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Ensuring Responsible and Transparent Use of Generative AI in Extension

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Ensuring Responsible and Transparent Use of Generative AI in Extension

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Abstract. Generative artificial intelligence (AI) systems capable of generating human-like text, images, and ideas from existing data based on user-defined prompts, will inevitably impact Extension, including increasing efficiency, productivity, and performing tasks previously exclusive to humans. There are ethical and risk-related considerations surrounding the use of generative AI, including concerns about bias and unintended consequences. It is important for Extension to consider these implications and take steps to ensure that generative AI is used in a responsible and transparent manner. Extension must ensure that educators and staff have the necessary knowledge and skills to effectively utilize and integrate this technology.

INTRODUCTION

Generative artificial intelligence (GenAI) refers to automated machine systems able to generate new human-like text, images, and ideas from existing data based on a set of user-defined inputs or prompts (Goodfellow et al., 2020; Salakhutdinov, 2015; Toews, 2022). GenAI has the potential to considerably impact knowledge work, which includes the generation, analysis, and dissemination of knowledge and information (Daugherty & Wilson, 2019; Davenport & Mittal, 2022; Kelloway & Barling, 2000). GenAI also has the potential to increase organizational efficiency and productivity, as it can generate large amounts of content, ideas, and solutions that free up time for knowledge workers to focus on more complex or creative tasks. Current examples of GenAI systems include:

- GPT-4 (Generative Pre-trained Transformer 4). Developed by OpenAI, GPT-4 is the fourth generation of the GPT language, capable of generating human-like text for a wide range of applications.
- BigGAN. Developed by researchers at the University of California, Berkeley and Google, BigGAN is a large-scale generative model that can generate high-resolution images of a wide range of objects and scenes.
- CTRL (Conditional Transformer Language Model). Developed by OpenAI, CTRL is a generative model that can generate text based on a given prompt or condition, such as a suggested topic or style.
- DALL-E. Developed by OpenAI, DALL-E is a generative model that can generate images from text descriptions.

GenAI can produce new content, ideas, and solutions based on a set of user prompts. It differs significantly from traditional AI, which is designed to perform specific tasks or functions based on pre-determined rules or algorithms (Goodfellow et al., 2020). This is because GenAI systems often utilize machine learning techniques, such as neural networks, that can learn from large datasets and generate outputs that are nearly indistinguishable in style or content to the input data (Chui et al., 2022). GenAI systems include language models that can generate text, image generation systems that can create new images based on a set of parameters, and music generation systems that can create new compositions based on a certain style or genre (Toews, 2022).

GenAI has the potential to impact various industries and fields—including knowledge work, media and entertainment, and healthcare—by automating the creation of content and allowing businesses to generate new ideas and products more quickly and efficiently (Daugherty & Wilson, 2019). It is important to note that GenAI is still in the early stages of development; there are still many challenges and limitations to examine before it can reach its full potential.

GenAI could change the work and expectations of Extension educators. There are two major issues Extension must consider: the effect of GenAI on the relevance of Extension and how to maximize the benefits of GenAI to improve Extension. As GenAI becomes more widespread, Extension must determine how to incorporate it into work functions if we want to remain relevant and effective in programming. At the same time, Extension educators' ability to effectively utilize and integrate GenAI into their work will influence the relevance and effectiveness of Extension in the future. The prevalence of GenAI has the potential to disrupt the nature of Extension—a knowledge industry—by automating repetitive or predictable tasks currently performed by Extension employees.

POTENTIAL IMPLICATIONS OF GENERATIVE AI ON EXTENSION

Ultimately, we cannot understand the full scope of the impact of GenAI within Extension without further research. However, based on what we do know, GenAI could have the following potential implications for Extension professionals and programs:

- Increased efficiency. GenAI systems could help Extension employees analyze and utilize needs assessment and evaluation data to design and/or improve programs.
- Improved education. AI-assisted instruction could lead to more effective teaching and learning by existing and emerging audiences.
- Job displacement. GenAI systems could automate some tasks that are currently done by employees, leading to job displacement.
- Ethical issues. Extension will need to create organizational policies outlining the use of GenAI in the workplace to ensure transparency and avoid conflict based in employee ethics.
- Funding. Extension may need to invest in AI research, development, and education to remain relevant in the knowledge industry, which could lead to a strain on funding and other resources.

POTENTIAL APPLICATIONS OF GENERATIVE AI WITHIN EXTENSION

In the future, Extension could increase efficiency and productivity through the use of GenAI tools in the following ways:

- Automating research tasks. Automating various research and/or evaluation tasks, such as data analysis, could save time for Extension employees.
- Generating new ideas. Producing ideas for new Extension programs, or helping Extension professionals come up with new interventions to existing needs/issues/problems, could spur creativity and increase program offerings.
- Improving education. Extension professionals could use GenAI to create personalized learning materials for existing and new audiences, such as customized reading lists or interactive tutorials.
- Automating administrative tasks. Automating various administrative tasks, such as program registration, scheduling, and course planning, could save time and help avoid human error.
- Analyzing data. Analyzing large datasets and identifying trends could help Extension administrators make more informed decisions about state-level priorities.
- Improving communication. GenAI systems can generate emails, newsletters, marketing campaigns, and other communication materials.
- Providing support. GenAI could improve client support by answering frequently asked questions or helping clients navigate the university's resources (e.g., common gardening or canning questions).

Responsible Use of Generative AI

- Identifying potential funding sources. Extension agents could use GenAI to monitor grant opportunities and identify potential funding sources that might be a good fit for a particular project or program area.

There are many more opportunities for Extension to leverage GenAI to create new content and resources and to replace certain tasks currently performed by Extension educators or staff. This means that there is an opportunity for Extension professionals to adapt and upskill to effectively utilize GenAI.

ETHICAL CONSIDERATIONS AND POTENTIAL RISKS ASSOCIATED WITH THE USE OF GENAI IN EXTENSION

Biases exist within GenAI systems, and they have the potential to negatively impact Extension programming and clientele. Extension should be concerned about the following:

- Representation. GenAI systems are only as good as the data with which they are trained. If the training data is biased or does not accurately represent the diversity of experiences and perspectives within a community, the system may produce biased or inaccurate output. This imbalance could have negative impacts on marginalized communities that are not well-represented by the data.
- Algorithmic bias. GenAI systems can perpetuate and amplify existing biases if the algorithms used to build them are not carefully designed and tested. This could also have negative impacts on marginalized communities, as the system may produce biased output or make biased decisions that disproportionately affect these communities.
- Ethical considerations. The use of GenAI systems raises a number of ethical considerations, including issues related to transparency, accountability, and social responsibility. Extension will need to carefully consider these issues and take steps to ensure that their use of GenAI systems is ethical and fair.

CONCLUSION

GenAI has the potential to significantly impact the field of knowledge work. However, there are ethical and risk-related considerations surrounding the use of GenAI, including concerns about bias and unintended consequences. It is important for Extension to consider these issues and take steps to ensure that GenAI is used in a responsible and transparent manner. This may involve providing training and professional development opportunities, adapting educational programs and resources, and considering the potential impact on marginalized communities. By considering the potential uses and effects of GenAI on Extension, the system can ensure that it stays relevant, effective, and ethical in a rapidly changing technological landscape.

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