QR Codes and Libraries
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What are QR Codes?

QR Codes, short for Quick Response Codes, are two-dimensional barcodes that instead of being traditional multiple-bar layout, they appear as a pixilated square. They are being used more frequently for a variety of reasons.

Barcodes are used because they are easily and quickly read by scanners and provide a great deal of accuracy and functionality. As barcodes have become more popular, barcode users have needed to store more information with them. (For example ISBN switched from 10 to 13 digits in 2007.)

Multiple-bar barcodes only store data in one direction; QR Codes allow information to be stored vertically as well as horizontally, allowing a great deal more information to be held in them. Conventional multiple-bar codes can only store a maximum of approximately 20 digits. QR codes on the other hand can hold numeric, alphabetic, symbols, binary, control codes and other data; up to 7,089 characters in one barcode.

QR codes can store numbers, text, hyperlinks, bookmarks, contact information, calendar information, email addresses, phone numbers, SMS text information, Geo locations and maps, social network information, and much more.
Along with storing a large amount of data, QR Codes can display information in a variety of sizes and resolutions depending on how the code will be used. QR Codes will also work up to 30% of the time when partially damaged, unlike “multi-bar” barcodes which become unreadable.

**Reading QR Codes**

Reading and using QR codes is limited to people who own smartphones or other mobile devices with cameras and a barcode scanning app. If you own such a device and would like to get started, go to your device’s app store, and download a barcode scanner, there are free and paid versions.

http://2d-code.co.uk/qr-code-readers/
(These are in no way an endorsement of individual applications, just a place for you to start to investigate and research yourself.)

Once you have your app installed, find a QR Code to scan. Like this one:

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With most apps, after you scan the QR Code it asks what you want to do with the information, depending on the type of information it holds. The QR Code you just scanned should have opened an email addressed to me, or asked if you wanted to send me one.
Utilizing QR Codes
QR Codes are used in the same way conventional barcodes have been, but are now also being used to link people to a plethora of information with a simple scan. They appear on a variety of products, advertisements, websites, and they are even being used by realtors, appearing in people’s front lawns.

Starbucks uses QR codes in their mobile application for Starbucks Cards. Instead of handing the barista a card, customers can now open the app on their phone and allow the barista to scan the QR Code that appears. Starbucks also, in partnership with Lady Gaga, held a scavenger hunt in their stores utilizing QR codes. Customers would scan the codes around the store and the first customers to solve the puzzles won prizes.

Other Examples
- United Airlines uses them as digital boarding passes.
- Google provides a QR Code to your business’ Google Places page when you register your business with Google Places.
- Art galleries and museum exhibits are using them to display information about the piece or exhibit.
- Barnes & Noble includes them on brochures to lead customers to their nook mobile Application.

Use in Libraries
Many libraries have begun to integrate QR Codes into their library services.

Hyperlinks
Libraries can do many things with simple hyperlink QR Code:
- Link to the mobile version of the website
- Link to videos the library has created
  - Video interviews of the staff
  - Book commercials
  - How-to videos
- Display links on physical materials to digital materials
  - Add links to the stacks to collections of online resources
Display QR codes to online databases for journals and articles
Put QR codes directly on materials to link to book reviews, movie trailers and more.
Add QR Codes directly to books to link to the digital versions of the titles

QR code generators can create calendar events that patrons can add to their personal calendars on their devices
Add QR codes to event posters
Add them to your online calendar so patrons can add them to their phones and devices quickly and easily
Open a text message to the library
Integrate the codes into scavenger hunts within the library

How to create a QR Code
To create QR Codes yourself you will need a computer with an internet connection, and knowledge how to save an image from the internet, and then add that image to documents or print it out.

1. Use a QR Code Generator to create your barcode
2. Scan the barcode to make sure the data appears how you would like it to and does what it was intended to do
3. Save or print the QR Code image that is created for your information
4. Place the QR Code image within documents, or add it to physical items

Things to consider while creating the QR Code:
- Size
  - Where are you going to display the barcode?
  - Will the image be large enough to scan?
• Clarity
  o Will the barcode be easily readable by a mobile device at the size you are creating it at?
  o Example, which is a better choice?

All three of these QR Codes link to the same URL, but each has a different version or density, and each has a different level of error correction. If you were to display the QR Code at the displayed size, the first would be most easily scanned, and the last would most likely not work for most devices.

• Use, how will the QR Code be displayed?
  o Will it be on a poster that a person can walk up to and scan the barcode?
  o Will it be on a large sign a person would not be near (a banner, billboard, directional sign)
  o On a website

Make the QR Code as simple as possible for the amount of information you are storing.

All of the items above should influence how you create your QR Code. Remember, if a person can’t scan it, they will not have access to the information it provides.

QR Code Generators
There are many QR Code generators available, the one you will use depends on what type of information you would like the barcode to hold, and what you plan on doing with it once generated.
1. Choose the type of data you would like the barcode to store.
   a. The types of data allowed depends on the generator you are using, some are very basic, others allow you to store almost anything.
2. Enter your data.
3. Choose your QR Code settings
   a. Size
      i. This is usually the actual size of the image generated. Some sites display in pixels, others have a simple small, medium, or large choice.
   b. Version
      i. Most generators automatically chose what version to use, or simply give you no choice.
      ii. When you do have a choice, what you should choose depends on what you are storing with the barcode.
      iii. Further explanation of QR Code versions can be found here: http://www.denso-wave.com/qrcode/qrgene2-e.html
   c. Encoding
      i. This usually refers to the type of information you will be storing, for most things, choosing the default setting or allowing the generator to choose is fine.
   d. Error Correction
      i. This setting sets the level of barcode correction; if it is damaged if it can still be read.
      ii. You would change this setting depending on how the barcode will be used or how damaged it may become over time.

Here are three basic web-based generators, but do further research to find one that fits all your needs.

QR Generator
http://qrcode.good-survey.com/
This site is very easy to use. It allows you to encode text, hyperlinks, bookmarks, contact information, calendar events, email, phone numbers, SMS (texting), geo location and maps, social networks, iPhone and Andriod information (links to apps, market, reviews), and wifi network information. You can then also set the size of the image created, padding, version, encoding, colors, error correction. It then allows you to download the QR Code in BMP, PNG, JPEG, TIFF, GIF, SVG, XAML, EPS, HTML, ASCII, and zip bulk formats.
Quafter
This generator allows you to store a vast variety of information than the standard hyperlink or email information. Some of the more unusual information stored are Foursquare venue URL, sent a tweet, YouTube URLs, and formatted text, just to name a few. It also allows you to create micro QR Codes (not all scanners can scan this type), set the size, colors, and output type and error correction levels.

QR Stuff
http://www.qrstuff.com/
This one lets you include a variety of information including Paypal “Buy Now” link information, social media information and more. It also lets you set the color of the barcode, but it does not allow you to set the size, resolution or encoding, and forces you to sign up for an account (free) for other advanced settings.

Resources:


Image Sources:

http://www.flickr.com/photos/halfhollowhills/4504965499/in/photostream/
http://www.flickr.com/photos/25095603@N07/5021688103/in/set-72157625028207818
QR Codes were created by the author using a QR Generator: http://qrcode.good-survey.com/
Additional Reading:

- **QR tags and mobile 'phones in the library**

- **Why QR Codes Will Go Mainstream [OPINION]**

- **QR codes for libraries - some thoughts**

- **HOW TO: Use QR Codes for Small Business Marketing**

- **HOW TO: Use QR Codes for Event Marketing**

- **5 Unique Uses for QR Codes**

- **HOW TO: Create and Deploy Your Own QR Codes**

- **QR Code Generators Online**
  [http://2d-code.co.uk/qr-code-generators/](http://2d-code.co.uk/qr-code-generators/)

- **QR Code and 2d Barcode Readers**

- “Staff QR Code Posters” Delaware County District Library, last updated May 15, 2011, accessed June 15, 2011,