Designing Inspired Learning in Non-Formal Educational Settings:
A Case Study of Technology Use in the Kentucky 4-H Program

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Abstract

Extension Agents across the country work to incorporate emerging technologies in their programming. Today's youth have grown up with technology as a major component in their lives. 4-H Extension Agents are teaching youth using the 4-H slogan, "Learn by Doing." The educational focus in 4-H is experiential learning (Borden, Perkins & Hawkey, 2014). However, Agents struggle to keep up with ever-changing technologies. A case study of Kentucky 4-H Extension Agents looked at technology use among Agents and how learner engagement is affected. The qualitative study included a focus group and questionnaire. Results showed technology is being used primarily in educational programming and marketing. Facebook and Instagram were the most used social media outlets. Barriers to technology use included the expense, lack of time by staff, and training needs. Results showed Agents feel technology use in programming promotes engagement if used properly. Tablets were listed as the most engaging technology, followed by laptops.

Introduction

"It is generally acknowledged that engagement plays a critical role in learning." (D'Mello, Dieterle, & Duckworth, 2017). "Efforts are made to enhance in-class learner engagement because it stimulates and enhances learning. However, it is not easy to quantify learner engagement." (Alimoglu, Sarac, Alparslan, Karakas & Altintas, 2014). Extension programs, and especially 4-H programs are known to be hands-on in nature. The more recent push for STEM programs has allowed for even more incorporation of technology in 4-H programming. Just as many schools have transitioned to laptops or tablets for all students, a few 4-H programs have obtained funding to be able to offer laptops or tablets to all participants during educational programs.

"Research shows that multifarious benefits occur when students are engaged in their own learning, including increased motivation and achievement. However, there is little agreement on a concrete definition and effective measurement of engagement." (Sinatra, Heddy, & Lombardi, 2015). Fredricks, Blumenfeld, and Paris (2004) further break down engagement into behavioral engagement, emotional engagement, and cognitive engagement.

Behavioral engagement includes actions such as following the rules and refraining from disruptive behaviors while emotional engagement includes the participants' reactions and feelings toward the learning experience (Fredricks, et al., 2004; Fredricks, 2011). Cognitive engagement refers to the learner's investment in learning (Fredricks, et al., 2004). There is overlap between the three areas of engagement. Fredricks, Bluemenfeld and Paris (2004) share types of individual needs: needs for relatedness, need for autonomy, and need for competence. These needs have been tested related to engagement. "Ultimately, although engagement might begin with liking or participating, it can result in commitment or investment and thus may be a key to diminishing student apathy and enhancing learning" (Fredricks et al., 2004, p. 82). Just as teachers love to see youth excited about learning, Extension Agents also love to have participants who are fully engaged and anxious to participate and learn. Schlechty (2011) defines five levels of student engagement: rebellion, retreatism, ritual compliance, strategic compliance, and engagement. In this order, the levels advance from least to most engaged.

Methodology

A case study was conducted to examine technology use among 4-H Extension Agents in Kentucky. The qualitative study included a focus group, as well as an open-ended questionnaire completed by five individual 4-H

Agents. The purpose of the study was to gather information about current technology use and barriers to technology use among 4-H Agents in Kentucky.

The focus group was conducted at the District 5 4-H Agent's Retreat. Thirteen 4-H Agents were present and participated in the open discussion. The entire discussion was recorded and notes were also taken during the focus group.

An e-mail invitation was sent to the distribution list of Kentucky 4-H Agents inviting them to participate in the questionnaire related to technology use among 4-H Agents. Four Agents or specialists volunteered to participate. Two additional Agents were specifically asked to participate due to their use of technology in their county program by the suggestion of the Assistant Director for 4-H Youth Development. A total of five questionnaires were collected. Four were Agents who volunteered to participate and one was specifically asked to complete a questionnaire.

Agents who completed questionnaires ranged in years of service as a 4-H Agent from 6 years to 26 years. The State 4-H Office, as well as Districts 1, 4, and 5 were represented. Three participants were female and two were male. Questionnaires were reviewed to look for common themes. Thematic coding was used and compared to the focus group discussion as well.

The questionnaire included ten open-ended questions and one final question where Agents were asked to rank four technologies in regards to learner engagement. Agents were asked to identify the county in which they work, as well as their years of service. The following is a list of questions asked:

1. What are the main ways you are currently using technology in your 4-H program?
2. Are you using technology in marketing? Please provide examples.
3. What other ways are you using technology in your 4-H program? Please list examples.
4. In your opinion, what are the strengths of technology use in the Kentucky 4-H program?
5. What do you see as opportunities for Kentucky 4-H in regards to technology?
6. What do you feel are the weaknesses in regards to technology use in the Kentucky 4-H program?
7. What do you feel are the barriers, if any, to technology use in your program?
8. How do you feel Kentucky 4-H is perceived in the area of technology use?
9. Do you feel the use of technology in educational programming affects learner engagement? Please explain.
10. Can you provide examples from your own technology use in programming of how you feel it has affected learner engagement?
11. Please rank the following items in terms of learner engagement. Rank #1 the technology you feel provides the most learner engagement and #4 to the least, ranking all four.
    _____Tablet (such as iPad, etc.) _____Projector _____Laptop _____Videoconferencing

Results

Kentucky 4-H Agents are using technology in a variety of ways. However, the most popular use of technology from this sample and focus group is in educational programming, followed by marketing. Most 4-H Agents are using a variety of social media outlets to market, as well as apps such as Remind. Social media use is most popular on FaceBook, but also Agents are using Instagram and Twitter.

When asked in an open-ended question about how they use technology, all respondents stated they use technology in educational programming. Marketing was listed as the next way Agents use technology most, followed by communications. When asked how Agents use technology in marketing, all respondents noted the use of Facebook. The second most noted technology used in marketing was Instagram.

When asked about the strengths of technology use in the Kentucky 4-H program, marketing and outreach are noted. Promotion of programs and interactions through social media are found to be strengths in Kentucky 4-H. Outreach to previously unreached audiences is also found to be a strength, as well as information outreach to teens.

When looking at opportunities for technology use in the Kentucky 4-H program, the use of emerging technologies and providing more learning opportunities for youth are reported. Virtual training is also listed as an opportunity.

Weaknesses of the use of technology in the Kentucky 4-H program include being slow to embrace changes in technology. There is a need for more curriculum developed with technology use in mind. The general feeling is that technology is not used enough and that more support is needed.

When looking at barriers to technology use in the Kentucky 4-H program, expense and lack of access are the number one barriers. Followed by a lack of time by employees to learn to use technologies or create new programs.

The perception of Kentucky 4-H in the use of technology by those Agents surveyed shows a common feeling that Kentucky 4-H is weak or behind the times in the use of technology. However, it was noted that Kentucky 4-H is a front runner in use of the National Youth Science Day experiment.

All Agents completing the questionnaire feel that technology contributes to learner engagement. Agents described incorporating technology as adding excitement to the program and improving the learning experience. One Agent noted that the variation in instructional design improves the experience and engagement. Another stated that new technologies must be carefully and deliberately worked into educational opportunities. Meeting youth where they are on the digital technology continuum was seen as a way to engage participants.

Respondents were asked to rank four technologies in terms of learner engagement. The technology the respondent felt was the most engaging would have been rated as number one. The least engaging technology was rated with number four. Tablets such as iPads were ranked as the most engaging by four out of five respondents. Laptops were ranked as the second most engaging. Videoconferencing and use of a projector had the same combined scores and tied for third.

The focus group included many of the same themes that were recognized in the Agent questionnaires. Social media was noted as a major use of technology by most Agents. Barriers included skill level and knowledge as well as different levels of resources in counties. Agents also noted expectations are that they automatically know how to use various technologies, which may not be the case. Opportunities noted included the use of more online training for Agents in order to cut costs associated with time and travel.

Conclusion

Extension Agents will continue to work to find ways to incorporate emerging technologies into their programs. A detailed study is needed to more clearly identify Agents' technology needs in Kentucky. Program participants will benefit from engaging programs built on solid instructional design principles. Engagement is difficult to measure, however, Agents note programs with incorporated technology are of interest to youth. One Agent described the process as meeting youth where they are with technology in order to engage them.

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