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QR Codes in the Library: Are They Worth the Effort? Analysis of a QR Code Pilot Project

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Accessibility

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Abstract

The literature is filled with potential uses for Quick Response (QR) codes in the library Setting, but few library QR code projects have publicized usage statistics. A pilot project Carried out in the Eda Kuhn Loeb Music Library of the Harvard College Library sought to determine whether library patrons actually understand and use QR codes. Results and analysis of the pilot project are provided, attempting to answer the question as to whether QR codes are worth the effort for libraries.

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The literature is filled with potential uses for Quick Response (QR) codes in the library setting, but few library QR code projects have publicized usage statistics. A pilot project carried out in the Eda Kuhn Loeb Music Library of the Harvard College Library sought to determine whether library patrons actually understand and use QR codes. Results and analysis of the pilot project are provided, attempting to answer the question as to whether QR codes are worth the effort for libraries.

Keywords

QR Codes, on-line resources, usage statistics, mobile access, Access Services

About the Author

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Background

QR CODES IN THE LIBRARY was a pilot project supported by the Harvard Library Lab, an innovation incubator supported by a grant from the Arcadia Fund, seeking to test user acceptance of QR Codes posted in the library setting. The trial was carried out in the Eda Kuhn Loeb Music Library, a unit of the Harvard College Library, Harvard University, over the course of the Fall semester, 2011-2012 academic year. QR ("Quick Response") Codes (see below) are two-dimensional barcodes fast becoming ubiquitous in marketing, public spaces, and supply-chain/logistics management. When scanned using the camera on smartphones and tablet computers, QR Code reader software instantly links the image of the code to a URL, proving mobile access to on-line content.

Sample QR Code

The origin of this project was found in an College Library committee, with a plan to pilot QR Codes in 2009, using the Lamont Library (undergraduate humanities) and the Loeb Music Library as test sites. Lamont was to have linked QR Codes with call-number maps, floor plans, and similar way-finding resources, while the Loeb Music portion of the project was to link the codes to on-line research guides. After the initial project was shelved, the Loeb Music portion of the original plan was recast as a pilot project submitted for support by the Library Lab, and accepted in the second round of Library Lab awards, in 2011.

This report details the process and results of the pilot project, with some analysis and conclusions. In addition, a step-by-step "best practices" guide is included so that other libraries thinking of employing QR Codes can benefit from the experience gained in this pilot project.

Process

The design and implementation of the project went extremely smoothly, with no problems or obstacles to implementation. QR codes linking to three pre-existing on-line research guides were posted in the areas of the library stacks relevant to the guide subjects. For example, a QR code linking to the research guide "Finding Songs in Song Collections" was posted in the area of the stacks housing song collections. The other two guides chosen were "Finding Concert Reviews in Periodicals" and "Jazz Resources," all three addressing common reference inquiries in the library. The on-line resources were tested successfully for mobile compatibility, and the codes themselves were easily generated and linked to the research guide URL's. There are many vendors proving free QR code creation available on-line, and this project chose the Swiss firm Kaywa (http://qrcode.kaywa.com/), which offers, in addition to an enterprise QR Code product line, free QR Code creation and site linkage, which is very easy to use. The signs containing the codes and user information were created and printed in-house, using an ordinary laser printer. Once the specific research guides were selected for the purposes of this project, locations in the stacks related to these subject areas were identified and reviewed for their appropriateness. Mobile signal strength was tested and confirmed in

these locations. Legacy usage data for these research guides was obtained for analytical purposes. Accounts in Google Analytics, the means by which the success or failure of this pilot was to be assessed, were created, and the tracking HTML code (supplied by Google Analytics) was inserted into each web site; with testing, it was determined that the insertion of these small chunks of HTML proved harmless to the proper functioning of the web sites. The signs were posted on the first day of classes, September 1, 2011, and the trial concluded on the last day of the semester, December 20, 2011.

QR Codes are freely available from a number of web-based companies, so there are essentially no associated costs with generating and linking the barcodes. Aside from the dedication of relatively insignificant staff time to this project, a budget was set at $50, primarily for the purchase of flexible plastic magnet-backed sign holder, resulting in an actual total expense for this project of approximately $25. These sign holders proved effective, since they may be easily deployed and redeployed at will, and adhere well to the metal shelving in the library.

No publicity for the existence of the QR Code signs was done in advance of deployment, nor was any done during the run of the trial. The rationale for this was that would be useful to know whether QR Codes have become commonplace enough that they do not need additional explanation to potential users, the mark of a mature technology. (Should the Loeb Music Library decide to continue and even widen the use of QR codes after the pilot period, it is likely that some publicity will be conducted in order to better familiarize regular users with their purpose.)

Results

There is no way to describe the usage statistics as anything but extremely disappointing. None of the three on-line resources were viewed via QR codes more than five times each over the course of the entire semester, and the actual utility of those page views was minimal, at best. Of the three sites, only the "Finding Concert Reviews in Periodicals" appears to have been accessed for use, as the other two research guides had only single page-views, and no recorded time on the sites themselves. Legacy and current usage statistics indicate that the sites are being used, with anywhere from 31 to 53 site visits over each of the past two academic semesters, but once the data is examined at the platform level, mobile usage was negligible in comparison to conventional on-line access.

How to Find Concert Reviews in Periodicals

Visits: 4 (7.5% of 53 total visits) [Spring 2011 usage=43]
Pages/visit: 3.56 (site average=1.9)
Ave. time on site: 13' 7" (site average=3' 57")
No multiple access days

Finding Songs in Song Collections

Visits: 3 (8.75% of 35 total visits) [Spring 2011 usage=51]
Pages/visit: 1 (site average=1.17)
Ave. time on site: 0 (site average=1' 3")
No multiple access days

Jazz Resources

Visits: 5 (16.13% of 31 total visits) [Spring 2011 usage=1*]
Pages/Visit: 1 (site average 1.26)
Ave. time on site: 0 (site average 42")
One multiple visit day (2 visits on 10/6/11)

*Author of this research guide indicates that the Jazz Resources site was not migrated to current platform until summer of 2011.

During the course of the pilot project, there was little anecdotal response to the presence of the QR Codes posted in the library, nor did the signs generate many questions from students or other library patrons.

Analysis

While the results of this pilot project seem quite disheartening, QR Codes may still have a valuable place within the library space. There are a number of potential reasons why this particular trial failed to generate significant use, though some of those reasons are based on speculation. Most interestingly, during the pilot project, the author of this report monitored discussions regarding QR Codes in both professional journals (and conferences) and the popular press, and it seems that, in this instance, the popular press is out ahead of the professional chatter. In both conferences and a review of the literature, most professional library discussions revolve around *potential* uses for QR Codes in libraries, with few examples of projects that can point to concrete results through assessment (e.g. Kelley, 2011). For example, an excellent presentation on QR Codes at the 2011 Access Services Conference (Georgia Tech, Atlanta, GA. November 10-11, 2011) by Khyle Hannan of Georgia Tech was heavy on uses and potential uses, but had

no usage data from actual trials in the library space. Mr. Hannan discussed several uses for QR Codes, from the mundane (access to way-finding resources), to the extraordinarily innovative (access to on-line journals from the print shelves), but was not able to present any real-world statistics. Meanwhile, *Fortune* (Kantrowitz, 2011), MSNBC.com (Shannon, 2011), and CNN.com (Gahran, 2011) have all presented articles quite skeptical of QR Code's actual utility. The results of the trial in the Loeb Music Library may bear out the popular press' skepticism.

Among the likely reasons for the lack of acceptance of QR Codes in this pilot project are a wider-than-previously-believed misunderstanding of what QR Codes are and what they can do. Despite their ubiquity in the public space, a significant portion of the population appear not to know exactly what they are, or even what the term "QR Code" means. Further, while polls of Harvard's student population, particularly undergraduates, indicate a high percentage of smart-phone usage, there is still a disconnect between the smartphone hardware/software and how they apply to QR Codes. In a recent study (Aguirre, *et al*, 2011) of 534 college students across 24 campuses, eight in ten did not know what QR Codes were or what they were for, even though 81% reported owning a smartphone. Most phone and tablet computers (e.g. Apple's iPad) have QR Code reading ability, but the user must download a QR Code reader application to complete the puzzle; these apps are mostly free to obtain, and extremely simple to use, but a general lack of awareness and/or interest seems to be thwarting the wider acceptance of QR Codes as people ignore taking the necessary steps to enable their devices to access the technology. In addition, there is some evidence of a public antipathy towards QR Codes, even among

those with enough savvy to understand their use. Many marketers and other users of QR Codes fail to test their application of the codes in place, resulting in QR Codes that do not work due to a lack of Wi-Fi or other mobile service, codes that do not properly link to their intended URL destination, and, to put it simply, codes that link to information neither useful nor interesting to the user (Pidaparthy, 2011). This pilot project suffered from none of these particular drawbacks, but there is a sense among some students with whom this author spoke that QR Codes are just another mindless marketing tool, and they do not wish to subject themselves to unwanted advertising. Finally, although the knowledge is not widespread, there is also a fear that QR Codes may become another vector for on-line crime to wend its way into people's devices by linking to malicious websites, and providing new ways of luring people into phishing scams (Shannon, 2011). These are all legitimate concerns, though, for the purpose of this discussion, these last few points of contention may have only served as a background to the more likely causes of this project's failures, a general unfamiliarity with the technology.

Another possible constraint to wider use during the pilot program was that there were no courses being taught in the Harvard Music Department during the Fall, 2011 semester that would have taken advantage of the research value contained in these specific linked sites, though a popular course in American musical theatre offered by the Extension School could have generated traffic for the "Finding Songs in Song Collections" research guide. It was hoped that there would be an uptick in usage, based on the usual increase of student research needs as the semester neared its end, but this increase did not, in fact, materialize as anticipated.

Three areas in which the pilot project fulfilled its goals are its cost, the process for deploying the codes, and how well the technology worked in this setting. The project came in at 50% of its (admittedly laughable) projected cost. The process by which the project was carried out was also as intuitive and effortless as predicted. Creating the codes, linking them to the on-line resources, and deployment of the signs went smoothly, as did the evaluation and assessment using Google Analytics. These factors make up an important part of the "best practices" guide that was created for use by other Harvard library units at the conclusion of the pilot. And in the end, the technology functioned flawlessly, so that the actual mechanics of how to use the codes and access the linked resources posed no obstacles for the overall success of the pilot.

Conclusions

Are QR Codes worth it? Interestingly, and in spite of the failure of this pilot, the answer seems to be "yes." Much of the argument in favor of QR Codes in the library (or virtually any other setting) comes down to a simple cost/benefit analysis. And in this case, as long as a few simple rules are followed, the cost of employing QR Codes is so low that any benefit derived from them outweighs the minimal effort involved. There is a reason that QR Codes have become so ubiquitous in print advertising, points-of-sale, and other venues: they are so easy to use, and cost so little in terms of resources, time, and money, that despite low acceptance by the public, it is a technology simply too easy to ignore. Should the public become more familiar and welcoming of the utility provided by QR

Codes, their use will grow. This acceptance may come with more "mediated" use, such as on descriptive cards in museums, or marketing-based contests, in which context it is more likely to be explained how they work and how to use them.

Aside from participation in Library Lab-sponsored events and forums, the author of this report has had the opportunity to discuss the project widely with colleagues in the field of Access Services at two library conferences over the past six months. There were opportunities to relate plans and progress of this effort at the Ivies+ Access Services symposium held at Cornell University in June, 2011, and at the Access Services 2011 Conference at Georgia Tech in November, 2011. With QR Codes up for discussion during formal sessions of both meetings, the Harvard project was informally presented and very well received by colleagues, who indicated that this was a unique and valuable experiment in the deployment of the QR Code technology within libraries.

In the final analysis, QR Codes are an excellent method by which we can link physical library space with our virtual space. The ease of use and low costs associated with the technology strongly favor continued use in the library setting, until the point at which it has been determined that QR Codes have reached either wide public acceptance, or the opposite, that this technology will never find the kind of use anticipated by proponents. During the run of this trial, a number of other uses for QR Codes have popped up in Harvard's libraries, including access to Harvard's "Get It" web portal (interlibrary loan, Borrow Direct, Scan & Deliver, etc.), and links to more information from descriptive exhibit and museum cards. Other libraries should make the effort, however, to conduct

user assessment after a certain period of time, so that any further effort with QR Codes is not wasted should the technology never find wider acceptance than at present.

Using QR Codes: A Step-By-Step Guide

Step 1: *Identify your on-line content*.

The first step in planning any program involving QR Codes is to identify the need to link to specific on-line content. The library needs to make sure that the targeted on-line content will be useful or interesting to patrons. Once a compelling need to offer on-line content/resources has been identified, one needs to ask whether a QR Code is the best means by which users can access that content. In other words, will a QR Code better serve, or make more convenient access to on-line content? If the answer is yes, QR Codes can simplify user access to what might be long, complicated URL's, or take the place of a URL in a location that would otherwise be difficult for users to see (such as a description card in an exhibit). This is why QR Codes have often supplanted URL's in print advertising. And also as in advertising, the library needs to make sure that the linked content will be worth linking to for patrons. From the point the decision to go ahead with QR Codes is made, the process of creating and deploying the codes can move forward.

Step 2: *Make sure your on-line content is appropriate and optimized for mobile devices*.

The website to which a QR Code links needs to be set up so that its content displays properly on mobile devices. Many websites do not conform to mobile standards, and can lead to user frustration as they load too slowly, or cannot be displayed within the confines of the small hand-held screen. While there seems to be general compatibility in web

content between smartphones and tablet computers, one should make sure that the web content does NOT rely on Flash video, which will not play on Apple's iPhone nor its iPad, two of the most popular devices.

Step 3: *Identify and Test the QR Code Location*.

This is an important early step if the use of QR Codes is location-dependent, i.e. the use of the code is determined by posting the codes in a specific location. The location where the code(s) are to be posted must, first and foremost, have good wireless data access so that users can reach the internet from their device at that location. Whether Wi-Fi, 3G, 4G, or some future wireless network, a smartphone or tablet computer must be able to access the network without any difficulty. There needs to be enough physical space for the signage, with the code clearly visible and reachable by the hand-held device's camera. Also, do not place the sign with the code in an area where it would be dangerous or inconvenient for the user to be able to stop, snap the QR Code with their camera, and view the website. This means keeping signs out of high-traffic pathways, away from emergency exits, elevator doors and waiting areas, and other such locations.

Step 4: *Create and link the QR Code*.

Many websites offer free QR Code generation, linking, and reading. The Loeb Music Library pilot project used the free site offered by the Swiss company Kaywa (http://qrcode.kaywa.com/). The process to generate the code and link it on the Kaywa website is quite intuitive and easy to use; for the purpose of this guide, the individual QR Code generator web sites and how they work will not be described here, but all that is

needed prior to generating the code is the URL to the website to which the code will link. The final product of the code generation process will be a graphic file with the code itself. Store the code for future reference, making sure to keep accurate records, particularly if numerous codes are to be used.

Step 5: *Take necessary steps to allow tracking and assessment of usage*.

In our pilot project, Google Analytics was employed to measure usage. GA offers free website tracking that is granular enough to provide more than enough usage data to assess the effectiveness of the program. There are likely other resources that supply the same kind of information. To use GA, create an account and register the URL of the website(s). For the best data, register each website linked to a QR Code, as multiple websites can be tracked from a single GA account. Upon registration of the website, GA supplies a small chunk of HTML code that needs to be embedded within the HTML code of the website itself. GA supplies the instructions on how to do this, but one first needs to make sure that they have access to the website's code. Once embedded, test the website thoroughly to make sure that the new code does not disrupt or corrupt the website.

Step 6: *Embed the QR Code into the signage, and post in the desired location(s)*.

The code can be cut and pasted into Word files, .pdf's, and virtually any other graphic design application. Make sure the code is big enough to be read clearly by the camera, and do not let text or other graphic elements intrude on the code within the signage. The signage should be clear as to what the code will link for users, and it is helpful to include somewhere on the sign the actual URL to which the code links, as well (for the benefit of

those who see the sign, but do not have a smartphone or tablet with which to take advantage of the information linked to the code).

An example of a QR Code sign:

It is up to the library whether to include instructions for the use of QR Codes, but the instructions, if provided, should be clear and simple. Since a lack of general understanding of QR Code technology among library patrons constrained usage in the Music Library pilot project, consider carefully the pros and cons of including instructions: they may clutter up the signage, but they may also enhance usage. Post the signs in a well-lighted place, again, away from traffic or other physical obstacles. Make

sure that the signs are not mounted too high to be easily scanned by those with physical disabilities, and confirm that the signs are in a location that meets the guidelines set out in Step 3. From this point, the QR Code is "live," and it should be tested to make sure that all of the above points have been adhered to, and that everything is working well. At every stage of this process, test, test, test, but particularly now, when all the pieces have been put into place. (There are dozens of QR Code reader apps available; the Music Library used Qrafter for all testing in its pilot project.) Make any needed adjustments before unveiling the program to the public.

Step 6: *Track and assess usage*.

Regardless of whether Google Analytics or some other tracking application is used, follow the usage data for your QR Code to see whether it is being used. Usage data may inform the library of a number of things: the appropriateness of the web content linked, the effectiveness and location of the signage, and usage patterns over time. These data may prompt the library to alter the program, by changing sign text, moving the location of the codes, or other such adjustments. Low utilization can indicate that it may be necessary to post instructions for how to use QR Codes, or that the web content is not interesting or useful to patrons. It may also indicate that QR Codes are not appropriate for that specific use or context, though since the work has been done, and there are no up-front or continuing costs involved, there may be no need to terminate a program of QR Codes, unless the technology eventually falls by the wayside over the long run.

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