Journal of Extension

Volume 56 | Number 1 Article 21

2-1-2018

The Event Horizon for the Horizon Report: Inclusivity in Extension Programs

Jane Crayton
Colorado State University

Journal of Extension
www.joe.org

February 2018
Volume 56
Number 1
Article # 1COM1
Commentary

The Event Horizon for the Horizon Report: Inclusivity in Extension Programs

Abstract

The Horizon Report for Cooperative Extension calls for Extension professionals to incorporate emergent technologies into programming; however, adoption and use of such technologies can be hampered due to critical diversity issues in the science, technology, engineering, and math industries. For Extension professionals to capitalize on the Horizon Report recommendations, we must embrace the report's call to action while also having an action plan for diversity and inclusivity. The challenge for Extension professionals goes beyond capitalizing on new technology trends; it has a broad scope and necessitates our considering critical issues surrounding those trends.

Keywords: Horizon Report, diversity, inclusivity, emergent technology, self-efficacy

Jane Crayton
Extension Agent,
Science, Technology,
Engineering, Arts, and
Math/4-H Youth
Development
Colorado State
University Extension,
Pueblo County
Pueblo, Colorado
Jane.crayton@colostate.edu

Introduction

The recently published New Media Consortium (NMC) Horizon Project Sector Report, titled *NMC Technology Outlook for Cooperative Extension 2016–2021* (hereafter referred to as the Horizon Report), calls on Extension professionals to engage with a variety of emergent technologies over the next decade (Freeman, Adams Becker, & Cummins, 2016). Extension has the unique opportunity to expand technologies supporting innovation and learning, using the land-grant university system for effective delivery across the United States (Freeman et al., 2016). Meanwhile, diversity is an important challenge within both Extension programs and the technology industry. There are prolific gender and ethnic diversity gaps in fields related to technology and innovation, especially in Silicon Valley (Wiener, 2016), where "bro tech" culture thrives and rewards White males. Gender and ethnic inequality in science and technology is a complex societal phenomenon that needs to be addressed. The Horizon Report does not mention this conundrum, and if we in Extension do not carefully evaluate how we implement new technologies in our programming, we might unintentionally spur greater diversity issues within

science, technology, engineering, and math (STEM). An increase in demand for STEM professionals is expected over the next decade, as is an increase in diverse demographics across the United States. It is imperative that Extension professionals embrace the implementation of emergent technologies, with care and consideration for inclusiveness.

Implications for Emergent Technology Hindered by Inequality in STEM

The demand for STEM-qualified professionals in the United States is growing as trends project a decrease in the number of U.S. candidates who will be qualified to meet the demands of STEM positions (Brown, Concannon, Marx, Donaldson, & Black, 2016). Moreover, newly created and developed technologies will reflect any inequalities inherent in the cultural popular values of those who create them (Wiener, 2016). Research has suggested that girls and minorities are opting out of science as early as middle school because stereotypes surrounding STEM careers idealize individuals within a specific gender and ethnic narrative (Haynes, 2017). Self-efficacy plays a major role in one's ability to succeed, and self-efficacy is said to be the foundation for entrance and persistence in STEM careers (Brown et al., 2016). This may be especially true for nontraditional STEM learners such as girls, minorities, and disabled students. In a SmartBrief educational technology survey on STEM, 41% of respondents claimed that social and cultural norms influenced gender and minority biases around STEM careers, creating barriers for self-efficacy in STEM (Jones, 2016). The U.S. Department of Commerce projects that more than 1.2 million STEM jobs will be unfilled in 2018 due to a lack of qualified STEM professionals (Namahoe, 2015). Extension has an obligation to influence this trend through the conscious implementation of diverse STEM and educational technology programming. Although the Horizon Report highlights how Extension professionals might use technology to leverage social networks and build new communities of practice with the aim of reaching new audiences (Freeman et al., 2016), it does not address the gender and ethnic gaps surrounding these technologies, which could negatively affect Extension's future relevancy.

Diversity in Extension Programs

Extension has taken some action toward exploring gender differences related to the provision of STEM and educational technology programming. For example, Wang and Billington (2016) studied a 4-H girls-only course in bicycle mechanics and physics called the Pedal Power Program, which was intended to increase girls' interest in science and engineering. The study illustrated how participants in the program changed their perceptions and stereotypical thinking about gender success in STEM careers. Interestingly, Wang and Billington (2016) noted that two students in the program reflecting on their previous science experiences expressed their preference for working with other girls not boys when participating in group science activities. On the basis of this finding, the authors suggested that STEM programs might be more effective for girls if educators were to avoid mixed-gender groups (Wang & Billington, 2016).

With regard to the importance of closing ethnic gaps surrounding emergent technologies, it has been predicted that by 2055 no single racial or ethnic group will be in the majority, with an increase in new Asian and Hispanic immigration expected over the next five decades(Pew Research Center, 2015). If Extension does not include marginalized culture groups, as their populations grow, Extension will cease to be relevant to the predominant culture. Advancing cultures of innovation within Extension will require Extension programs to be more than just spurs of creativity and entrepreneurial thinking. Instead, doing so will require thoughtful and deliberate programming aimed toward including the predicted prevalent culture. Currently, a more traditional image of Extension programming, including 4-H youth development programming, exists and is evidenced by the lack of

participating minorities, especially Hispanic youths, as documented in membership data (Jones, LaVergne, Elbert, Larke, & Larke, 2013). Barriers to participation by many groups include fee-based activities, lack of transportation, cultural differences, and the potential for discrimination (Bruyere & Salazar, 2010). Indeed, in a recent study by Avent and Jayaratne (2017), the authors collected evidence suggesting that one obstacle to children's participation in youth programs is participation fees and that cultural groups feel excluded from 4-H programs. Hobbs (2004) suggested that Extension programs need to be culturally responsive, reflecting the cultural beliefs, traditions, and values of the people we wish to serve. She explained that unless a culture is integrated into existing programs, the culture represents a new audience, which seems to threaten traditional audiences (Hobbs, 2004). Although the Horizon Report mentions a Texas A&M University translation tool used to support greater outreach to Spanish-speaking farm owners, it does not address the wicked challenges of expanding diversity in emergent technologies, possibly because they are less understood and are difficult to define.

Diversity of Extension professionals also will need to be addressed in order for diverse, culturally relevant programming to be implemented within Extension. Recently, Scott Reed, vice provost for university outreach and engagement and director of Extension for Oregon State University, spoke at Colorado State University's annual Forum for Extension. He argued that Extension must recruit and retain culturally diverse professionals who can implement diversity action planning as well as emergent technologies for us to retain our relevance as a research-based educational organization of the 21st century.

The Event Horizon for the Horizon Report

It is too easy for emergent technologies, especially those highlighted in the Horizon Report, to be male dominated. Makerspaces, for example, easily can promote a "boys with toys" atmosphere that excludes other gender identities (Reed, 2016). It is critical to understand that diversification requires the clearing of all paths, not token gestures such as pinkification of programs. Such gestures stereotype girls further, confining them to participation within a pink landscape and suggesting that all girls behave in one particular way (Mendoza, 2016). A male-dominated atmosphere in STEM may have other effects as well. McGregor (2017) noted that sexual harassment, as has been addressed by the recent #Metoo movement, includes gender pay discrimination, and Pew survey data recently collected as part of a forthcoming study on women and minorities in STEM revealed that 42% of women have experienced some form of sexual discrimination, including unequal pay or promotions (Parker & Funk, 2017).

Changing naive conceptions about STEM will be an important part of implementing the emergent technologies identified in the Horizon Report. To truly have an impact with regard to expanding diversity within STEM and emergent technologies, we must consciously create programs that empower diverse participation. We can accomplish this by integrating gender and cultural equity instruction. For example, as mentioned previously, one consideration may be to avoid mixed-gender instruction or teams when teaching STEM or emergent technologies to at-risk STEM learners. Finding appropriate mentors and role models within a community and engaging them in programs will support and inspire inclusivity in Extension programs. Upholding acceptable-use policies, etiquette, and ethical guidelines, all of which outline terms and conditions for technology classes, is essential and identifies for students explicit behavior expectations and penalties for violations (Lock & Kingsley, 2007).

Additionally, collaboration is necessary for capacity building and can reduce program barriers, including fees. Extension professionals must carefully and thoughtfully integrate community stakeholders into programming efforts and form partnerships with organizations that can serve as liaisons for connecting various cultural groups

with Extension programs. Collaborating with relevant organizations may expand Extension's reach related not only to specific demographic groups but also to technologies that are beyond the scope of many professionals' current knowledge bases. Learning to teach technology to a diverse audience effectively will require an inclusivity strategy, which likely will involve differentiated instruction, resources, or tools. A willingness on the part of the Extension professional to try something new and to step out of his or her comfort zone by connecting course materials, themes, and learning styles to students is essential. Recently eXtension Foundation announced the Impact Collaborative and Designathons for Extension professionals and their collaborators. This conscious effort to embrace innovation and diversity in Extension culture and program development is promising.

Teaching inclusively requires educators to connect with and learn about their students, engage with students' cultural backgrounds, and incorporate a variety of teaching strategies that are relevant to students' cultures or demographics. The emerging technologies highlighted in the Horizon Report are associated with complex problems. But these problems are solvable challenges that have the potential to affect Extension programs broadly and may ultimately serve to positively influence a larger scope of inclusivity within STEM.

References

Avent, D. M., & Jayaratne, K. S. U. (2017). Factors limiting youth participation in 4-H and other youth development programs in underserved communities. *Journal of Extension*, *55*(4), Article .4RIB8 Available at: https://www.joe.org/joe/2017august/rb8.php

Brown, P. L., Concannon, J. P., Marx, D., Donaldson, C. W., & Black, A. (2016). An examination of middle school students' STEM self-efficacy with relation to interests and perceptions of STEM. *Journal of STEM Education*, *17*(3), 27–38.

Bruyere, B. L., & Salazar, G. (2010). Engaging Latino audiences in out-of-school programs about science. *Journal of Extension*, *48*(3), Article 3RIB4. Available at: https://www.joe.org/joe/2010june/rb4.php

Haynes, K. (2017). Fighting for visibility. *Astronomy*, *45*(2), 44–49.

Freeman, A., Adams Becker, S., & Cummins, M. (2016). *NMC technology outlook for Cooperative Extension 2016–2021: A Horizon Project sector report.* Austin, TX: The New Media Consortium.

Hobbs, B. B. (2004). Latino outreach programs: Why they need to be different. *Journal of Extension*, *42*(4), Article 4COM1. Available at: https://www.joe.org/joe/2004august/comm1.php

Jones, V. R. (2016). Social and cultural capital: The heart of STEM success. *Children's Technology and Engineering*, *20*(3), 16–19.

Jones, W. A., LaVergne, D. D., Elbert, C. D., Larke, A., & Larke, P. J. (2013). 4-H as a catalyst to enhance quality of life for Hispanic individuals. *Journal of Extension*, *51*(4), Article 4COM1. Available at: https://joe.org/joe/2013august/comm1.php

Lock, R. H., & Kingsley, K. V. (2007). Empower diverse learners with educational technology and digital media. *Intervention in School and Clinic*, *43*(52), 52–56.

McGregor, J. (2017, December 14) Another day at work for many women: Lower pay, passed over, treated as incompetent and subjected to slights. *The Washington Post*. Retrieved from https://www.washingtonpost.com/news/on-leadership/wp/2017/12/14/another-day-at-work-for-many-women-

lower-pay-passed-over-treated-as-incompetent-and-subjected-to-slights/?utm_term=.46366721fc81

Mendoza, H. M. (2016, January 25). Looking for diversity in 3D printing by amping up the pink. *3D Printing.com*. Retrieved from https://3dprint.com/116646/diversity-in-3d-printing-pink/

Namahoe, K. (2015, September 30). *Survey: Social, cultural barriers discourage STEM pursuits among girls, minorities*. Retrieved from http://www.smartbrief.com/original/2015/09/survey-social-cultural-barriers-discourage-stem-pursuits-among-girls

Parker, K., & Funk, C. (2017, December 14) Gender discrimination comes in many forms for today's working women. Retrieved from http://www.pewresearch.org/fact-tank/2017/12/14/gender-discrimination-comes-in-many-forms-for-todays-working-women/

Pew Research Center. (2015). Modern immigration wave brings 59 million to US, driving population growth and change through 2065: Views of immigration's impact on U.S. society mixed. Washington, DC: Author.

Reed, M. (2016, February 12). Makerspaces and gender. Retrieved from https://www.insidehighered.com/blogs/confessions-community-college-dean/makerspaces-and-gender

Wang, H. H., & Billington, B. L. (2016). Economically disadvantaged minority girls' knowledge and perceptions of science and engineering and related careers. *Journal of Extension*, *54*(6), Article 6RIB8. Available at: https://www.joe.org/joe/2016december/rb8.php

Wiener, A. (2016). Hacking the boys' club. *New Republic*, *247*(5), 13–15.

The Discussion Forum for this Commentary can be found at:
https://joe.org/joe/2018february/comm1.php#discussion