

Using Generative AI to Design Differentiated Learning in a General Education Course

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Abstract

This design case explores an instructor's experience redesigning her course using generative artificial intelligence (GenAI) tools to facilitate differentiated learning. The course is part of a general education program that draws students from various disciplines, aiming to create unique, interdisciplinary learning experiences that allow each student to engage meaningfully with the content. The redesign process followed the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model, incorporating differentiated instructional strategies that leverage GenAI for tasks such as researching current leadership trends, crafting learning outcomes, outlining content, and creating assessments tailored to students' diverse mastery levels. This design case reflects on the decisions made during the course redesign process, presents some impact assessments, and discusses critical factors affecting implementation.

Introduction

One of the most prevalent challenges in higher education is large, lecture-based classes characterized by minimal student interaction, impersonal instruction, and standardized approaches that fail to accommodate unique learner preferences and abilities. These large classes are common, particularly in general education, as they allow universities to scale instruction to save costs despite evidence that smaller classes tend to yield better student engagement (Blatchford, Bassett & Brown, 2011).

As a faculty member, it remains an ongoing challenge to work within the confines of these large enrollment courses to design engaging experiences for individual students. The logistics of differentiating instruction for a large number of students are nearly impossible—until now. Enter generative artificial intelligence (GenAI). This technology has the potential to help faculty and instructional designers scale differentiated instruction quickly for high-enrollment courses. Why do so many courses get copied and reused year after year, regardless of changes in need? Ask any faculty member, and the honest answer is likely because it's too costly and time-consuming to redesign a course every semester to adapt to changing needs and student populations.

I am an instructional designer and a full-time faculty member at Hawaii Pacific University (HPU). Every semester, I teach a couple of courses in General Education (Gen Ed). In liberal arts colleges, Gen Ed courses provide a broad foundation of knowledge across various disciplines, ensuring that students are well-versed in multiple fields such as humanities, social sciences, natural sciences, and mathematics. At HPU, the unique features of the general education program are the Hawaiian context and Hawai'i's place at the crossroads of the Pacific. The general education program features three general program learning outcomes:

Skills (Mākau na‘auao):

Students will develop skills in writing, quantitative reasoning, critical thinking, group process, and communication so they can find, evaluate, and implement information effectively to solve problems.

Knowledge and Perspectives (‘Ike):

Students will explore diverse social and cultural viewpoints and gain knowledge about the historical, geographical, natural, technological, and contemporary forces that impact and shape the world.

Values (Mea Waiwai):

Students will discern and assess the values that underlie various crucial positions, articulate their own values with coherence and integrity, and participate in community projects that bridge academia and the public good.

These Gen Ed courses draw students from all disciplines, and the goal is to design learning experiences that are unique and interdisciplinary so that each student may engage with content in meaningful ways. PADM1000 Introduction to Leadership is one of the Gen Ed courses offered at HPU every semester. I regularly teach this course and decided it would be a suitable pilot for the redesign, given the large class sizes and diverse student population.

This design case details my experience redesigning a section of the PADM1000 Introduction to Leadership course, PADM1000-A, utilizing GenAI tools in the process. PADM1000 Introduction to Leadership is an introductory course to the study of leadership in America. It compares the administrative processes used in private and non-profit organizations and the US government, including the military. This course introduces students to the theories of leadership, the styles, traits, and myths of leadership, including the history, cultures, and ethical basis for good leadership in an American context. PADM1000-A was the section offered as an in-person course over a 16-week semester, and students met twice a week for 75 minutes.

My objectives for this pilot project were to create meaningful, differentiated learning experiences for students and to employ GenAI tools, specifically ChatGPT (GPT-4o), aiming to enhance both effectiveness (improving student learning experiences and engagement) and efficiency (saving time and effort).

Why Differentiated Learning

Differentiated learning is a teaching philosophy that values students' prior knowledge, personal experiences, and individual identities. It aims to ensure that all students can access educational content in a way that resonates with them. This approach goes beyond the traditional one-size-fits-all model, emphasizing the need to adapt lessons to address different learning preferences, strengths, and challenges. As noted by [Cope and Kalantzis \(2017\)](#), "Differentiated learning is a philosophy that values what students know and who they are before they come to the classroom and works with them to achieve what they need to learn" (p. 184). This method personalizes learning and prevents students from feeling disconnected or discouraged from the material.

Another significant goal of differentiated learning is to foster equality of condition, which goes beyond merely providing equal access to educational resources. It also emphasizes creating an environment where respect, recognition, power, love, care, and solidarity are foundational elements of the learning experience ([Valiandes, 2015](#)). This goal aligns with HPU's values of aloha (love, kindness, and grace), pono (righteousness), and kuleana (responsibility and concern for all people). By prioritizing these aspects, I believe I can create a learning environment where students feel valued, included, and understood within the classroom.

Furthermore, I believe that using GenAI tools to design differentiated learning activities for our students will lead to better engagement, increased motivation, and enhanced collaboration. The need for differentiated learning is underscored by the diversity present in our general education classrooms. Our students come from various linguistic, cognitive, and cultural backgrounds, each with unique learning preferences. Failing to accommodate this diversity could risk leaving some students behind, hindering their educational progress. In fact, ignoring developmental differences among students may lead to incomplete achievements or unmet expectations in school life ([Taş & Minaz, 2024](#)). By allowing students to explore content through various modalities—such as visual aids, collaborative projects, and digital media—I believe this approach fosters a more dynamic learning environment.

Course Redesign Process

I followed the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) Model for the course redesign. The ADDIE Model is a popular instructional design method that has been used as a framework for designing and developing educational programs for many years ([Kurt, 2017](#)). The model offers a structured approach to course development and redesign and has five iterative phases: Analyze, Design, Develop, Implement, and Evaluate.

I employed ChatGPT (GPT-4o) to help with the following instructional design tasks while redesigning the course:

1. Research (during the Analyze Phase)
2. Writing Learning Outcomes (during the Design Phase)
3. Outlining (during the Design Phase)
4. Creating Lesson Plans (during the Design Phase)
5. Differentiating Learning Resources (during the Development & Implementation Phases)

6. Generating Assessment Items and Rubrics (during the Development, Implementation & Evaluation Phases)

ChatGPT is an AI chatbot developed by OpenAI that can generate human-like text and code in response to user prompts. Prompt generation in GenAI is a crucial step for anyone who intends to use ChatGPT to assist them in design tasks. This process involves crafting specific instructions or queries that guide the AI in producing relevant and coherent responses tailored to specific needs.

A well-constructed prompt typically consists of four essential components:

Task + Perimeters + Contextualize + Refine = Good Prompt

The task defines the primary objective or action the AI needs to perform, such as generating text, answering questions, or summarizing information. Tasks should be clear and specific. Parameters specify the boundaries or constraints within which the task should be executed, including factors like length, tone, structure, or format. Contextualize provides the necessary background or additional information that helps the AI understand the specific circumstances or nuances surrounding the request, ensuring that the output aligns with the instructional designer's goals. Refine involves iterating on the prompt to enhance clarity and precision, and adjusting based on previous interactions or desired outcomes ([Kulkarni & Tupsakhare, 2024](#)).

In the following sections, I will discuss how I used prompt generation with ChatGPT (GPT-4o) to perform some of the design tasks in each of the design phases.

Research (Analyze Phase)

As part of the initial phase of the course redesign, I conducted research to understand current interdisciplinary trends in leadership and to learn more about my students and their needs. Although audience analysis is a crucial step in the ADDIE model, it is often bypassed in educational institutions, and the analysis phase is often skipped due to a lack of time or resources ([Lechner, 2010](#)). Additionally, downloading and analyzing student records to differentiate instruction can be time-consuming. This is where I think GenAI can help with efficiency. For this pilot project, I used ChatGPT to explore current trends in the leadership field, to understand my learners' demographics, and to identify essential skills for students from industry leaders. Details on sample prompts used for each design task can be found in the Appendix.

Research on Current Trends in Leadership

To explore current trends in leadership, I prompted ChatGPT to summarize the latest developments in leadership theory and identify prominent thought leaders from the past five years. The responses were mixed. On the positive side, ChatGPT correctly highlighted adaptability, inclusivity, and technology integration as major trends influencing leadership. However, GenAI also exhibited biases in its selection of profiled leaders and contained some inaccuracies. For instance, ChatGPT responded, "Key figures, such as Simon Sinek, have championed 'infinite mindset' leadership, urging leaders to focus on long-term goals and adaptability rather than finite metrics." While Simon Sinek is a well-known motivational speaker and author, he may not be universally recognized as a key figure in academic leadership literature. Additionally, the initial results lacked diversity among the leaders identified. Upon refining my query to request examples of diverse

leaders, ChatGPT provided a more varied list, including Dr. Laura Morgan Roberts on inclusive leadership, Satya Nadella, CEO of Microsoft, on digital technology integration, and indigenous leader Chief Wilma Mankiller on community-centric leadership. This experience underscored that interacting with AI tools is an iterative process; providing more context yields more refined and accurate results.

Research on Learner Demographics

I employed ChatGPT to generate a list of survey items to gather information from my students at the beginning of the semester, aiming to make the course relevant and targeted to them. The survey items included questions on demographic information, previous leadership experiences, topics in leadership they are most interested in learning about, preferred learning modalities, and what they hope to gain from the course. A suggested question I appreciated and had not thought of myself is, "What cultural or personal experiences have shaped your perspective on leadership?" In my opinion, one of the perks of using ChatGPT for brainstorming is that it can offer suggestions you might miss, whether due to blind spots or simply being too close to the material. I distributed this survey at the beginning of the term and discovered that one of the differentiating factors among my students was their experience with leadership. Some students were veterans with many years of leadership experience, while others were first-year students who had just graduated from high school.

Research on Needs Analysis

Next, I used ChatGPT to identify key skills that students in a leadership course would need to acquire. This aligns with HPU's general program outcome of developing skills (Mākau na'auao), where students are expected to develop competencies in writing, quantitative reasoning, critical thinking, group processes, and communication to effectively find, evaluate, and implement information to solve problems. While I had an idea of the desired skills, I was also interested in exploring ChatGPT's suggestions regarding essential leadership skills from industry leaders' perspectives. The query produced a list of ten skills, including emotional intelligence (EQ), adaptability, communication, strategic thinking, cultural competence, technological literacy, decision-making under uncertainty, conflict management, mentorship and coaching, and sustainability and social responsibility. While most of these skills were already part of the curriculum, the exercise uncovered new skills not previously included, such as technological literacy and decision-making under uncertainty. This approach helped me revise the list of skills informing my curriculum development, ensuring the course content aligns with real-world expectations and demands.

Research on Interdisciplinary Approaches to Leadership

I also used ChatGPT to explore interdisciplinary approaches to leadership because I believed it could enrich the course's content and perspectives. This aligns with HPU's general education outcome of Knowledge and Perspectives ('Ike), where students explore diverse social and cultural viewpoints and gain knowledge about the historical, geographical, natural, technological, and contemporary forces that impact and shape the world. ChatGPT suggested that I integrate psychological principles of motivation with sociological insights on group dynamics to enable leaders to build high-performing teams. It also recommended combining these with business acumen to ensure that leadership decisions are strategically sound and aligned with organizational goals. Although it didn't necessarily provide new insights, as those areas were already in the existing curriculum, it did offer some new ideas for how to integrate these into the classroom. This structured prompt emphasized the importance of a holistic approach to leadership, tying back to the concept of differentiated learning.

Writing Learning Outcomes (Design Phase)

Based on insights from the analysis phase, I focused on outlining the course structure and instructional strategies during the design phase. This involved clearly defining learning outcomes. Prior to this exercise, I already had a set of learning outcomes for the course and respective learning modules. However, I wanted to revise these to incorporate HPU's values of pono, kuleana, and aloha. I believe that aligning course learning outcomes with these cultural values not only enriches the educational experience but also helps students develop a sense of belonging and social responsibility, preparing them to engage thoughtfully with diverse perspectives in their academic and personal lives.

I used ChatGPT to assist in crafting learning outcomes that align with Bloom's Taxonomy while integrating cultural values. This resulted in outcomes such as: "By the end of the module, students should be able to explain the concept of pono in decision-making, identify their kuleana in group projects, and demonstrate aloha by collaborating respectfully with peers." This module learning outcome was a new addition to my course syllabus and group work requirements. One challenge was that, after a few iterations, the query results sounded repetitive and uninspiring. While it serves as a good starting point for generating ideas, overusing the tool to rewrite course learning outcomes can lead to monotonous learning outcomes. Ultimately, instructor insight and human judgment are needed to craft the final drafts.

Outlining (Design Phase)

From here, I wanted to explore how instruction can be differentiated across four key areas: content (what students learn), process (how they learn), product (how they demonstrate their learning), and environment (where learning takes place). My goal is to create lessons that are adapted to varied learning preferences, pacing, and engagement levels and give students the opportunity to interact with the material in ways that suit them best.

Outlining during the design phase refers to the systematic organization of course content, objectives, assessments, and instructional strategies into a coherent framework. This structure serves as a blueprint for the course, helping instructors visualize the relationships between various components and ensuring that all elements align with the desired learning outcomes. The outlining process is often an iterative process that can be tedious and time-consuming. I utilized ChatGPT to generate multiple course outlines that were aligned with my learning outcomes. This approach allowed me to select and combine various components to create a comprehensive final outline for my course.

Creating Lesson Plans (Design Phase)

This section focuses on creating lesson plans that are differentiated according to students' strengths, interests, and learning preferences during the course design phase. Research by [Smale-Jacobse et al. \(2019\)](#) indicated that when instructors tailor their lesson plans to accommodate these differences, students are more likely to remain engaged and motivated. In my PADM1000 course, I had students from different backgrounds, different majors, and with varying degrees of leadership experience—some students had very little leadership experience as they were young and came straight from high school, while others had some work experience, and a couple of students were more mature military students with more leadership experience. I wanted to differentiate the instruction for them to meet them where they are. For one of the learning modules on the topic of "Developing Leadership Skills," I used ChatGPT to give me suggestions for differentiated lesson plans. This structured prompt resulted in multiple lesson plans that included differentiated content, process, and assessment options for students with limited leadership experience, some experience, and extensive experience (see [Figure 1](#)).

Figure 1 – Differentiated lesson plans based on students’ leadership experiences and background suggested by ChatGPT

Lesson Component	Novice Leaders (Limited Experience)	Intermediate Leaders (Some Experience)	Advanced Leaders (Extensive Experience)
Content	Articles and videos on leadership fundamentals.	Research on leadership styles and challenges.	Scholarly articles, simulations, and case studies specific to industries.
Process	– Group discussions on leadership definitions. – Reflection on strengths and growth areas.	– Role-playing interpersonal and administrative scenarios. – Problem-solving tasks for team conflicts.	– Leadership simulations on strategic planning. – Peer-led workshops to critique leadership approaches.
Product: Assessment Options	Written Report: Reflect on a personal leadership moment or analyze a case study. Creative Project: Create an infographic on key leadership skills. Practical Application: Participate in a guided leadership task (e.g., organizing an event).	Written Report: Develop a leadership improvement plan based on feedback. Creative Project: Produce a video/presentation on a leadership concept. Practical Application: Lead a small group activity and reflect on the experience.	Written Report: Propose a strategic leadership solution for a real-world challenge. Creative Project: Develop a training module for peers/organizations. Practical Application: Mentor peers and present learnings in a portfolio.
Warm-Up Activity	Watch a leadership video and discuss takeaways based on personal experience	Watch the same video and analyze its relevance to leadership challenges.	Discuss advanced applications of the video concepts in strategic contexts.
Core Activity	Group brainstorm on leadership skills with facilitation.	Scenario-based role-playing for workplace conflicts.	Strategic planning simulations for multi-step challenges.
Reflection	Reflective journal entry focusing on personal leadership skill development.	Reflective journal on lessons learned from role-play and challenges faced.	Reflective portfolio documenting advanced leadership strategies and mentorship outcomes.

I found that using GenAI was highly efficient—it saved me countless hours in structuring multiple lessons and provided a solid framework to build upon. While I still needed to create these lessons in the Learning Management System (LMS) and fill in some gaps, it served as an excellent starting point. I particularly appreciated the differentiated assessment options, allowing students to choose between a written report, a creative project, or demonstrating practical application. My students responded positively to this aspect of differentiation. They selected lesson plans based on their leadership experience. During our class meeting, we all watched the same short video on leadership skills; afterward, students formed small groups according to their experience levels to collaboratively work on core activities. At the end of the module, each student wrote a short reflection on their learning experience.

Differentiating Learning Resources (Development & Implementation Phases)

The development phase involves creating and assembling course materials based on the design blueprint. A key activity during this phase is content curation and creation. In my course redesign, I aimed to differentiate content by offering the same material in multiple formats—such as lectures, videos, study groups, and readings—allowing students to choose the method that aligns with their learning preferences. This approach ensures that all students engage with the material in ways that resonate with them, making learning more accessible and personalized. Since it's time-consuming for instructors to source and curate content in multiple modalities, I used GenAI to assist with the initial identification of learning resources. This prompt generated a table with a list of learning resources for me. However, after analyzing the list, I found many of the suggestions unsatisfactory and ended up curating my own content. The generated content lacked diversity of thought and did not include scholarly articles or expert opinions ([see Figure 2](#)). Instead, it comprised a list of pseudo-leadership articles one might find while browsing a LinkedIn feed. ChatGPT seems to favor Simon Sinek; this is the second time it suggested him as a resource, even though in an earlier chat, I informed the chatbot that Simon Sinek is not considered a leader in scholarly literature.

The root cause of this issue lies in how GenAI generates content. As a Large Language Model (LLM), it learns patterns in language from extensive datasets and predicts subsequent words in a sequence based on preceding ones. It's easy to mistake it for a knowledge base because it presents information resembling a structured repository. However, it is crucial to understand that ChatGPT is fundamentally different: it's a language model trained on vast amounts of text data, not a curated collection of facts like a true knowledge base. Consequently, I didn't save much time using ChatGPT to curate differentiated learning resources. I used the table it generated to help categorize the types of resources I needed to curate, and I used HPU's library resources to locate materials for Leadership Studies topics and find databases, journals, articles, and citations.

Figure 2 – Differentiated learning resources suggested by ChatGPT

Experience Level	Resource Type	Title & Description	Link
Novice Leaders	<i>Text</i>	"Leadership Basics: What Makes a Good Leader?" An introductory article exploring fundamental leadership qualities, suitable for beginners.	Read Here
	<i>Video</i>	"Everyday Leadership" by Drew Dudley A TED Talk emphasizing the impact of small acts of leadership in daily life.	Watch Here
	<i>Interactive</i>	"Leadership Styles Quiz" An online quiz helping students identify their innate leadership style.	Take the Quiz
Intermediate Leaders	<i>Text</i>	"The 5 Levels of Leadership" by John C. Maxwell An article detailing the progression through different leadership stages.	Read Here
	<i>Video</i>	"How Great Leaders Inspire Action" by Simon Sinek A TED Talk exploring the importance of purpose-driven leadership.	Watch Here
	<i>Interactive</i>	"Team Building Activities" A collection of exercises designed to enhance leadership and teamwork skills.	Explore Activities
Advanced Leaders	<i>Text</i>	"Leadership in the 21st Century" An in-depth analysis of modern leadership challenges and strategies.	Read Here
	<i>Video</i>	"The Essence of Leadership" by General Colin Powell A talk providing insights into effective leadership from a seasoned leader.	Watch Here
	<i>Interactive</i>	"Leadership Simulation: Change Management" An interactive simulation allowing students to practice leading organizational change.	Try the Simulation

Generating Assessment Items and Rubrics (Development, Implementation & Evaluation Phases)

Differentiating assessments involves providing students with choices in how they demonstrate their learning, which can encourage engagement in critical thinking and problem-solving activities beyond rote memorization. By allowing students to explore topics through various lenses—such as analysis, evaluation, and synthesis—instructors can foster a deeper understanding of the subject matter. I believe that differentiated tasks challenge students to take ownership of their learning, promoting independent study

habits. Moreover, differentiation ensures that even students who struggle with content are not denied opportunities for higher-order thinking. I used ChatGPT to create three differentiated assessment options for a unit on ethical leadership: a written case study analysis, a presentation on ethical leadership in action, and a creative project on ethics through storytelling (see [Figure 3](#)).

Figure 3 – Differentiated assessment options suggested by ChatGPT

Assessment Type	Description	Focus on Higher-Order Thinking Skills	Accessibility Considerations
Written Assignment	Case Study Analysis: Choose a real-world ethical dilemma faced by a leader or organization. Write a detailed analysis explaining the ethical principles involved, the decision made, and alternative approaches. Conclude with your recommendations.	– Critical analysis of ethical theories. – Application of concepts to real-world scenarios. – Evaluation of alternative actions.	Provide case studies in diverse contexts to ensure cultural and situational relevance. Allow text-to-speech and translation tools.
Presentation Format	Ethical Leadership in Action: Deliver a 10-minute presentation analyzing the ethical leadership of a public figure. Highlight key ethical decisions, challenges faced, and their implications. Include visual aids and a Q&A session.	– Synthesis of research and presentation skills. – Evaluation of ethical outcomes. – Engaging peers in discussion and debate.	Allow choice of medium for visuals (slides, posters, videos). Support accommodations for public speaking (e.g., pre-recorded videos).
Creative Project	Ethics through Storytelling: Create a short story, video, or comic that portrays a fictional or real-world leader grappling with an ethical dilemma. Demonstrate the application of ethical principles in resolving the issue.	– Creative application of ethical theories. – Analysis of cause-effect relationships in ethical decision-making. – Synthesis of concepts into a narrative form.	Offer multiple formats (written, visual, digital) for expression. Provide templates and tools for creating media (e.g., Canva, video editing software).

In addition to generating differentiated assessments for the unit, I also used ChatGPT to create rubrics emphasizing content mastery over form, enabling students to utilize the medium they are most comfortable with to demonstrate their understanding. I found the rubrics generated by ChatGPT to be a good starting point, which I then refined into my final version. These rubrics were aligned with module learning outcomes, featured differentiated levels, and allowed students the freedom to choose their preferred medium (see [Figure 4](#)).

Figure 4 – Ethical Leadership Assessment Rubric generated by ChatGPT

Criteria	Excellent (4)	Proficient (3)	Satisfactory (2)	Needs Improvement (1)
Understanding of Ethical Concepts	Demonstrates a comprehensive understanding of ethical leadership principles, providing in-depth analysis and clear examples.	Shows a good understanding of ethical leadership principles with relevant examples but may lack depth in analysis.	Demonstrates a basic understanding of ethical concepts, but examples may be superficial or unclear.	Lacks understanding of ethical leadership principles: examples are missing or irrelevant.
Application to Real-World Scenarios	Effectively applies ethical concepts to real-world scenarios, offering insightful solutions to ethical dilemmas.	Applies ethical concepts to real-world scenarios with appropriate solutions, though some may lack creativity.	Attempts to apply ethical concepts but provides limited or unclear connections to real-world scenarios.	Fails to apply ethical concepts to real-world scenarios; solutions are irrelevant or missing.
Critical Thinking and Analysis	Engages in advanced critical thinking, analyzing various perspectives and considering implications of ethical decisions.	Demonstrates good critical thinking skills, analyzing key perspectives but may miss some implications.	Shows some critical thinking, but analysis may be simplistic or one-dimensional.	Lacks critical thinking; analysis is superficial or absent.
Creativity and Originality	Displays exceptional creativity in presentation, demonstrating unique approaches that enhance understanding.	Shows creativity in presentation; approaches are original but may be conventional.	Some creative elements are present, but overall presentation lacks originality.	Little to no creativity in presentation; relies heavily on conventional methods without adding personal insights.
Medium Choice and Effectiveness	Chooses a medium that enhances communication of ideas; effectively utilizes it to engage the audience.	Selects a suitable medium that communicates ideas clearly, though engagement could be improved.	Chooses a medium that communicates ideas but does not fully engage the audience.	Fails to select an appropriate medium; communication of ideas is unclear or ineffective.
Reflection on Learning	Provides a thorough reflection on the learning process, demonstrating insights gained and personal growth.	Reflects on the learning process with some insights; may lack depth in personal growth discussion.	Offers a basic reflection on learning, but insights are limited or unclear.	Lacks reflection on the learning process; no insights or personal growth are discussed.

According to [McCarthy \(2023\)](#), differentiation through structured group work or personalized learning stations allows all students, regardless of ability, to engage with complex tasks that stimulate critical thinking and analysis. Additionally, differentiated learning often involves complex, durable skills such as collaborating, presenting, and information literacy. For example, in my class, students collaborate in small groups during brainstorming sessions and group projects. One major complaint from students about group work is the varying levels of engagement among group members. Students who dislike group work often express that there are no clear metrics for assessing individual collaboration within the group. [Rusman and Dirkx \(2017\)](#) emphasize the importance of incorporating both quantitative and qualitative dimensions in rubric design. Quantitative dimensions may include the frequency and regularity of behaviors, while qualitative dimensions focus on the quality of engagement and the internalization of collaborative behaviors. This multifaceted approach allows me to capture a more comprehensive view of student performance. For instance, I used ChatGPT to generate a rubric assessing collaboration skills in group work. The rubric included indicators such as the regularity of contributions to group discussions and the quality of feedback provided to peers, offering a holistic view of a student's collaborative abilities ([see Figure 5](#)).

Integrating these rubrics into my classroom practice has enhanced the quality of collaboration and improved attitudes toward group projects. Students reported that the rubric was fair and encouraged regular communication and increased engagement with their group members. I also found these rubrics to be effective tools for self-reflection. As students receive feedback based on clearly defined criteria, they can better identify skill gaps and understand how to progress toward higher mastery levels. Additionally, rubrics facilitate communication among instructors, students, and peers, ensuring alignment with skill expectations. I am very pleased with the collaboration rubric generated by ChatGPT.

Figure 5 – Collaboration Assessment Rubric generated by ChatGPT

Criteria	Excellent (4)	Proficient (3)	Satisfactory (2)	Needs Improvement (1)
Regularity of Contributions	Consistently contributes to group discussions, offering insightful ideas and actively engaging with others throughout the project.	Frequently contributes to discussions, sharing relevant ideas, but may miss some opportunities to engage fully.	Occasionally contributes to discussions but lacks consistency or depth in contributions.	Rarely contributes to group discussions; involvement is minimal or absent.
Quality of Feedback	Provides constructive and actionable feedback to peers, enhancing the group's overall performance and collaboration.	Offers useful feedback that contributes to group improvement, though it may lack specificity or depth.	Gives limited feedback that may not significantly impact the group's progress or understanding.	Fails to provide meaningful feedback to peers; feedback is vague or unhelpful.
Team Dynamics and Support	Actively fosters a positive team atmosphere, encouraging collaboration and supporting peers in their roles and responsibilities.	Supports team dynamics and contributes to a positive atmosphere but may miss some opportunities to encourage others.	Participates in team activities but does not consistently support team dynamics or peer contributions.	Shows little regard for team dynamics; does not actively participate or support teammates.
Conflict Resolution	Effectively identifies and addresses conflicts within the group, facilitating constructive discussions and promoting resolution.	Acknowledges conflicts and attempts to address them, but solutions may lack effectiveness or clarity.	Recognizes some conflicts but does not actively engage in resolving them; relies on others to mediate.	Ignores or exacerbates conflicts within the group, avoiding participation in resolution efforts.
Engagement and Initiative	Takes initiative in group tasks, demonstrating leadership qualities and encouraging peers to contribute their ideas.	Shows some initiative in group tasks but may rely on others to lead; engages with group activity.	Participates when prompted but rarely takes initiative or engages proactively.	Lacks engagement and initiative; does not contribute to group tasks without prompting.

Results from Course Evaluation Survey

This project was a pure redesign with some testing of impact. Because differentiated learning seeks to be interactive and inclusive, the outcomes should lead to better engagement, development of skills, knowledge, and values, and enhanced collaboration. At the end of the semester, my students were invited to take an end-of-course evaluation survey to give their feedback on the effectiveness of the course. Students were asked to rate the appropriateness of the learning materials for the course, the effectiveness of classroom

conditions, and instructor management for student engagement. The course evaluation also measures students' perceptions of whether the course helped them develop critical thinking skills, written communication, spoken communication, problem solving, collaboration and teamwork, and global citizenship (respect for and awareness of cultural differences, and/or awareness of how individual choices affect local, national, and international communities). The rating goes from Very Poor (1) to Very Good (5). There were 31 students in PADM1000-A, and I received 17 responses.

In the PADM1000 course evaluation, 82% of students rated the learning materials as 'good' or 'very good,' with none rating them as 'poor' or 'very poor.' One student commented:

What I really liked about the course was that it was structured very well. As a student, I knew what was expected of me. I could look up which topics we would learn about every week. I really appreciate how engaging the class was. Prof. Chong encouraged the students to participate and to share their thoughts. I also loved that Prof. Chong provided a lot of extra links and videos one could look up if one wanted to learn more about certain topics. Also, she always tried to make the material relevant to us personally. In this way, it was much more interesting to learn since I knew that what I learned was relevant for me personally. What was really amazing too, was that Prof. Chong provided room for discussion and different opinions. We students could state and write what we think, listen to others and voice our thoughts and change our minds about different subjects. I found that very valuable.

Regarding instructor management of student engagement, 88% of PADM1000-A students rated it as 'good' or 'very good,' with none rating it as 'poor' or 'very poor.' Common themes from open-ended responses included appreciation for the course structure, group work, interactive activities applying concepts to real-life situations, and access to multimodal information. One student noted:

I have been pushed out of my comfort zone with this course, and it has personally helped me be more comfortable even in tough situations. Strengths are the in-class group works.

Another wrote,

I thought that the course definitely achieves what it sets out to do and I'm exiting with a good grasp on core concepts surrounding leadership and how to utilize those skills in everyday environments. I thought that the activities involving leadership like the lifeboat example were fun and showcased how leadership styles and techniques might be used so I'd say do more of that.

The evaluation also assessed students' perceptions of whether the course helped them develop critical thinking, written and spoken communication, problem-solving, collaboration and teamwork, and global citizenship (respect for and awareness of cultural differences, and awareness of how individual choices affect local, national, and international communities). This aligns with the three general program outcomes:

development of skills (Mākau na‘auao), knowledge (‘Ike), and values (Mea Waiwai). In PADM1000-A, at most, one student had a negative evaluation on any rating dimension, while approximately 60% to 70% of students gave the highest rating on each dimension.

Due to the focus on one course for this redesign project, results cannot be generalized to other courses. However, I believe critical factors influence the implementation of GenAI tools in designing differentiated learning activities that allow students to engage meaningfully with content. In the next section, I will discuss the implementation framework for this course redesign project.

Discussion of Critical Factors Affecting Implementation

Implementing innovation in education is complex because independent variables are not always known, do not behave uniformly, and both users and innovations co-evolve (Nespor, 2002; Preskill et al., 2014). In the case of redesigning this course using GenAI tools for differentiated learning, ChatGPT's behavior is not consistent over time/across queries and is instead continuously evolving. Consequently, the instructor's role also evolves from creation to curation, editing, refining, and fact-checking. Century and Cassata (2016) provide a comprehensive examination of implementation research within the educational sphere and encourage us to embrace the complexity of innovation implementation in authentic settings. They identify two primary perspectives in implementation research measurement:

1. **Evaluating Fidelity:** This perspective assesses whether an innovation is implemented as intended, emphasizing adherence to its core components to determine efficacy and effectiveness.
2. **Understanding Application in Context:** This approach examines how an innovation is applied in real-world settings, exploring variations in implementation, adaptations made, and factors influencing outcomes. It seeks to answer questions about the extent of innovation use, deviations from the original model, and the reasons behind these changes.

The redesign of this course using GenAI for differentiated learning aligns with the second perspective. Integrating insights from Century and Cassata's (2016) work involves a systematic approach that addresses key implementation questions:

1. What is being done?

Utilize GenAI tools to redesign a course and develop differentiated learning experiences tailored to diverse student needs.

2. Is it effective?

The impact of the redesigned course using GenAI tools was measured using course evaluation data - students were asked to rate the appropriateness of the learning materials for the course, the effectiveness of classroom conditions and instructor management for student engagement, and students' perceptions of whether the course helped them develop critical thinking skills, written communication, spoken communication, problem solving, collaboration and teamwork, and global citizenship. I would say that the redesigned course is generally effective and led to better engagement, development of skills, knowledge and values, and enhanced collaboration.

3. For whom?

Students in a general education course, PADM1000 Introduction to Leadership. In Fall 2024, I had 31 students in PADM1000. Nineteen students self-identified as female, ten as male, and two as non-binary. Students in the Gen Ed course are between ages 18-24, with eight students self-identifying as first-generation college students with no immediate family members who attended college, and ten students as military-affiliated students (MAS). MAS are students who are currently serving on active duty within the branches of the US armed forces, currently serving within the National Guard or Reserve Forces, is a family member of a service member on active duty, a veteran of active-duty service, National Guard or reserves, or a family member of a veteran.

4. In what contexts?

PADM1000 Introduction to Leadership is an introductory course to the study of leadership in America. It compares the administrative processes used in private and non-profit organizations and the US government. This course introduces students to the theories of leadership, the styles, traits, and myths of leadership, including the history, cultures, and ethical basis for good leadership in an American context. PADM1000-A was offered as an in-person course over a 16-week semester, and students met twice a week for 75 minutes.

5. How?

I used ChatGPT to help with the following instructional design tasks while redesigning the course: Research (Analyze Phase), Writing Learning Outcomes (Design Phase), Outlining (Design Phase), Creating Lesson Plans (Design Phase), Differentiating Learning Resources (Development & Implementation Phases), and Generating Assessment Items and Rubrics (Development, Implementation & Evaluation Phases).

6. Why?

To create meaningful differentiated learning experiences for students in the course and to use GenAI tools, specifically ChatGPT, with the aims of benefiting student learning experiences and engagement (effectiveness) and saving me time and effort (efficiency).

The Center for Elementary Mathematics and Science Education (CEMSE) developed a framework to analyze educational innovations by identifying their essential elements, termed "critical components," which are categorized into two main types: structural and interactional (Century, et al., 2012). Structural components are further divided into procedural and educative elements. Procedural components outline the specific actions and organizational aspects that users should follow, reflecting the developers' design intentions. Educative components provide the necessary knowledge and understanding that users require to implement the innovation as intended. Interactional components focus on the behaviors and interactions of participants involved in the intervention, such as instructors and students. These are divided into pedagogical aspects, which pertain to

instructor actions like facilitating discussions and group work, and student engagement aspects, which relate to student behaviors such as participating in discussions and completing assigned tasks. This comprehensive framework ensures that both the structural design and the interactive dynamics of educational innovations are thoroughly considered and effectively implemented.

Using the innovative implementation framework developed by CEMSE, I will discuss the following critical components that, based on my experience, affect the implementation process for instructors who are interested in implementing a course redesign for differentiated learning using GenAI (see [Table 1](#)).

Table 1 – Sample items from critical components impacting implementation

Critical Component	Conceptual Instructor Dimensions
Structural-Procedural	
Instructor workload	Workload stress levels. Time set aside during the semester to adapt content, assessments, and teaching methods to meet diverse learner needs.
Technical resources and support	Access to institutional technical resources. Access to ongoing institutional technical support. Access to institutional professional learning communities or technology user groups.
Data protection and funding	Institutional budget allocation for paid GenAI tools that ensure data protection. Proper institutional infrastructure, and robust security measures to safeguard data privacy.
Collaborative learning environments	Access to professional learning communities, where instructors can share resources, ideas, and best practices with each other. Access to subject matter experts from interdisciplinary fields to collaborate on co-creating learning experiences for our students.
Professional development and support	Access to training and professional development that will equip instructor with the skills and confidence necessary to implement differentiated instruction effectively. Access to resources that will further support the adoption of diverse teaching methods.

Structural-Educative	
Instructor's knowledge of and experiences with differentiated learning	Knowledge of the core principles of differentiated instruction, which involves tailoring teaching methods, content, and assessments to accommodate varying student readiness levels, interests, and learning profiles. Experiences creating differentiated instructional activities, materials, and resources necessary for all students in a learning environment.
Instructor's knowledge of and experiences with using GenAI	Familiarity with GenAI tools. Knowledge of and experiences using GenAI tools to ask general questions. Knowledge of and experiences using GenAI tools to prepare materials for courses taught. Knowledge of and experiences using GenAI tools to create assessment items for courses taught. Knowledge of and experiences using GenAI tools for research related activities.
Instructor's knowledge of and experiences with classroom management skills	Possess extensive classroom management skills. Able to effectively organize and manage structured yet flexible learning environments.
Interactional-Pedagogical	
Facilitation of student discussion	Able to connect learning materials to students' interests and real-world applications when facilitating student discussion in class. Able to address varied needs of students without compromising the overall classroom dynamics.
Facilitation of group work	Use active learning strategies to facilitate group work in your class. Use flexible grouping strategies in the facilitation of group work.
Ongoing assessment	Conduct ongoing assessments to inform instruction.
Interactional-Student Engagement	
Student autonomy	Encourage students to have a voice in their learning choices.
Student motivation	Motivate students to take ownership of their own learning on a regular basis.
Student participation	Incentivize students to actively participate in group work and discussion on a regular basis.

A key structural-procedural factor to consider when implementing course redesign using GenAI tools for differentiated learning is instructor workload. Adapting content, assessments, and teaching methods to meet diverse learner needs is time-consuming, even with GenAI assistance. Ideally, instructors experimenting with such redesigns should have a manageable workload, allowing time during the semester to adapt materials and methods effectively.

Another critical factor is access to technical resources and support. Effective implementation of differentiated learning relies on appropriate technical resources and expertise, as technology supports various instructional strategies. My background as an instructional designer provided me with the technical expertise and confidence to explore new technologies. However, I still wished for more assistance and professional

development opportunities. Instructors wishing to implement such redesigns should have access to technical resources and ongoing institutional support, including professional learning communities or technology user groups focused on GenAI in teaching and learning.

Data protection and institutional funding are also paramount. Strict adherence to data protection laws is essential, especially when using cloud-based tools to monitor student progress and performance. Institutions must establish clear protocols to safeguard student information, ensure privacy, and maintain ethical data handling standards. This includes securing the necessary funding to support infrastructure, ongoing technical assistance, and robust security measures, creating a safe and effective digital learning environment that enhances differentiated instruction. This comprehensive commitment to ethical data management and student involvement will help build a more inclusive and secure environment for differentiated learning.

Collaborative learning environments are another critical factor. Reflecting on the redesign of the PADM1000 Introduction to Leadership course to incorporate differentiated learning, I realized the importance of seeking collaboration and peer support early in the process rather than attempting to manage everything independently, as I did in this pilot project. Engaging with subject matter experts from interdisciplinary fields to co-create differentiated learning experiences could benefit multiple courses. Peer collaboration can reduce individual instructor workload and foster a more inclusive and supportive teaching community ([Santangelo & Tomlinson, 2012](#)). If we expect our students to be collaborative learners, we must model collaborative teaching practices. Institutions should encourage environments where instructors can share resources, ideas, and best practices.

Access to professional development is also essential. If institutions are committed to leveraging GenAI to streamline processes and improve efficiency, they must invest not only in advanced digital tools but also in comprehensive professional development to ensure instructors can use these tools effectively and confidently. This includes training on integrating digital platforms into daily instruction, analyzing data from adaptive learning software, and utilizing real-time analytics to inform teaching decisions. Additionally, instructors need training that equips them with the skills and confidence to implement differentiated instruction and adopt diverse teaching methods. Such training could itself employ a differentiated approach, provided sufficient funding is available.

Regarding structural-educative components, a crucial factor is the instructor's knowledge of and experience with differentiated learning. Ideally, instructors should understand the core principles of differentiated instruction and have experience creating activities, materials, and resources that cater to all students in a learning environment. Prior to implementing this course redesign project, I spent many hours reading and learning about differentiated learning, its applications, benefits, and limitations.

Similarly, familiarity with GenAI tools for general inquiries, course preparation, and research is beneficial. GenAI is excellent for brainstorming ideas, generating workable frameworks quickly, and synthesizing trends into digestible information. However, some tasks are less suited to GenAI tools, and an instructor's knowledge and familiarity are crucial in discerning these limitations. For instance, ChatGPT can sometimes "hallucinate," fabricating information or presenting plausible-sounding but incorrect statements, which can lead to misinformation and erode trust in the generated content. Without understanding how GenAI operates, one might mistakenly believe ChatGPT draws from a structured knowledge base, whereas it actually generates predictive text based on its training data.

Classroom management skills are also critical. During the implementation of differentiated lessons, I encountered challenges such as uneven groupings when students self-selected discussion groups based on their leadership experience levels: limited, intermediate, and advanced. A significant number chose the intermediate group. In one lesson, only two students opted for the advanced group; subsequently, one switched to the intermediate group, citing the advanced lesson's workload. Similarly, some students participating in intermediate activities submitted assessments intended for those with limited experience. Some confusion arose regarding expectations, and I believe that if I had enhanced classroom management skills, I could have clarified expectations and better managed group dynamics.

Interactional components, focusing on the behaviors and interactions of instructors and students involved in the intervention, are also vital. These components encompass pedagogical aspects related to instructor actions and student engagement aspects concerning classroom behaviors. To illustrate these interactional factors, consider the following case example of differentiated learning. On the morning of October 1, 2024, I read news of a massive strike by port workers across America's East Coast, threatening nationwide goods shortages and rising prices. This scenario presented an excellent case study for students to apply their conceptual leadership skills to real-world challenges. I used ChatGPT to generate a case tying this news to the topic of Primary Leadership Skills (see Figure 6).

Figure 6 – Leadership skills case study generated by ChatGPT based on breaking news

ChatGPT Prompt:

 Original screenshot

Create a case study scenario based on massive port strike that begins across America's East Coast today, threatening shortages and rising prices:
<https://www.cnn.com/2024/10/01/business/us-port-workers-strike-tuesday/index.html> Ask for how students of intro to leadership course may apply model of primary leadership skills attached in the slides (admin, interpersonal, conceptual) to address this issue, assuming they are admin, HR, and CEO roles. And they are negotiating with ILA President Harold J. Daggett who is asking for increase in pay and a ban on automation and semi automation at ports: <https://www.youtube.com/watch?v=822WNvhQHkI>

ChatGPT result:

Case Study Scenario: Port Strike Crisis

Background: A massive strike by port workers has commenced across America's East Coast, threatening shortages of goods and rising prices nationwide. The International Longshoremen's Association (ILA) President, Harold J. Daggett, is negotiating with administrators, human resources (HR) managers, and CEOs from the largest shipping companies. Daggett's key demands include a pay increase for workers and a ban on automation and semi-automation at ports.

Roleplay Exercise: In this scenario, students are asked to assume the roles of:

- Administrative Leader (Admin Role) - Focused on managing resources and operations at the ports.
- Human Resources (HR Leader) - Responsible for managing employee relations, addressing worker concerns, and supporting negotiations.
- Chief Executive Officer (CEO) - Tasked with strategic decision-making, balancing business interests, and ensuring the long-term success of the company.

Discussion Prompt:

As a student in the Introduction to Leadership course, use Peter Northouse's Three Skills Approach (Administrative, Interpersonal, Conceptual) to address the leadership challenges in this scenario. You are negotiating with the ILA President, Harold J. Daggett, who is demanding increased wages and a ban on automation. How would you apply the leadership skills in your respective roles?

ChatGPT generated a baseline case study, which I then adapted to allow students to form small groups of three, select a leadership role to assume, and collaboratively discuss their responses to the scenario. Students were given the choice to demonstrate their understanding through a written press release, an in-class skit, or a presentation of proposed solutions. I subsequently integrated the case study into the Blackboard learning module (see [Figure 7](#)).

Figure 7 – Screenshot of port strikes crises case study embedded in Blackboard Learn

 **Case Study Scenario - Port Strikes Crises**  

Background: A massive strike by port workers has commenced across America's East Coast, threatening shortages of goods and rising prices nationwide. The International Longshoremen's Association (ILA) President, Harold J. Daggett, is negotiating with administrators, human resources (HR) managers, and CEOs from the largest shipping companies. Daggett's key demands include a pay increase for workers and a ban on automation and semi-automation at ports.

News coverage on the strike on Oct 1, 2024: <https://www.cnn.com/2024/10/01/business/us-port-workers-strike-tuesday/index.html>

International Longshoremen's Association (ILA) President, Harold J. Daggett's stand and demands: <https://youtu.be/gjEKhhutwU?si=wYbDzeo9Ehxyj8S>



Instructions: Get into small groups of 3, each student in the group will pick a leadership role they want to assume, discuss and brainstorm about how they intend to react to the scenario with the other two group members:

Use Peter Northouse's Three Skills Approach (Administrative, Interpersonal, Conceptual) to address the leadership challenges in this scenario. You are negotiating with the ILA President, Harold J. Daggett, who is demanding increased wages and a ban on automation. How would you apply these leadership skills in your respective roles?

Each group has a choice of how the group members want to demonstrate knowledge – through a written press release, a skit in the classroom, or a presentation of suggested solutions.

Roleplay Exercise: In this scenario, students are asked to assume the roles of:

- **Administrative Leader (Admin Role)** – Focused on managing resources and operations at the ports.
- **Human Resources (HR Leader)** – Responsible for managing employee relations, addressing worker concerns, and supporting negotiations.
- **Chief Executive Officer (CEO)** – Tasked with strategic decision-making, balancing business interests, and ensuring the long-term success of the company.

From my experience, instructors aiming to implement differentiated learning should be adept at facilitating student discussions, connecting learning materials to students' interests and real-world applications, and addressing the varied needs of students during discussions. To introduce a new learning activity, I began with a debrief of the module's learning outcomes and key concepts from the chapter. Students were then organized into small groups and given instructions for the case study. Effective implementation also requires attention to student engagement components, focusing on behaviors and interactions that parallel pedagogical efforts, such as participation in discussions and group work. While facilitating these activities, I would frequently assess whether students are motivated to take ownership of their learning and fully engage in these activities.

The port strikes case study in my course generated significant engagement. Most students chose to reenact how they might handle the situation, role-playing as administrative leaders, human resources leaders, or chief executive officers. Some wrote press releases and held press conferences to address the media, while a few groups delivered presentations. One student reflected:

I think that the most interesting thing that we have studied was developing leadership skills. This was week 6, and we covered the strike that was going on at the time on the mainland. It was dealing with the longshoreman, who works at the docks. These individuals are the backbone of the US economy, as they deal with imports, exports, and all sorts. We used this conflict as an example in class because we talked about the types of leadership skills. We were analyzing the president of the union, and it was very interesting to hear him speak, break it down, and understand it as well. I can also recall the case study for that week or around that time which dealt with a business owner who wants to open up a second bakery. I liked learning about these things especially, just because I can recall times when I have had to deal with or help people deal with situations where they are either weighing out their options or negotiating. These sections made me think.

Conclusion

In my view, differentiated learning represents a fundamental shift in education, embracing the diversity of students' backgrounds, learning preferences, and abilities. By focusing on personalized instruction across content, process, product, and environment, this approach provides more equitable educational opportunities, allowing every student to engage meaningfully with the material.

The integration of GenAI tools, such as ChatGPT, into course redesign for differentiated learning presents both promising opportunities and notable challenges. GenAI's dynamic nature, coupled with instructors' and students' evolving roles, necessitates a flexible and adaptive approach to implementation. Drawing from Century and Cassata's (2016) framework, this study adopted a contextual perspective, focusing on real-world applications and the factors influencing outcomes.

The application of GenAI in redesigning the PADM1000-A Introduction to Leadership course demonstrated potential benefits in enhancing student engagement and learning experiences. GenAI is also useful in supporting certain design tasks, such as streamlining research, crafting learning outcomes, outlining content, and designing lesson plans. It can also be used to create on-the-fly assessments and rubrics, but this process will require iterative human input. In this design case, it was not very good at generating actual resources as content for learning needs.

Using GenAI for course redesign also presented specific challenges. AI-generated content sometimes lacks accuracy and can perpetuate biases inherent in its training data, necessitating careful review and revision by instructors. Moreover, the use of AI can dilute the unique human touch, which is often vital for capturing the nuances of individual classroom dynamics and fostering meaningful instructor-student connections. While generative AI offers immense potential to enhance teaching and learning, its use must be balanced with critical oversight and a commitment to maintaining the authenticity of the educational experience.

Successful implementation is contingent upon several critical factors. Instructors must possess a solid understanding of differentiated instruction principles and be proficient in utilizing GenAI tools effectively. Institutional support is equally vital, encompassing access to technical resources, ongoing professional development, and collaborative learning environments. Moreover, considerations around data protection and ethical use of AI tools

are paramount to maintaining trust and integrity in the educational process.

The development of an innovative implementation framework, aligned with the CEMSE framework, offers a structured approach to assess and enhance the readiness of instructors interested in implementing differentiated learning facilitated by GenAI. By addressing both structural and interactional components—ranging from workload management and technical support to pedagogical strategies and student engagement—this framework aims to facilitate a comprehensive understanding of the multifaceted challenges involved.

In essence, while GenAI holds significant promise for transforming educational practices, its successful integration into course design requires a holistic approach. This approach should consider the interplay of technological capabilities, instructor preparedness, institutional infrastructure, and ethical considerations. Future research and practice should continue to explore these dimensions, fostering an environment where innovation in teaching and learning can thrive responsibly and effectively.

References

- Blatchford, P., Bassett, P., & Brown, P. (2011). Examining the effect of class size on classroom engagement and teacher–pupil interaction: Differences in relation to pupil prior attainment and primary vs. secondary schools. *Learning and instruction*, 21 (6), 715-730. <https://doi.org/10.1016/j.learninstruc.2011.04.001>
- Century, J., & Cassata, A. (2016). Implementation research: Finding common ground on what, how, why, where, and who. *Review of Research in Education*, 40(1), 169-215. <https://doi.org/10.3102/0091732X16665332>
- Century, J., Cassata, A., Rudnick, M., & Freeman, C. (2012). Measuring enactment of innovations and the factors that affect implementation and sustainability: Moving toward common language and shared conceptual understanding. *The Journal of Behavioral Health Services & Research*, 39, 343-361. <https://link.springer.com/article/10.1007/s11414-012-9287-x>
- Cope, B., & Kalantzis, M. (2017). *E-learning ecologies: Principles for new learning and assessment*. Routledge. <https://doi.org/10.4324/9781315639215>
- Kulkarni, N. D., & Tupsakhare, P. (2024). Crafting effective prompts: enhancing ai performance through structured input design. *Journal of recent trends in computer science and engineering (JRTCSE)*, 12(5), 1-10. <https://doi.org/10.70589/JRTCSE.2024.5.1>
- Kurt, S. (2017, August 29). *ADDIE model: Instructional design*. Educational Technology. <https://educationaltechnology.net/the-addie-model-instructional-design/>
- Lechner, T. R. (2010). *Preparing instructional designers for the realities of the business and industry workplace* (Doctoral dissertation, uga).
- McCarthy, J. (2023, April 20). *Using differentiation to challenge all students*. Edutopia. <https://www.edutopia.org/article/differentiation-challenge-all-students/>
- Nespor, J. (2002). Networks and contexts of reform. *Journal of Educational Change*, 3(3), 365-382. <https://doi.org/10.1023/A:1021281913741>

- Preskill, H., Parkhurst, M., & Juster, J. S. (2014). *Learning and evaluation in the collective impact context*. Collective Impact Forum. https://www.fsg.org/wp-content/uploads/2021/08/Guide_to_Evaluating_Collective_Impact_01.pdf
- Rusman, E., & Dirkx, K. (2017). Developing Rubrics to Assess Complex (Generic) Skills in the Classroom: How to Distinguish Skills' Mastery Levels? *Practical Assessment, Research & Evaluation*, 22(12). <https://doi.org/10.7275/oeat-hb38>
- Santangelo, T., & Tomlinson, C. A. (2012). Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation. *Action in Teacher Education*, 34(4), 309-327. <https://doi.org/10.1080/01626620.2012.717032>
- Smale-Jacobse, A. E., Meijer, A., Helms-Lorenz, M., & Maulana, R. (2019). Differentiated instruction in secondary education: A systematic review of research evidence. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.02366>
- Taş, H., & Minaz, M. B. (2024). The effects of learning style-based differentiated instructional activities on academic achievement and learning retention in the social studies course. *SAGE Open*, 14(2). <https://doi.org/10.1177/21582440241249290>
- Valiandes, S. (2015). Evaluating the impact of differentiated instruction on literacy and reading in mixed ability classrooms: Quality and equity dimensions of education effectiveness. *Studies in Educational Evaluation*, 45, 17–26. <https://doi.org/10.1016/j.stueduc.2015.02.005>

Appendix – Sample Prompts for Design Tasks Using ChatGPT

All prompts were formulated using the following prompt structure:

Task + Perimeters + Contextualize + Refine = Good Prompt

Research (Analyze Phase)

Research on Current Trends in Leadership

To investigate current trends in the leadership field, I formulated the following prompt:

Task "Summarize the latest trends in leadership theory and practice."

Parameters: "Focus on trends from the past five years and limit the summary to 300 words."

Contextualize: "Highlight key figures and theories that have gained prominence in organizational leadership."

Refine: "Please emphasize any innovative approaches that integrate technology or social change into leadership practices."

Research on Learner Demographic

I created the survey for learner analysis using the following prompt:

Task: "Create a survey to gather information about student backgrounds, interests, and learning preferences related to leadership."

Parameters: "Include at least ten questions, focusing on demographic information, previous leadership experience, and preferred learning modalities."

Contextualize: "The survey should be aimed at undergraduate students enrolled in a leadership course."

Refine: "Incorporate questions that allow for open-ended responses to gain deeper insights into student expectations."

Research on Needs Analysis

Next, I used ChatGPT to identify key skills that students in a leadership course will need to have. Below is an example of a prompt I used:

Task: "Identify the top ten skills needed for effective leadership in today's workplace."

Parameters: "Focus on insights from industry leaders and educational professionals, providing examples from various sectors."

Contextualize: "The skills should be relevant to both aspiring leaders in the classroom and those currently in leadership roles."

Refine: "Please provide a brief explanation for each skill, along with potential activities to incorporate into the course."

Research on Interdisciplinary Approaches to Leadership

I also used ChatGPT to explore interdisciplinary approaches to leadership. Below is a prompt that I used:

Task: "Discuss how interdisciplinary approaches can enhance the understanding of leadership principles."

Parameters: "Include insights from at least three different fields, such as psychology, sociology, and business."

Contextualize: "Focus on how these disciplines intersect to inform leadership practices."

Refine: "Provide examples of how these interdisciplinary insights can be integrated into course modules."

Writing Learning Outcomes (Design Phase)

Based on insights from the analysis phase, I used ChatGPT to assist in crafting learning objectives that align with Bloom's Taxonomy while integrating cultural values. For example, one of the prompts that I used to establish these objectives is structured as follows:

Task: "Generate learning objectives for an introductory leadership course that incorporate Bloom's Taxonomy and Hawaiian cultural values."

Parameters: "Focus on the lower to mid-level cognitive skills such as remembering, understanding, and applying."

Contextualize: "The objectives should reflect key leadership concepts while emphasizing pono, kuleana, and aloha."

Refine: "Include at least four objectives, ensuring they are specific, measurable, and relevant to the course content."

Furthermore, using ChatGPT can help instructors craft learning objectives that are clearly defined and actionable. An example of a prompt that focuses on creating measurable objectives is:

Task: "Develop specific learning objectives for a unit on leadership styles using Bloom's Taxonomy."

Parameters: "Aim for objectives that encourage remembering and understanding, with a focus on leadership concepts."

Contextualize: "The unit is designed for first-year students in a general education course."

Refine: "Ensure that each objective includes an action verb that corresponds to Bloom's levels and ties in the cultural values of pono, kuleana, and aloha."

Outlining (Design Phase)

I used ChatGPT to help create multiple alternative outlines for PADM1000 Introduction to Leadership course. A prompt example is structured as follows:

Task: "Create a 16-week outline for an introduction to leadership course using the attached syllabus file as a guide"

Parameters: "Include key topics, current trends and assessments for each week."

Contextualize: "Align objectives with the values of pono, kuleana, and aloha."

Refine: "Ensure objectives are clear and actionable."

Creating Lesson Plans (Design Phase)

For one of the learning modules on the topic of “Developing Leadership Skills” I used the prompt below to ask ChatGPT to give me suggestions for differentiated lesson plans:

Task: "Design a differentiated lesson plan for the module developing leadership skills, focusing on admin skills, interpersonal skills, and conceptual skills."

Parameters: "Include differentiated content, process and product."

Contextualize: "The lesson should differentiate based on students' leadership experiences, field of studies and leadership experiences."

Refine: "Suggest specific assessment giving student choices for how they choose to demonstrate knowledge."

Differentiating Learning Resources (Development & Implementation Phases)

The development phase involves the creation and assembly of course materials based on the design blueprint. I used generative AI can help with the initial learning resources identification. Below is an example of a prompt I used:

Task: "Based on the lesson plan generated, identify differentiated course content on the topic of leadership skills using multimodal resources."

Parameters: "Include at least three different types of media—text, video, and interactive activity."

Contextualize: "The content should be suitable for a diverse group of first-year students with varying leadership experiences. Suggest 3 different resources from diverse backgrounds for text, video and interactive activities."

Refine: "Include links to resources whenever possible, and display results in a table format for novice, intermediate and advanced leaders."

Generating Assessment Items and Rubrics (Development, Implementation & Evaluation Phases)

In the example below, I used ChatGPT to create differentiated assessment options for a unit on ethical leadership. Below is an example of the prompt I used:

Task: "Design three differentiated assessment options for a unit on ethical leadership."

Parameters: "Include one written assignment, one presentation format, and one creative project."

Contextualize: "Assessments should focus on higher-order thinking skills and apply ethical concepts to real-world scenarios."

Refine: "Ensure that each option encourages critical analysis and is accessible to all students."

In addition to generating differentiated assessments for the unit, I also used ChatGPT to generate rubrics for the assessments. Below is an example of a prompt I used to generate the rubric for the three differentiated assessment options for the unit on ethical leadership:

Task: "Create a rubric for three differentiated assessment options for a unit on ethical leadership."

Parameters: "The rubric should include criteria that emphasize understanding of ethical concepts, application to real-world scenarios, critical thinking, creativity, choice of medium, and reflection on learning. It should be scored on a scale of 1 to 4, with descriptions for each score level."

Contextualize: "The assessments are for first year university students in an introductory leadership course, focusing on their ability to demonstrate mastery of ethical leadership principles through various formats, such as written assignments, presentations, or creative projects."

Refine: "Ensure that the rubric aligns with learning outcomes, emphasizes content mastery over form, and incorporates aspects of differentiated learning, allowing students to choose the medium they are most comfortable with to showcase their understanding."

Additionally, differentiated learning often involves complex generic skills such as collaborating, presenting, and information literacy. Below is an example of a prompt I used to generate the collaboration assessment rubric for PADM1000 Group Work:

Task: "Create a rubric to assess collaboration skills for group work in the PADM1000 Introduction to Leadership course."

Parameters: "The rubric should include criteria such as regularity of contributions, quality of feedback, team dynamics and support, conflict resolution, and engagement and initiative. It should be scored on a scale of 1 to 4, with clear descriptions for each score level."

Contextualize: "The rubric is designed for high school or college students participating in group projects focused on leadership challenges, emphasizing the importance of effective collaboration."

Refine: "Ensure that the rubric allows for flexibility in how students demonstrate their collaborative abilities, aligns with learning outcomes, and focuses on content mastery rather than the format of contributions."

About the Author



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