same category as other forms of ‘mobile’ content with the content distinguished from the technology. Consequently, when discussing the use of e-content for teaching and research within an academic environment, it is important to do so within a context-based setting.

#Mobilefail

Applications of TTF to the mobile environment has demonstrated that the current technology achieves a better fit with predictable, communicable and contained tasks, as demonstrated by the success of applications like Facebook and Twitter in the mobile environment (J. Gebauer & Tang, 2007). Academic content seeking is not of this nature and it is clear that current technologies fail to meet the needs of academics seeking information for either teaching or research purposes. Many academics want to be able to access full text as needed, and want the same functionality in a device, application or platform that is afforded in a physical printed model. This dichotomy emerges in our survey, with users liking “the accessibility of electronic books, but finding it annoying that they cannot be printed or marked up”. Further examples of these difficulties can be found in the incompatibilities for many e-books in academic libraries to be accessed and read on e-readers, some platforms such as ebrary do not offer any access and others such as EBL require complicated third party applications.

In a study at the University of California, Berkley, Harley (2006, p. 8.2) concluded, “faculty use a variety of strategies for negotiating the digital morass. For most, the path of least resistance is the one usually taken—a Google search, a walk down the hall or an e-mail to a colleague, a visit to the Web site of a trusted archive, or a personal and eclectic collection of digital stuff”. Currently, the use of a mobile device to effectively engage with mobile content is not the path of least resistance, and a number of consistent factors were identified in the survey (and in the literature) as roadblocks that would discourage academics from using a mobile device to access scholarly content. The survey respondents identified 66 factors, of which there were four distinct groups, cost (15%), screen size (21%), connection speeds (18%) and core interface design (20%). Since a similar survey of the UNSW Faculty of Law in 2010, many of these concerns seem to be decreasing and fragmenting, as previously, cost and screen size were identified as issues for 67% of respondent concerns, and 40% named a lack of available content (Gray, 2010a).

Dissatisfaction in Context

Many of the recent technological developments in content delivery are emotive, challenging academics to think about the assumptions they make about their ‘natural’ research techniques. This is because research is an extremely experiential process and “complicated key controls and difficult-to-read screen presentations will be tolerated only under certain very limited conditions. The rest of us aren’t willing to risk having a bad experience. For broad and long-term adoption, the experience really does matter” (Wagner, 2005, p. 4). In her 2007 paper, Kukulska-Hulme (2007, p. 2) suggests “the very nature of mobile interaction is that it is frequently interrupted or fragmented, may be highly context-dependent, and takes place in physical environments that may be far from ideal”. This inherent fragility is compounded by the limitations of the current technology and the reluctance of academic staff to engage in activities which might result in a bad experience. This failure of mobile devices to fit the needs of academics and the context they operate in was demonstrated in our survey through the dissatisfaction many academics expressed and that for most, their information seeking behaviour had simply not changed since owning a mobile device. These messages of dissatisfaction emerged in a number of ways from academics involved in our survey, including academics who used content shifting to manage, such as one who “find[s] it easier to look for journal articles...not using a mobile device, but... read[s] the articles using my iPad at home, at work or anywhere”. Others have decided not to engage at all, such as one who stated: “It is not possible to read an article on an iPhone. Really”.

The complex separation between the technology and the users' context can mean that the device is not often perceived as the cause of the problem, but rather the content itself. "If this happens, the mobile user's dissatisfaction may not be directed at their newly-acquired device but rather at the institution that has failed to meet their changing needs" (Saravani, 2010, p. 6). One respondent explicitly acknowledged this when commenting on his workflow: "I'm fully invested...in the Kindle ecosystem, and wouldn't purchase a new reader in the short to medium term...If no content is available through the library I'll continue purchasing what I can through Amazon". Despite this current dissatisfaction, the uptake of these devices is continuing to increase and this seems to demonstrate a desire for the flexibility possible and a willingness to overcome current limitations. As such, we must examine to what extent this desire to use mobile devices as part of their workflow translates into the academic context.

Desire for Development

Our survey demonstrated that currently there is a high use of mobile devices for task-oriented activities. 60% of respondents indicated traditional mobile calling/SMS was the most important function of their mobile device with emailing and using the device as a personal organiser the next most highly ranked functions of their device. This reinforces the findings of the 2011 Horizon Report (Johnson, et al., 2011, p. 12) that indicated the mobile device as being the "first choice for accessing networked resources" as the result of three trends: "the growing number of Internet-capable devices, increasingly flexible web content, and the continued development of the networks that support connectivity". Combined, this results in a scenario in which individuals are always connected and expect to access any content they desire at the moment they need it.

This trend of users being "always on" suggests that in order to improve current academic content provision, the entire industry needs to think about the context in which content is being accessed, and the spaces into which that content is being channelled. "Mobile devices, and indeed cloud computing, have heightened a need for a shift from thinking about physical spaces to virtual ones, as the retrieval of content can be from as many places as there are users. As people move, the content goes with them too creating new spaces. This place may be called their Content Space" (Gray, 2010b, p. 14). It is from this space that demand will grow exponentially. Increasing the 'content spaces' available to academics, by improving the accessibility of the content, will serve to further foster the desire to use the available technology to maximise academic flexibility, which in turn will encourage further uptake. The increased mobility afforded to these task oriented roles simultaneously heightens the awareness of the academic potential of mobile devices, as well as the need for this content to be accessible in mobile friendly format. As such, an emphasis on the provision of information into multi-modal digital form must be paramount.

Mobile devices are the first point of access for many users around the globe. As usage and device capability continues to grow, greater attention must be paid to the variety of content available as user demands increase. This is demonstrated by early adopters within the academic community, who have already begun to integrate their mobile device into their administrative and research activities. For example, one academic identified using an iPad "for reading of admin documents, students' draft theses [and] academic journal papers". They have also begun to think about potential uses for the future, as indicated by survey responses that proposed, "access to an integrated online collaborative writing/reference management system", an emphasis on "display possibilities and designs" and "mobile-specific platforms" for academic content. It will be this group

of academics that will encourage confidence in other users and will drive the necessary changes to make academic content appropriately accessible.

Future Directions for Academic Libraries

Advocacy and Standards

Standards and consistency are fundamental for sustained support from library users. To date, many of these standards have been technologically focussed such as the *W3C Mobile Web Application Best Practices* (W3C, 2010), but there must also be a corresponding emphasis on user experience. Our survey consistently showed that academics had a desire for using academic content on their mobile device, but the content available was insufficient. To encourage academics to use academic content on their mobile devices, at least one academic commented that they would want “an app set up for the mobile device – just as SSRN has an iPhone app”. Yet more telling were the interface and access concerns expressed by the academics, who wanted “better platforms”, “easier searching”, the “ability to check things out from the library digitally” and were troubled by “copyright laws confusion”, “proprietary formats”, “complex login and use procedures” and “locked in designs, clumsy interfaces [and] data entry scripts that lack intuition”. The underlying message to this appeared to be that while academics are willing to use their mobile devices for accessing academic content, they are confused and dissatisfied by the multitude of platforms and arrangements that publishers present. “Extant technical standards like Z39.50 or Open Archives Initiative – Protocol for Metadata Harvesting (OAI-PMH) are often not fully utilized, and consequently, valuable openly accessible collections, especially from libraries, remain invisible” (Dirk & Philipp, 2006, p. 530). This is especially true in the case of e-books, where proprietary readers are often needed to view content.

Academic libraries are in the best position to be advocates for the standards necessary to ensure mobile content is suitable for a scholarly context because “advocacy is something library professionals do every day, almost without thinking” (Australian Library and Information Association, 2009). However, this role as advocate will not come without a major change for academic libraries as well: “the future imperative for libraries will be to sacrifice their institutional impulses to build collections, along with their bibliographic support services, and seek to infuse their core values of knowledge organization and information access as part of an emerging decentralized arrangement that has become the foundation of networked society’s literature and literacy” (Shuler, 2002, p. 159). The role of the library, therefore, is to promote the use of standards by publishers in the provision of mobile content to the academic community.

Discoverability, Marketing and Awareness

“Researchers’ use of digital information resources is now habitual and they would like to see more provision of information in digital form. They very much appreciate the efforts that Libraries have made in this area. They recognise that utilising the content of journal is now much easier than it used to be and there is potential for a similar leap in utility with digital monographs and research texts” (Key Perspectives, 2007, p. 38). There are significant opportunities for academic libraries to work with researchers to ensure that the next technological leaps they take are as small as possible. There are two main elements within this process. Firstly it is very important to ensure that discoverability is optimised to enable academics to have as seamless an experience as possible. The second element is to effectively market these resources to ensure that the academic community is

aware of the content available to them and the potential benefits to both themselves and their students. This process is not about teaching academics how to use these resources, because if the resources have fallen that far behind it will become a losing battle. Instead, we need to communicate the potential benefits so that academics can make an informed choice whether to invest time and in some cases money into expanding their portfolio of information tools.

At UNSW Library, the outreach teams in the Academic Services Unit specialise in building and maintaining communication channels with the academic staff (Drummond & Wartho, 2009, p. 80). The depth of this relationship building goes beyond a traditional library liaison model, forming an important building-block for effective engagement across all levels of the University. There are significant opportunities to market underutilised electronic content or highlight special features. An example of this is our “collection roadshow”, which is a series of tailored presentations for academic staff spotlighting academic content. Similar approaches can be used for highlighting mobile friendly content and e-books, building academic confidence in using the resources themselves and promoting the library in physical and digital forms as a space to explore the changing environment.

Conclusion

As the application of Task Technology Fit theory demonstrates, in the short term the current limitations of mobile devices restrict their usefulness to being task-oriented tools with particular strengths in predictable, communicable tasks. Academic information seeking behaviours are many and varied, and mobile devices do not currently support the flexibility they desire within their work life. This results in the current high levels of frustration and a reluctance to engage with academic content on mobile devices. However early adopters are demonstrating that as academic use of these devices grows and their confidence develops there is a corresponding surge in demand for the academic content provided. This requires a higher standard of platform with greater interoperability and increased accessibility across all technologies, as a part of a truly multi-modal information environment. Libraries have a key role to play in supporting academic use of content by advocating the effective use of standards and interoperability to ensure academic content platforms improve. Making content more accessible and working with our academic communities to support their discovery and awareness must be a key focus for academic libraries now and into the future.

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