

Applications and Challenges of Chat GPT in the Development of University Training Programs in Viet Nam

Pham Minh Thuy

Faculty of Primary Education, Thai Nguyen University of Education, Viet Nam

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ABSTRACT

In recent years, the education sector has undergone a dramatic transformation through the integration of artificial intelligence technologies. The rise of AI chatbots is a notable step forward. This study explores how ChatGPT can act as a tool to support the development of undergraduate training programs in Vietnam in the following stages: program design, building objectives and output standards, developing course content, supporting assessment activities, and making these objectives measurable. However, the integration of ChatGPT also poses significant challenges. The study argues that the value of ChatGPT lies not in creating multiple versions of training programs, but in creating more possibilities for academic discussion. Ultimately, the use of ChatGPT requires a shift from content creation to monitoring usage in a responsible and effective manner.

Keywords: ChatGPT, training program, learning outcomes, assessment, challenges.

I. INTRODUCTION

In recent years, artificial intelligence (AI) has been able to be applied to almost every human activity, which has increased its acceptance in many fields (Nadarzynski et al., 2020). The education field is no exception. The rise of AI chatbots is a notable step forward with Chat Generative Pre-trained Transformer (ChatGPT), developed by OpenAI, most notably due to its ability to generate, provide coherent and contextual responses (Dwivedi et al., 2023). Although initially perceived as a threat to academic integrity, particularly in relation to plagiarism and automated essay writing, ChatGPT is increasingly recognized as a transformative educational tool when integrated responsibly (Kasneci et al., 2023). This innovative large language model is flexible and capable of providing instant, informative, and personalized support, enhancing the interactive chat

experience for students seeking knowledge and support (Susnjak, 2022).

Conventional approaches need to fully equip students with essential competencies, such as problem solving, critical thinking, and adaptability, which are critical in a society dominated by artificial intelligence. There is an urgent need to re-evaluate curricula and innovate teaching methods to keep up with technological changes. Rethinking the curriculum is imperative not only for economic reasons but also for the sake of social equity (Hamal, 2022). However, current education systems often emphasize rote memorization and standardized testing, failing to provide students with the critical thinking, problem-solving, and adaptability needed in an AI-driven future (Walter, 2024). As artificial intelligence continues to transform businesses and the job market, creating a curriculum that emphasizes interdisciplinary learning, ethical decision-making, and the application of technology is critical.

Curriculum design in conventional universities is a resource-intensive process that requires close collaboration between experts, educators, and accreditation bodies. In essence, curriculum development involves clearly defining program objectives, developing expected learning outcomes (ILOs), aligning content, and adapting assessment strategies to the needs of both the institution and society (Mendoza et al., 2022). Despite its importance, this process often has several limitations: a lag in updating content relative to rapidly changing professional fields, an over-reliance on individual faculty expertise, and the risk of fragmentation between objectives, teaching, and assessment.

The emergence of ChatGPT can solve that problem. With the ability to synthesize a huge amount of knowledge and provide draft frameworks, ChatGPT can serve as a tool to support rapid program design. Rather than

replacing the work of instructors, ChatGPT provides a variety of possible options, allowing experts, instructors or curriculum managers to consider and adjust their options more effectively. Not only supporting program development at a general level, ChatGPT can also contribute to expressing ILOs in measurable terms, especially according to Bloom's Taxonomy. Therefore, it not only provides the ability to measure results but also promotes consistency between subjects within a program. In content development, ChatGPT allows instructors to maintain the relevance of the curriculum in the face of rapid changes. It can help instructors gather the latest and bestcase studies from around the world, design problem-based learning scenarios, and suggest interdisciplinary connections (ElSawy, 2024). In doing so, ChatGPT helps curricula evolve from static disciplinary knowledge repositories to dynamic frameworks that reflect the complexity of contemporary challenges. This study will explore how ChatGPT supports lecturers and managers in designing and building training programs in Vietnam from the above aspects.

II. RESEARCH METHOD

The qualitative research method used in this study is based on the analysis of secondary data from domestic and foreign studies to explore, synthesize and explain the general understanding and basic functions of ChatGPT, and explore the application of ChatGPT in building training programs. This method does not conduct surveys through questionnaires but focuses on exploiting and analyzing information from published sources. The data is collected from reliable secondary sources, including: academic articles, scientific research, monographs in the fields of educational technology, pedagogy and artificial intelligence, especially reputable international articles related to the research topic.

III. RESULTS

3.1 ChatGPT and popular functions

3.1.1 What is ChatGPT?

ChatGPT, developed by OpenAI - a consortium of researchers and technologists focused on building AI safely and responsibly. ChatGPT is a powerful large language model and acts as a text-based generative AI engine. ChatGPT is capable of understanding and generating human-like responses in natural language, making it a powerful tool in diverse applications across a wide range of industries. Built on a deep neural network trained on a large corpus of text, ChatGPT can

engage in conversation, generate coherent and informative text, and answer queries by predicting the most likely next words or sentences given the input (Leggatt et al., 2023).

Kasneji et al. (2023) argue that ChatGPT can help improve the quality of higher education by assisting in teaching, assessment, and research, provided it is integrated ethically. Dwivedi et al. (2023) add that AI-based language models can drive educational innovation by personalizing learning and reducing the time teachers spend on repetitive tasks. However, even if ChatGPT is trained on extensive data, we do not know the specifics of its accuracy or ability to retrieve personal data unless explicitly requested or provided by professional commands in the ChatGPT chat.

3.1.2 Key Features

The flexible and adaptable text generation capabilities allow it to meet specialized requirements and generate texts that are tailored to the specific characteristics of each domain or language style. Based on the Open AI documentation (2023), the key features of ChatGPT include:

Browse with Bing: ChatGPT can now access and process information from the Internet via Bing search, allowing for more accurate and up-to-date responses. This is particularly useful in curriculum design as it allows real-time access to the latest information, ensuring that educational content is up to date. For example, in a course on current events, ChatGPT could use Browse with Bing to reference recent books and articles relevant to the topic being searched.

Advanced data analysis: ChatGPT can perform complex data analysis tasks, such as identifying trends, patterns, and outliers. This can be used to generate insights from student learning data and other educational data sets. Students can input raw data into ChatGPT, and the model will generate an analysis of that data, identifying similarities and other important points.

Plugins: Plugins are additional features that can be added to ChatGPT to enhance its functionality. In terms of curriculum design, plugins can be developed to meet specific educational needs. For example, a plugin can be created for language learning to provide translations, definitions, and language practice exercises.

Voice capabilities: This capability of ChatGPT is powered by OpenAI's Whisper, which allows users to interact with the AI system using

voice commands. This feature is currently limited to ChatGPT's mobile apps on iOS and Android. Users can enable it in the settings and choose from five distinct output voices, each with its own tone and characteristics. This addition extends the way ChatGPT interacts beyond text-to-speech, expanding the user's range of interactions. With the mobile-centric voice feature, users have the flexibility to engage in spoken conversations with ChatGPT on the go, which can be useful in situations such as needing pronunciation assistance during discussions.

DALL-E 3: This is an AI model that generates images from text descriptions. It allows ChatGPT to convert text into images such as diagrams, charts, and illustrations. For example, in an architecture course, students can use DALL-E 3 to create architectural models based on specific design requirements with specific contexts and landscapes. Each of these functions brings unique benefits to curriculum design in higher education. By integrating AI into the learning process, educators can create more dynamic and interactive learning experiences that meet a variety of learning styles and needs of learners.

3.2 Application of ChatGPT in university program development

3.2.1 As a tool to support program design

Building a university program is always a complex process, requiring a combination of professional knowledge, social needs, and development trends of education around the world. In the context of digital transformation, ChatGPT stands out thanks to its natural language processing, text generation, and learning material recommendation capabilities. ChatGPT can help lecturers and education administrators analyze academic data, identify training needs, and suggest curriculum frameworks that meet output standards. Kasneci et al. (2023) suggest that ChatGPT can be used to create course outlines, suggest reference materials, and provide illustrative examples in different science fields, especially social sciences and STEM. This reduces the manual workload of lecturers during the design phase, while allowing them to focus on developing in-depth content and skill orientation for students. In addition, ChatGPT also helps compare training programs of different universities around the world. By synthesizing information from multiple sources, ChatGPT allows program developers to easily compare and adjust content to meet international standards. For example, when designing an Information Technology program, ChatGPT can analyze

ACM/IEEE standards and suggest core subjects such as Data Structures, Artificial Intelligence, or Information Security (Hwang et al., 2023).

a) Changing the approach to program design

Previously, university program design was mainly based on two main sources: scientific knowledge standardized into textbooks and the accumulated experience of lecturers. This process was manual, requiring a lot of time to review documents, compare with professional standards, and then discuss and agree on a common product. This activity always had some limitations such as slow content updates compared to technological changes, lack of synchronization between courses, and great dependence on subjectivity or academic will of some individuals. With the appearance of ChatGPT, the approach has fundamentally changed. Although ChatGPT does not replace humans in academic decisions, it plays a role as a powerful support tool, thanks to its ability to quickly synthesize a huge amount of knowledge from many sources, provide suggestions on structure, content, and explore emerging trends. This helps lecturers and the academic community in the school save a lot of time and effort in the process of building - testing - comparing - continuously adjusting.

b) Shorten the time to build a curriculum framework

A curriculum framework usually takes many months to complete: from determining core subjects, specialized subjects and credit allocation. ChatGPT can significantly shorten the draft stage. For example, if you want to request "Build a framework for a Bachelor's Primary Education program with 130 credits and allocate 8 semesters", ChatGPT can immediately create a draft with full suggestions for basic subjects (Philosophy, Political Economy, Legal Education, Party History, etc.), core subjects (Education, Primary Education, Primary Student Psychology, Organization of Educational Activities, etc.), and specialized subjects (Teaching Activities, Subject Teaching Methods, etc.). Although this draft is not yet complete, it provides a basic framework for instructors to reference, discuss, edit, compare with international standards, and adjust to local conditions. In addition, ChatGPT can continue to be edited according to user requirements, allowing program designers to focus more on quality assurance, instead of having to figure it out themselves at the beginning.

c) Supporting interdisciplinary and integration

A major challenge of modern education today is the trend of interdisciplinary. Practical issues (climate change, cyber security, global logistics) require the combination of knowledge from many fields. For example, the requirements when building an integrated bachelor's program in Natural Science Education, History - Geography Science Education. In fact, lecturers of one major often have difficulty identifying complementary subjects from other majors. Thanks to ChatGPT, it is possible to suggest ways to integrate interdisciplinary and cross-disciplinary by analyzing the program's keywords and comparing them with related majors. With its broad synthesis ability, ChatGPT becomes a tool to ensure that the program is not "framed", but suggests directions of intersection, helping students to have the ability to solve complex problems.

d) Reduce administrative work

Artificial intelligence helps automate administrative tasks, freeing up lecturers' time to focus more on the teaching process (Parycek, 2023). Standardizing language, writing course descriptions, compiling reference lists, etc. often take up a lot of lecturers' time. ChatGPT can generate different versions of these descriptions, helping lecturers save a lot of time. Thanks to the time saved, it can be spent on tasks that require more intelligence and academic value, such as analyzing social needs, organizing consultations with businesses or testing new teaching methods. Therefore, ChatGPT helps lecturers free themselves from repetitive tasks to focus on innovation.

3.2.2 Application in building goals and output standards

One of the important steps in building a program is to determine output standards. ChatGPT can help instructors express training objectives according to Bloom's Taxonomy, from the level of recognition, understanding, application to analysis, evaluation, and creativity. Using ChatGPT can promote the process of standardizing output standards by comparing to match training objectives with occupational requirements. ChatGPT helps automate the work of reviewing the compatibility between the program's output standards with the national competency framework or regional reference framework, thereby ensuring that the program meets quality accreditation standards.

a) Support changes in training objective design thinking

ILOs are considered the "backbone" that regulates the entire content structure, teaching methods, and assessment. Normally, the construction of ILOs is mainly based on the professional capacity and personal experience of instructors and can refer to some occupational competency frameworks or national standards. The limitation of this approach is that the expression is often inconsistent, the coverage is not uniform among the courses, and can be too broad (general, difficult to measure) or too narrow (just like the course objectives, not linked to professional competencies). When using ChatGPT, enter information about the training field, student target, and desired professional standards, ChatGPT will suggest many versions of ILOs according to the thinking levels in Bloom's taxonomy or according to specific competencies. In addition, lecturers can request ChatGPT to create ILOs variations that suit their requirements: research orientation, career orientation, or application orientation. Thanks to that, many different versions will be built for the program council to choose and adjust.

b) Linking to professional standards and competency frameworks

Typically, instructors have to manually compare the output standard description with the current program. This work is both time-consuming and prone to omission. From the perspective of a training program designer, using ChatGPT helps to closely link professional standards and teacher competency frameworks. First, ChatGPT helps ensure that training content is consistent with the requirements for professional competence, skills and qualities set by professional standards. This tool provides the ability to analyze needs, propose learning scenarios, and create rich situations to integrate into the program. Second, ChatGPT contributes to increasing flexibility and personalization in training design. Designers can use ChatGPT to build adaptive learning modules, helping instructors develop technological competence, creative teaching capacity and self-learning capacity - core elements in current competency frameworks. Third, ChatGPT is also a testing and feedback tool, helping to evaluate the suitability of objectives, content, and methods with standardization requirements.

3.2.3 Using ChatGPT in course content development

After determining the output standards, the next step is to design course content. ChatGPT is capable of creating detailed lecture frameworks, including detailed outlines, reference lists, and suggested classroom activities. Research by Dwivedi et al. (2023) shows that ChatGPT can help shorten the time to prepare learning materials by 30–40% compared to traditional methods. In addition, ChatGPT can also suggest case studies, discussion questions, and practice activities. This is especially useful for applied-oriented professions such as Engineering, Medicine, or Business.

a) Shift from knowledge transfer to learning experience design

In traditional higher education, course content is built on the notion that lecturers are the keepers of knowledge and students are the recipients. Therefore, content development often revolves around compiling lectures, textbooks, and reference materials. However, in the context of rapidly changing knowledge that can be found in many different sources, students no longer need to listen to lectures to access information, but need to be guided through meaningful learning experiences. ChatGPT can play an important role in this shift, from supporting lecture preparation to designing learning journeys. With the ability to suggest activities, situations, and critical questions, ChatGPT helps lecturers design courses as an interactive experience, instead of a fixed set of lectures as before.

b) Suggested learning activities and teaching methods

ChatGPT can provide diverse ideas for experiential learning activities, such as career situation simulations, open-ended case studies, online group discussions, or interdisciplinary projects. As a result, learning activities are linked to practice and promote the development of critical thinking, problem-solving, and collaboration skills. In addition, ChatGPT can suggest a variety of activities: group discussions, simulations, role-playing situations, and small projects. It can be flexibly changed, creating many options for lecturers to choose and adjust. As a result, the course design process becomes a creative interactive activity between lecturers and ChatGPT.

3.2.4 Application in assessment and testing

a) Shift from outcome assessment to competency assessment

In the traditional education model, assessment tends to measure the final results through test scores, essays or finished products. However, the current trend, especially competency-based education, is emphasizing that assessment must measure the process of competency formation: what students know, what they can do, and how they can apply it in real-life situations. The emergence of ChatGPT forces us to shift from the concept of anti-cheating assessment to “assessment with AI”, considering AI as part of the learning and career environment that students need to know and master.

One of the novel values of ChatGPT is the ability to integrate into process assessment. Instead of just submitting a final paper, students can be asked to submit an AI log, which requires students to record: the prompt they entered, the AI response, how they edited it, and why they accepted or rejected the suggestion. This approach helps instructors assess critical thinking skills and digital literacy, rather than just the final product.

b) Tools to support test design

A challenge for instructors is to build a diverse question bank and assessment scenarios that avoid duplication and reflect multiple levels of thinking. ChatGPT can help instructors write multiple versions of multiple-choice questions to reduce cheating, create open-ended scenarios that require students to analyze, debate, and find examples from local or global contexts. ChatGPT can create a diverse test bank, from multiple-choice, fill-in-the-blank, to essay. Rudolph et al. (2023) suggest that using ChatGPT in test generation can help reduce duplication and increase question diversity. The challenge for instructors is to select and validate based on what AI provides.

c) Enhance adaptive assessment

Adaptive assessment tools, which dynamically change the difficulty and variety of questions based on real-time feedback, are a fundamental component of this integration and help assess student growth and understanding (Caspari-Sadeghi, 2022). By customizing tests to reflect unique learning paths, these tools provide a more accurate assessment of student knowledge and skills, ensuring that each student is appropriately challenged and receives feedback directly related to their current knowledge. This real-time flexibility allows instructors to quickly identify areas where learners may be struggling so they can take action with focused tools and immediate support. By making the assessment process relevant, adaptive

assessment tools also help maintain student engagement by eliminating frustration from difficult questions and boredom from tasks that are too easy. They help assess learners' abilities more accurately and comprehensively, while creating a more inspiring and motivating learning environment by continuously calibrating assessments according to student performance.

ChatGPT's role in customized learning is to use advanced algorithms and data analytics to tailor educational content and experiences to each

student's pace, interests, and learning abilities (Pawar, 2023). This feature allows for the creation of highly personalized learning paths that can dynamically change in response to real-time analysis of student performance.

In short, ChatGPT provides powerful support for instructors and administrators in building training programs. Table 1 below summarizes some of the main functions of ChatGPT in this regard.

Table 1. ChatGPT functions in program building

Functions	Deployment	Example
Support Curriculum	Creation Use AI to create a structured curriculum based on course objectives.	For a physics course, AI can generate topics, readings, and weekly assignments that align with course objectives.
Generate Course Materials	AI tools can automatically generate course outlines, schedules, and content.	For a history course, create outlines of topics from ancient to modern history, detailing topics and weekly readings.
Customize Lesson Plans	AI can adjust lesson plans based on student feedback or performance.	If students are having trouble with the grading scales, extend the topic by two lessons and add additional materials.
Synthesize Reference Materials	AI can scan massive databases to compile bibliographies.	For a research paper on climate change, the system can pull the most cited and relevant articles from the past decade.
Create assignments, tests, and quizzes	Create assessment items based on course content.	Create 30 multiple choice questions on the consequences of climate change today
Create presentations and slides	AI tools can design visually appealing slides based on lecture content.	For a lesson on the Renaissance, slides can be automatically generated with key points and images of relevant works of art.
Integrate technology and prepare for flipped classrooms	Design technology-enhanced lessons where students interact with content outside of class.	Assign interactive online modules on cell structure as homework, leaving room for class time for discussions.
Support group discussions	AI can suggest discussion topics, monitor participation, and provide feedback.	In an ethics workshop, AI can suggest the topic "AI and Privacy" and highlight key points from student discussion.
Professional Development Support	AI can curate resources, courses, and materials to enhance a teacher's skills.	For a teacher looking to integrate more technology into the classroom, AI can suggest online workshops on digital pedagogy.

(Source: Reference by Cecilia Ka Yuk Chan and Tom Colloton (2024) and author tested in practice)

3.3 Challenges

Vietnam is a country with a rapidly developing higher education system, approaching the world's education system. However, the process

of building and developing training programs is having to change to adapt to the new requirements of the era of artificial intelligence. Despite these

benefits, there are still some challenges to using ChatGPT in curriculum design.

Firstly, the quality of the output information generated by ChatGPT may be inaccurate or misleading, outdated content and lack of context may reduce effectiveness, requiring further review and validation by educators (Koutropoulos, 2023). For Vietnam, it requires curriculum designers to promptly update the latest information combined with a realistic assessment of the current situation in Vietnam to build appropriate programs.

Second, as ChatGPT evolves, the educational system must adapt to technological advances by incorporating advanced learning tools and updating curricula. The implementation of ChatGPT requires significant professional development in scripting with users. Therefore, it requires users to be adequately trained and coached to use it effectively, incorporate it into their curriculum development strategies and teaching practices, and maintain autonomy and professional development.

Third, an overemphasis on technical skills can overshadow other essential aspects of education. When technical competencies are overemphasized, curriculum development can easily overlook fundamental values such as critical thinking, communication skills, or social adaptability. In the context of curriculum design and development, this bias can undermine the balance of educational goals: instead of aiming at the comprehensive development of personality, ethics, knowledge, and skills, the program focuses too much on a single specialized competency. This risks leading to the formation of training programs that lack interdisciplinary cooperation capacity, are limited in critical thinking, and lack comprehensiveness, making them difficult to adapt to a changing and multidimensional work environment.

Fourth, the ethical and practical risks and considerations of integrating ChatGPT are diverse and complex, posing significant challenges that need to be carefully considered and managed. The primary ethical concern is that of data privacy and security, as AI systems rely heavily on the collection and analysis of large amounts of learner data. This data collection raises significant privacy concerns, as sensitive information about students' study habits, strengths, and weaknesses must be protected from intrusion and misuse (George, 2023). Additionally, a very clear risk is that ChatGPT may generate false or fabricated information with a confident tone that, if applied

uncritically, undermines credibility, or it may generate references that are not in fact true. Finally, issues of copyright, intellectual property, and transparency remain unresolved in the academic context. Božić, (2023) argues that policy makers and educational leaders must work together to establish ethical guidelines and legal frameworks that protect the interests of all stakeholders and ensure that the integration of ChatGPT into education leads to a richer and more equitable learning environment.

IV. CONCLUSION

This study has identified the key functions and applications of ChatGPT for curriculum design. The evidence suggests that ChatGPT can contribute to curriculum design in a variety of ways, thereby saving time and effort. However, the output may be incomplete in terms of information or content quality, and therefore requires careful review and editing by experienced professionals. The study also highlights that ChatGPT has great potential to support innovative approaches to curriculum design when used with user feedback. Further research is needed to identify best practices and effective facilitation methods to fully exploit the capabilities of ChatGPT. At the same time, it is necessary to conduct empirical evaluation to find out the level of suitability with the reality of Vietnamese higher education.

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