Co-creating with Generative AI (GenAI) for curriculum design: learning personas

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Abstract:

Generative AI (GenAI) presents new opportunities for learner-centred teaching. This study explores its potential in co-creating learning personas—fictional yet research-informed representations of students – for energy digitalisation education, a field that attracts learners from diverse backgrounds. We document the process of generating nine learner personas with GenAI and evaluating their quality through expert review and benchmarking against publicly available LinkedIn profiles of professionals in similar roles. Our findings indicate that GenAI effectively differentiates professional roles, captures key job-related challenges, and reflects learner motivations, making it a valuable tool for curriculum design. However, critical limitations persist, with GenAI creating overly idealised professionals, lacking diversity in the supporting AI-generated images, and overlooking some nuanced real-world complexities. These challenges highlight the need for human oversight to ensure authenticity, inclusivity, and ethical depth. Based on our findings, we provide recommendations for co-creating personas with GenAI for curriculum design.

Keywords: Generative AI, curriculum design, learning personas, co-creation, AI evaluation, learning design

Introduction

Learner-centred teaching approaches emphasize designing content, materials, and assessments that align with the diverse backgrounds and goals of learners. However, understanding a learner base can be challenging, especially in online education, where courses often scale to hundreds or even thousands of learners.

A well-established approach from user experience (UX) design that helps address this challenge is the use of learner personas (Quintana et al., 2017). These fictional yet research-informed representations of typical students provide insight into student demographics, skills, motivations, and potential obstacles. Research suggests that personas encapsulate critical behavioural data in an accessible format, helping instructional designers and educators create targeted, effective learning experiences (Quintana et al., 2017). Additionally, personas offer a shared means of communication between key stakeholders in the course design process (Goodwin, 2009).

Despite their benefits, developing accurate learner personas is resource-intensive. Previous efforts have involved liaising diverse stakeholder groups to ensure realistic and well-informed profiles (Quintana et al., 2017). Some studies have applied predictive modelling using institutional data and student surveys to bridge the gap between data science and learning design, though validation of these personas remains limited (Brooks & Greer, 2014). Both approaches require either extensive expertise or advanced data analysis skills.

Given the challenges of persona development, this study explores the use of Generative AI (GenAI) to create personas for learners in energy digitalisation. As digital energy is increasingly becoming part of everyday life, people from very diverse backgrounds need access to the learning on the topic. To our knowledge, no prior previously published research has explored GenAI-driven co-creation in persona development, making this study an innovative step toward scalable learner-centred teaching.

GenAI in curriculum: friend or foe?

GenAI holds promise in higher education in assisting educators with course material development. From generating course outlines and content to drafting assessment instructions and mapping learning outcomes, GenAI has the potential to streamline curriculum design enhancing student engagement (Fisher et al., 2024; Ullman et al., 2024).

While evaluations of GenAI outputs for course creation and co-creation with GenAI remain limited, emerging studies highlight the critical need for expert review and refinement of AI-generated content. Ullman et al. (2024) examined expert evaluations of AI-generated content for course production and found that while GenAI enabled generation of plausible first drafts of relevant content, human intervention was essential for quality assurance. Meron and Tekmen Araci (2023) having explored two university educators' collaboration with ChatGPT in developing course materials, found that ChatGPT excelled in saving time, structuring textual content, and supporting brainstorming but often produced generic outputs requiring extensive prompting, refinement, and manual editing.

This study examines the process of co-creating learning personas for learners in the energy digitalisation field with GenAI. Co-creation is typically defined as a collaborative process in which participants—whether citizens, end users, or other stakeholders—influence both the production process and the final product, contributing to knowledge generation through collective creativity (Sanders & Stappers, 2008). In this research, we argue that GenAI itself can act as a co-creator and document the steps involved in this co-creation process. We then assess the quality of the GenAI personas by working with energy experts and benchmarking the personas against publicly available LinkedIn profiles of professionals in similar roles. Based on our findings, we offer recommendations for co-creating with GenAI for curriculum design.

Methods

The study was conducted as part of the Every1 project, funded by Horizon Europe/UK Research and Innovation (2022–2026) and managed by an international consortium of researchers and energy experts. The project aims to engage a diverse range of European stakeholders and citizens in energy digitalisation. As part of the project, The Open University UK team is leading the development of a wide range of online learning materials on energy digitalisation for different stakeholders.

Co-creating with GenAI

The GenAI co-creation process began with a consortium-wide brainstorming session to identify key audiences for whom the project's learning materials should be designed. This session followed the methodical collation of a potential list of stakeholder groups from earlier work within the project. At this stage, we focused on specialised stakeholders within the energy ecosystem rather than the general public. This resulted in a list of nine relevant personas, including managers, educators, engineers, and business leaders from energy regulation, investment, electricity retail, digital services, and non-profit sector.

Once the target personas were defined, the next GenAI co-creation step involved preparing a learning persona template. For the purposes of the project, we adapted a template from The Open University's learning design team (https://bit.ly/4kEUdNY) that has been widely tested at the university and used to develop courses for undergraduate and graduate students. This template includes key attributes such as name, age, living situation, motivations, career plans, and qualifications. Since the project's learning materials are not part of a formal programme of study, we expanded the template to include learning outcomes (tailored to the persona's needs), work-related challenges (to refine learning objectives), relevant stakeholders (to explore further engagement opportunities). This adapted template guided the prompts to generate personas. To exemplify, the first prompt used with GenAI was as follows:

Make a profile for [a persona – e.g., a university educator from a technical background looking to teach a course about energy digitalisation]. This topic is new to them. What do the person's qualifications, interests, and motivations tend to be like? What sort of projects/initiatives are they likely to be involved in? What does their life-style tend to be like? Suggest a first name and a last name for them, age, and a location of where they are most likely to be based.

The prompts used aimed to provide a rich contextual background for each persona, acknowledging that learning cannot be separated from its cultural and historical context, and that individuals shape and are shaped by their environments (Kennedy et al., 2025).

Since learning personas are typically presented with images, we used GenCraft (https://gencraft.com/) to generate profile pictures, as it produced more realistic results compared to GenAI chatbots. Each prompt was based on the GenAI-generated persona details, including name, age, location, position, and organisation.

To avoid evaluating a single specific GenAI tool, such as ChatGPT, we used three GenAI chatbots with different architectures and training cut-off points: ChatGPT, DeepSeek, and Claude.

The responses provided by GenAI tools were copied into the adapted learning persona template. An example of the final format is shown in Figures 1 and 2 below.

Andreas Kallioras

Junior Business developer at HEDNO (Greek DSO)

(Image generated by gencraft.com)

Overall description ***(person and team, product/service, stakeholder needs and gaps)***	Andreas is junior business developer starting at a DSO and has the responsibility to bring innovative solutions to the DSO to increase efficiency in the company. He is based in Athens, Greece. • **Age**: 28 years old • **Marital status**: single but in a committed relationship. He is focused on building his career and gaining experience in the energy sector but values maintaining a meaningful personal life. His partner, who may also work in a professional or creative field, shares his interest in sustainability and technology. They enjoy exploring Greece's natural landscapes and cultural events together, making the most of their free time. • **Living arrangement:** He lives in a modern apartment in the heart of Athens, close to key amenities and public transport. His apartment is a well-designed one-bedroom space with a small home office setup, reflecting his practical and professional mindset. The building is located in a vibrant yet quiet neighborhood, possibly in areas like Pangrati or Koukaki, known for their balance of city life and green spaces.

Figure 1. Excerpt from a GenAI learning persona

Qualifications

- Bachelor's degree in Electrical Engineering or Energy Management.
- Master's degree in Business Administration (MBA) or Renewable Energy Systems.
- Certifications or coursework in innovation management, digital transformation, and smart grid technologies.

Skills

- Analytical thinking and problem-solving.
- Proficiency in data analysis tools and project management software.
- Familiarity with energy markets, regulatory frameworks, and grid modernization.
- Strong communication skills for stakeholder engagement and collaboration.

Figure 2. Excerpt from a GenAI learning persona showcasing generated qualifications and skills

Validating GenAI personas

Each GenAI learning persona was reviewed by energy experts affiliated with the Every1 project. The first persona was used as a test persona and was reviewed by the entire consortium at an in-person consortium meeting. After receiving positive feedback on its quality, seven other personas were reviewed in separate research interviews, and one – in an interactive group workshop. To ensure accurate reviews, we matched reviewing experts with personas based on their field of expertise (e.g., university educators reviewed the university educator persona).

The first author conducted all interviews online via Zoom and Microsoft Teams. To encourage constructive feedback and give time to reviewing experts to reflect on the personas, before the interviews, participants received the persona assigned for review, a link to the chatbot-generated conversation used to create the persona, and the interview questions in advance. The interview focused on evaluating the accuracy and representativeness of the GenAI personas.

As a final validation step, we compared the GenAI personas with real-world professional profiles. Reviewing experts provided LinkedIn links to public profiles of individuals in their networks, who have similar positions to the personas.

Figure 3 below presents the four stages we followed to co-create the learning personas with GenAI: envision, collaborate with GenAI, refine, validate.

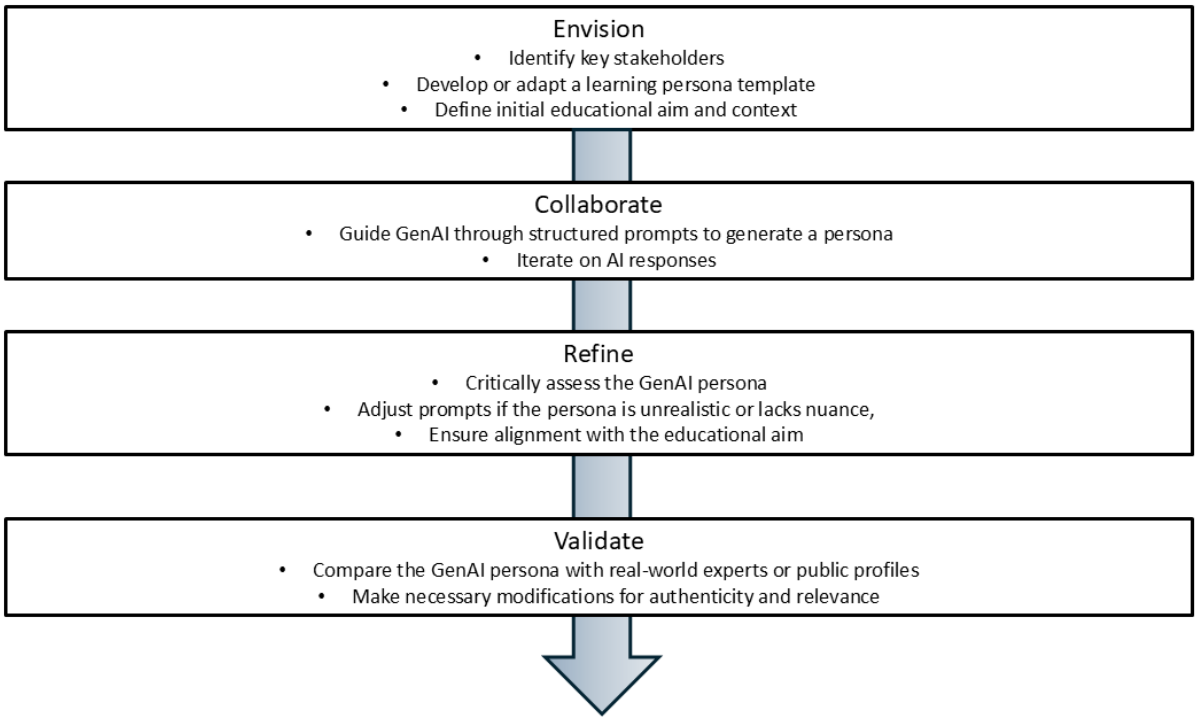

Figure 3. A four-stage approach to co-creating with GenAI adopted in this study

Analysis

The review meeting transcripts were analysed, using thematic analysis (Boyatzis, 1998). Open coding was used to develop the themes and sub-themes, and axial coding was used to identify their repeated occurrences. Following the first round of coding, the interview transcripts were re-read for a critical assessment of assigned codes and adjustments were made. The unit of analysis for coding was one paragraph (i.e., one full answer to an interview question). A particular paragraph could be given multiple codes.

Additionally, the first author reviewed all nine GenAI personas, comparing them for similarities and differences, with particular attention to race and gender representation, living arrangements, and work activities discussed in the personas. LinkedIn profiles suggested by the reviewing experts were explored to complement and triangulate the findings derived from the analysis of the review meetings. The resulting coding scheme is presented in Figure 4 below. The figure illustrates two themes – positive feedback on GenAI personas and identified areas for improvement – along with six sub-themes.

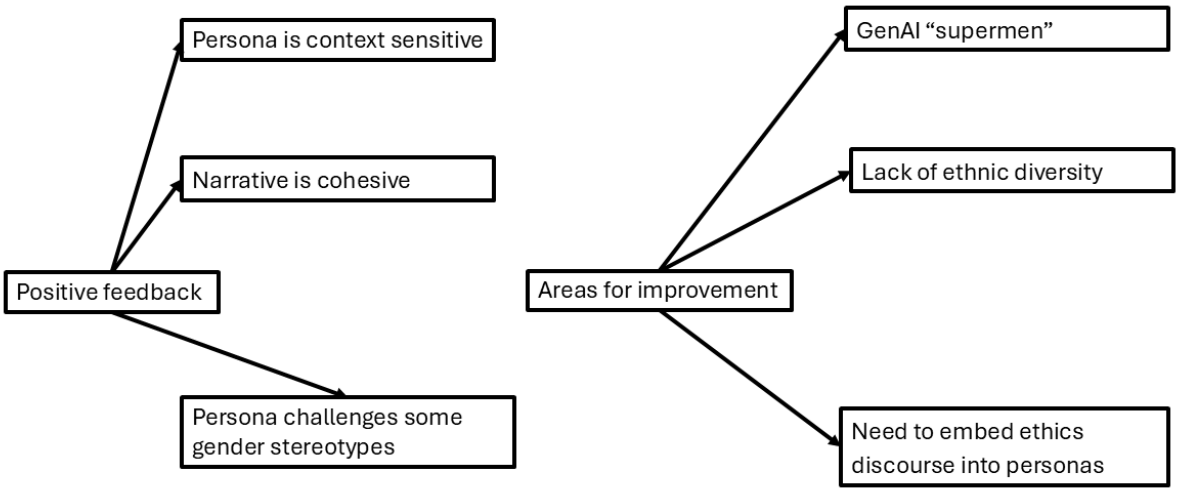

Figure 4. Coding scheme developed in this study

Results

Positive feedback on GenAI personas

Overall, expert reviewers provided positive feedback on the GenAI personas. A key strength noted was the personas' contextual sensitivity to the kind of activities and challenges a persona has to deal with in their daily job. When comparing personas, we noted how GenAI effectively captured differences in professional contexts, such as the contrast between commercial and non-profit roles (e.g., scalability and return of investment – ROI – for commercial roles, systemic change, policy and funding for non-profit roles). The following excerpts from the personas illustrate this point:

- *"Marcus must deliver measurable ROI for his solutions while maintaining the company's sustainability goals".* (Challenges section, Digital Company Owner persona)
- *"Desire to contribute meaningfully to the energy transition by working in a team that drives systemic change across Europe."* (Motivations section, project manager persona at a non-profit organisation)

Experts appreciated the authenticity of the challenges described in the personas. One expert in the group workshop reflected:

"The challenges look so realistic, especially the third one, where Clara needs to frequently update her teaching materials. I feel myself represented in this stressful situation". (Project manager / Lecturer in energy and business models, review of Clara – the university educator persona).

Good contextual sensitivity also involved a placement of personas in relevant geographical contexts, GenAI's "spot on" choice of locations. For example, ChatGPT placed a persona working in agri-tech solutions in the Netherlands, which is a leader in digital solutions for farming. Another expert noted how placing a banker in Zurich *"makes sense"*:

"If he comes more the banking side rather than the energy market side, then Zurich for bankers makes sense. I think, probably, Swiss banks invest substantially in European energy markets and energy services". (Chief Operating Officer, COO, at an energy systems think-tank, review of Elliot, Lead portfolio manager at an investment fund).

A few experts highlighted the strong coherence in the personas' life stories: *"It all sticks together, the story of the persona follows well"* (digital consultant at a digital communication agency, review of Marcus, digital company owner). For example, the investment banker persona, reflective of their financial stability, was the only one among the nine with a secondary/vacation property.

Without explicit gender prompts, GenAI created good female representation in the traditionally male-dominated roles (e.g., Emma, a grid connection engineer persona). Overall, GenAI generated three male and six female personas. Work-life balance was a recurring theme, including for male personas. This challenges gender stereotypes, as previous research indicates that work-family cues are often gendered (e.g., "flexible" work, and "work–family balance" are feminine cues, often used in female-dominated roles vs. "irregular" and "long work hours" are masculine cues, often used to describe male dominated fields, Hu et al., 2024). One expert noted:

"So, it's not the person who is just about, you know, investments and projects, but it's interesting how the tool does keep family in the background. I would say if it would have been a female persona, I would have said that this is something to scrap from the persona, as it's a bit stereotypical. So, it's maybe good that it's in a male persona as well". (COO at an energy systems think-tank, review of Elliot - lead portfolio manager at an investment fund)

Areas for improvement

One major critique was that GenAI tended to create "supermen" – very successful, almost perfect professionals, with extensive skills across different domains. They all got their education from top universities and had a very *"structured route directly into energy"* (Digital consultant at a digital communication agency, review of Marcus – digital company owner). The reviewing expert further noted:

"In my experience, life is not so linear and balanced. We are all formed by diverse experiences, and our experiences help us make our next steps. I think it would be interesting to know a bit about this person's background that motivated him to get into this line of work. Maybe, he was working some summers as a student in a farm. Maybe he had a different role growing up in another working environment and decided to change that,

so that his personality matches his work better? Unless his life was a structural dream". (Digital consultant at a digital communication agency, review of Marcus – digital company owner).

For example, when comparing these personas against LinkedIn profiles, we noted that some professionals had non-traditional educational paths, such as an electrical engineer with a background in teacher education.

Besides being flawless professionals, many personas portrayed an overly idealised environmental consciousness. All generated personas used solar panels at home, energy efficient smart devices, and other eco-friendly "touches", and, overall, looked *"instagrammic"*. One expert in a group workshop reflected:

"She rides a bicycle everywhere she goes, she grows her own stuff, she has solar panels, she is eco-conscious. Working in energy digitalisation doesn't mean that you are eco-conscious, and that you are on the green team. You can work in the oil industry and teach energy digitalisation. You can support big oil and still work in that. So that's interesting how GenAI creates this specific narrative". (Senior research assistant in energy and sustainability, review of Clara, university educator persona).

Another suggestion for improvement was the need to address the lack of ethnic diversity in the GenAI-generated profile photos of the personas. All nine GenAI personas appeared to be white. The personas' appearances also seemed to align with their geographic locations (e.g., slightly tanned for southern Europe, lighter-skinned for northern Europe). One expert commented how the profile photo of the persona they reviewed was very representative of their colleagues:

"She looks exactly like my colleague in my current office in Stuttgart [laughter]. There are, like, ten people in my office that look just like her". (EU project manager working on climate, energy and mobility in a non-profit organisation, review of Emma, a non-profit project manager).

On a different note, some experts noted that it is also important to recognise that some of the portrayals—such as *"white males in suits"— "also exist"* and may accurately reflect real-world demographics in certain professions. Therefore, this is the responsibility of the person co-creating with GenAI to ensure a balanced representation among the generated personas and prompt the inclusion of individuals from ethnic minority backgrounds as well.

Finally, several experts emphasised the importance of embedding ethical discourse into personas, as learning personas shape the direction of educational materials. Empathy and awareness of ethical issues are essential for guiding both the field and learners toward a more sustainable future, which necessitates the need for an added layer of sensitivity in developing personas. One expert explained:

"Students studying computer science don't always learn about ethics, so it's not surprising that the digital company director persona lacks mention of ethical concerns. This should be included. For example, in the 'Future Trends and Innovations' section, I'd add ethical and social considerations. Farming, isn't just about technology—it's about communities, livelihoods, and societal changes." (Digital consultant at a digital communication agency, review of Marcus – digital company owner)

Recommendations for co-creating with GenAI for curriculum design

Taking into consideration the findings above, and particularly the areas for improvement, we propose the following five key recommendations for co-creating with GenAI for curriculum design:

1. Use narrow, specific prompts (e.g., indicate the size of the company for a digital company owner or the focus of the projects a non-profit persona is likely to work on). These more specific prompts would help avoid "superman" personas.

2. Avoid overly idealised expertise: real-world professionals have areas of strength and areas for growth. Prompt the chatbot to create narratives with career shifts, setbacks, and non-traditional paths and/or discuss life events / events in the wider world that may encourage one to take up a certain line of work.

3. Proactively include diversity: Prompt GenAI for diverse ethnic and gender representation or manually adjust persona demographics.

4. Validate against real-world profiles: Compare personas with LinkedIn profiles of professionals in similar roles. This can provide a reality check and make them appear more human.

5. Incorporate ethical considerations: Prompt GenAI to address ethical and social issues relevant to each persona's role. While the previous recommendation makes the persona more human, this point makes a persona more humane, fostering critical thinking among learners who will engage with the learning materials that the persona motivates.

Conclusion

This study explored the use of Generative AI (GenAI) in co-creating learner personas for energy digitalisation education, evaluating its effectiveness and limitations through expert validation and real-world benchmarking. We adopted a four-stage co-creation approach: envisioning (e.g., defining an educational aim), collaborating (e.g., prompting and iterating GenAI responses), refining (e.g., adjusting prompts), and validating the personas (comparing with expert insights and real-world profiles).

Our findings highlight GenAI's potential to be a valuable co-creator in learning persona development for learner-centred teaching. It effectively differentiates professional roles, captures key job-related challenges, and reflects motivations, supporting its integration into curriculum design. However, critical challenges remain. GenAI tends to generate overly idealised professionals, lacks diversity in GenAI-generated images, and overlooks nuanced real-world complexities such as ethical dilemmas. To enhance GenAI-driven persona creation, we recommend using more specific prompts, intentional inclusion of diversity ethical considerations, and real-world validation.

Our study contributes to the evolving discourse on GenAI in education, reinforcing that while AI can assist in content creation, it requires expert oversight to ensure authenticity, inclusivity, and ethical depth.

Competing interests

The author(s) has/have no competing interests to declare.

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