

Automation or Innovation? A Generative AI and Instructional Design Snapshot

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Abstract

Advances in generative artificial intelligence (AI) are transforming possibilities across industries, including instructional design. Tools like ChatGPT can draft objectives, assessments, and content rapidly. This mixed-methods study surveyed 144 instructional designers on current adoption, tasks, benefits, and concerns regarding generative AI integration. Analysis revealed widespread mainstream usage with 83% leveraging ChatGPT. Accelerating efficiency ranked as the top benefit, with 67% achieving moderate-to-significant time savings that allow more strategic work. Additional gains centered on accelerated content drafting, feedback, and ideation. However, key challenges included verifying accuracy, addressing ethical risks, formulating effective prompts, and lacking personalization. While meaningful automation freed up instructional designer capacity, truly customized innovation still requires human oversight. Guidelines must shape practical, responsible applications. Though comfort levels remain polarized and generative AI capabilities are immature, participants reported that generative AI brings notable workflow improvements. Though not a solution to all course development challenges, AI may help focus instructional design talent on more creative and complex design opportunities.

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Introduction

Artificial intelligence (AI) attained prominence across societies and industries through machine learning achievements in computer vision, language processing, robotics, and more (Kaplan & Haenlein, 2019). Recently a subset of AI approaches called generative models have demonstrated increasing aptitude for creative tasks like writing prose, composing songs, and painting images after learning patterns from substantial training data. Generative AI can be defined as a technology that leverages deep learning models to generate human-like content in response to complex and varied prompts that include instructions and questions (Lim et al., 2023). Prominent examples include systems like DALL-E for generating images from text captions and ChatGPT for interactive conversational responses to user prompts on diverse topics. These groundbreaking technology tools are viewed by many as potential methods of producing immediate feedback, providing intelligent tutoring, and personalizing responses to prompts (Weng & Chiu, 2023).

Given the foreseeable impact of ChatGPT and other generative AI tools on instructional design (ID) (Gibson, 2023), the prospect of leveraging AI for automating repetitive course development tasks is appealing amid regular demands on ID tasks like analysis, design, and evaluation. However, appropriate human oversight must guide the integration of generative AI (Wiley, 2023). This study investigates the current state of generative AI adoption and perceptions among 144 instructional designers. The analysis focuses specifically on usage rates, prescribed tasks, comfort levels, benefits, concerns, and best practices.

Literature Review

Generative AI encompasses subsets of language-focused models like GPT-3 (ChatGPT), image creators including DALL-E 2 and Stable Diffusion, speech synthesis through tools like Replika, and others designed uniquely for niche domains (Bommasani et al., 2022). In common is generative AI's ability to generate previously unseen, original artifacts like text, art, or audio from user prompts.

ChatGPT and other generative AI tools have proven capable of creating course content suitable for eLearning and instruction, saving instructional designers precious time and resources (Hardman, 2023). While generative AI has the potential to transform education and distance learning (Bozkurt & Sharma, 2023) concerns remain about how to use these tools responsibly and ethically. For instructional design applications, Wiley (2023) suggests that human-centered generative AI could enhance the generation of draft course material like discussion prompts, formative assessments, and learning outcomes.

This study aims to detail current usage behaviors among 144 instructional design professionals across tasks, impacts on efficiency, concerns, and guiding practices. Findings provide a snapshot of adoption amid this rapidly evolving area of technology. The study's research questions include:

1. How are instructional designers using generative AI to automate aspects of the ID workflow?
2. What opportunities or advantages have instructional designers discovered when using generative AI during the ID workflow?
3. What challenges have instructional designers experienced when using generative AI during the ID workflow?

4. What best practices have instructional designers adopted when using generative AI during the ID workflow?

Methodology

A 12-question Qualtrics survey combining Likert scale ratings and open-ended responses was administered in December 2022 to 144 instructional designers. Recruitment employed snowball sampling seeking participants across higher education, K-12, non-profit organizations, government, and corporate roles. Respondent locations spanned 42 U.S. states and international regions including India and Canada. Most were experienced instructional designers, with 77% reporting over five years of developing courses and 73% were age 40 or older. The demographic information appears in Table 1.

Table 1: Demographic Information

Roles	Percentage
Instructional Designer	78%
ID Supervisor/Technologist/Specialist	15%
Other (faculty, trainers)	7%
Organizations	
Higher Education	71%
K-12	14%
Corporate	10%
Government	3%
Consulting	2%
Experience Level	
5-20+ years	77%
< 5 years	23%
Age Range	
40-59 years old	73%
30-39 years old	24%
60+ years old	18%
21-29 years old	10%

The open-ended survey responses describing participants' experiences and perspectives were analyzed qualitatively. This involved coding the responses to identify key themes in the data. An open coding approach was initially used to capture all unique ideas, and then a second stage grouped codes into higher-level concepts. Finally, selective coding focused the analysis on core themes that addressed the research questions around benefits, challenges, and effective practices using generative AI tools (Haradhan, 2018).

Results

Current Adoption Levels

Of 144 respondents using generative AI tools to some degree presently, ChatGPT led among named systems at 83% share followed distantly by other tools like Claude (6%) and Copilot (2%). Overall, 64% reported frequent or very frequent current usage. AI tool application

centered predominantly around drafting learning objectives, developing assessments, content research, and outlining course structure. Table 2 summarizes AI tools utilized and common AI tasks assigned by instructional designers.

Table 2: AI Tools Utilized and Prescribed Tasks

Top AI Tools Used	Result
ChatGPT	83%
Claude	6%
Other (Bard, Copilot, etc.)	11%
Common AI-Assigned Tasks	
Drafting Learning Objectives	64%
Developing Assessments	56%
Content Research	47%
Course Structure Outlines	48%

These core instructional design stage activities point to leveraging the acceleration of generative AI for rapidly developing draft artifacts to speed workflow efficiency.

Efficiency, Quality, and Future Growth Factors

Beyond usage rates, key adoption indicators include perceived improvements in efficiency, output quality, and continued growth potential. Regarding increased efficiency from incorporating AI tools, 67% reported moderate to very significant gains, freeing up designer capacity. A slim majority (58%) believed AI modestly enhances course quality, though over one-third saw no measurable improvements. However, despite split perceptions on quality gains, strong majorities saw ongoing value in AI integration with 66% expecting moderate to high increases in future usage driven by greater adoption. Table 3 summarizes perceptions on efficiency, quality, and growth.

Table 3: Perceptions on Efficiency, Quality, and Growth

Efficiency Gains	Result
Moderate/Significant	67%
Slight/No Gains	33%
Quality Improvements	
Agree/Somewhat	58%
Neutral or Disagree	42%
Future Usage Growth	
Moderate/High Expected	66%
Limited/No Increase Expected	9%

While quality enhancement remains uncertain currently, participants cited generative AI's efficiency in freeing instructional designers to focus on more creative and strategic initiatives.

Benefits and Challenges

Survey responses highlighted both useful advantages and ongoing obstacles that instructional designers encounter when adopting generative AI tools like ChatGPT. In terms of benefits,

participants repeatedly mentioned saving time and increased ease of use as main benefits. When asked openly about their biggest AI successes, frequent answers included:

1. Faster drafting and revision cycles (16 mentions)
2. Accelerated content development (32 mentions)
3. Better research and summarization (15 mentions)
4. Enhanced idea generation (15 mentions)
5. Writing assistance on objectives and rubrics (7 mentions)

Some respondents specifically remarked on generative AI's ability to help get past creative lulls, reduce fatigue, and use AI to supplement limited bandwidth on teams. Comments included:

"AI has allowed me to develop content more expediently and efficiently. We are a small department with two instructional designers serving a faculty of 500."

"I spent 30-40 hours creating three course scenarios...I then prompted AI to design something similar; I had the same material (and similar quality) in less than an hour."

"Automatically generating closed captions is amazing, and then another pass with ChatGPT to create a transcript saved me hours."

Despite many advantages, participants also identified key challenges that offset some of the AI optimism:

1. Verifying accuracy of outputs (19 mentions)
2. Bias risks and ethical concerns (10 mentions)
3. Difficulty engineering effective prompts (9 mentions)
4. Lack of learner personalization and context (5 mentions)
5. Financial costs with advanced tools (5 mentions)

Comments from participants included:

"Working on prompt engineering is key."

"Developing prompts that work adequately has been a struggle."

"(AI) does not always demonstrate good pedagogy strategies. It needs to be heavily edited to be used..."

"The output is too generic, and (AI) lacks the emotional intelligence to provide actionable suggestions."

Participants identified that while meaningful benefits around simplified workflows exist, responsible oversight integrating human judgment helps balance AI's current limitations when applying generative AI tools.

Guidelines and Best Practices

When asked what specific best practices guide ethical, responsible AI usage, only 2% indicated their organizations have formalized policies or expectations. The most common best practices cited by participants included:

1. Combining AI outputs with human expertise – 23%
2. Verification processes on generated content before acceptance – 21%
3. Setting realistic expectations on capabilities – 6%
4. Transparent disclosures regarding AI usage – 6%
5. Advocating for formal ethical usage policies – 2%

These precautions, as cited by the participants, are an attempt to ensure AI is used carefully and ethically. Participants framed AI as a helpful tool as long as instructional designers stay responsible for risks and final decisions.

Comfort Levels

Participants revealed discomfort in relying on generative AI tools independently without additional verification. Only 17% claimed moderate to high comfort levels trusting generative AI outputs compared to 49% reporting no comfort at all. Table 4 summarizes the participants' comfort levels.

Table 4: Comfort Levels

Comfort Level	Percentage
Comfortable/Very Comfortable	6%
Moderately Comfortable	17%
Somewhat Comfortable	28%
Not At All Comfortable	49%

For most participants, combining generative AI use with continued human guidance proves essential until capabilities and ethical protections are better established.

Conclusion

This study aims to detail current usage behaviors among 144 instructional design professionals across tasks, impacts on efficiency, concerns, and guiding practices. The survey findings show the accelerating adoption of generative AI tools like ChatGPT among instructional designers for key tasks like objectives, assessments, and prototyping. Efficiency enhancements bring some welcome relief for repetitive ID tasks. Key limitations center on crafting effective prompts and enhancing human aspects of pedagogy like emotional design, ethical usage, and personalization. Fact-checking what AI creates and customizing generic outputs remains vital. Humans still need to govern use to protect vulnerable groups and balance complex societal impacts. Effective practices emphasize verifying, setting expectations, and transparency.

Implications point to maximizing respective AI and instructional designer strengths through human-AI collaboration. Transparency, expectations-setting, and unbiased augmentation remain vital. As capabilities advance exponentially, extensive research must continue

tracking AI developments, particularly those that would benefit learner accessibility and engagement.

Limitations of this exploratory snapshot include sample size and self-reported data. As the generative AI landscape unfolds rapidly, broader, ongoing mixed methods studies should investigate developments to better inform adoption and best practices.

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