Title: Apps for academic success: Developing digital literacy and awareness to increase usage

Authors: Robin Canuel, Emily MacKenzie, Andrew Senior, & Nazi Torabi
McGill Library, McGill University, Montreal, QC, Canada

Corresponding author: Robin Canuel email: robin.canuel@mcgill.ca

Abstract

As a consequence of the high adoption levels of mobile technology, users are increasingly accessing academic library-subscribed content via vendor-supplied mobile applications (apps) or responsive websites. However, users may be unaware of the existence of some standalone apps and might miss benefitting from available apps at their most significant point of need. This paper outlines the McGill Library's multifaceted approach to promotion and outreach to increase awareness and usage of mobile apps in an effort to provide additional access points for the library's e-resources. A variety of online and traditional promotional methods were employed, such as faculty news e-bulletins, an app web-guide, images on the Library home page slideshow, and in-person demonstrations, to advertise two of the Library's subscribed apps, PressReader and BrowZine. Complementing this approach, four different workshops were offered at different times during an academic year targeted to specific audiences: faculty, university communications and library staff, and students. The authors describe the content and results of these initiatives showing how specific promotional strategies appear to have a greater impact on usage. They conclude with thoughts on how current behaviours in mobile usage might begin to affect the future direction of mobile access to library subscriptions.

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1) Introduction

Today's scholars are using mobile technology more frequently in all aspects of their research; for information discovery, accessing scholarly publications, data collection, and in the production of new academic work for publication. Recent surveys focusing on the adoption of various technologies show that trends in the use of mobile technology consistently indicate a progression in mobile adoption, particularly among university aged students that is nearly universally complete [1, 2]. Since the level of engagement that our students and faculty have with these devices and their corresponding applications (apps) is exceptionally high, teaching academic library users how to leverage these tools in their daily work, and promoting the use of these technologies to develop digital literacy is essential. Library staff need to stay abreast of these developments and be prepared to support and advise users on effective and efficient use of these tools in order to be more productive researchers. At the same time, mobile access to library-subscribed electronic resources is fast becoming the norm through publisher designed applications and mobile responsive websites. This technology is having a significant impact on academic libraries and is changing the way that students and faculty are accessing and using library e-resources. This trend is of particular importance in research intensive institutions such as McGill University, where the library collection is increasingly electronic in nature, with over 100,000 e-journal subscriptions, and 2.1 million e-books in the current collection. This paper will describe the multifaceted approach to promotion and outreach strategies employed by the McGill Library with the goal of increasing awareness and usage of library-subscribed mobile apps as additional access points for the library's e-resources.

2) Literature Review

There has been a steady increase in the body of literature addressing how academic libraries have leveraged mobile apps to promote services, collections, and resources, as well as

the use of mobile apps in information literacy instruction. The following review of the literature provides a brief overview of mobile app initiatives in academic libraries, and the use of mobile apps by students and faculty for academic purposes. These relatively recent developments highlight the importance of promoting mobile apps to library users.

2.1) *Academic libraries leveraging mobile apps*

A recent study by Liu and Briggs surveyed librarians and investigated library websites at the top one hundred universities in the United States to find out more about their use of library-related apps [3]. Their findings demonstrated that vendor-provided, and third-party apps, were widely used, and that several types of apps were recommended by these libraries. The most popular apps were e-journal aggregators, followed by databases, e-books, reference resources, and e-reader apps [3]. Research-related apps focused on citation management, information management, and productivity were also mentioned [3]. In addition, the authors took note of apps that were developed in-house for accessing library services. These library apps provided access to a variety of library services such as booking a study room, and sending catalogue records to a mobile device [3]. Other studies have described using apps for providing reference services, for library instruction [4], and for scanning ISBN or QR codes to check the availability of items in library catalogues [5].

There are a variety of apps available that can support academic library users in all stages of their academic work. In a survey of 97 library websites of the Association of Universities and Colleges of Canada (AUCC), Canuel and Crichton found that 37% of AUCC libraries included links to mobile apps on their website [6]. The four most frequently occurring categories of apps for supporting scholarly activities were reading apps (69%), citation management apps (50%), bibliographic database apps (42%), and cloud-based information storage apps (28%). Apps requiring institutional access, in contrast to free or individually-paid access, were found on 89% of the AUCC libraries' websites, an indication of the increasing

importance of using apps as a way to provide access to library subscription-based collections and resources [6].

2.2) *Apps for library instructions*

There is a marked increase in the popularity of app use in the classroom among academic librarians. Johnson and Marsh have described how they integrated apps into information literacy (IL) instruction sessions at their institution [7]. They used mobile apps as tools to apply active learning techniques in the classroom, with the goal of increasing student engagement [7]. For example, Johnson and Marsh used the Popplet Lite app and the Oxford Dictionary Online app to identify relevant keywords and synonymous terms related to research questions. This approach enabled them to deliver IL instruction in a creative manner while aligning learning activities with the learning objectives of the session [7]. Cathryn Copper created an interactive learning environment by using tablets in her IL class for architecture students, and by offering tablet workshops at the beginning of each academic year [4]. The primary goal of the workshops was to increase awareness of apps that are particularly useful to architecture students. One of Cooper's main recommendations was for librarians to budget for the purchasing of apps which otherwise would not be accessible to students [4]. Stefanie Havelka advocates for developing student's mobile information literacy and teaches IL concepts using mobile devices [8]. Havelka also uses mobile apps at the reference desk to motivate students to contribute to the search process and to become familiar with available apps [8]. It is clear from the literature reviewed that creative use of mobile apps for teaching can have several potential benefits, such as increasing student engagement, providing a variety of content delivery options to meet the needs of students with different learning styles, and assisting with the integration of active learning into instruction sessions.

2.3) *App use by students and faculty*

There is a growing body of literature which describes the use of mobile apps by students and faculty for academic purposes. Caniano and Catalano surveyed over 250 library users, including faculty, students, and alumni, to learn how they were using mobile technology to access library resources [9]. 51% of participants indicated using mobile devices to access library materials and library services [9]. Among the participants, 44% used their devices for database searching, 26% accessed Google Scholar, 24% used their Journal Finder tool, and another 24% searched the library catalogue. Using apps for research and academic work was found to be more common among graduate students compared with the other categories of the library users studied [9]. Catharine Bomhold has investigated the types of apps used by freshman undergraduate students, and their frequency of use for academic work [10]. 36.9% of the students surveyed by Bomhold indicated that they used apps for 'references or libraries'. The most frequently used apps cited by Bomhold's respondents were search engine apps (60%), online encyclopaedias (14.4%), dictionaries or translators (11.3%), and learning tools such as calculators or flashcards (10%), and library or databases apps (4.3%). While she used a small sample of 62 students enrolled in an elective introductory IL class, and the results were not generalizable to the entire student body on campus, this study provided insight into the information use of students within the context of mobile apps. Bomhold concluded that apps were important for the participants primarily because they are easy to access and use when searching for information [10]. In a study of 184 research scholars in India, Madhusudhan investigated the use of mobile devices to improve research work. The author found that 72.28% of respondents used mobile devices to search the OPAC, 57.60% to access library subscribed e-journals and 22.28% to access e-books. The study noted barriers to mobile access created by non-optimized resources, lack of high-speed connectivity and authentication, and recommended actively promoting mobile resources available through the library and encouraging their use by research scholars [11]. Since student and faculty desire for library related apps is clearly

evident, therefore, it is important for academic libraries to leverage mobile apps as another way of providing access to e-resources and services.

2.4) *Promotion of e-resources*

Promoting library-related mobile apps and responsive websites is essential for increasing user awareness of these resources, and to do this effectively requires a well-planned marketing and promotion strategy. There is a body of library literature on effectively promoting traditional e-resources, which is useful to consult when thinking about the promotion of mobile apps. According to Emily Alford the main challenges related to marketing library e-resources are defining your target audience and the lack of control libraries have over commercial platforms, however, she recommends developing a marketing plan, defining objectives, knowing your audience, and selecting a variety of communication options [12]. Moreover, Vasileiou and Rowley recommend the development of a formal marketing strategy to promote e-books along with an innovative use of tools and capitalizing on word-of-mouth opportunities [13]. In a survey of 25 academic librarians they found that three quarters of interviewees recognised a need for a strategy for e-books promotion but that none had one in place at the time [13]. Amy Fry employed usage statistics to measure the impact of various promotion strategies on database usage through a game-based initiative during the fall of 2011 [14]. She found that personalised promotional activities such as tailored communications to faculty and active learning teaching methods were more effective in increasing database usage than other traditional marketing methods, for example web promotion, flyers and displays [14]. A study by Lo et al. that investigated the use of smartphones by art and design students to find information for the purpose of academic learning, social networking, and collaborative learning, reported that one of the barriers preventing students from using their mobile devices for learning activities was the lack of awareness of specialized and user friendly mobile apps [15]. Finally, Swogger and Linares have suggested that providing a live demo of relevant mobile apps to students and

faculty is essential when encouraging them to adopt, and frequently use, mobile apps for scholarly activities [16]. Although a comprehensive search of the literature was not conducted as part of this review, to the best of our knowledge this paper is unique in that it is the first to describe multiple promotion strategies to increase library-related app awareness, and to document the impact of our promotional activities on app usage.

3) Mobile Apps Committee

In response to the emergence of mobile apps for accessing library e-resources, and to address the information needs of library users, a mobile apps committee was formed at McGill Library in April 2013. The committee membership included representation from both technical and public services, as well as the library communications officer. The primary mandate of this committee was to review vendor-supplied mobile apps and to make recommendations regarding their use and promotion at the university. The committee was also responsible for creating and developing innovative mobile library services to facilitate teaching, learning, and research, and to develop promotion strategies and training sessions (for both library staff and patrons) in library-supported mobile apps. In the course of reviewing and selecting apps to highlight, the committee focused on those that could facilitate academic work and provide alternative access to the library's electronic collections. Among the first apps selected for promotion was BrowZine, a library-subscribed app providing users with a single platform for browsing and full-text access to over 90% of McGill's e-journal collection, and PressReader, a popular magazine and newspaper subscription service to which the library provides access.

In summer 2015, a team of librarians working as part of the library's mobile apps committee were tasked with developing a new series of workshops to increase awareness and use of mobile apps. This most recent series of workshops targeted four separate user groups: faculty, library staff, students and the university's communication staff. The development of the workshops required not only a careful consideration of the needs of each user group in order to

select the most useful apps to highlight, but a significant amount of consideration was also placed on targeted promotion strategies for the workshops. Presenting and writing about the committee's activities has provided an opportunity to reflect on the work of the committee over the past few years. While a causal relationship between the work of the committee and e-resources usage cannot be definitively made, information such as app usage statistics and anecdotal feedback from students, faculty and staff can offer valuable insight to inform and guide the future work of the committee.

4) Marketing, Promotion and Usage of Mobile Apps at McGill Library

Journal, newspaper, and e-book mobile applications, or responsive websites, have the primary goal of facilitating access to their online content. Many platforms (including PressReader, Springerlink and UpToDate, among others) provide access to this content through their apps as part of a library subscription, although some apps require users to create personal accounts. User awareness of the existence of these apps is far from guaranteed, for reasons similar to those issues surrounding the marketing and promotion of traditional e-resources. Content providers do sometimes employ their own marketing strategies to promote mobile options, such as online press-releases or website download links (for example ACM Digital Library displays prominent panel links to their native app from their website), providing users the potential to discover apps when following links to websites from search results in the library discovery layer or catalogue. McGill subject guides will also occasionally provide this information, but nowhere in the discovery layer is there an indication that a corresponding app might exist. And for a standalone product such as BrowZine, which provides access to publisher content outside of the discovery layer, link options do not form part of traditional catalogue search results, thus further reducing the chances of serendipitous discovery. What all these platforms have in common is a significant monetary investment, and libraries everywhere are expected to justify and demonstrate a return on this financial investment. If users are unaware of the additional mobile options available to access these products, there is no potential for

increased use. Conversely, knowledge of an app's existence might prompt app adoption, especially if this brings value-added benefits such as customised screen display (no more "reverse-pinch"!) and the convenience of anywhere-anytime access. A combined win-win benefit was perceived in promoting e-resource apps; a benefit for the user-centered approach to facilitating access followed by potential increase in parent e-resource usage statistics. The need for some kind of marketing and promotion was deemed necessary in the McGill context.

A variety of strategies were employed to promote apps at McGill. As indicated by Emily Alford [12], a knowledge of one's audience is key to planning e-resources promotion and the McGill mobile apps committee used targeted approaches to reach faculty, staff and students. Consequently, the first marketing initiative was aimed at the broad user base with multiple methods. Beginning in the fall of 2013, and in collaboration with the Library's communication officer, promotional images were created, initially for two mobile apps--BrowZine and PressReader, with OverDrive and ebrary added in January 2014. These promotional images were featured on the library home page, above the "fold", in the rotating slide show, advertised on library public display screens, and used on bookmarks handed out at library service desks and regular library workshops. Brand and company information was attached to the marketing message, for example, often mentioning the company's name on promotional images.

Promotional slots were included in the fortnightly e-bulletin *Focus on Teaching*--an initiative designed by Teaching and Learning Services to inform faculty about resources which could enhance their teaching at McGill University. Starting in the November 15, 2013 (Volume 3, Number 7) issue, short informational items about BrowZine and PressReader ran in every newsletter until September 2014 with embedded links to the then newly-created Mobile Apps Guide (a link to the App Guide had appeared in the previous issue). This was the first iteration of an online apps guide that recommended apps that are available to users as part of library subscriptions. The mobile app guide fed into an ongoing web-presence strategy. Recommended apps were listed according to subject area with links to the three major OS platforms of iOS,

Android, and Windows. This full marketing campaign was carried out for one academic year (Fall 2013-Fall 2014).

During 2015 and 2016, promotional activities were more limited in scope. Marketing of the mobile apps guide continued on the library home page and social media feeds as well as advertisements on the library's public display screens, bookmarks, and hands-on demonstrations at library events. The Mobile Apps Guide was migrated to LibGuides in September 2015. The LibGuides version features drop-down menus according to operating system, with subsequent divisions by subject or theme (see: http://libraryguides.mcgill.ca/mobileapps/home). Links are also given to the library's IT informational page, *Computing at McGill*, authentication updates, and tip sheets for setting up apps that require additional configuration. At the same time, the promotional images were updated to feature the latest icons of BrowZine, PressReader, Ebsco Ebooks and Overdrive, icons for the Android, iOS, and Window operating systems, and the slogan *Access free apps to help you with your research*. This formed the new slide design that would serve for ongoing web promotion in addition to printed documents and information screen displays.

The base marketing image continued to form part of a 14-slide rotating deck appearing on the library home page and linked to the committee's Mobile Apps Guide intending to drive patrons to the guide to see the full range of available apps and responsive websites. In addition, the image without the slogan was used to advertise the Mobile Apps workshops on Twitter and Facebook and on bookmarks/flyers. A mobile app-related blog was launched in September 2015, entitled *APPpropos* https://blogs.library.mcgill.ca/apppropos/ and linked to from the online apps guide. The goal of the blog was to reach a wider audience and provide additional information about apps as well as an opportunity for a more personal touch from other committee members with "app of the month" app-reviews. The blog proved challenging to maintain due to the busy schedules of librarians and for this reason will be the focus of a "reboot" effort in September 2016 with the aim of shorter, but more frequent posts. A second

initiative was a combined venture with a science librarian to use portable mini projectors to display app content and functionality during on-the-fly live app demonstrations in high-traffic Library spaces.

5) App Usage Reports to Gauge the Impact of Marketing and Promotion

Amy Fry [14] employed usage statistics to assess the effectiveness of database promotional campaigns, at Bowling State Green University, at the same time noting that "many factors can affect the use of resources" (p. 14). She also analysed website usage to view clickthroughs to databases from library rotator, libguides, blog posts and poster bit.ly URLs. The authors have used a similar combined analysis of resource and website usage across several periods to assess the effectiveness of the committee's marketing initiatives. As these initiatives were not experimentally designed, assessing their direct impact on e-resources mobile usage must be seen in terms of correlational patterns. Nonetheless, we believe that such correlations do exist between marketing and promotion strategies and specific usage outcomes, highlighted by the data from two of the most continually promoted apps, BrowZine and PressReader. The McGill results would appear to support Fry's conclusion that communicating with faculty directly is one of the more effective methods to increase e-resources usage, and we believe that this strategy translates equally to mobile app usage.

Two types of mobile statistics are available for these resources: BrowZine provides mobile session counts, and PressReader provides mobile device downloads. BrowZine was solely distributed as a mobile app until September 2015, when a web version of BrowZine (BrowZine.com) was made available to McGill users and represented between 0 and 5% of McGill's monthly BrowZine sessions to July, 2016. These results were removed from the BrowZine usage statistics since BrowZine.com directs mobile users to download the app and therefore does not account for any of the mobile traffic.

McGill's PressReader mobile device download statistics are available from September 2013. Non-mobile statistics include "web reads" which show the number of publications

accessed from a web browser. Similarly to BrowZine.com, it is not possible to ascertain on which type of device the web-read content was accessed, but the authors surmise that such access is principally from a desktop computer. Nonetheless, PressReader's "web reads" statistics allow a comparison for this resource between desktop and mobile.

5.1) *App usage observations*

Mobile usage for PressReader and BrowZine increased over the September 2013 to August 2014 academic year period, corresponding with the committee's marketing initiatives. Usage for both mobile resources continued to rise in the autumn of 2014 and spring 2015 but declined in the autumn of 2015. This correlates with a change of focus in the marketing and promotion strategies as the committee had moved to providing workshops, but does not completely explain the drop in both resources' usage seen early in the 2015-16 academic year (Table 1, and Figures 1-3).

Insert Table 1 and Figures 1-3 here

Where there is greater certainty of impact is from the November 2013 e-bulletin to faculty. An initial spike for the month of November 2013 can be seen for both resources which coincided with the start of the faculty newsletter item and other marketing and promotion activities. BrowZine sessions in September 2013 numbered 23, rising to 61 sessions in October and 162 sessions in November (Table 2). This represented monthly increases of 165.2% and 165.6% respectively with November's total showing a 604.3% increase over the September figure. PressReader download statistics show a similar though less dramatic result, increasing monthly by 290% and 126.4 % in October and November 2013. If we compare these figures to the same period in the following year, monthly increases for BrowZine sessions from September to November 2014, are 15.7% and 24% respectively. In 2015, BrowZine sessions actually decrease between October and November by 22.6%.

Insert Table 2 here

Analyzing the usage statistics of the Mobile Apps Guide web pages for the same periods corroborates the perceived impact of the faculty e-bulletin on app usage. From the November 15, 2013 issue to February 1, 2014 e-bulletin issue, links to BrowZine and PressReader resolved to the Mobile Apps Guide (and subsequent options to link out to App Store or Google Play). After February 15, 2014, the resource links themselves resolved directly to the App Store. This means that faculty who clicked on the resources links prior to February 15, 2014 would have passed through the Mobile Apps Guide website and this usage can be measured. Web usage for the guide pages show a significant increase in page views on November 15, 2013, the day the e-bulletin was released (Figure 4) and featured information on both resources and the Apps Guide website. However, there was a decline in page views in the autumn of 2015 which mirrors that of the lower resources usage during the same period (Table 3).

Insert Figure 4 here

Insert Table 3 here

There may be other reasons for these usage patterns. The spikes in use in November 2013 could simply be a reflection of regular e-resources peak usage for the month of November as library patrons are more engaged in research at this time. For example, usage of the library's website and discovery layer largely mirror the natural academic yearly cycle with peaks in October/November and March/April as students work on assignments and exam revision. However, this November spike was not repeated to the same extent in 2015 for either resource, nor for the Apps Guide, which suggests it likely isn't due to research-intensive usage alone.

In the area of research-related usage, behaviours appear to be different for mobile users. For example, PressReader's web reads (desktop) data mirrors the spring/autumn research peaks with less usage in the summer months for all three given academic years. However, mobile device downloads demonstrate increased or at least equivalent usage during the summer months of June to August for each year as users are not limited to access during vacation periods. BrowZine data is far smaller but similar high summer usage is seen for 2015.

This may suggest that users continue to browse news publications and journal content throughout the academic year, in a manner unfettered by the normal research cycles.

The scheduling of the tailored mobile apps workshops described in the next section did not correlate with noticeable increased usage for BrowZine, PressReader, or the Mobile Apps Guide. However, the questions and feedback received during the sessions, though qualitative in nature, will inform future promotional campaigns.

6) Tailored Mobile App Workshops

Four types of mobile app workshops were developed, each targeting different audiences. Though the content of each of the workshops was carefully tailored to focus on tasks or themes central to the research and/or work context of each user group, some important commonalities exist. For example, all workshops began with an invitation for attendees to connect to the Wi-Fi at McGill, with the teaching team providing assistance with this initial task. All workshops included information on accessing McGill Library content from off-campus using the app for the university's Virtual Private Network (VPN), with instructions needed for setting up the connection for future use. To provide context for attendees an introduction to the main activities and the rationale behind the library's mobile apps committee was included. Each workshop was advertised as "BYOD" (bring your own device) to allow users to capitalize on readily available assistance from the teaching team with both setup and use of the apps discussed during the workshop. As such, the committee found it practical to have a teaching team that included expertise in both iOS and Android devices, which are by far the most used devices, though others do exist.

6.1) *Workshop for communications group*

The first developed session was directed towards the campus communications group. This group consists of the Communications Services unit (within the Office of Communications and External Relations), the campus-wide Network and Communications Services unit (part of

McGill IT Services), and the departmental and faculty Communication Officers. Our library communication officer (being a member of both the mobile apps committee and this campus communications group) suggested this session, and also provided important insight into the group's information needs and daily practices. During the workshop, the group was introduced to the mobile landscape and trends in mobile usage at McGill, the most popular devices on campus, and mobile apps for academic research (including discipline-specific apps). The session was followed by an open discussion highlighting both the shortcomings and strengths of currently available apps as well as a forecasting of the future of mobile apps technology in scholarly communication and campus-wide communication practices.

6.2) *Workshop for library staff*

A session entitled "Accessing McGill Collections using Mobile Apps" was developed to provide library staff with both a professional and personal opportunity to experience the use of mobile apps. The workshop was offered twice, with both sessions deliberately scheduled during the summer when the library is less busy and staff have more time to attend workshops (see Table 4). Frontline staff are approached regularly by users who arrive at the service desk with a device in hand looking for assistance. Exposure to mobile apps, and providing training for navigating some of the more common questions among library users, could reduce staff anxiety when they encounter mobile app-related questions. During the workshop, the McGill Library Mobile Apps page was introduced as a helpful resource to which users can be directed. Some of the more common troubleshooting issues associated with using the library via a mobile device were discussed, and attendees were also introduced to terminology associated with downloadable media including Digital Rights Management (DRM), Adobe ID, and various file formats in a mobile environment. Also discussed was the importance of connecting to McGill's virtual private network when setting up apps, and the workshop provided an overview of library resources available through mobile apps. One of the objectives of this workshop was to encourage library staff who had never used mobile apps to select one to begin using for

personal use. Increased exposure to mobile apps will make it easier for library staff to become comfortable assisting library users with mobile technology and promoting the access of library resources using mobile apps. Promotion for this session occurred via the weekly staff update email to all library employees.

6.3) *Workshop for students*

The workshop developed for students was entitled "Apps for Academic Success!", and was offered twice in the beginning of the fall term (see Table 4). The content was structured around four major themes relevant to a student's work in an academic setting: finding scholarly information, accessing and managing content, managing work and documents, and producing scholarly work. The theme of "finding scholarly information" was meant to encompass the "searching" phase of library research and emphasis was placed on the mobile apps resource guide where discipline-specific resources are listed, followed by a discussion of the mobile interface of the library catalogue. Under "accessing and managing content", attendees were introduced to apps useful for working with specific types of library content, for example e-books and e-journal articles. Since different e-book reader apps are necessary in order to make full use of the library's e-book resources using a mobile device (for example, Overdrive, Ebsco eBooks, Bluefire reader, etc.), time was spent discussing the differences between the apps (for example, certain apps require users not only to connect to the network, but also to have app-specific personal accounts; some e-books are fully downloadable, others can only be borrowed for a limited time). For accessing and managing e-journal content, BrowZine was selected as the demonstration app because it provides access to a large portion of the library's e-journal subscriptions all from a single platform. Attendees were also shown how to access, read and save journal articles. For managing their work and documents, students were shown where to find information on the university's cloud-computing policies, and the EndNote app for managing citations. The last section of the workshop introduced students to the MS Office apps (with the launch of Office 365 at McGill, the university community gained access to the suite of MS office

mobile apps). Throughout the workshop, tying together the various parts of the research process, the interoperability of many apps was emphasized showing students the possibilities of increased productivity while on the go. The promotional strategy for these workshops was developed in close consultation with the library communications officer, and included slides displayed on the LCD display screens in all branch libraries and as part of the rotating slideshow on the main library home page.

6.4) *Workshop for faculty*

The workshop directed towards faculty, "Mobile Apps for Teaching, Research and Productivity" began with an overview of mobile trends, including a short discussion on how mobile devices are currently being integrated into research activities, such as the adoption of mobile devices and apps for conducting fieldwork, and for crowdsourcing data collection. Apps discussed in this session were similar to those emphasized for students, though the organization was slightly different to reflect the specific needs of this group. The session sequence was: library apps for teaching (presentation apps, as well as some ideas for connecting mobile devices to projectors); apps related to productivity (e.g. MS Office apps, cloud storage solutions and considerations, such as highlighting McGill's policy on cloud storage); and finally apps for accessing the library's resources, including apps for searching and reading content (e-book apps, BrowZine, and PressReader). A significant amount of time was left at the end of the session to allow attendees to explore the apps, troubleshoot access and usage issues, and to raise specific questions with the instructors. Once again, the library communications officer was involved in developing promotional materials and strategies for this workshop. In addition to posting slides on the library's public display screens, and the library website, the workshop was also mentioned in the e-bulletin "Focus on teaching".

Insert Table 4 here

7) Lessons Learned and Future Directions

Continuous promotion and effective outreach activities are the most important factors in building a user-centered mobile app collection and increase app usage. Based on the findings reported here, there has been an increase in the awareness and use of library-related mobile apps in the past three years, partly due to the multi-faceted approach taken by librarians in marketing and promotion. The first promotional initiative at McGill, which highlighted several library-related mobile apps in the university's e-bulletin *Focus on Teaching*, proved to be one of the most successful approaches in increasing faculty's awareness of library-related mobile apps.

The authors intend to create an assessment plan to monitor library app usage more closely and evaluate the success of various promotional activities. This will allow the library to plan and prioritize promotional and marketing activities, and to investigate the reasons for the marginal use of certain library-related mobile apps. Considering that mobile apps might produce a different usage pattern compared to the more traditional library e-resources, monitoring app usage might provide some insights into how academic libraries can leverage mobile resources. In addition, as mobile apps become more popular as an alternative access point, vendors and mobile app providers should be able to deliver more detailed usage statistics.

Mobile apps technology is in a constant state of change, as is our university community. Mobile technologies have been adopted by nearly all academic library users and academic librarians must acknowledge that new online information-seeking behaviours are evident among library users. For example, a researcher might make a conscious effort to use their mobile device for information triage, but use their desktop for in-depth reading. It is very common for scholars to receive the new table of contents of a journal or new citation alerts on their mobile device, and for them to save the full-text reading for later when they have access to their desktop computer. Another example would be a student who has to make a long commute each day and deliberately decides to work on formatting their paper and bibliography using mobile citation management software while on public transit. It is crucial for academic librarians to

understand emerging information needs and behaviours and for us to be proactive in addressing those needs using targeted promotional strategies.

The authors made a concerted effort to tailor the content of their workshops to each different audience. In addition, the time that each workshop was offered and the title of the workshops varied. Also, a variety of promotional channels were used to target each workshop to its intended audience. Reflecting back on this experience, the low attendance in some of the workshops (particularly those offered for students), has led the authors to believe that the sessions should be offered in a different format to attract more students. In a traditional workshop/lecture style the authors were able to attract only those students who actively sought extra learning opportunities outside of their classrooms. Alternative approaches such as pop-up learning stations within the library, and at various campus locations, might be something to consider for future content delivery. To assist different types of learners, the group will consider developing self-directed online modules to introduce new and popular library-related mobile apps.

In-person workshops can provide our users with an opportunity to advance their technological literacy, and offer librarians a valuable opportunity to interact face-to-face with faculty and students, gaining added insight into their information needs. Librarians can enable learners to use mobile technology independently, or for collaborative work in accessing, evaluating, managing, and sharing information. When designing the content of a workshop it is strongly recommended that skill-based teaching be emphasized, rather than tool-based demonstration. Focusing on concepts such as DRM and authentication will provide learners with transferable skills that they can use in the future. Furthermore, skill-based teaching encourages a higher level of engagement, a benefit observed by the authors during the in-person workshops at McGill.

It is important to provide continuing training opportunities for all library staff, particularly those responsible for providing public services to the students and faculty. This will ensure that

library staff are comfortable assisting library users with mobile technology. It is also important to continue developing expertise in the area of mobile apps in the library. It should no longer be considered one person's job to promote the use of mobile apps and to increase awareness. This type of work requires collaborative effort from various units within the library to effectively plan and implement mobile apps services.

8) Conclusion

A multifaceted approach to promotion and outreach strategies can be useful in increasing awareness and usage of library-subscribed mobile apps as access points to the library's e-resources, and in justifying and demonstrating a return on the library's financial investments. Targeted workshops for faculty and students can provide a great opportunity for the academic librarians to gather insights into the information needs of patrons. The authors anticipate more and more library users will adopt library related mobile apps for their academic work and will appreciate knowing about them and receiving guidance on how to use them. Academic librarians are strongly encouraged to promote mobile apps to help facilitate student and faculty work, and to increase the use of our valuable electronic resources.

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Table 1 - Usage totals and percentage changes for the academic years 2013-14 to
2015-16 (September to August).

Resource	2013-14 academic year	2014-15 academic year	2015-16 academic year
BrowZine Sessions	1126	1649 (+46.4%)	1495 (-9.3%)
PressReader Device Downloads	6491	8082 (+24.5%)	6942 (-14.1%)

Figure 1 - BrowZine Sessions (May, 2013-Aug, 2016)

Bar chart legend: BrowZine Sessions

Month	Sessions
MAY (2013)	20
JUN	16
JUL	27
AUG	17
SEP	23
OCT	61
NOV	162
DEC	90
JAN (2014)	137
FEB	124
MAR	88
APR	100
MAY	108
JUN	79
JUL	78
AUG	76
SEP	108
OCT	125
NOV	155
DEC	138
JAN (2015)	140
FEB	133
MAR	150
APR	164
MAY	135
JUN	128
JUL	161
AUG	112
SEP	95
OCT	103
NOV	79
DEC	111
JAN (2016)	89
FEB	126
MAR	180
APR	156
MAY	161
JUNE	126
JULY	118
AUG	146

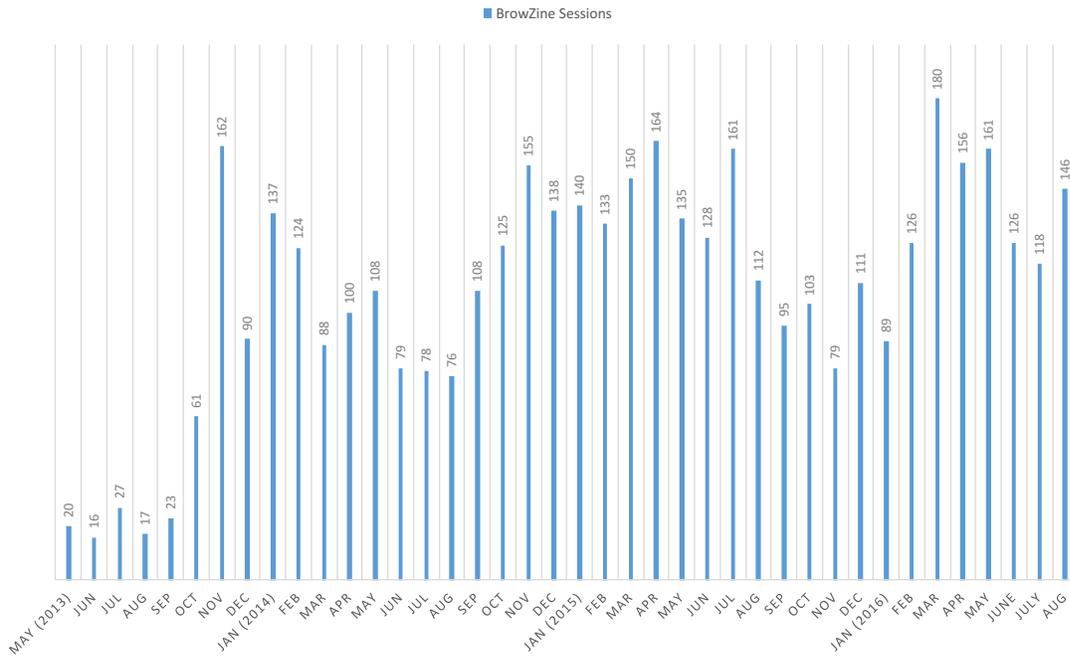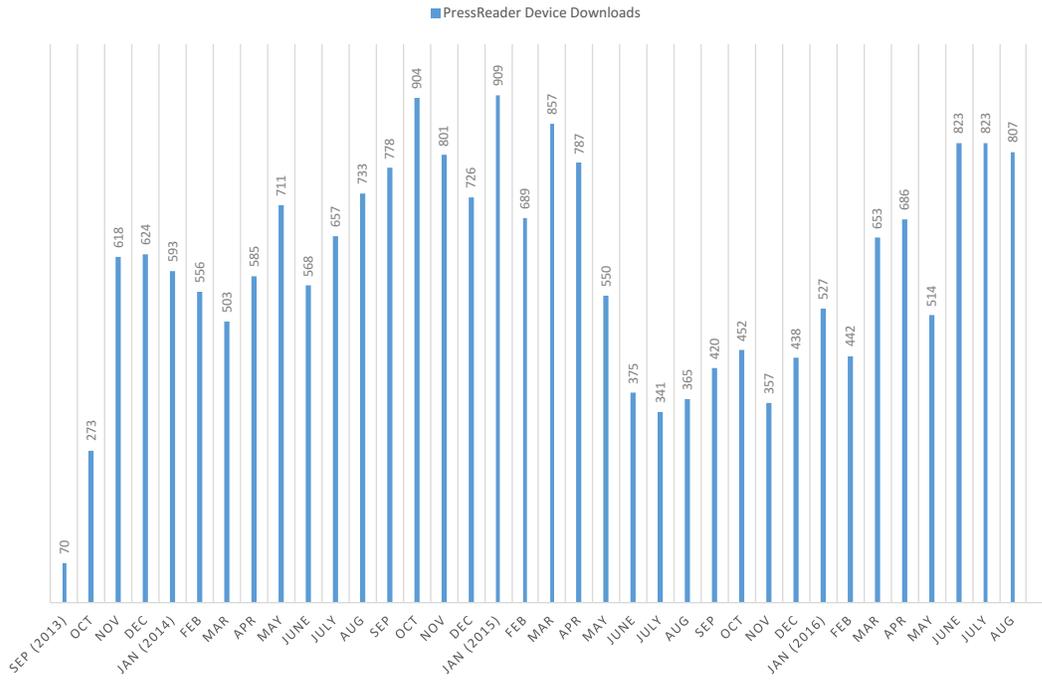Figure 2 - PressReader Device Downloads (Sept., 2013-Aug., 2016)

Figure 3 - PressReader Web Reads (July, 2013-Aug., 2016)
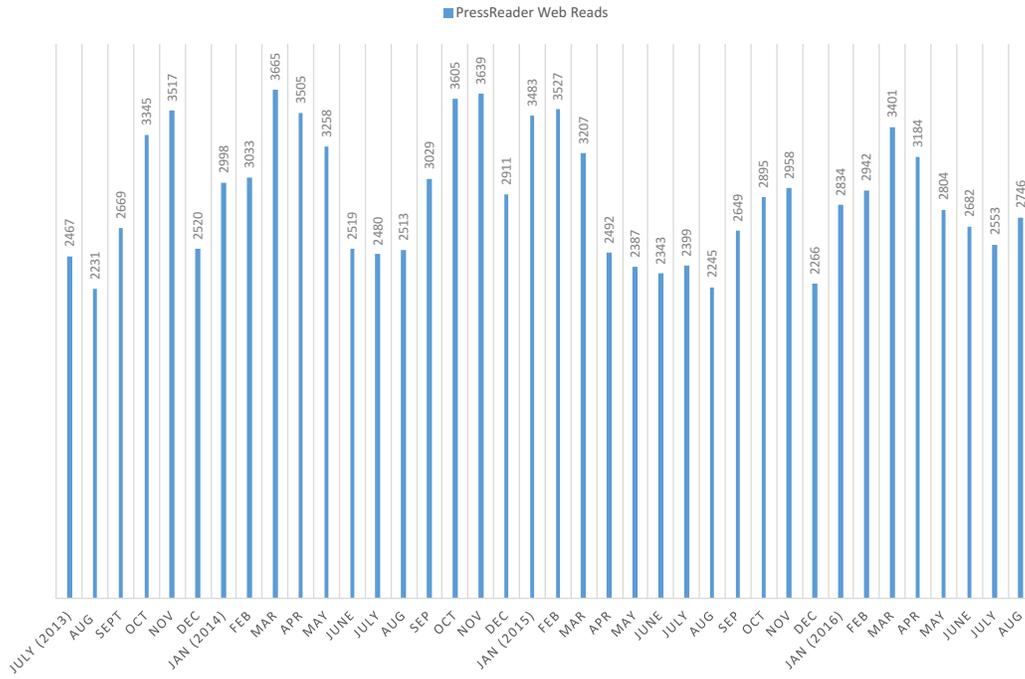

PressReader Web Reads

Table 2 - Comparison of September-December 2013 to 2015 periods with percentage changes over previous month

Resource	Sept. 2013	Oct. 2013	Nov. 2013	Dec. 2013	Sept. 2014	Oct. 2014	Nov. 2014	Dec. 2014
BrowZine Sessions	23	61 (+165.2%)	162 (+165.6%)	90 (-44.4%)	108	125 (+15.7%)	155 (+24%)	138 (-11%)
PressReader Device Downloads	70	273 (+290%)	618 (+126.4%)	624 (+0.95)	778	904 (+16.2%)	801 (-11.4%)	726 (-9.4%)

Resource	Sept. 2015	Oct. 2015	Nov. 2015	Dec. 2015
BrowZine Sessions	95	103 (+8.4%)	79 (-22.6%)	111 (+40.5%)
PressReader Device Downloads	420	452 (+7.6%)	357 (-21%)	438 (+22.7%)

Figure 4 – Mobile Apps Guide page views in the week of November 2013 featuring the first e-bulletin marketing of BrowZine and PressReader items on November 15.
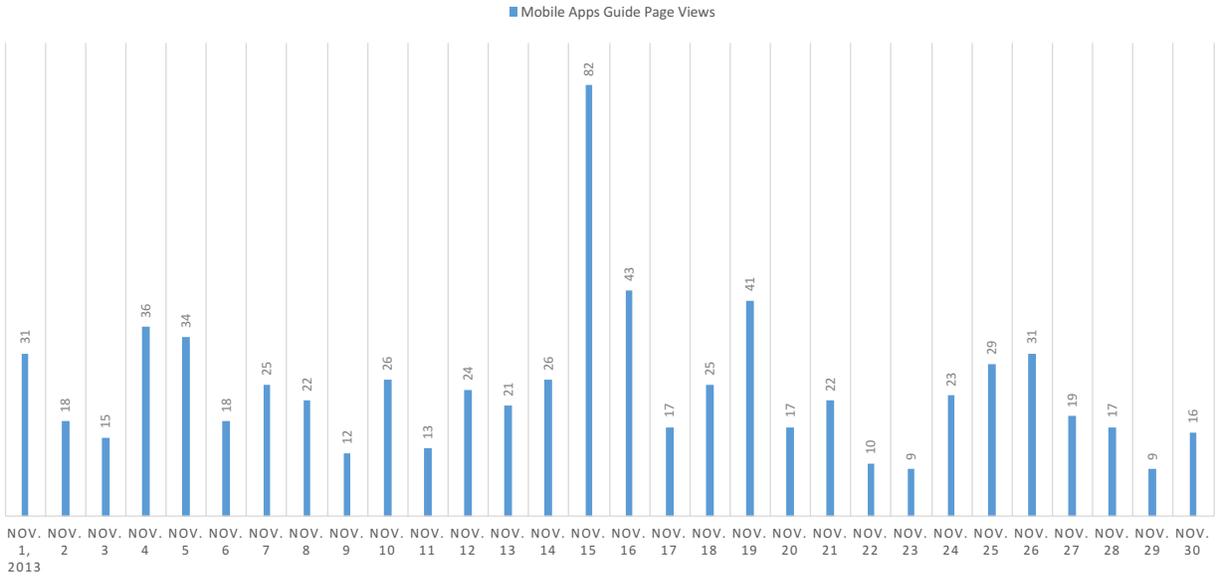

Mobile Apps Guide Page Views

Table 3 - Monthly page views to the Mobile Apps Guide, September-December,
2013-2015

	Sept. 2013	Oct. 2013	Nov. 2013	Dec. 2013	Sept. 2014	Oct. 2014	Nov. 2014	Dec. 2014
Mobile Guide Page views	48	618	731	509	790	450	456	327

	Sept. 2015	Oct. 2015	Nov. 2105	Dec. 2015
Mobile Guide Page views	471	148	163	67

Table 4 - Workshop Audience, Dates and Workshop Repetitions

Workshop Audience	Date	Number of workshops given
Communications Group	May, 2015	1
Library staff	July, August, 2015	2
Students	September, 2015	2
Faculty and graduate students	February, 2016	1