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Bridging Student Expectations and Instructor Capacity: Leveraging General Artificial Intelligence to Enhance Quality Online Learning

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ABSTRACT

This study centers student perspectives on quality digital, blended, and online learning through a secondary qualitative analysis of panel data originally collected by the Online Learning Consortium and Every Learner Everywhere. Drawing on transcripts from four student panels featuring twelve learners from diverse academic and institutional contexts, previously identified themes were revisited to explore how Generative Artificial Intelligence (GAI) might support the elements of quality that students defined. Using a conceptual mapping process grounded in current discussions on GAI in education, areas were examined where GAI could realistically enhance the instructional strategies students most valued. Three key themes guided this exploration: structuring learning experiences for success, designing intentionally and deeply, and keeping humans and connection at the center of learning. In these themes, students emphasized the need for clarity, purpose, flexibility, and authentic connection in digital learning environments. In response, a set of student-informed insights and practical recommendations is offered, illustrating how GAI might support instructors in meeting these expectations without overly increasing workload—by streamlining course design, enhancing communication, fostering collaboration, and generating real-world learning experiences that move beyond busywork. At the same time, attention is given to ethical considerations and potential risks associated with GAI to maintain responsible and transparent instructional use. Rather

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than prescribing specific tools or models, this study invites a thoughtful, values-driven approach to integrating GAI in support of human-centered teaching.

Keywords: Generative Artificial Intelligence (GAI); Digital Learning; Online Education; Student-Centered Design; Instructor Workload

1. Introduction

Over the past few years, educators have navigated a range of complex changes facing higher education, most notably a global pandemic that destabilized dominant course models and shifted student preferences, the rise of generative artificial intelligence (GAI) technologies that drive both innovations and ethical concerns, and an ever-shifting political landscape that has contributed to uncertainty about the path forward. These challenges are compounded for instructors who are adapting to the growing integration of innovative technologies in teaching and assessment, alongside evolving preferences for flexible learning and work options. A Fall 2024 report from the College Innovation Network [1], for instance, described the difficult balance faculty face with staying abreast of emerging and evolving technologies while prioritizing accessible and engaging learning experiences. These ongoing technological shifts add to the demands on educators, contributing to increased stress as they work to balance innovation with student engagement and success.

As educators have continually adjusted to these shifts while preparing students to meet the demands of a workforce undergoing similar transformations, it is perhaps not surprising that burnout has remained a persistent concern. The College Innovation Network [1] report found that 40% of faculty reported being "burned out and emotionally exhausted from their work," while 80% reported that they felt like they were "constantly on the job because of technology" and 60% said they found it difficult "to take a break from their work and/or their students" (p. 20). Faculty members are certainly not the only ones experiencing this phenomenon; a study of professional services staff at higher education institutions in the UK found that 69% of respondents worked during annual leave, 40% rarely or never had enough time to get their work done, and 10% were miserable [2]. As technology advancements blur the boundaries between work and personal time, the strain on educators and staff continues to grow, further cementing burnout as a widespread and pressing challenge across higher education.

Although burnout is a widely examined issue in higher education research, viable solutions to this complex challenge remain limited. Much of the conversation has focused on faculty and staff exhaustion, yet student experiences play a critical role in shaping sustainable learning environments and relationships to work. When digital, blended, and online learning experiences are poorly designed, they can contribute to frustration and disengagement for both students and educators, compounding the challenges of burnout. Moreover, just as competing institutional priorities can contribute to excessive workloads and stress, the growing expectations for faculty responsiveness and tailored support, often shaped by students' evolving needs and experiences, can also place additional pressure on faculty and staff. In our previous report about student perspectives on quality online learning [3], we raised concerns about the current climate of burnout and our findings that students were expressing a preference for tailored instruction, increased time with instructors, increased flexibility for course engagement, and meaningful engagement opportunities with peers. While these goals are widely supported by educators in principle, they often require time-intensive practices that can be difficult to sustain, especially amid ongoing workload pressures. Our analysis highlighted a critical challenge: how to design engaging, high-quality learning experiences that are impactful for both students and educators without amplifying excessive workloads that lead to burnout.

This study contributes to the discourse around burnout, particularly in the context of online learning, by centering student experiences and feedback to guide prioritization and enhance meaningful learning experiences. This study aims to bridge student definitions of quality online learning with the affordances of GAI tools, which might be leveraged to create quality learning experiences without overstraining educators.

2. Literature Review

To contextualize this study, we examined recent research on three interconnected areas shaping online learning

environments: quality in online learning, instructor workload, and the emergence of GAI as a potential support mechanism.

2.1. Quality Online Learning

Defining quality in online learning can be challenging, as it can encompass a wide range of concepts that hinge on foundational theories that center interaction (i.e., learner-learner, learner-instructor, learner-content)[4] and presence (i.e., social, teaching, and cognitive)[5]. We follow Wright et al.[6] in suggesting that quality online learning, while complex and multi-faceted, often refers to key features of online learning that create a positive learning experience for both students and instructors. To explore how these features take shape in practice, Wright et al.[6] conducted a cross-disciplinary study of high-quality online learning experiences in higher education and identified four key themes: course design, instructor facilitation, student engagement, and quality assessment. They also highlighted several ways faculty can support online student success through these themes, including fostering collaboration, effectively using information and communication technology (ICT) tools, maintaining strong instructor presence and availability, and applying structured frameworks for online learning.

Several other studies have identified key components that contribute to quality in online and blended learning environments. Nie[7], for example, identified four critical methods for ensuring the quality of student learning experiences in blended and online learning environments: designing effective courses and teaching materials, providing flexible learning methods and support, creating a positive learning environment and atmosphere, and providing timely feedback and evaluation mechanisms. Similarly, Al Abri and Elhaj[8] identified a range of recommended guidelines for designing online courses across several areas, including fundamental [instructional design] principles, overview and objectives, content and instructional strategies, assessment and evaluation, collaboration and communication, technology and resources, and accessibility. Additionally, in their systematic literature review of research that intended to define quality in online higher education, Hafeez, Naureen, and Sultan[9] identified four key quality assurance indicators in online learning: student-faculty interactions, active learning techniques, prompt feedback, and learner support services. Interestingly, although Bolliger and Martin[10] focused on student engagement in online courses, they found that students and faculty differed in their perceptions of the importance of engagement strategies; for example, students rated the inclusion of due date checklists in each module as more valuable than instructors did.

Despite the growing body of research on quality online learning, few studies have examined how students themselves define quality in online courses. This is a critical gap, given that, as Nie[7] noted, student experience directly impacts motivation, academic performance, learning interest, and overall learning effectiveness. One notable exception is the study by Konstantinidou and Nisiforou[11], who identified five key factors that shape students' perceptions of course quality: clear structure, authentic content (which they define as "practical…material with experience-based examples and tasks"), interactive and multimodal delivery, appropriate and accessible technology, and robust support for both students and instructors. While students highlight clear structure, engaging content, and strong support as hallmarks of quality, delivering on these expectations often places significant demands on instructors—particularly when they are also navigating new technologies and tools as well as burnout. Understanding how student-centered definitions of quality intersect with instructor workload is essential to developing sustainable, high-quality online learning experiences.

2.2. Instructor Workload

While instructors strive for excellence in online learning and high-quality student experiences, they often do so while shouldering excessive workloads. The 2025 EDUCAUSE Teaching and Learning Workforce in Higher Education report[12] underscored this pressing challenge: a majority (60%) of respondents reported that their workload was very excessive or somewhat excessive and 37% of respondents indicated that no institutional action had been taken to address this. Furthermore, a majority of respondents (57%) strongly or somewhat disagreed that their department/unit had sufficient staff to meet its needs and goals. In response to these challenges, a commonly recommended strategy for institutions facing staffing shortages and excessive workloads was to leverage digital tools to automate time-consuming tasks and streamline workflows where appropriate.

This context has made some faculty reluctant to teach

online courses because of the perceived greater workload. For example, in a study examining faculty workload and anxieties during the shift from face-to-face to online learning across Spain, Chile, Colombia, and Ecuador, Bravo et al.[13] identified the primary source of faculty anxiety as the concern that they will spend more time addressing student demands and providing immediate feedback when teaching online.

Similarly, in their study on faculty and student satisfaction with online learning after the onset of the COVID-19 pandemic, Elshami et al.[14] found that faculty were most dissatisfied with increased workload, the extended time required for course preparation, and technical issues. While there is ongoing debate about whether online teaching actually increases faculty workload, this perception nonetheless continues to influence faculty attitudes toward online instruction and contribute to hesitation in teaching in these modalities. Given these persistent concerns about workload, institutions are considering new strategies to support faculty while maintaining high-quality online learning. One promising avenue is the use of GAI tools to enhance student learning experiences and automate time-consuming tasks. When implemented thoughtfully and purposefully, these tools have the potential to help reduce burnout and make online teaching more sustainable without compromising educational quality.

2.3. Generative Artificial Intelligence (GAI)

While a broad range of research explores GAI in education, this review focuses specifically on how GAI intersects with quality online learning and instructor workload.

The rapid growth and adoption of GAI in higher education have sparked both critical scrutiny and enthusiasm for its potential to transform the field and address key challenges. Key benefits of GAI in higher education include automating routine tasks so educators can focus on what they consider more meaningful work[15], generating assessment questions and rubrics[16], managing workload while supporting personalization[17], and assisting with course design, content delivery, and research[18]. Students have also highlighted the benefits of GAI tools, such as writing and brainstorming support, research and analysis support, and administrative support[19]. Additionally, GAI tools offer on-demand and tailored tutoring and learning support for students and may encourage students to be more self-directed[20]. While Ausat et al.[21] emphasized potential important contributions of tools like ChatGPT for teaching and learning, they nonetheless maintained that the teacher's role remains essential for offering direction, support, and holistic evaluation of students' skills.

While GAI tools offer opportunities for personalization, efficiencies, and innovation in higher education, they also raise important concerns. Some of the greatest challenges posed by GAI include potential over-reliance on AI, concerns around data security, algorithmic bias[18], copyright infringement, and environmental impacts[22]. Others have cautioned that GAI, and more specifically, large language models (LLMs), have limited ability to move beyond more straightforward tasks. French et al.[23] argue that ChatGPT is better at certain tasks (e.g., brainstorming) than others (e.g., writing). Some have argued that using generative AI to easily solve academic challenges could reduce the motivation for scholars to grow intellectually or engage deeply with their work[15]. While GAI tools, like ChatGPT, offer significant potential to enhance higher education, their integration necessitates careful guidance to address issues such as academic integrity, ethical use, and alignment with best practices for teaching and learning[24].

Overall, the challenges and ethical implications of generative AI are significant and demand careful, thoughtful engagement. Yet, alongside these concerns, GAI offers valuable opportunities for educators, especially in addressing widespread instructor burnout and excessive workloads without compromising quality. GAI has the potential to enrich student learning experiences while alleviating demands on faculty. One especially compelling advantage is its ability to support personalized instruction. Kasneci et al.[25] observed that LLMs offer instructors a way to personalize learning for students while minimizing the workload involved in creating individualized materials. This might allow educators to dedicate more time to other important teaching responsibilities, such as designing courses and fostering student engagement through interactive lessons. Similarly, Mulaudzi and Hamilton[17] suggest that AI can help instructors balance workload and personalized instruction, but they emphasize that while AI should be embraced as valuable, it should be used thoughtfully and not replace what we do as human teachers in the classroom. Students, too, have highlighted the importance of "personalized and immediate learning support" as a sig-

nificant benefit of GAI[19].

Taken together, the literature reflects a dynamic tension between the promise and peril of GAI in higher education. GAI tools have a remarkable capacity to support personalization, reduce workload, and enhance course design, with students also expressing appreciation for tailored support and increased autonomy. On the other hand, concerns persist around ethical use, overreliance, and the limitations of LLMs in fostering deeper academic engagement. This duality highlights the importance of thoughtful integration—one that elevates quality without offloading the core relational and pedagogical work of educators.

This article seeks to heed this imperative to harness GAI's personalization capabilities as a means for instructors to enhance and augment teaching and learning, rather than replace themselves with it.

3. Materials and Methods

This study used a qualitative design, conducting a secondary, literature-informed analysis of previously collected student panel data using a conceptual mapping approach. The original dataset was developed as part of a practitioner-focused research collaboration between the Online Learning Consortium (OLC) and Every Learner Everywhere, aiming to elevate student voices in defining quality digital, blended, and online learning. The guiding question of the original analysis was: *What does quality digital learning look like from a student perspective?*

The current study builds on that work by revisiting the thematic findings from the initial report[3] to explore a new question: *How might generative artificial intelligence (GAI) support instructors in implementing elements of quality digital learning identified by students?*

3.1. Data Sources

The original dataset consisted of four student panel transcripts from OLC conferences held between 2022 and 2023. The panels were conducted in partnership with Every Learner Everywhere and GlobalMindEd and featured 12 student participants from diverse institutional types that included community colleges, regional publics, research universities, as well as academic levels (i.e., undergraduate, master's, and doctoral). The panels included:

- Student Perspectives on Evidence-Based Teaching Practices (OLC Innovate, 2022)
- Charting a Learner-Driven Future for Online Learning: A Student Panel on Centering Humanization and Care (OLC Accelerate, 2022)
- If They Build It, They Will Come: Co-Constructing Diverse Pathways to Digital Learning With Our Students (OLC Innovate, 2023)
- Empowerment Online: Students Share Their Digital Learning Journeys (OLC Accelerate, 2023)

Panel sessions were recorded via Zoom, and OLC provided the authors with automated transcripts. These were reviewed and verified by the research team to ensure transcription accuracy and completeness. The student panels were recorded and disseminated with participant consent by OLC. The study utilized data derived from student panels conducted by OLC at their conferences between 2022 and 2023. Because the initial report was openly published and accessible, institutional review board (IRB) approval was not sought. However, we adhered to ethical guidelines for secondary data use by maintaining the integrity of participants' perspectives, avoiding recontextualization that could misrepresent their intent, and ensuring no personally identifying information was disclosed.

3.2. Data Analysis

This study draws on a two-phase analysis approach to explore how GAI may support quality digital learning. First, we briefly summarize the original thematic analysis that identified core student-defined elements of high-quality online learning. We then describe our secondary, literature-informed analysis, which revisits those themes through the lens of current research on GAI in education. This approach allowed us to examine how GAI tools may align with, enhance, or fall short in meeting the priorities students articulated in the original dataset.

3.2.1. Original Analysis

In the original study, we applied a thematic analysis approach adapted from Creswell & Creswell[26]. This included organizing and preparing the data, open coding of the transcripts, clustering codes into categories, and identify-

ing seven overarching elemental themes that defined quality digital learning from the student perspective. These themes included:

- Getting Beyond Face-to-Face Replication;
- Taking Collaborative Action on Diversity, Equity, and Inclusion (DEI);
- Keeping Humans and Connection at the Center of Learning;
- Designing Intentionally and Deeply;
- Structuring Learning Experiences for Success; and
- Supporting Instructional Development.

The original analysis emphasized trustworthiness through collaborative coding discussions, iterative theme refinement, and the inclusion of participant quotes to support transparency and authenticity of interpretation.

3.2.2. Secondary Literature-Informed Analysis

For the present study, we revisited the seven previously identified themes through the lens of current research on GAI in education, with the goal of identifying areas where GAI might meaningfully support instructors in designing and facilitating quality digital learning experiences. Our secondary analysis took the form of a conceptual mapping process, in which we defined our focus question (i.e., How might GAI support instructors in implementing elements of quality digital learning identified by students?) and identified relevant GAI-in-education literature. To guide this process and visualize the connections, the research team created a matrix linking each of the original themes with elements of quality online learning opportunities discussed in the GAI literature, and possible alignment for further exploration as identified by the research team (see **Table 1**).

Table 1. Alignment of Online Learning and GAI Opportunities.

Original Theme	Quality Online Learning	GAI Opportunities	Observed Alignment
Getting Beyond Face-to-Face Replication	Supports quality in course design; encourages flexible formats [6, 7].	GAI can assist in developing formats and modalities that go beyond traditional replication [18].	Moderate alignment; GAI may offer support, but may be limited in the depth needed to fully transition course modalities without first focusing on the other themes.
Taking Collaborative Action on Diversity, Equity, & Inclusion (DEI)	Equity and inclusion are essential aspects of quality [6, 7].	Concerns exist regarding bias and accessibility in GAI tools [18, 22].	Limited alignment; GAI raises concerns (e.g., bias, access) regarding DEI-focused work at this time.
Keeping Humans and Connection at the Center of Learning	Instructor presence and human connection are central to student experience [6, 7].	GAI may help free instructors' time to engage more meaningfully with students; however, it should not replace relational aspects of teaching [15, 21].	Strong alignment; GAI could support but not replace the instructor-student connection.
Designing Intentionally and Deeply	Effective instructional design, clear structure, and authentic content emphasized [7, 11].	GAI can support backward design, draft materials, and generate examples aligned with authentic content [17, 18].	Strong alignment; GAI has potential to provide feedback on design and assist in generating authentic activities.
Structuring Learning Experiences for Success	Clear structure and learner supports noted as important to student experience [10, 11].	GAI can generate scaffolds, reminders, checklists, and tailored study plans [19, 20].	Strong alignment; GAI well-positioned to support structuring learning experiences for success.
Supporting Instructional Development	Professional development has potential to improve quality, but instructor workload remains a barrier [12].	Limited formal research exists on GAI instructional development.	Moderate alignment; promising area for future exploration, particularly around AI literacies and effective, responsible use.

This interpretive mapping process led to the identification of three themes with the strongest alignment between student desires and GAI-supported instructional practices. The themes of Getting Beyond Face-to-Face Replication, Taking Collaborative Action on DEI, and Supporting Instructional Development were omitted from the present study, as they had limited or moderate alignment with increasing efficiency for instructors as they enhance learning experi-

ences (e.g., bias) or being out of scope for this study (e.g., supporting instructional development). This centered the discussion on the following themes:

- Structuring learning experiences for success
- Designing intentionally and deeply
- Keeping humans and connection at the center of learning

These three areas form the basis of our analysis and discussion, where we explore the potential and limitations of GAI in responding to student-defined priorities in digital learning environments. However, before we explore the results, we would be remiss in not sharing our positionality. As an instructor at a higher education institution and a researcher at a professional organization serving higher education institutions, our experiences may have shaped how we interpret students' perceptions of quality online learning. Given our interest in GAI as an emerging and evolving topic, and our awareness of burnout in higher education, we may have noticed opportunities in these particular themes to enhance instruction with workload considerations in mind. To consider potential bias, alignment decisions were reviewed and discussed collaboratively.

4. Results

The results below revisit three themes that originally surfaced through a multistage qualitative analysis of student panel data[3]. In this study, we revisit these themes with renewed attention to the specific experiences, expectations, and challenges students described regarding quality digital learning. While the thematic structure remains consistent with the original analysis, our focus is on elevating student voices as a foundation for subsequent reflection on how instructional strategies—particularly those supported by GAI—might respond to these needs.

The three central themes discussed in the sections that follow include: (1) structuring learning experiences for success, (2) designing intentionally and deeply, and (3) keeping humans and connections at the center of learning. Within each theme, students shared insights into what supports their success, the barriers they encounter, and the conditions that foster engaging and meaningful learning experiences in digital environments.

4.1. Structuring Learning Experiences for Success

Students emphasized the importance of instructors understanding the diverse challenges they face. Many students noted varying levels of technological experience, with some lacking exposure to digital tools in K-12 education. One student highlighted the need for early instructor engagement, stating, "Get engaged early with your students so they can get a thorough understanding of the course ... get that syllabus up as soon as possible, so that they know what they are responsible for and what type of time that they need to dedicate to the course"[3]. Students also expressed the need for manageable schedules that balance school, work, and personal responsibilities, and pointed to the value of resources, structured routines, and clear expectations in supporting their learning.

Additionally, students wanted an easy-to-understand course structure and routine, recognizing the benefits of consistency: "If we always have that clear and concise routine, I find that it's very beneficial for me and for some of my classmates, too"[3]. Clear assignment due dates and an organized learning structure were also recommended by students.

Lastly, students underscored the significance of clear expectations throughout the semester. One student emphasized the importance of establishing expectations early in the course, echoing the call for greater transparency. While students were open to instructors experimenting with new methods, they also highlighted the importance of clear communication and mutual support. Interestingly, clear communication was tied to a sense of goodwill and grace. As one student expressed, "It's giving grace to yourself, giving grace to your students, and making sure that they feel supported and not lost"[3].

Student calls for early engagement, transparent expectations, and well-structured routines reflect how critical clarity and consistency are for success in online learning. These needs, particularly among students managing work, school, and family responsibilities, suggest a theme well-suited for GAI exploration. GAI has shown potential to support educators in delivering clearer, more organized learning experiences with less manual effort, especially through personalized learning scaffolds[25], assessment support[16], and administrative assistance[19]. As such, this theme offers fertile

ground for exploring how GAI might help maintain course quality and structure while alleviating the design and communication demands that often fall heavily on online instructors.

4.2. Designing Intentionally and Deeply

Students expressed a strong desire for learning experiences that are purposeful and connected, noting a preference for assignments that are meaningful rather than perceived "busy work." They emphasized the importance of intentionality in course design, particularly when it comes to the alignment of content, activities, and assessments. One student explained how much they appreciated when instructors made things easy to digest, sharing connections and purpose between content, activities, and assessments. However, students also emphasized that they do not want their learning experiences to be easy – they seek deeper learning with constructive feedback. For example, a student shared, "During COVID, I was able to get all my schoolwork done on time, but I didn't feel like I was actually learning anything. I was just sort of just taking it all in and then regurgitating it onto my homework assignments"[3]. Students were clear that they wanted the work in their courses to be meaningful for their futures.

In addition to meaningful learning, students expressed the need for flexibility and personalization in their courses. As one student stated, "Education should always be accessible anywhere to anyone. No matter what your schedule is. If you want to go for education and change and get a career that you can love, you should be able to do that"[3]. Students appreciated opportunities to personalize their learning experiences, choosing content topics, types of media, and assignments that aligned with their interests. Another student highlighted that "having more agency and choice when it comes to the kind of things that I would like to learn digitally has also been helpful"[3].

Students also indicated awareness of emerging educational approaches and valued instructors who embraced new technologies and innovative methods for engagement and feedback. One student panelist remarked, "Education is constantly changing, and we have to adapt with it... just knowing that we have different supports and people in our corner... is so beneficial to us"[3]. In particular, students highlighted the positive impact of technologies like social media, AR/VR, and simulations, as these tools helped them engage more deeply with course material. They also stressed the importance of receiving timely and constructive feedback, whether through courseware, learning management systems, or direct interaction with instructors.

These student calls for meaningful, personalized learning experiences—and their appreciation for instructors who innovate with technology—reflect both the challenges and possibilities of online course design. GAI tools offer instructors powerful support in this space, particularly when it comes to aligning content, activities, and assessments. By helping to generate authentic assignments, suggest personalized learning paths, and streamline course development, GAI can reinforce intentional and connected learning experiences without adding to instructor burden[17, 18]. In addition, GAI's potential to support transparency, clarity, and relevance in assignments aligns closely with students' desire to understand how their work connects to broader learning goals[15, 25]. In the following discussion, we will further examine how GAI can support instructors with this, as well as how they can strengthen structure, purpose, and connection in their courses—without compromising the human touch students need to thrive.

4.3. Keeping Humans and Connections at the Center of Learning

Students underscored the importance of transforming what they described as impersonal learning environments into more humanized ones. One student panelist shared that when they first began their online education journey, they struggled with the lack of personal engagement: "When I first started college online, learning was impossible for me because I needed that presence. I needed that personal engagement"[3]. Students expressed how the absence of human interaction in online courses, such as pre-recorded lectures and stale discussion forums, made their learning experience challenging and less effective.

Many of the students noted that the level of personal engagement they had in K-12 education, where teachers were more accessible and collaborative learning was encouraged, was sorely lacking in their online courses. They longed for a similar sense of connection, both with their instructors and peers, that made them feel part of a larger community.

A key takeaway from the student panels was the importance of instructors being actively present and engaged

in their courses. Students stressed that communication with their instructors—both in terms of frequency and personal interaction—was critical to fostering a humanized learning environment. As one student pointed out, "The most important thing is just the communication between the professor and the student"[3]. Students shared that they valued instructors who could serve as mentors and provide personalized feedback, rather than simply assigning work and assigning a grade.

The desire for meaningful instructor interaction extended beyond prerecorded lectures. One student noted how a lack of instructor voice or presence made them feel disconnected, stating that "if you're constantly this faceless person that's assigning work, it's really hard to connect…"[3]. For students, hearing from their instructors, whether through announcements, feedback on assignments, or even casual check-ins, made them feel valued and supported.

Students also expressed the desire to connect with their peers, both academically and socially. While many noted that online learning can often feel isolating, they recognized the importance of purposeful community-building within the course structure. As one student pointed out, "It's really important that the professor was intentional in fostering class participation and recognizing that things are a little bit more difficult for students socially when things are online"[3]. Students appreciated it when instructors took the time to facilitate opportunities for peer interactions, such as breakout rooms or social message boards, acknowledging that these experiences fueled learning and personal connection.

Overall, students emphasized the role of instructors not only as facilitators of academic content but also as creators of environments where meaningful connections could flourish. A humanized learning experience, anchored in instructor presence, peer engagement, and a sense of community, provided the foundation for a quality online learning experience.

Importantly, students are not just asking for content delivery—they are asking for connection, clarity, and care. Their experiences point to the urgent need for course design that centers humanity: present instructors, personalized feedback, and intentionally built communities. While these goals have long been present for educators, they can be especially difficult to attain amid growing demands on faculty. GAI tools offer promising support—not as a replacement for relational teaching, but as a means of reducing the routine burdens that often crowd out human connection. By streamlining tasks such as content and assessment question generation, feedback drafting, and collaboration support[16, 18], GAI can help instructors reclaim the time and energy needed to meaningfully engage in ways that students find most impactful[17, 25].

These student perspectives offer a compelling framework for rethinking instructional support in digital environments. Across the themes of course structure, intentional design, and meaningful connection, students consistently emphasized the importance of feeling supported, challenged, and connected. When these elements are lacking, online learning can feel impersonal and demotivating, but when they are present, students might feel more supported and empowered to succeed.

As instructors work to meet these expectations within complex teaching contexts, emerging GAI-powered tools present new opportunities to alleviate routine burdens, personalize support, and enhance engagement. In the following discussion, we explore how GAI might be harnessed to help instructors preserve the human presence and care that lie at the heart of high-quality learning in any modality.

5. Discussion

Building on these findings, this discussion considers how GAI can be meaningfully applied to support the types of practices students identify as essential for quality learning. By examining each theme in relation to current GAI capacities, we explore both the potential and the limitations of these tools in helping instructors design and deliver engaging, human-centered digital learning experiences.

5.1. Structuring Learning Experiences for Success

Numerous studies have underscored the importance of clear course structure, transparent expectations, and manageable pacing in supporting student success in online environments[6, 7, 11]. These structural elements are especially critical for learners managing complex life demands, such as work, caregiving, or health challenges. Our findings reinforce this body of research, highlighting how students continue to value and often depend on strong course organization as a key component of quality online learning.

Given all of the changes students faced during the COVID-19 pandemic and the sudden shift to remote learning, it is not surprising to see that they emphasized the importance of well-structured courses. In particular, students highlighted the need for clear course organization, manageable schedules, and transparent expectations. These elements enable students to navigate the demands of their coursework, particularly as many students juggle the challenges of balancing education with work and personal responsibilities.

GAI can be a powerful tool for instructors in this area, helping to offload time-consuming tasks like evaluating course content and structure to ensure clarity and structure. GAI can also support instructors in streamlining course design tasks, such as developing rubrics, schedules, and to-do lists. These applications align with prior research that suggests that GAI tools can reduce workload while supporting alignment with quality standards[16, 17]. For example, instructors might use GAI to generate initial drafts of rubrics or to analyze course materials, activities, and assessments for clarity, tone, workload balance, or alignment with learning outcomes. GAI can also play a valuable role in supporting students' academic planning through personalized success plans. By shifting aspects of this process to GAI tools like ChatGPT, instructors can empower students to take ownership of their learning while also reducing the individualized logistical support often expected of faculty.

To begin this process, students might upload key course information, such as assignment deadlines, major projects, and exam dates, along with personal learning preferences, including ideal study times, preferred session lengths, and recurring schedule constraints (e.g., weekly meetings, work shifts, or caregiving responsibilities). With this information, ChatGPT can generate a customized course management plan, helping students allocate their time more effectively and engage more deeply with course content. To further tailor their learning plan, students could also share additional context, such as:

- Learning goals (e.g., "improve writing skills" or "find more credible sources")
- Academic challenges or anxieties (e.g., "anxious test taker" or "need extra time to understand dense readings")
- Preferred study environments or formats (e.g., "learn best with visuals" or "prefer 25-minute focus intervals")
- Upcoming life events or obligations (e.g., travel, family responsibilities)
- Typical energy or focus patterns (e.g., "most focused in the evening")

These reflective inputs not only support more tailored planning but also align with calls to increase metacognitive development and learner agency in online education[20].

For students who may not yet have the skills to identify their learning needs and preferences, ChatGPT can help guide the process. By prompting them with reflective questions, such as "What time of day do you feel most productive?" or "How much time does it usually take you to study for a test?" students can begin to understand their own learning needs and challenges. This can serve as a helpful first step in self-assessment, enabling students to better articulate what works for them as they move forward.

ChatGPT, then, can personalize both a study schedule and a success strategy that aligns with the student's unique context. Students can then integrate this schedule directly into their calendars (e.g., Google Calendar, Outlook) for automatic reminders and notifications. This approach not only equips students with tools to manage their academic responsibilities more effectively, but it also alleviates some of the logistical and planning-related demands placed on instructors – demands that, while important, can be especially taxing in online environments.

5.2. Designing Intentionally and Deeply

In addition to a well-organized course structure, students emphasized the importance of intentional, meaningful learning experiences. They voiced a desire for assignments that move beyond "busy work" and instead offer real-world relevance, opportunities for application, and a sense of personal connection to future goals. This finding reinforces previous research that highlights authenticity, practical application, and alignment with student needs as key indicators of quality learning experiences in online environments[6, 7, 11]. However, designing such experiences can place additional strain on instructors already grappling with time and capacity constraints[12–14]. GAI integration offers a promising avenue for reducing this workload while potentially enhancing opportunities for deep learning.

GAI can aid instructors in designing assignments and learning experiences that align with course outcomes and

help students engage in higher-order thinking. For instance, instructors can use tools like ChatGPT to generate problem-based cases, role-play scenarios, and decision-making simulations tailored to specific course content. In the past, such experiences might have required extensive time, collaboration with experts in the field, or access to costly software. GAI, by contrast, enables instructors to rapidly create realistic and relevant scenarios that invite students to engage critically and apply their learning to complex, real-world problems[18, 25].

For example, instructors might use a GAI tool to practice key skills (e.g., managing conflict among members of your team) in a simulated role-playing scenario. By acting as professionals in real-world contexts, students can practice communication, analysis, and skills in low-risk environments—experiences that echo Konstantinidou and Nisiforou's[9] findings on the value of authenticity in student perceptions of quality.

GAI can also assist in ensuring clarity and transparency in assignment design. Instructors may use tools like ChatGPT to draft assignments within structured frameworks, such as the Transparent Assignment Framework, which emphasizes purpose, task, and criteria for success[27]. Students benefit from this kind of transparency, particularly in online environments where they may feel less able to seek clarification in real time. Moreover, this practice supports equity, consistency, and experience—hallmarks of quality online learning[7, 9].

Beyond course activities, some instructors might explore ways to use GAI to help students reflect on and communicate their personal and professional narratives. For example, students may partner with GAI tools to reflect on what they are learning and how it applies to their future work, empowering them to articulate their knowledge, skills, abilities, and values to craft tailored cover letters, resumes, and portfolios. Assignments like these, along with peer and instructor feedback, have great potential to increase students' career preparation while reinforcing metacognitive skills and identity development. As Chan and Hu[19] observed, students recognize the benefit of GAI for brainstorming, writing support, and professional communication, particularly when paired with human feedback and reflection.

While GAI can offload time-consuming design tasks, it does not replace the need for deep pedagogical engagement. As Mulaudzi and Hamilton[17] argue, GAI should be used to augment—not automate—the human dimensions of teaching. In this context, GAI allows instructors to invest more time in relational work, such as one-on-one mentorship, timely feedback, and instructional presence[4–6], while still offering students high-quality, personalized learning experiences.

5.3. Keeping Humans and Connections at the Center of Learning

As online learning continues to evolve, one aspect remains constant: students deeply value human connection in their learning experiences. Across the literature, instructor presence, feedback, and tone have been cited as essential to quality online learning[6, 7, 11]. Yet maintaining this relational work often comes at the cost of instructor time and energy, especially in already overloaded teaching environments[12, 14]. GAI introduces new possibilities by offloading repetitive, time-consuming tasks, giving instructors space to focus on what matters most—guiding inquiry, fostering student growth, and building authentic connections.

One of the most important themes that emerged from the findings is the desire for human connection in online and blended learning environments. Students reported that the lack of personal engagement in their online courses made their learning experiences feel detached and disconnected. Instructor presence, reflected in personalized feedback, announcements, and interaction, helped foster a humanized learning environment where students felt valued and supported.

This parallels student perspectives in previous research, which highlighted instructor visibility, approachability, and personalized support as key components of quality[10, 11]. However, building and maintaining this presence takes time, particularly in asynchronous or high-enrollment courses.

GAI can play a key role in enhancing human connection in digital learning environments by taking over tasks like initial content identification, case generation, and rubric creation. These tasks, while important, often pull instructors away from more relational aspects of teaching. Studies suggest GAI tools like ChatGPT can efficiently assist with brainstorming discussion prompts, drafting announcements, refining instructions, and even creating formative assessments—reducing cognitive load and increasing bandwidth for student interaction[16, 18, 25]. By freeing instructors

from these time-consuming tasks, GAI allows them to focus their efforts on engaging directly with students. GAI tools can even assist in editing and refining communication, helping instructors ensure that their messages to students are clear, motivating, and supportive. For example, an instructor might use a GAI tool to rewrite a generic announcement into something more conversational, culturally responsive, or encouraging—ensuring their tone resonates with students. This can help bridge the relational gap often felt in online courses and foster a more inclusive, responsive classroom climate.

GAI tools can also significantly enhance peer collaboration, a high-impact aspect of learning that can sometimes be challenging to facilitate in fully online courses. This is particularly true for research projects, which generally require project coordination and collective problem-solving. Tools like Notebook LM offer GAI-powered functionality that support students in co-creating shared notes, organizing and summarizing information, developing strong research questions, and collaboratively exploring course materials in real time. These features not only streamline the research process but also promote active engagement and peer-to-peer learning.

One of the primary benefits of using GAI tools like Notebook LM is that instructors can be added directly to student workspaces. This allows them to monitor progress, review group activity, and provide timely feedback without needing to directly facilitate each step of the collaboration. For example, instructors can check in on group notes, review GAI-generated summaries of discussions, or see how students are interpreting key sources, all in one space. This addresses both efficiency and quality by allowing instructors to focus their feedback on areas of greatest need—supporting deeper learning while conserving energy[17]. This reduces the time and effort traditionally required to manage group dynamics and keep projects on track, while still enabling a high level of instructional support. For instructors, integrating GAI into research activities offers a powerful way to foster meaningful student interaction while ensuring that they can prioritize mentoring, guiding inquiry, and supporting student growth.

The findings from this study underscore the importance of clear course structure, meaningful learning experiences, and human connection in supporting student success in digital, blended, and online learning environments. While GAI cannot replace the human presence that lies at the heart of teaching and learning, it can serve as a powerful partner in helping instructors meet student needs without compromising their capacity. As Watermeyer et al.[15] noted, GAI offers the potential to automate routine work and refocus instructor energy on more meaningful human-centered practices. **Figure 1** illustrates how GAI can act as a bridge between student expectations and instructor capacity, highlighting its potential to be a partner by automating routine work, assisting with generating authentic learning experiences, and enhancing discussion prompts.

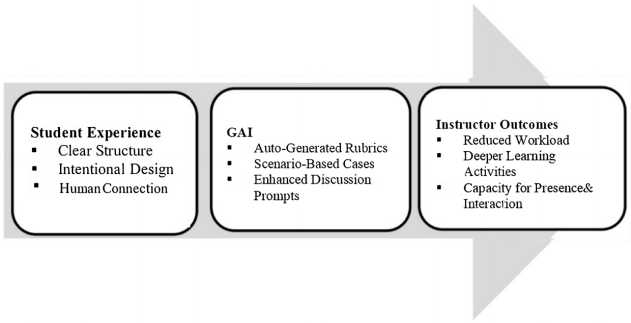


Figure 1. A flowchart-style diagram illustrating the relationship between student expectations, generative AI (GAI), and instructor outcomes in digital learning environments.

Note: On the left, a box labeled "Student Expectations" lists three items: clear course structure, intentional design, and human connection. In the center, a box labeled "GAI" highlights three examples highlighted in the article that instructors can leverage to meet student needs while considering their capacity: auto-generated rubrics, scenario-based cases, and enhanced discussion prompts. On the right, a box labeled "Instructor Outcomes" lists three benefits to using GAI to meet student needs: reduced workload, deeper learning activities, and freed capacity for presence and interaction. An arrow in the background of the boxes flows from student expectations through GAI to instructor outcomes, illustrating how GAI can mediate demands and resources.

Together, these findings offer a guide for leveraging GAI thoughtfully to create more intentional and effective learning experiences.

5.4. Using GAI Critically

While GAI can be a useful tool for instructors to enhance learning experiences to better meet student needs, its outputs must be constantly audited to ensure accuracy and minimize bias. To do this, instructors might consider the Dimensions of AI Literacies[28] to prepare them for leveraging cultural, cognitive, constructive, communicative, confident, creative, critical, and civic literacies that move beyond technology tools and into a mindset that consistently evaluates GAI use and practices. Additionally, instructors might con-

sider frameworks aimed at supporting institutions of higher education as they engage with GAI. For example, the ETHICAL Principles Framework for Higher Education, published by California State University[29], focuses on:

- Exploring and Evaluating
- Transparency and Accountability
- Human-Centered Approach
- Integrity and Academic Honesty
- Continuous Learning and Innovation
- Accessibility and Inclusivity
- Legal and Ethical Compliance

As we experiment with GAI tools, it is imperative that we critically evaluate them, maintain transparency about how they are used, and remain accountable for the outputs we use. This will both help instructors create learning experiences that are engaging, accessible, and inclusive and model effective and responsible GAI use for students.

6. Conclusions

This study underscores three key elements that shape student success in online learning environments: clear course structure, meaningful learning experiences, and authentic human connection. The findings highlight the value students place on purposeful, well-designed courses that enable deep engagement and real-world application. They also call attention to the importance of instructor presence in fostering a sense of connection, support, and belonging.

GAI presents an opportunity for instructors to meet these needs by offloading time-consuming tasks and creating more space for meaningful content, activities, and interaction. From supporting course design and generating real-world case studies to enhancing communication and enabling personalized learning strategies, GAI can be a valuable tool for improving both the quality and efficiency of teaching. However, educators must approach GAI as a partner—not a replacement—for the human elements students continue to value most in their learning experiences.

Future research should explore how GAI can be further integrated into course design and teaching practices, with particular attention to its long-term impact on student engagement and learning outcomes. Additional studies might also examine the potential challenges and ethical considerations associated with GAI in online learning environments, ensuring its responsible and equitable implementation in more decentralized classroom spaces. Finally, this current research, like the original report this study centered on, includes a limited number of students and a lack of demographic specificity. Empirical studies that gather a wider range of student perspectives regarding quality online learning and the impact of GAI would be beneficial for the field.

Perhaps most importantly, the constantly evolving conditions facing educators and students call for persistent attentiveness to emerging student and instructor needs, thoughtful integration of GAI alongside human-centered, relational aspects of online learning, and a commitment to maintaining ethical integrity and responsibility.

Author Contributions

Conceptualization, N.L.W. and K.G.; methodology, N.L.W. and K.G.; validation, N.L.W. and K.G.; formal analysis, N.L.W. and K.G.; investigation, N.L.W. and K.G.; resources, N.L.W. and K.G.; data curation, N.L.W. and K.G.; writing—original draft preparation, N.L.W. and K.G.; writing—review and editing, N.L.W. and K.G.; visualization, N.L.W. and K.G.; supervision, N.L.W.; project administration, N.L.W. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

This study involved a secondary, literature-informed analysis of previously collected qualitative student panel data, originally gathered through a practitioner-focused research collaboration between the Online Learning Consortium (OLC) and Every Learner Everywhere. The dataset

was developed to elevate student voices in defining quality digital, blended, and online learning and was reported in the publication *Empowering Change Together: Student Voices on Digital Learning* (Weber & Gay, 2024), available at: https://onlinelearningconsortium.org/research/2024-report-empowering-change-together/.

No new data were collected for this study. The original dataset is not publicly available due to participant confidentiality and privacy protections.

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Conflicts of Interest

The authors declare no conflict of interest. OpenAI's ChatGPT (GPT-4) was used to assist with language refinement and copyediting. All conceptualization, analysis, interpretation of findings, and final decisions about framing were conducted by the authors. ChatGPT was not used to generate ideas, perform analysis, or write original content.

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