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## Abstract

QR codes are digital codes that provide quickly accessible information to users by scanning codes with compatible devices such as smartphones. These codes can read and interpret different types of data including website links, photographic images, videos, and more. During the COVID-19 pandemic, many organizations were forced to go contactless with clientele. Extension professionals were required to swiftly adapt and utilize new technologies for virtual program delivery. Some Oklahoma State University Extension personnel had experience using QR codes in their pre-pandemic program promotional efforts, however, QR codes had not been widely used to deliver educational content such as seminar recordings, short informational videos, and fact sheets, nor had QR codes been used to collect program evaluation data. In response to the COVID-19 pandemic, Oklahoma County Extension professionals used QR codes in new ways. While the pandemic provided great impetus for QR code adoption, it is still underutilized as a tool in Extension education. Great opportunities exist for QR code use by Extension professionals.

# **Quick Response (QR) Codes: A Tool for Sharing Extension's Educational Resources and Improving the Response Rates of Program Evaluations**

## **Introduction**

Quick response codes, often referred to as QR codes, are digital and machine-readable codes that contain information made quickly accessible to users by scanning codes with compatible devices such as smartphones. These codes can read and interpret different types of data (e.g., website links, photographic images, and videos, among other digital objects). The main benefit or relative advantage (Rogers, 2003) of QR codes is their ability to make the task of searching for information easier by taking users directly to the desired content (Ozkaya et al., 2015). QR codes are widely adopted globally, with a rapid increase of adoption speed by the onset of the global COVID-19 pandemic. Many QR code adopters during the initial phase of the pandemic used the codes for the first time as businesses were forced to go contactless with their customers (Rahimizhian, & Irani, 2021). While the pandemic provided great impetus for QR code adoption, it is still underutilized as a tool in education with great opportunities to support student-centered learning approaches and enhance students' intrinsic motivation (Karia et al., 2019). Great opportunities exist for QR code use by Extension professionals to transfer educational resources and information to clientele and as a tool to increase participation in the evaluation of virtual and hybrid educational programs.

## **Methods**

During the COVID-19 pandemic, many organizations were forced to go contactless using exclusively virtual means to connect with customers, Oklahoma State University County Extension professionals also had to quickly transition their educational programs to virtual formats. This led to challenges in getting information to Extension clientele and in securing program evaluation responses from virtual workshop participants. Extension professionals were required to swiftly adopt and utilize new technologies for program delivery. Some Extension personnel had experience using QR codes in their pre-pandemic program promotional efforts, however, the codes had not been used to deliver educational content such as seminar recordings, short informational videos, and

fact sheets, nor had such been used to collect program evaluation data. In response to the COVID-19 pandemic, Oklahoma State University Extension professionals in Oklahoma County piloted the use of QR codes in three ways.

First, QR Codes were used in virtual program evaluation to improve response rates with workshop participants. Low response rates are a major concern of web-based programming with participation rates known to be around 10% less than paper and in-person surveys (Fan & Wan, 2010). Online surveys have been shown to have response rates as low as 2% (Monroe & Adams, 2012). Archer (2008) found average response rates of web-based surveys for Extension workshops and conferences around 57%. We initially sent email messages after virtual events requesting participants to complete the respective post-workshop evaluations resulting in response rates of approximately 25-30%. This approach failed to achieve our desired participation rate as email surveys typically produce low response rates (Faggiano & Carugo, 2020). Beginning in August 2020, we embedded QR codes at the end of virtual workshops' PowerPoint slides and paused to ask participants to complete the evaluation by using their mobile telephones to scan the QR codes as the seminars ended (Figure 1). Lutig (2021) hypothesized that using QR codes for surveys may increase participation by signaling to potential respondents that the questionnaire is smartphone friendly and that the time commitment will be brief. We found this to be true, as the usage of QR codes at the end of virtual presentations rather than a link sent later significantly increased our response rates. Although, allotting specific time to request participation in the evaluation at the end of virtual programs may also have contributed to the increased response rates.

Second, QR code signage was installed in the Oklahoma County Extension Center teaching gardens in Oklahoma City in September 2020 linking users to short, curated YouTube video segments providing interactive experiences for learning opportunities in the teaching gardens (Figure 2). Oklahoma County Extension professionals collaborated with Oklahoma Gardening, a long running public television program, and Extension YouTube channel in the Department of Horticulture and Landscape Architecture at Oklahoma State University to create videos highlighting specific plants in

the garden and raised bed garden designs. Several of the videos were highly curated and produced by Oklahoma State University Agricultural Communications professionals and others were produced by Oklahoma County Extension professionals.



**Figure 1.** Visitors to Extension gardens interacting with QR codes

Third, we piloted the installation of QR code shelf-talkers at two Oklahoma City Garden centers beginning in September 2021 to provide low-contact learning and information exchange opportunities for the garden centers' customers while they shopped (Figure 3 and Figure 4). The QR code shelf-talkers' signage was strategically placed on store shelves and endcaps allowing garden center customers to quickly access Extension fact sheets addressing topics associated with products in that part of the store. This provided a service to the garden centers by assisting them in efforts to engage customers in unique and safe ways while also driving traffic to Oklahoma State University Extension's research-based fact sheets.



**Figure 2.** Shelf talker signage at garden center linking to an Extension fact sheet.



**Figure 3.** Wall signage piloted at garden center linking to Extension fact sheet.

## Results

Use of QR codes after virtual programs led to an estimated 30% increase in response rates by Extension program participants. Before using QR codes after virtual workshops response rates were approximately 25-30%, but after implementing QR codes response rates were consistently 60% or higher. Participants said that “using QR codes makes it so much easier to complete the workshop evaluations” and “I’m more likely to complete the evaluation because I can do it immediately from my cell phone rather than having to take time to open up an email later.” While we believe that QR codes significantly increased response rates, allotting specific time to request evaluation participation at the end of virtual programs may have also contributed to the increased response rates (Monroe & Adams, 2012).

QR Code usage in the teaching gardens was also well-received by clientele. Early in the pandemic, Oklahoma State University Extension offices were closed to the public, but clientele were encouraged to visit the outdoor garden spaces and interact via QR codes. One client stated: “It was so cool to be able to learn from my Extension agents while browsing the gardens.” Since installing the QR code signage at the teaching gardens the YouTube videos and Extension fact sheets received over 500 unique engagements from the period of September 2020 to March 2022.

The garden center pilot program provided the opportunity to engage garden center customers with Extension fact sheet resources in a new and unique manner. Since launching the pilot project in September 2021, the shelf talkers and endcap QR code signage has resulted in approximately 1,500 unique engagements with Extension fact sheets during the period of September 2021 to March 2022. The participating garden center managers also expressed their appreciation for the shelf-talker pilot program. One shared: “Having the QR codes really provides a service to our customers and by referring them to the fact sheets it shows them that we are following the science-based practices recommended by Oklahoma State University.”

### **Discussion**

QR codes are a simple tool and generally accepted by much of the public; however, using QR codes in education is still in its infancy (Law & So, 2010). Extension professionals should expect to continue to engage our clientele in learning through digital media technologies (Beam & Hawkins, 2020) and can expect that using QR codes will improve response rates, especially in virtual programming (Lutig, 2021). The challenge for Extension lies in motivating personnel to use the codes as a tool for education (Hill et al., 2013), which according to Rogers (2003) points to the need for some Extension professionals to have more opportunities for observability and trialability of QR code use in programming. Although Extension is sometimes accused of failing to embrace innovation, Smith and Hill (2016) argued that the Golden Age of Extension is before us now because at no other time have Extension professionals had so many information technologies and communication tools at their disposal. However,

more Extension professionals should adopt an innovation-oriented mindset and embrace the use of QR codes in their programming (Hill et al., 2013). Technology is changing both the traditional classroom setting and non-formal education such as Extension programs (Raison, 2014). We must constantly be evaluating and reexamining how to make Extension programs more accessible to our audiences including utilizing technology, some argue that the future sustainability of Extension depends on this (Franz & Cox, 2012; Meyer et al., 2015).

Technological methods of information delivery to clientele are certainly not the only way people want to engage with Extension services but will continue to be important into the future (Simeral, 2001). Extension clients often see QR codes on brochures and posters (Raison, 2014) and the pandemic undoubtedly increased the use of QR codes among Extension professionals. However, greater opportunities exist regarding the adoption and implementation (Rogers, 2003) of QR codes as a pervasive and effective tool for program evaluation and information-sharing in Extension. Sharing the relative advantages of QR codes and likely compatibility (Rogers, 2003) with Extension professionals' practices may lead Extension professionals to adopting the innovation more widely. Extension must continue to stand on its historical identity of providing research-based knowledge in our information-overload culture (Argabright et al., 2012), but our success may, in part, depend upon creatively adopting and utilizing simple technologies such as QR codes for sharing educational resources and evaluating programs.

## Literature Cited

- Archer, T. M. (2008).** Response rates to expect from web-based surveys and what to do about it. *Journal of extension*, 46(3), 1-5.  
<https://archives.joe.org/joe/2008june/rb3.php>
- Argabright, K., McGuire, J., & King, J. (2012).** Extension through a new lens: Creativity and innovation now and for the future. *Journal of extension*, 50(2), 1-7.  
<https://archives.joe.org/joe/2012april/comm2.php>
- Beam, B., & Hawkins, E. (2020).** Virtual reality for extension education and learner engagement. *Journal of NACAA*, 13(1).  
<https://www.nacaa.com/journal/09e5e8e1-0137-4b01-af8c-b2fc3a27b7e8>
- Faggiano, A., & Carugo, S. (2020).** Can the implementation of electronic surveys with quick response (QR) codes be useful in the COVID-19 era? *International journal of epidemiology*, 49(5), 1732-1733. doi.org/10.1093/ije/dyaa170
- Fan, W., & Yan, Z. (2010).** Factors affecting response rates of the web survey: A systematic review. *Computers in human behavior*, 26(2), 132-139.  
doi.org/10.1016/j.chb.2009.10.015
- Franz, N. K., & Cox, R. A. (2012).** Extension's future: Time for disruptive innovation. *Journal of Extension*, 50(2), 1-7.  
[https://archives.joe.org/joe/2012april/pdf/JOE\\_v50\\_2comm1.pdf](https://archives.joe.org/joe/2012april/pdf/JOE_v50_2comm1.pdf)
- Hill, P., Mills, R., Peterson, G., & Smith, J. (2013).** Breaking the code: The creative use of QR codes to market extension events. *Journal of Extension*, 51(2).  
<https://archives.joe.org/joe/2013april/tt4.php>
- Karia, C. T., Hughes, A., & Carr, S. (2019).** Uses of quick response codes in healthcare education: a scoping review. *BMC Medical Education*, 19(1), 1-14.  
doi.org/10.1186/s12909-019-1876-4
- Law, C., & So, S. (2010).** "QR Codes in Education." *Journal of Educational Technology Development and Exchange (JETDE)*, 3(1), Article 7. doi:10.18785/jetde.0301.07
- Lutig, P. & Luiten, A. (2021).** Do shorter stated survey length and inclusion of a QR code in an invitation letter lead to better response rates? *Survey Methods: Insights from the Field*. doi:10.13094/SMIF-2021-00001
- Meyer, N. J., Boyce, S. P., & Meyer, R. L. (2015).** A call to embrace program innovation. *Journal of Extension*, 53(3).  
<https://archives.joe.org/joe/2015june/comm1.php>



- Monroe, M. C., & Adams, D. C. (2012).** Increasing response rates to web-based surveys. *Journal of extension*, 50(6), 6-7.  
[https://archives.joe.org/joe/2012december/pdf/JOE\\_v50\\_6tt7.pdf](https://archives.joe.org/joe/2012december/pdf/JOE_v50_6tt7.pdf)
- Ozkaya, E., Ozkaya, H., Roxas, J. et al. (2015).** Factors affecting consumer usage of QR codes. *Journal of Direct Data Digital Marketing Practice*, 16, 209–224.  
[doi.org/10.1057/dddmp.2015.18](https://doi.org/10.1057/dddmp.2015.18)
- Rahimzhan, S. & Irani, F. (2021).** "Contactless hospitality in a post-Covid-19 world", *International Hospitality Review*, 35(2), pp. 293-304. [doi.org/10.1108/IHR-08-2020-0041](https://doi.org/10.1108/IHR-08-2020-0041)
- Raison, B. (2014).** Doing the work of extension: Three approaches to identify, amplify, and implement outreach. *Journal of Extension*, 52(2),  
<https://archives.joe.org/joe/2014april/a1.php>
- Rogers, E. M. (2003).** *Diffusion of innovations* (5th edition). New York: Free Press.
- Simeral, K. D. (2001).** Keeping a traditional program delivery method in an "E" world. *Journal of Extension*, 39(1).  
<https://archives.joe.org/joe/2001february/comm2.php>
- Smith, K. L., & Hill, P. (2016).** *The innovation imperative: Can Extension change?* Extension Committee on Organization and Policy.