Talk to the Bot: Lessons from Implementing a Custom Chatbot in Extension Programming

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Introduction/Need for the Innovation

As artificial intelligence (AI) becomes increasingly integrated into all sectors of the economy and society, both formal and non-formal education have likewise been influenced by its advancements (Roll & Wylie, 2016; Nazari et al., 2024). While AI offers numerous benefits in educational settings, significant challenges have also been documented in the specialized literature (Borenstein & Howard, 2020; Kayyali, 2024). Among these technologies, chatbots, including language models, stand out as digital tools capable of simulating conversations with human users (Hwang & Chang, 2020). Chatbots have proven useful for delivering technical assistance and disseminating scientific information in an accessible and efficient manner (Coggins et al., 2024; Prestegaard-Wilson &Vitale, 2024). However, there is limited evidence regarding best practices for their design and implementation within the specific context of Extension Services. In the United States, the Cooperative Extension System is the largest nonformal education system, providing technical assistance in several specialized areas to constituents across all states and territories (Bickell, 2024). Extension professionals are typically receptive to incorporating innovations into their programs, primarily to broaden their reach and enhance the effectiveness of training and support delivered to their audiences (Gunawardana et al., 2025; Listiana et al., 2019). This study aims to share the lessons learned during the development of the chatbot for Equine Reproductive Management Short Course at Texas A&M AgriLife Extension, serving as a case study for its applicability in other extension programming initiatives.

How it works/methodology/program phases/steps

The Equine Reproductive Management Short Course is a week-long, in-person training program aimed at professionals and practitioners in equine reproduction. Every spring, between 10 and 15 participants attend the course, which takes place in College Station, Texas. As a complement to lectures, hands-on sessions, and traditional educational materials, a chatbot was developed to provide real-time answers on topics covered during the course. It also aimed to increase participant engagement with the content. The development and hosting of the chatbot were carried out using the CustomGPT platform, which allowed for customization of design and usability through an iterative testing process with diverse audiences. The chatbot's knowledge base was built using documents, presentations, and videos from the inperson course. Access to this tool is restricted exclusively to individuals enrolled in the program, who receive a unique link to create a user account. Before deployment, the team leading the initiative, composed of specialists in Extension, equine reproduction, and innovation dissemination, conducted several rounds of test questions, including some that were entirely unrelated to course content. The responses were reviewed solely to ensure coherence, even for questions outside the scope of the program.

Results to date/Implications

As of now, the chatbot has been shared with the 11 participants of the Equine Reproductive Management Short Course held in the spring of 2025. To distinguish it from other resources included in the program, it was publicly distributed under the name TAMU Horse Breeding Advisor. Throughout its development, several modifications were implemented based on feedback from different audiences. A non-specialized audience noted that the inclusion of Texas A&M AgriLife Extension's logos and institutional colors increased their trust in the tool. They also mentioned that, although they lacked the technical expertise to evaluate the quality of the responses, they found them to be written in accessible and comprehensible language.

Conversely, a specialized audience affirmed that the chatbot's responses were appropriate for the target users and offered a sufficient level of detail to support technical decision-making. During the dissemination of TAMU Horse Breeding Advisor, it became necessary to develop clear instruction not only on how to use the chatbot to access technical information, but also on ethical considerations and the quality of the sources supporting the responses. Although the results of a formal evaluation are still pending, usability metrics show very low levels of usage and engagement. Therefore, it is essential to identify the barriers that users may be experiencing when interacting with the tool.

Future Plans/Advice for others

Future plans involve a more comprehensive evaluation that will include interviews and surveys targeting both users who completed the course in 2025 and those expected to participate in 2026. This evaluation will also integrate long-term usage metrics provided by the CustomGPT platform. Additionally, a comparative study is planned to analyze the responses generated by TAMU Horse Breeding Advisor against those of other publicly available chatbots.

While the use of chatbots represents an innovative alternative with the potential to enhance the programmatic delivery of extension services, it is essential to raise awareness and adequately prepare the target audience prior to full-scale implementation. In our experience, participants had very limited prior exposure to such tools and displayed considerable skepticism regarding their use. This finding stands in contrast to the current high level of technological hype surrounding artificial intelligence within agri-food systems, despite the still limited scientific evidence supporting the concrete benefits of this innovation.

Costs/Resources needed

The use of TAMU Horse Breeding Advisor requires users to have a stable and continuous internet connection. Hosting and maintaining the tool through the CustomGPT platform involves a monthly cost of $499. While more affordable alternatives are available, they often present significant limitations in terms of the amount of content they can support and the number of users they allow. Therefore, we recommend conducting a careful cost-benefit analysis when considering the implementation of a chatbot as a complement to agricultural extension programs.

References

Bickell, E. G. (2024) The Agricultural Cooperative Extension System: An Overview. (2025, July 1). https://www.congress.gov/crs-product/R48071

Borenstein, J., & Howard, A. (2021). Emerging challenges in AI and the need for AI ethics education. *AI and Ethics*, *1*(1), 61–65. https://doi.org/10.1007/s43681-020-00002-7 Coggins, S., Munshi, S., Smith, J., Yadav, A. K., Poonia, S. P., Patil, S., Singh, N. K., Sawarn, A., Ireland, D. C., McDonald, A. J., Singh, D. K., Sherpa, S. R., & Craufurd, P. (2025). How do chat apps support the use of farming videos in agricultural extension: A case study from Bihar, India. *NJAS: Impact in Agricultural and Life Sciences*, *97*(1), 2420803. https://doi.org/10.1080/27685241.2024.2420803

Hwang, G.-J., & Chang, C.-Y. (2023). A review of opportunities and challenges of chatbots in education. *Interactive Learning Environments*, *31*(7), 4099–4112. https://doi.org/10.1080/10494820.2021.1952615

Kayyali, M. (2024). Future possibilities and challenges of ai in education: In R. C. Sharma & A. Bozkurt (Eds.), *Advances in Educational Technologies and Instructional Design* (pp. 118–137). IGI Global. https://doi.org/10.4018/979-8-3693-1351-0.ch006

Listiana, I., Efendi, I., Mutolib D, A., & Rahmat, A. (2019). The behavior of extension agents in utilizing information and technology to improve the performance of extension agents in lampung province. *Journal of Physics: Conference Series*, *1155*, 012004. https://doi.org/10.1088/1742-6596/1155/1/012004

Nazari, Z., Vahidi, A. R., & Musilek, P. (2024). Blockchain and artificial intelligence non-formal education system(Banfes). *Education Sciences*, *14*(8), 881. https://doi.org/10.3390/educsci14080881

Prestegaard-Wilson, J., & Vitale, J. (2024). Generative artificial intelligence in extension: A new era of support for livestock producers. *Animal Frontiers*, *14*(6), 57–59. https://doi.org/10.1093/af/vfae024

Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International Journal of Artificial Intelligence in Education*, *26*(2), 582–599. https://doi.org/10.1007/s40593-016-0110-3