The Role of Instructional Designers in the Integration of Generative Artificial Intelligence in Online and Blended Learning in Higher Education

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Abstract

The purpose of this exploratory research study was to examine the roles instructional designers (IDs) play in the integration of generative Artificial Intelligence (GenAI) into their higher education institutions, and how they use GenAI technologies in their own professional practices. Data were collected from 15 participants in the United States (U.S.) in an ID role or with similar job titles (e.g., educational technologist). Using a general qualitative approach, semi-structured interviews were conducted in Zoom about IDs' use and integration of GenAI. Our analysis resulted in three primary themes related to IDs' integration of GenAI in online and blended education: (a) the use of GenAI for instructional design; (b) collaborative guidance for faculty integration of GenAI; and (c) training, resources, and guidelines on the integration of GenAI. A common thread through all the themes was IDs' conscientious and cautious approach and ethical concerns about GenAI integration. We unpack these themes and discuss the implications of IDs in higher education integrating GenAI to meet organizational, faculty, and student needs.

Keywords: Instructional designers, generative artificial intelligence, higher education, qualitative, online education

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Instructional designers (IDs) play a pivotal role in online and blended learning experiences in higher education in the United States (U.S.). While their titles vary—learning experience designer, educational technologist, etc.— IDs partner with faculty members on the creation, facilitation, and evaluation of online and blended courses, across disciplines and levels. They provide technical and pedagogical support for faculty and students, facilitate professional development for faculty, and spearhead quality assurance processes for online and blended teaching and learning (Anderson et al., 2019; Kumar & Ritzhaupt, 2017; Pollard & Kumar, 2022; Xie et al., 2021). In their role, IDs are enablers in the implementation of emerging teaching and learning technologies in higher education, including generative artificial intelligence (GenAI).

GenAI has quickly advanced into online and blended higher education in various ways, including but not limited to automated assessment, accessibility, personalized learning, efficiency, curriculum development, inclusion, and feedback (Bozkurt et al., 2023; Kilinç, 2023; Wang & Chen, 2023). At the same time, challenges related to privacy, ethics, academic integrity, and profiling accompany AI-generated content, AI-based assessment, and similar technologies, leading to uncertainty among faculty and administrators about how to appropriately address those challenges (Bozkurt et al., 2023; Crawford et al., 2023). In collaborating with faculty on online and blended teaching and learning processes and while providing professional development, IDs are at the forefront of these changes and addressing these challenges. In several ways, IDs serve as change agents in their organizations (Pollard & Kumar, 2022) by helping lead and shape the adoption of emerging technologies into the fabric of educational institutions.

Given the key role that IDs play in technology integration and higher education teaching and learning, it is important to explore their role in the integration of GenAI in online and blended education. A literature review revealed scarce literature about how IDs are using GenAI in their professional practices. This study is focused on the ways in which IDs integrate GenAI into their roles in higher education. The results of this exploratory study can provide insight for educators, administrators, researchers, and other IDs into how GenAI is being integrated into online and blended higher education in collaboration with faculty.

Purpose and Research Questions

The purpose of this research was to explore the role of IDs in the integration of GenAI in teaching and learning processes and curricula in institutions of higher education in the U.S., and how IDs in higher education are using GenAI in their own professional practices. Thus, this exploratory research study aims to answer two guiding research questions:

RQ1: What roles do instructional designers play in the integration of generative AI in (online/blended) teaching and learning in institutions of higher education?

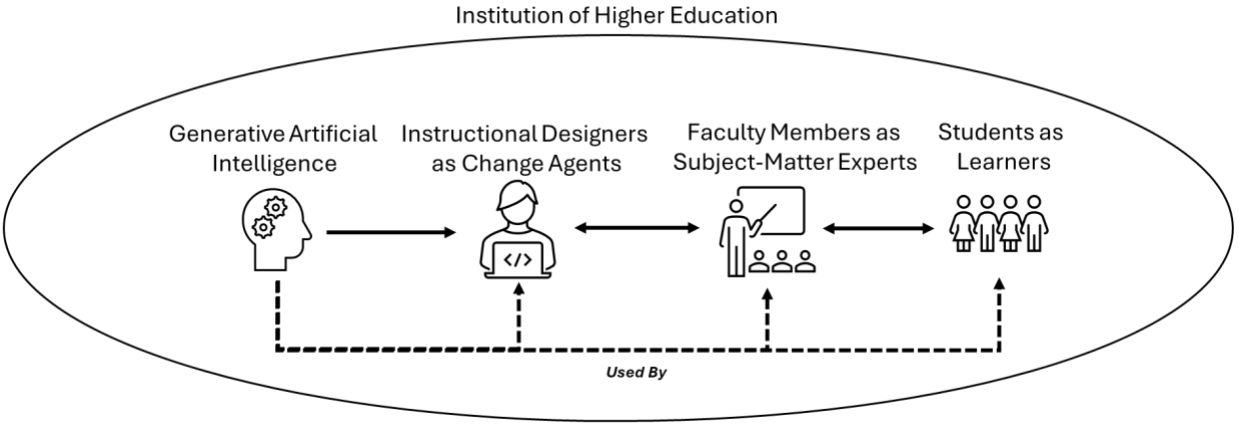
RQ2: How do instructional designers integrate generative AI into their practice?

Literature Review

A review of prior research revealed a scarcity of literature focused on IDs' integration of GenAI in teaching and learning processes in higher education. This literature review is framed by our conceptual framework (Figure 1). This framework identifies the key stakeholders and their roles in GenAI integration processes in higher education. IDs fulfill the role of change agents to further advance the meaningful application of GenAI in the teaching and learning process supporting blended and online learning. IDs serve this capacity by providing pedagogical, technological, and motivational guidance to faculty as subject matter experts (SMEs) across disciplines seeking to support learners as the primary audience. The conceptual framework also acknowledges that all stakeholders can use GenAI in an institution of higher education; however, IDs play a unique role of providing guidance, support, and inspiration to faculty in learning to employ emerging technology to support teaching and learning processes. As we disentangle the role of IDs in the integration of GenAI in higher education, we must refer to the other stakeholders and their roles in the process.

Figure 1

Conceptual Framework to Illustrate the Role Instructional Designers Play in the Integration of Generative Artificial Intelligence in Higher Education.



Instructional Designers' Roles in Higher Education

Instructional designers in higher education are also known by other titles such as learning specialist, learning designer, instructional technologist, or e-learning developer (Wang et al., 2021). Higher education institutions of all sizes and types (e.g., universities and community colleges) in the United States employ IDs who work in centralized units such as academic technology, online learning, or continuing education, and in college-specific or discipline-specific units housed in the organizational structure of a discipline (e.g., College of Medicine). The roles, responsibilities, and competencies of IDs have been studied widely in the literature. They encompass services and professional development for various stakeholders such as faculty, staff, administrators, and students; the development of services and products; and leadership and

agency on campuses (Anderson et. al, 2019; Kumar & Ritzhaupt, 2017; Pollard & Kumar, 2022; Ritzhaupt & Kumar, 2015; Ritzhaupt et al., 2021; Wang et al., 2021).

IDs' responsibilities include the design of blended and online courses as well as instructional materials (e.g., videos, podcasts, simulations) and assessments to support all formats of instruction at all levels (e.g., undergraduate, graduate). They work closely with faculty members as subject matter experts (SMEs) on instructional processes and products, provide guidance on teaching and accessibility, provide technical support, provide professional development on the use of technologies and teaching and learning processes, and ensure the quality of educational offerings (Anderson et. al, 2019; Kenny et al., 2005; Kumar & Ritzhaupt, 2017; Park & Luo, 2017; Pollard & Kumar, 2022; Ritzhaupt & Kumar, 2015). In these endeavors, they use a wide range of multimedia packages and software to create a variety of products and provide both one-on-one consultations as well as professional development in the form of workshops or faculty learning communities (Ritzhaupt et al., 2021). In addition to these functional responsibilities, Pollard and Kumar (2022) highlight the role of IDs as problem solvers and change agents, describing them as "the glue that holds together technology, content, and pedagogical best practice" (p. 5) in higher education institutions.

Several non-empirical papers have explored the emergence of new roles and responsibilities within the instructional design landscape in the wake of new AI technologies (Bozkurt & Sharma, 2023; Moore et al., 2024) and the ways in which various AI tools might be integrated into instructional design processes and workflows (Bolick & da Silva, 2024; Chng 2023). As the discourse of AI in education shifts from promised potential to practical application, IDs have an important role to play in shaping AI into useful applications for teaching and learning that consider ethical parameters (Moore et al., 2024). Despite the lack of literature on AI and instructional design, there is a considerable amount of research on the integration of AI within the broader field of education in general.

Artificial Intelligence in Higher Education

The integration of AI in education has created a distinct academic field that is often referred to as "AI in education" (AIEd). Its inception potentially began with the development of Computer Assisted Instruction and Intelligent Tutoring Systems (ITS) in the 1970s (Alkhatlan & Kalita, 2018). From the 1970s through 2022, AIEd focused on three areas: 1) AI for learners (personalized learning and intelligent tutoring systems), 2) AI for teachers (assessment/feedback tools and automatic grading), and 3) AI for administrators (learning analytics based on ML algorithms for decision-making insights. However, the potential and the reality for implementation of AI in the everyday classroom were far apart. Many AIEd applications were high-cost and unavailable to instructors or instructional design teams without significant resources (i.e., time, funding, and advanced programming skills).

In investigating AIEd papers between 1970 and 2018, Goksel and Bozkurt (2019) identified three key themes: (a) adaptive learning and personalization, (b) expert systems and intelligent tutoring systems, and (c) the future of AI in educational processes. A systematic review by Zawacki-Richter et al. (2019) also found four primary categories of AIEd applications: (a) adaptive systems and personalization (e.g., tools designed to personalize educational content

or support teachers in the design of learning and teaching); (b) intelligent tutoring systems (ITS) (e.g., systems designed to diagnose student understanding, provide adaptive feedback, or curate personalized learning materials); (c) assessment and evaluation (e.g., AI tools used for automated grading, feedback, or evaluation of student understanding); and (d) profiling and prediction (e.g., AI for use in admission decisions, predicting drop-out and retention, or modeling student learning behavior). A bibliometric analysis conducted by Zhang and Aslan (2021) noted research on specific AI applications and tools such as chatbots, expert systems, intelligent tutors, machine learning, personalized learning systems or environments, and visualizations/virtual learning environments in education. Their research revealed the gap between the potential for AI in teaching and learning and its actual implementation in learning environments. Park and Doo (2024) conducted a systematic review of the literature related to AI applications within blended learning. They noted several challenges identified within blended environments such as the desire to develop a greater degree of student autonomy and highlighted the contributions of AI that can be used to address each challenge. They categorized AI as playing three possible roles in blended learning: 1) AI as teacher, 2) AI as mediator, 3) AI as assistant.

Prior to November 2022, the discourse in the AIEd literature centered around adaptive learning, ITS, and Machine Learning (ML) related to learning analytics and administrative decision-making. These forms of AI required significant investment and programming skills for participation. Access to AI for day-to-day classroom applications was not truly open to all educators. After November 2022, with the release of OpenAI's ChatGPT and similar Large Language Models (LLMs), the focus in the AIEd literature shifted to the potential power of GenAI, which has the added ability to create content in response to input data (Bozkurt & Sharma, 2023). The rapid progress in AI capabilities had three contributing factors: increased scale of datasets, increased computing power, and increased improvement in algorithms (Green, 2020). Advances in Natural Language Processing (NLP) penetrated commercial innovation in 2021 (Pelletier et al., 2021) resulting in improved chatbots for educational contexts. These advances opened access to AI to wider audiences of educators and shepherded in a new era for exploration of AI applications in education.

Generative AI in Instructional Design, Facilitation, and Assessment

Following the release of ChatGPT by Open AI, several articles investigated the potential for Large Language Models (LLMs) to support teachers and IDs in the design and delivery of instruction.

Kim and Adlof (2023) categorized the pedagogical benefits of LLMs like ChatGPT as productivity, preparation, and problem-solving, each of which is valuable to teachers. Terwiesch (2023) illustrated one example of productivity by demonstrating that the time spent executing tasks like developing exams can be cut in half with the use of ChatGPT. Preparation might include tasks like assisting in the creation of learning objectives, inclusive lesson plans, activities, or detailed instructions; generating summaries, translations, and explanations that teachers can provide to students; or serving as a professional development assistant to provide information about various teaching methodologies and technologies (Bozkurt, 2023; Chng, 2023; Kasneci et al., 2023; Samala et al., 2024). The problem-solving ability of ChatGPT concerns its

ability to facilitate critical thinking and complex learning. For example, Rudolph et al. (2023) considered the use of ChatGPT to develop creative assessments, learner-centered approaches, and innovative teaching and learning strategies. Damiano et al. (2024) investigated students' and faculty members' perceptions of GenAI like ChatGPT in a higher education setting. Several of their findings included differences in perceptions of these tools based on age. For example, older age groups tend to have a higher level of awareness of GenAI. Younger age groups, on the other hand, tend to be more concerned about the potential negative implications of these tools, including the likelihood of plagiarism. Interestingly, younger age groups also see more potential benefits of generative AI in higher education than their older counterparts.

The use of GenAI in the design and delivery of instruction extends beyond the use of LLM. Users can generate AI images to illustrate ideas and concepts using tools like Midjourney, Dall-E3, or Stable Diffusion (Chng, 2023). These tools are designed to create high-quality images and graphics quickly from a simple text prompt, making them easily accessible to anyone with little or no background in art or graphic design. Tools like Descript or Eleven Labs are AI tools that can be used to create realistic audio for voiceovers of e-learning content using text-to-speech functionality (Bolick & DaSilva, 2024). Additional task-specific AI tools and technologies can assist the instructional design process through the development of videos, presentations, and assessments (Chng, 2023). Rahman et al. (2023) investigated the use of AI to generate visual and textual summaries that would transform video lectures into interactive learning resources. They found that these assets were on par with similar tools created by human experts and that students found them useful in making the videos easier to navigate. Each of these tools uses GenAI to improve the efficiency and the time commitment required to develop high-quality multimedia that can support the learning experience of the primary stakeholders—the students.

GenAI tools like ChatGPT can be used in the generation of assessment components, such as quizzes, discussion prompts, assignment instructions, and rubrics (Cooper, 2023; Kilinç, 2023; Samala et al., 2024). Zawacki-Richter et al. (2019) noted that the studies focused on the use of AI in student assessment could be divided into the following three categories: (a) automated grading and Automated Essay Scoring (AES) systems, (b) student-facing tools that provide feedback and guidance on a range of tasks, (c) and machine learning tools and algorithms to evaluate student understanding and engagement. While GenAI offers IDs and faculty a range of potential assessment artifacts, research on the quality of these assessments is ongoing. Further, increasing GenAI use by students presents a particularly difficult transformation to the nature of assessment (e.g., using GenAI to compose essays for a course) itself in higher education. Some of the main benefits of using AI in assessment involve its ability for immediate and robust feedback, its ability to offer adaptive and personalized learning experiences, and its consistency between students (Mao et al., 2024). Students can receive real-time explanations about their understanding and misconceptions, which also helps support their ability to self-regulate learning (Conijn et al., 2023). The application of GenAI in higher education on assessment will likely remain one of the major areas of ongoing research and development since it intersects with issues of student academic integrity and ethics.

Specific Subject Area Uses for Generative AI

Several researchers have recently investigated the application of GenAI technology within domain-specific educational contexts. For example, Kilinç (2023) suggests ChatGPT could be used to support (a) personalized feedback, (b) content and assessment generation, (c) curriculum development, and (d) communication facilitation in distance learning science education. Cooper (2023) also examined a specific science context to evaluate ChatGPT's ability to produce pedagogical tools like science units, rubrics, and quizzes. He noted that overall, the tool was effective at executing these functions, but the output was somewhat generic and needed further refinement to be ready for use with students. Sallam (2023) highlighted the utility of ChatGPT within healthcare education in crafting realistic clinical case studies for students to analyze. While GenAI appears to be appropriate for the creation of a range of instructional resources, both IDs and faculty must concurrently vet these resources for quality and alignment with student learning outcomes.

Several studies have explored the use of conversational AI in language learning contexts (Baranwal, 2022; Ji et al., 2023). Ji et al. (2023) highlighted the various roles that these tools can assume, including that of evaluator, resource provider, needs analyst, conversation partner, and feedback provider while Baranwal (2022) noted how Teachable Agents can support constructivist learning, exploratory learning, and the development of metacognitive strategies for language learners. The domain-specific applications of GenAI are being examined across disciplines and contexts, yet not all faculty are aware of these developments and applications. This reiterates the important role IDs play in shaping the application of GenAI to teaching and learning processes to support both blended and online learning experiences in higher education.

Challenges Related to Generative AI

Kim and Adlof (2023) suggest three primary concerns related to challenges and potential disruptions from the use of GenAI, including (a) academic integrity and the potential that exists for students to submit work that was generated by an LLM as their own; (b) misinformation risks and the need for users' ability to evaluate the credibility of an LLM's output; and (c) threats to critical thinking that may result from an overreliance on the tool by both teachers and students. Additional ethical considerations include algorithmic bias, lack of algorithmic transparency, privacy and security concerns, access and equity issues, the displacement of human labor, copyright concerns, and sustainable usage concerns that result from high energy consumption (Bozkurt & Sharma, 2023; Kasneci et al., 2023). GenAI and related technologies have created an urgency in higher education to reconsider how we facilitate teaching and learning processes and how we assess students' learning.

Method

In order to explore and understand how IDs are integrating GenAI into their roles and how they "interpret their experiences, construct their worlds, and what meaning they attribute to their experiences" (Merriam & Tisdell, 2016, p 24), a general qualitative approach was adopted in this study. We created an interview guide (Patton, 2002) with a list of questions to be explored, but within which we would be able to "explore, probe, and ask questions that will

elucidate and illuminate" (p 343) the topics. We conducted semi-structured interviews with open-ended questions that allowed us to probe further and understand as well as clarify participants' responses.

Participants

A network of approximately 80 instructional designers at a large public university, including educational technologists, learning designers, or others holding similar titles, was contacted through a network listserv and invited to participate in the study. The invitation email specified the criteria for participation in the study; if participants were using GenAI in their role, they were invited to fill out a short survey. The survey began with informed consent and institutional review board (IRB) information. Following an item where participants had read the informed consent and agreed to participate in the study, they were asked whether they currently use or intend to use GenAI in their role. Participants who stated they currently use GenAI were asked for demographic information (e.g., title, role, department, highest educational degree) and their interest in participating in an interview. Fifteen people agreed to participate in the study

Eight of the participants were male (53%) and seven female (47%). Twelve of the 15 held the title of instructional designer, and three others were educational technologists or education and training specialists. All the participants held advanced degrees: Thirteen held master's degrees and two had completed doctoral degrees. Fourteen participants worked at one university and one participant in a four-year college. Six of the participants were embedded in colleges (i.e., in college-specific units), and nine worked in central units that supported academic technologies, online programs, and human resources.

Table 1

Participants

Demographics	*n*	%
Title		
Instructional Designer	12	80%
Educational Technologist	2	13%
Education and Training Specialist	1	7%
Education		
Master's	13	87%
Doctoral	2	13%
Institution Type		
4-year college	1	7%
University	14	93%
Location		
Centralized	9	60%
Embedded in unit	6	40%

Interview Guide

A semi-structured interview guide was drafted based on the research questions and the literature reviewed about IDs use and integration of GenAI in their role. It was then shared with

two IDs who were not part of this study sample for feedback on the questions. The sequence of the questions was changed based on their feedback. The final semi-structured interview guide included questions about participants' roles and their use of GenAI. We began by asking participants to describe their role and responsibilities, and then asked how they currently use GenAI in their roles. Additional questions to probe, understand, clarify, or get more information were asked based on participants' responses. This was followed by the specific questions "How do you use GenAI in curriculum or course development," and "How do you support instructors in their use of GenAI." The interview also included questions about participants' perceptions of support needed and their own professional development, but the focus of this paper is participants' use of GenAI, and that data is not included in this paper.

Data Collection

Interviews were conducted online in Zoom and lasted between 35 and 50 minutes each. Initial interviews were conducted by at least two researchers, with later interviews conducted by only one researcher. Brief field notes were used by the researchers to capture the nature of the interactions, although the content was recorded. All Zoom interviews were recorded with the permission of the participants. The automated verbatim transcript generated in Zoom for each interview was first checked for accuracy and then sent to the participants to change, edit, or redact any statements they had made. None of the participants requested any changes, although some made formatting and syntax edits or requested us to make such changes within the Zoom transcripts. The transcripts were then downloaded and assigned an identification number. Regardless of their job title, all the participants were termed "ID" for consistency (e.g., ID4). Any identifying information such as references to the participants' units or specific course numbers or faculty names within the transcript was removed before analysis.

Data Analysis

Thematic analysis was conducted according to the six phases specified by Braun and Clarke (2006): (1) data familiarization, (2) initial code generation, (3) identifying and organizing into potential themes, (4) reviewing themes against the larger dataset, (5) naming of themes, and (6) selecting examples. Three researchers first familiarized themselves with the data. In the first round, one researcher conducted the initial coding for all the transcripts generating large categories. All three researchers met to discuss the coding process of the first researcher and the initial categories. The two other researchers then conducted a second round of coding, generating very detailed codes independently. All three researchers met to discuss these codes and agreed on the final codes. They then grouped the codes into categories and potential themes. Following an independent review of these themes against the larger dataset, the researchers met again to finalize the themes, review the field notes in case anything needed to be taken into consideration, and select representative excerpts from the interviews.

The research team included six researchers with prior research experience and professional experience in instructional design. Four have integrated GenAI in their online/blended teaching and four in their instructional design practice. Interview protocol review, detailed field notes and meeting notes, an audit trail, member checking, and multiple coders contributed to the trustworthiness (Lincoln & Guba, 1986) of this study.

Findings

The three main themes (Table 2) related to ID integration of GenAI in online and blended education were (a) IDs' use of GenAI for instructional design; b) collaborative guidance for faculty integration of GenAI; and c) training, resources, and guidelines on the integration of GenAI. We first describe the participating IDs' roles and responsibilities to provide context for the themes.

IDs' Roles and Responsibilities

Thirteen of 15 participants were actively involved in the design, development, or delivery of online or blended courses, while two described their responsibilities as mainly focused on designing and delivering training. For IDs involved in developing online and blended curriculum, responsibilities varied by role and the unit they worked in, with some IDs focused almost entirely on full course production, while others also provided instructional design or educational technology consultations, course reviews, or faculty professional development. They collaborated with faculty for course production (i.e., mapping out the course, including course goals, module learning objectives, and assessments, then building the course in the learning management system); provided course assistance and consultations in the design, development, or delivery phase; conducted course reviews and helped to assure quality; and helped faculty select the right educational technologies (e.g., Perusall, PlayPosit, Augmented Reality or Virtual Reality) for their courses and provided technical support for these tools throughout course delivery. Several participants described faculty development as part of their responsibilities, providing workshops and training sessions about teaching topics, specific technologies, and the use of GenAI for teaching and learning. IDs in professional workforce development described faculty and staff development workshops and training sessions on specific technologies (e.g., MS Teams, university systems), the use of GenAI, and leadership topics.

Table 2

Themes and Codes

Themes	Codes
IDs' use of generative AI for instructional design	Generative AI technologies used by IDs
	Instructional materials and activities
	Increased efficiency and automation
	Conscientious use of generative AI
Guidance for faculty integration of generative AI	Brainstorming partner for faculty
	Incorporating student use of AI
	Guiding generative AI use and academic integrity

Training, resources, and guidelines on generative AI use	Providing training about generative AI in teaching and learning Creating resources about generative AI for teaching and learning Contributing to committees and guidelines related to generative AI

IDs' Use of Generative AI for Instructional Design

The largest theme in the data was participants' use of GenAI for instructional design, comprising GenAI technologies used by IDs; IDs' use of GenAI for instructional materials and activities; their use of GenAI for increased efficiency and automation; and their conscientious use of GenAI in instructional design processes.

Generative AI Technologies Used by IDs

The GenAI technologies that IDs used the most in their roles were conversational chatbots, e.g., ChatGPT, Microsoft Co-Pilot, and Google Bard/Gemini. IDs used these chatbots to brainstorm learning objectives, assignment ideas or details, graphic design ideas, and course revision possibilities as well as develop module overviews, reading summaries, student checklists, rubrics, and alternative (alt) text. IDs also described using OtterAI for notetaking and Grammarly for editing their writing. They used Dall-E, Bing, Adobe (Firefly or Photoshop), Midjourney, and Canva for generating or editing images and Beautiful.AI, Gamma, and Canva for presentations.

Instructional Materials and Activities

Faculty members provide content for their online and blended courses, but IDs are responsible for organizing and creating the courses (e.g., learning objectives, chunking) and suggesting online activities or assignments. Participants described using GenAI to brainstorm for learning objectives, ideas for assignments, and revisions in online or blended courses. ID2 described using ChatGPT to generate ideas for learning objectives and engaging activities: "to kind of get the wheels turning [...] I'll type it in there just to see what I can get and build upon it and tweak it for that particular professor's needs." ID11 described using ChatGPT to "get [their] juices flowing" when developing assignment details: "I'm starting with something to build off of so that I can kind of go back to the faculty and say, 'Okay, here's kind of what I've come up with. What do you think about this?' And we, you know, go from there."

They also used GenAI to "adjust scripts" written by faculty (ID7) and to create "filler content or background material for something" such as "fictional personalities and backgrounds of people" (ID12). Participants also mentioned using chatbots for course revisions. ID14 used ChatGPT with the instructor to generate ideas for gamifying an entire course, including ideas for the narrative and characters and ideas for alternative assignments. They said:

> I looked at the activity that ChatGPT generated and then cleaned them up [and] shared with faculty, asked them to modify it, and they were actually happy. The course turned from quizzes only to a very nice course where students could think and reflect and be more engaged.

Whether developing or revising online/blended courses, participants emphasized the importance of the faculty member checking, modifying, adapting, and changing the content generated using GenAI and ensuring it was appropriate for the course level, the learners, and their approaches to their content.

Subject Matter Expert (SME) Augmentation

Building a quality online course frequently requires generating new content to help orient and guide the student learning experience. Module overviews, reading previews or summaries, and graphics replace what an instructor might have previously communicated verbally in an on-campus course. Although content is usually provided by the instructors who are the subject-matter experts, additional explanations, summaries, or overviews are often needed during course creation and IDs as non-subject-matter experts are dependent on the faculty to provide this information. In this context, GenAI seemed especially useful for the participants engaged in full course production. One of the ways in which GenAI served these IDs is as a "supplement to faculty" (ID 11), helping IDs generate course details when faculty members were too busy or unprepared to contribute. They described uploading readings, lecture slide material, or lecture transcripts into ChatGPT to generate a variety of online and blended course material. "Sometimes asking the professor to write just one summary sentence is too much," said ID6, so they would use ChatGPT to generate reading or video summaries and then ask the instructor to review these. ID11 described using ChatGPT to generate module overviews: "some instructors do struggle with that. That's not something that they've ever been required to do before." Although they found GenAI useful for these purposes, IDs were cautious about the material that they uploaded or input during these activities, limiting what they shared.

They found that using GenAI helped to keep course production on track when instructors did not have time to provide additional materials. ID14 gave the example of an instructor having only submitted "a little bit" of the material, stating "…so I asked ChatGPT to create summaries of the readings." One participant used ChatGPT to generate alternate text for accessibility that they would usually have requested from instructors:

> It's very difficult to describe a table or a diagram … we're not subject-matter experts so if we try to do it we might not do it justice, and … sometimes you can't always get hold of a faculty member and be like, Hey, would you write something. (ID5)

Images and Banners

Participants also mentioned using GenAI for media or multimedia production. After designing an online module, ID14 uses ChatGPT to generate ideas for module banners, images, or icons that reflect the content. Then they edit or adjust these before reviewing them together with the instructor. Participants also described generating images that are difficult to find in

stock photos. Two IDs found GenAI helpful for quickly editing image backgrounds or dimensions. For example, ID9 used it to quickly remove backgrounds of instructor photos before adding them to the course. Two participants mentioned trying GenAI for presentations: They experimented with Beautiful.AI, Gamma, Canva and the embedded designer in Microsoft PowerPoint. An ID also described trying an AI-assisted video tool, Biteable, to create an animated transcript for an instructor.

Increased Efficiency and Automation

Participants emphasized how they used GenAI to make their work faster or more efficient by using chatbots or automating time-intensive tasks, which helped them manage a workload that was sometimes too high. According to ID14, GenAI "can save me so much time, and I can actually be more helpful to faculty because now I have this great assistant." Participants provided the following examples:

Making Content More Accessible

ID6 found that creating alt text for tables, where "it's just exhausting to type everything out like that" manually, was a task made easy with ChatGPT that "does a really great job." While other tasks required careful review of a chatbot's output, creating alt text for a table was a task that could be done quickly and accurately. ID5 stated, "We have a lot of things to finish. [..] AI is like a very good tool for stuff like that. It's like the information is already there. We just need a tool to help us organize information."

Creating Rubrics

IDs frequently help instructors create rubrics, another task they described as being able to automate. ID11 described their process for creating a prompt for a rubric as providing course context, an assignment overview, formatting expectations and sometimes an example rubric:

> It does it really well, does it a lot faster and a lot more accurately than I ever could, and you know, of course, we review all these things, but often what it produces is fantastic, and you know the instructor is really happy with that.

Drafting Reading Summaries

Even for tasks that couldn't be fully automated, IDs still emphasized the potential for efficiency that GenAI offered. ID11 stated that drafting summaries of readings used in a course frees up both faculty and ID time, allowing faculty to focus on more "intensive" tasks like creating their lectures and giving the ID something they could work with.

Creating Accessible Scenarios

ID13 described developing a process where course transcripts were uploaded into a chatbot to generate branching scenarios. This helped them to make the process as efficient as possible, because the faculty often had very little time and the chatbot provided a basis to work from. They were able to transform an entire series of lab activities from quizzes with inaccessible

images “to accessible scenarios built in Rise 360 that have more branching and more authentic learning.”

Conscientious Use of Generative AI

Although all the participants used GenAI in their role, there was a strong theme of caution, restraint, ethical deliberation, and rumination about where, when, and how it was appropriate to use GenAI and its products. Almost all IDs shared that they were still experimenting with the technologies; many used terms such as “hesitant” or “skeptical” and several stated that they limited their use due to concerns over ethics or quality.

Several IDs expressed ethical and copyright concerns about image creation and generation using GenAI. ID14 intentionally limited their use of image generation AI tools out of concerns for copyright infringement, and described dissuading an instructor from creating their images with GenAI: “truthfully, I was very worried about copyright because at that time many artists started protesting, so I wasn’t sure, [...] if all images are [AI] generated and they are in videos, in Canvas…So we decided to be very selective with what we did.” ID3 stated, “I have a whole bunch of reservations when it comes to… the way this technology is being trained, but also in the ways in which it's being implemented.” Not knowing the resources used by GenAI or the source for information or images was disturbing for these IDs.

The quality and veracity of information were the other main concerns voiced by IDs. Despite providing workshops for faculty on the use of GenAI, ID3 voiced their hesitancy to use it in their own instructional design practice: “I don't think it's incredibly reliable. [...] I view instructional design as a highly creative endeavor. And I see a lot of what comes out of AI as being kind of average.” ID8 described their recent experimentation of using prompts for a module, stating, the course goals “weren’t too bad,” the module titles “I didn’t really have to tweak a whole lot,” but the course objectives is “where it broke down.” They concluded that,

> without the set of skills that an instructional designer has, or someone in education has, they might look good on the surface. They might even use the right active verbs, but … someone could be deceived…if they didn’t know better.

Across the interviews, IDs asserted that the expertise of an ID as well as the expertise of the faculty member/SME were paramount in verifying the results from GenAI.

Guidance for Faculty Integration of Generative AI

The collaborative partnership between a faculty/SME and an ID provides a unique opportunity for guidance and implementation of AI in blended and online courses. During one-on-one consultations and while working on their courses, IDs showed faculty how GenAI could serve as a brainstorming partner, discussed how they could incorporate student use of GenAI, and provided guidance on academic integrity issues.

Brainstorming Partner for Faculty

IDs described encouraging faculty to use GenAI as a brainstorming partner, while being careful what they input into chatbots. One ID who supports a college described “teaching faculty

how to flex ChatGPT within their own workflow," including how to adjust quiz questions or make them more challenging and generate new possibilities for assignments or course material (ID13). ID1 and ID6 described showing an instructor how to use ChatGPT to brainstorm learning objectives. ID6 said, "at least that is a place to build from… and get past that fear of the blank page." When helping a new instructor revise an existing course, ID15 used ChatGPT with an instructor to "generate some objectives, not just for the lecture content, but also for assignments, and then we tweaked it from there." ID5 described helping faculty to create new kinds of assignments using GenAI, "scaling up feedback systems" and "showing the instructor how they might use AI to write feedback to student writing."

Incorporating Student Use of AI

IDs often help instructors select and integrate emerging technologies for students to use in their online/blended courses. Three participants described helping faculty integrate AI-enabled assessment tools such as Perusall, Packback, and Harmonize in online and blended courses. ID6 worked with an instructor to encourage critical use of chatbots in synthesizing information after discovering that many of the course activities (e.g., conceptual essays) were likely "weak to ChatGPT." ID8 helped an instructor "integrate AI into a longstanding case study [done] in segments… Students look at the symptom list … plug that into the AI and see what kind of differential diagnoses it would give them…then they would go back and evaluate those differential diagnoses based on what they were learning."

ID1 worked with an instructor to create a customized chatbot in a course in which students needed to learn how to identify certain personality traits. The students used the chatbot as a conversational agent to practice authentically and then wrote a report of their experience. When an instructor wanted to incorporate ChatGPT into their course but wasn't sure how, ID14 helped them create an activity where students prompted the chatbot to generate a short essay and then evaluated its accuracy using sources to support their analysis.

Guiding Generative AI Use and Academic Integrity

Faculty often brought questions to IDs about the potential use of AI in course assignments, about academic dishonesty concerns, and about including a GenAI policy in their syllabus. Participants provided examples of how instructors had different questions and also varying approaches to GenAI integration. They stated that "it's very much dependent on the instructor and what their comfort level is, and what they want" (ID1) and that "some instructors are tackling the idea, not just of how to like police students use of AI, but to integrate it directly and to kind of like help guide students through that process there" (ID11). ID11 described a faculty member "wanting to have a section in their syllabus about how students are allowed to use AI in their course" while ID13 had researched and helped an instructor write a statement about "appropriate use" of GenAI within an assignment.

Training, Resources, and Guidelines on Generative AI Use

In addition to their active roles in blended/online curriculum development and one-on-one faculty guidance in integrating GenAI into blended/online education, IDs provided training

about GenAI, created resources about GenAI use, and were involved in developing guidelines on GenAI use.

Providing Training About Generative AI in Teaching and Learning

Participants spoke frequently about the development and delivery of formal training, both online and face-to-face, with formats ranging from question-and-answer sessions to workshops, webinars, and Communities of Practice. Although these training offerings mainly serve faculty, others mentioned—as regular attendees—staff, other IDs, and graduate students. Specific topics participants covered in AI-related training included introductions to AI, using AI for course development or assessment, using AI in teaching (showing/helping faculty with student use of AI), using AI for image generation and customization, and student-focused training on AI use. Participants emphasized the need for sharing and collaboration as well as active use and participation among trainees, stating, "there are things that people are already doing with AI that we thought could be useful to share with more people" (ID4), and "getting comfortable with new technology for teaching requires hands-on experience" (ID12). In some cases, participants hosted focus groups after webinars to help inform the development of future training.

Creating Resources About Generative AI for Teaching and Learning

Participants also created resources for just-in-time use, such as websites, video tutorials, FAQs, guides, and other documents. ID8 noted, "there's always this dynamic contrast between on demand and people wanting online resources, and the other side of the audience wanting that more traditional personal feeling … So I like to kind of model … both." Another ID's team was working on creating "a series of short videos where we share our screen, record our screen as we walk through a tactic or a way that you can use an AI tool to achieve something in the workplace" (ID4). Many of the participants in this study explained that they used and shared a specific resource that was created within their university that presents guidance for effectively interacting with GenAI.

Contributing to Committees and Guidelines Related to Generative AI

Participants served on committees that discussed the use of GenAI in teaching and learning processes and debated the creation of guidelines for GenAI use. They served on curriculum committees, participated in discussions about GenAI detectors, syllabi policies, and GenAI use statements, and contributed to suggested guidelines for faculty to help them make decisions about GenAI use and to design assessments including GenAI use. One participant also made presentations about AI at conferences.

Limitations

Our conceptual framework emphasizes the role of IDs in higher education as "change agents," which assumes IDs are deeply involved with the integration of GenAI (like any other emerging teaching and learning technology) into teaching and learning processes. While research suggests this assumption is true, GenAI may be integrated differently in different institutions and contexts. Thus, the role of IDs may vary from institution to institution and from context to context and our results, while transferable, are not intended to generalize to all IDs in higher

education. This is especially notable given that our study used convenience sampling and of the approximately 80 IDs contacted, only those who currently use GenAI and volunteered to participate were interviewed. There is also a potential for bias because 14 of our 15 participants worked at the same institution of higher education. Also, their institutional context emphasizes applications of AI across all domains of inquiry (e.g., medicine, engineering, etc.), and thus, our participants may be more actively involved in the integration of GenAI than IDs at other universities. Though we used several methods to enhance the rigor and trustworthiness (i.e., member-checking, peer debriefing, and peer examination) of our research findings, the semi-structured interview was the sole method of collecting data from our participant IDs. Collecting additional evidence using different data collection methods, for example, observing IDs using GenAI or examining artifacts created using GenAI, would have provided additional support for the triangulation of data sources and potentially enhanced the confirmability of our findings.

Discussion and Implications

Our exploratory study provides insight, given the scarcity of empirical evidence in the literature, into how IDs are using and integrating GenAI into instructional design processes and higher education teaching and learning, albeit cautiously and ethically. IDs use various types of GenAI conscientiously while developing instructional materials and activities, to provide more accessible learning environments, and for increased automation and efficiency, but always as a draft for careful review and improvements by instructors. IDs also play an instrumental role in the integration of GenAI into higher education by providing guidance for faculty, leading training and developing resources, and contributing to the development of guidelines for GenAI integration in teaching and learning. We discuss our findings in this section by highlighting how IDs balance the benefits and limitations of GenAI when integrating it into teaching and learning, and how IDs are, and can be, change agents in the ethical use of AI.

GenAI Integration by IDs: Balancing Benefits and Limitations

The results of our study indicate that while IDs are leveraging the use of GenAI in many aspects of their roles in online and blended education, they do so with care and caution. Given the focus of this study on how they use GenAI, IDs provided various examples of GenAI integration in the instructional design process. However, all the IDs in this study also shared ethical, privacy, and copyright concerns and described efforts to strike a careful balance between efficiency and diligence in their use. Systematic reviews of AIEd note that there is often a lack of critical examination of ethical implications when integrating AI in education (Gonzalez-Calatayud et al., 2021; Zawacki-Ricker et al., 2019; Zhang & Aslan, 2021), however, IDs in this study reflected deeply on ethical concerns, including how systems are trained and implemented. They explained how these concerns limit what they do with GenAI—that they are cautious about content they input or share in these technologies and are careful about how they use the generated outputs and results—and these concerns also shape how they guide or encourage faculty to use GenAI. IDs engaged faculty directly in conversations surrounding the ethics of AI and were deliberate in decisions about appropriate GenAI use. Our empirical findings support

Moore et al. (2024)'s call for IDs to help shape the practical application of AI in education in ethical ways.

Reinforcing the conclusions of Chng (2023), Kasneci et al. (2023), Kim and Adlof (2023), and Rudolph et al. (2023), GenAI helped IDs in this study to automate repetitive or tedious tasks and generate and propose ideas for instructional materials and assessments (e.g., images, activities) that they then shared with instructors. These processes enable IDs to focus on deeper curricular and pedagogical efforts, but it is clear from this study that the outputs of collaboration with GenAI are not simply accepted or used as generated. Participants repeatedly stated that GenAI content must be reviewed, verified, and often corrected or enhanced in collaboration with instructors because it is often inaccurate or of poor quality. IDs in this study noted that AI on its own is not enough; the intervention of a knowledgeable individual is critical to ensure that content and pedagogical approaches are accurate and appropriate to the materials or courses being developed. These findings point to the possibilities of new roles evolving in the instructional design process that include AI content strategists, content accessors, and AI technology specialists (Chng, 2023). IDs' descriptions of task automation or rubric/quiz creation also suggest that GenAI's ability to complete certain tasks may change what instructors and IDs will do in the future, corresponding to Bozkurt et al. (2023)'s call for reflection on the roles that are assigned to humans and new AI tools that can assume several education-related tasks. Additionally, much of what IDs shared in this study was focused on the process of instructional design; although IDs mentioned the specific GenAI technologies they used, the purpose of that use, and human intervention and improvement following that use, were the focus of their responses.

Of particular interest are the ways in which IDs have leveraged GenAI to improve the accessibility of learning environments. This includes generating alt text for images and tables, creating transcripts, and transforming content into more accessible formats. This aligns with some of the benefits that Marino et al. (2023) envisioned would be possible with AI.

One of the most common ways in which IDs in our study used GenAI was to brainstorm ideas, especially for learning activities. This is representative of the "cognitive partnership" described by Moore et al. (2024, p. 27), where GenAI seems to go beyond its function as a tool and instead serves as a brainstorming partner, especially in the absence of a team member, faculty/SME, assistant, or advisor. For these IDs, GenAI is extending the capacity and perhaps the capabilities associated with working alone or in a one-to-one faculty partnership and opens the door to new possibilities of role definitions in these engagements. Focusing instructional design efforts and faculty/SME time commitments towards content review and evaluation may be a shift that happens as the use of GenAI increases, leading to the leveraging of GenAI for efficiency in the instructional design process.

IDs as Change Agents: Supporting the Ethical Integration of GenAI

IDs' roles and responsibilities in this study corresponded to prior literature: they worked closely with instructors and SMEs to develop instructional materials and online/ blended courses, provided guidance on GenAI integration and technical support, and provided faculty

development in the form of one-on-one consultations and formal training (Anderson et. al, 2019; Kumar & Ritzhaupt, 2017; Park & Luo, 2017; Ritzhaupt & Kumar, 2015; Ritzhaupt et al., 2021). The ways in which IDs in our study integrated GenAI within their roles and responsibilities further emphasize IDs' critical roles in technology integration and the evolution of teaching and learning in higher education. Additionally, where much of the existing research has highlighted their functional roles in teaching and learning processes, our study provides further evidence of the emerging trend of IDs' shifting roles in higher education. Not only do they continue to support innovation in online and blended learning (Brito, 2017), but they appear to be the main drivers of testing, guidance, training, and encouraging the practical and relevant use of new GenAI technologies within their institutions.

Although prior research had highlighted IDs' roles as change agents that challenge the status quo of teaching and learning (McDonald & Mayes, 2007; Pollard & Kumar, 2022; Schwier et al., 2004), their crucial role in institutions of higher education became more visible during the COVID-19 pandemic as institutions engaged in ERT. On studying IDs' roles in emergency remote teaching (ERT) during the COVID-19 pandemic, Xie et al. (2021) concluded that IDs had assumed a relationship-building role within their institutions, where they provided professional development for various stakeholders; gathered, curated, and distributed resources; and were involved in advocacy as well as institutional planning. The findings of our study reveal that this continues to be true with respect to GenAI integration in higher education. IDs play a pivotal role as change agents (Bond et al., 2023) in the integration of GenAI in teaching and learning process as they educate various stakeholders about GenAI, create and curate resources about GenAI integration, and guide the ways in which GenAI is integrated in teaching. Additionally, they engage in discussions with faculty not only about student use of GenAI in courses, but also in deeper discussions about issues of academic integrity and appropriate statements in syllabi or assignments regarding GenAI use. Their expertise and knowledge about technology integration in teaching and learning processes is also recognized as they serve on committees and contribute to the development of guidelines related to GenAI integration. In their roles within colleges and institution-wide units, they are in a unique position to drive change, facilitate appropriate use of GenAI, communicate and address needs and concerns that arise as new technologies are integrated, and lead the conscientious use of GenAI at their institutions.

Suggestions for Future Research

This study involved interviews with a small sample of IDs, almost all located at a single university, about how they were using GenAI in early 2024. Additional research on how IDs from a variety of institutional classifications are using GenAI would provide insight into how institutional size, type (e.g., public, private), policies, online and blended education practices, and other factors play a role in how GenAI is being integrated across higher education institutions. Although some IDs in this study used GenAI to create images or work with videos, the rapid developments in not only various GenAI technologies but also their open nature and availability to the public, imply that they will soon become as commonly used as LLMs. Future research could focus on the use of GenAI specifically for audio, video, and multimedia production.

A deeper dive into IDs' ethical and academic integrity concerns, and their involvement in collaborative decision-making about GenAI use with faculty members, would also illuminate reasons for the non-use of GenAI, especially because this study excluded IDs who did not use GenAI. Additional research on IDs who opt not to engage in the use of GenAI, which may be for ethical or a variety of other reasons, is also warranted.

Because IDs serve as change agents in their institutions and are in many ways leading the adoption and integration of GenAI into teaching and learning activities, research into how IDs *want* to use GenAI (e.g., what functions would they automate if they could?) could help guide future development and directions of new AI technologies in higher education. Additionally, researchers could explore ID's perspectives on potential future uses of GenAI within LMSs for student support, tutoring, success, and retention, as IDs may hold important insight into what is, or could be, possible both within an LMS given their experiences using GenAI.

Beyond the advancement of publicly available GenAI platforms, many industries and institutions are rapidly developing customized AI instances using Retrieval-Augmented Generation (RAG) to cater to the available knowledge base to enhance outputs for specific tasks, users, simulations, or parameters. The speed of GenAI evolution and the emergence of new applications and customizations is itself a call to action; research into how GenAI is being integrated into teaching and learning in higher education will be challenged to match the pace.

Declarations

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

The authors assert that approval was obtained from the institutional review board (IRB) at the University of Florida.

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