

## **A PROPOSED TRAINING PROGRAM FOR EMPLOYING CHATGPT ARTIFICIAL INTELLIGENCE APPLICATIONS FOR FACULTY MEMBERS AT THE UNIVERSITY OF JORDAN BASED ON CONNECTIONIST THEORY**

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**Abstract:** This study aimed to design a proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT) among faculty members at the University of Jordan. The study adopted a mixed-methods approach, including a quantitative analysis through a questionnaire administered to 332 faculty members, and a qualitative analysis through interviews with 15 faculty members to identify the standard specifications of the program. The results indicated that the majority of faculty members emphasized the importance of formulating clear, applicable, and measurable general and specific objectives (93.5%), identifying the target group and its training needs (80%), and ensuring continuous assessment and feedback (80%). The primary goals of the program identified as developing research skills, improving the educational process, and empowering learning (66.7%). Participants also highlighted that the training program should be flexible, have content aligned with trainees' skills and needs, enhance interaction and participation, and promote critical thinking and problem solving. The program should focus on developing research, communication, and collaboration skills to keep pace with technological advancements. Furthermore, the study stressed the importance of integrating social, cultural, and ethical standards to ensure the program's effectiveness and sustainability. The study recommended designing training content that encourages active and interactive learning, formulating clear and specific objectives, creating a flexible learning environment using technology and AI tools, and implementing continuous evaluation to collect feedback and improve program effectiveness.

**Keywords:** Training Program, Connectivist Theory, Artificial Intelligence Applications, Faculty Members.

### **Background of the Study and Its Significance**

#### **Introduction**

Artificial Intelligence (AI) is considered one of the modern technologies that has brought about a clear transformation in many fields, such as industry, commerce, marketing, and medicine. Its applications contribute to organizing work, supporting decision-making, analyzing and translating texts, and providing support to students and faculty members in the educational process. AI has witnessed increasing adoption in education and has become an urgent necessity, as it is viewed as a means of problem-solving, enhancing the understanding of human intelligence, and developing machine capabilities in line with rapid technological advancement (Haggag, 2023).

Chatbots are among the most prominent applications of artificial intelligence, as they rely on algorithms trained on large volumes of data to generate responses that simulate human interaction with users (Ratten & Jones, 2023). Chatbots have proven effective in the educational field by improving interaction with students and providing intelligent support that contributes to the development of the educational process and meets learners' needs across various domains (Goralski & Tan, 2022). ChatGPT is considered one of the advanced chatbot models that was initially used in online customer service and later expanded to include several fields, most notably education. This is due to its rapid response, accuracy of answers, and ability to produce high-quality texts that maintain semantic coherence and address students' inquiries synchronously (Talan & Kalinkara, 2023). From a theoretical perspective, Connectivism, introduced by George Siemens in 2004, emerged as a learning theory for the digital age. It focuses on the role of connectivity, social interactions, and the influence of messages and communication media on the behavior of individuals and societies, making it an appropriate framework for understanding the integration of digital technologies and artificial intelligence in education (Jirjis, 2016; Mamdouh & Alfaifi, 2020).

The integration of connectivist theory with artificial intelligence has contributed to the development of intelligent educational systems that adapt to learners' individual progress and provide immediate feedback, personalized guidance, and appropriate content recommendations, thereby enhancing an interactive and dynamic learning environment. This synergy has also been reflected in the organization of educational content, as AI-powered systems efficiently examine educational resources and select and organize content in alignment with learning objectives (Mushtarak, 2020). Social learning constitutes a core component of connectivist theory, and artificial intelligence applications in education have contributed to enhancing collaboration through educational social networking platforms. This enables learners to participate in discussions, exchange ideas, and engage in collaborative work, facilitating the creation of electronic learning communities that support cooperative learning (Mamdouh & Alfaifi, 2020). Accordingly, the current study aimed to design a proposed training program based on connectivist theory that employs artificial intelligence applications, such as the chatbot ChatGPT, for faculty members at the University of Jordan, thereby contributing to the development of academic practices and the enhancement of the quality of university education.

### **The Problem of the Study and Its Research Questions**

Through the researcher's experience at the Ministry of Education, it has become clear that training is essential for preparing educational personnel, particularly amid rapid technological development and the increasing use of artificial intelligence (AI) applications such as ChatGPT. Effective training enables teachers and faculty members to adopt intelligent digital tools, enhancing both their technical and pedagogical skills and improving the quality of education. Studies indicate that connectivist-based training fosters flexible learning communities capable of utilizing knowledge and exchanging expertise digitally. At

the University of Jordan, technological integration includes learning management systems, blended learning, video conferencing, and AI applications like ChatGPT, which enhance learning experiences and support teaching effectiveness. Modern AI tools, including generative transformers and chatbots, improve personalized interaction and facilitate access to learning resources, positively affecting training quality (Barbas, 2023; Haggag, 2023). Accordingly, the problem of this study focuses on designing a connectivist-based training program for employing AI applications (ChatGPT) among faculty members at the University of Jordan and evaluating its suitability from their perspectives. The present study seeks to answer the following research questions:

1. What is the proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT) at the University of Jordan from the perspective of faculty members?
2. What are the standard specifications that should be available in the proposed training program based on connectivist theory for employing artificial intelligence applications to enrich educational situations, from the perspective of faculty members at the University of Jordan?

### **Objectives of the Study**

The study aims to identify the proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT) at the University of Jordan from the perspective of faculty members, in addition to identifying the standard specifications that should be available in this program to enhance and enrich educational situations according to faculty members' evaluations.

### **Significance of the Study**

The significance of this study lies in its integration of theoretical and practical dimensions. Theoretically, it clarifies the importance of combining connectivist theory with artificial intelligence in education and explores its impact on enhancing the educational process. It also guides faculty members in applying connectivist principles when using ChatGPT in real educational settings. Practically, the study aims to improve faculty efficiency at the University of Jordan in utilizing AI tools for content preparation, feedback, and instructional strategies, while promoting self-directed and lifelong learning. The proposed training program could serve as a framework applicable to other universities in Jordan, supporting faculty development and effective AI integration in education.

### **Study Terms and Operational Definitions**

The concepts of the study are defined as follows:

- A **training program**, according to Al-Swalha (2017, p. 103), is an educational program designed to transfer knowledge or develop skills in a specific field, contributing to the improvement of students' or faculty members' performance

through integrated educational activities and resources. Operationally, the researcher defines it as a set of planned strategies, knowledge, and educational activities developed in light of connectivist theory and applied to the study sample of faculty members at the University of Jordan, with the aim of identifying the degree of its suitability for employing artificial intelligence applications (ChatGPT).

- **Connectivist theory**, as defined by Jirjis (2016, p. 110), is a theoretical framework that focuses on understanding the communication process among individuals and groups, the mechanisms of message transmission and interpretation, and the role of channels and cultural and social context in communication. Operationally, the researcher defines it as a set of Internet-based technological methods and tools employed in the study to share and exchange knowledge among the study sample and to learn through interaction with the educational environment using the chatbot ChatGPT.
- **Artificial intelligence applications (ChatGPT)**, as defined by Al-Sayyid and Al-Adawi (2023, p. 162), refer to an artificial intelligence model developed by OpenAI that relies on deep neural network techniques to understand natural language and generate texts in response to textual inputs. Operationally, the researcher defines it as an Internet-based application that is interacted with synchronously and in real time, and is used in this study to provide intelligent support to faculty members, analyze texts, and generate content.
- The **degree of suitability** is defined as the extent to which the opinions of the study sample align regarding the use of artificial intelligence technologies with the educational objectives or problems that the chatbot ChatGPT seeks to address.

## **Theoretical Framework and Previous Studies**

### **First: The Theoretical Framework**

This section addresses the following topics: the training program, connectivist theory, artificial intelligence applications, and the chatbot (ChatGPT).

#### **Axis One: The Training Program**

Training programs are essential tools for enhancing faculty members' performance by providing the knowledge, skills, and competencies necessary for professional growth and future roles in education, rather than merely focusing on current responsibilities (Al-Qadi, 2023). Such programs improve productivity and performance quality by offering specialized learning opportunities that support personal and professional development (Al-Saiari et al., 2024). Teacher training is a continuous, dynamic process encompassing pre-service, induction, and in-service stages, grounded in the principle that teaching is both a science and an art requiring ongoing skill and knowledge acquisition (Crespí & Ramos, 2021). The effectiveness of training programs depends on their design, structure, and alignment with practical field needs, functioning as an integrated system linking inputs, processes, and outputs to develop teaching skills and educational culture (Al-Husseini, 2023).

Training programs for faculty members differ based on their timing and objectives. Pre-service programs prepare new teachers by developing content knowledge, pedagogical skills, and classroom management in alignment with the educational context (Xiao & Yi, 2021). In contrast, in-service programs provide continuous professional development to update knowledge, bridge skill gaps, and enhance academic performance and job satisfaction (Sabat et al., 2022; Marolla, 2021; Teo, 2021). In-service training can take various forms, including workshops, seminars, conferences, classroom observations, mentoring, coaching, and technology-based e-training, which offer flexibility and accessibility for learning anytime and anywhere (González, 2020; Crispel & Kasperski, 2021; Al-Bishi & Ghazil, 2023). These programs contribute to ongoing professional growth, improved career advancement, and the ability to address contemporary educational and societal challenges (Howard et al., 2021; Ulrich et al., 2020). Additionally, they help identify skill gaps, design targeted courses, employ multimedia and microlearning strategies, and utilize assessment tools to measure effectiveness and enhance training quality (Burns, 2023; Hamdani et al., 2021).

Despite their importance, training programs face several challenges, including difficulty in standardizing training for geographically dispersed trainees, low motivation among some participants, high costs, limited time, lack of facilities, inconsistency in content and methodologies, and limited access to trainee performance analytics. These challenges necessitate the use of learning management systems and technological tools to improve the effectiveness of training programs (Al-Harbi, 2023; Al-Bishi & Ghazil, 2023; Sutiah et al., 2020; Hervas, 2021; Tuffnell, 2021). In the Jordanian context, teacher training programs are divided into pre-service training, provided to students in colleges of education through pedagogical courses and field training, and in-service training, offered to practicing teachers through workshops, training courses, summer programs, e-learning, and continuous professional development. These efforts aim to improve the quality of education, enhance faculty members' efficiency, and promote innovation in educational practices (Abu Al-Kashk, 2020).

### **Axis Two: Connectivist Theory**

In the digital age, students increasingly rely on Internet-enabled devices to access information, which has led to the emergence of connectivist theory as a pedagogical response to technology-driven learning environments (Siemens, 2004). Connectivism emphasizes that effective learning requires integrating knowledge and ideas from multiple digital sources, highlighting the central role of contemporary technologies in constructing knowledge (Siemens, 2007). The theory promotes collective learning through collaboration, dialogue, and interaction among learners, enhancing problem-solving skills and understanding of complex concepts. Connectivism also supports decentralized learning, where knowledge extends beyond the classroom into virtual communities, social media, and interconnected digital networks (Siemens, 2004; Siemens, 2007).

Connectivism is a relatively recent educational theory that transcends traditional approaches such as behaviorism, cognitivism, and constructivism by integrating educational, social, and technological dimensions into a unified framework for learning in digital environments (Al-Farmawi, 2021). It provides a lens to interpret learning processes in electronic environments and adapt to technology-driven social changes, focusing on the learner's ability to create connections among diverse knowledge sources (Siemens, 2007; Sayyid, 2019). The core assumption of connectivism is that knowledge exists as a network of interconnected nodes, constructed through learner participation and enhanced communication via online platforms. Nodes represent information sources, such as experts, institutions, databases, or digital communities, while links are the channels through which knowledge flows, including discussions, references, hyperlinks, and social interactions, supporting lifelong learning (Siemens, 2004; Mushtarak, 2020; Hendricks, 2019; Siemens, Rudolph, & Tan, 2020).

Connectivist theory assumes that learning is shaped through the distribution of knowledge within networks and continuous interaction among their elements, offering an alternative to traditional educational models that view students as passive recipients of information. In connectivist learning environments, the teacher's role shifts from a transmitter of knowledge to a facilitator and guide of learning processes, supporting students in building their own learning networks, making continuous learning decisions, and engaging in dynamic, inquiry-based learning experiences (Connolly & Wicks, 2023). Connectivist theory has diverse applications in education, including using social media to enhance collaborative learning, gamification to motivate participation, and computer simulations to provide immersive, safe, and effective learning experiences (Liu & Li, 2021). It supports online collaborative learning, enabling students across different locations to exchange ideas, develop critical thinking, and participate in virtual communities of practice (Downes, 2022). Moreover, connectivism promotes student-centered learning, active knowledge construction, and positions faculty members as facilitators while fostering diversity and inclusivity by leveraging learners' prior knowledge and experiences (Pandya et al., 2024; Jahani, Zainalipour, & Zarei, 2020).

### **Axis Three: Artificial Intelligence Applications**

Al-Sayyid and Al-Adawi (2023) defined artificial intelligence (AI) applications in education as the use of technology, intelligent systems, and computing to create interactive learning environments that simulate human interactions between teachers and students. These applications aim to enhance teaching and learning by analyzing learners' needs and providing personalized content (Al-Qahtani, 2024). AI supports individualized learning styles, curriculum personalization, effective communication, and timely feedback on performance. It also enables personalized learning, virtual and augmented reality experiences, and automates administrative tasks such as grading, allowing faculty to focus on critical educational aspects (Titila, 2023; Ibrahim & Ahmed, 2023).

AI-powered tools increase learner engagement through virtual and augmented reality, chatbots, interactive assessments, and educational games that enhance motivation and interaction (Karakose et al., 2023). Key AI components include experiential learning, knowledge storage, reasoning and decision-making, problem-solving, perception for interpreting sensory data, and natural language processing for understanding and generating language (Chen, 2023; Alhumaid et al., 2023). Shang et al. (2024) noted that artificial intelligence encompasses major subfields such as machine learning, deep learning, natural language processing, and robotics, each contributing to enhancing intelligent systems' ability to learn, adapt, and solve problems. In education, AI applications are used to automate administrative tasks, provide personalized support and learning, deliver individualized feedback to students, and expand learning opportunities through virtual environments using adaptive activities, games, and assessments tailored to learners' levels (Huang, 2024). AI can also be employed in lesson planning, diagnosing students' weaknesses, providing immediate responses to inquiries through chatbots, and offering supportive educational services.

The benefits of artificial intelligence (AI) in education include reducing faculty workload through automation, enhancing work-life balance, delivering personalized instruction that supports self-directed learning, fostering innovative teaching approaches, and promoting equity—particularly for students with special needs via tools such as speech-to-text (Huang, Zou, & Cheng, 2023; Xia & Zhou, 2023; Nguyen et al., 2023). However, AI integration also presents challenges, including limited faculty training, potential misuse, high costs, risks of academic dishonesty, and concerns regarding bias, privacy, and data security. These challenges require establishing clear regulatory and pedagogical frameworks to ensure the safe and ethical use of AI in educational settings (Chen, 2023; Huang, 2024).

#### **Axis Four: The Chatbot (ChatGPT)**

Rawas (2024, p. 6896) defined a chatbot as “a computer program designed to simulate conversation with users through messaging applications, websites, or mobile applications.” Chatbots can be programmed to respond to user inquiries or perform specific tasks and typically operate via text messages or voice communications, relying on artificial intelligence technologies (Elbanna & Armstrong, 2024). Al-Rahmi and Dahri (2024) explained that chatbots rely on natural language processing and machine learning algorithms to understand user inquiries and provide immediate responses. They are also defined as computer programs capable of understanding user intent and delivering appropriate answers, and can be integrated into multiple platforms such as websites, mobile applications, and social media platforms.

The history of chatbots dates back to the 1960s with the development of ELIZA in 1966 to simulate human conversation, followed by PARRY in 1972 to simulate a psychiatric patient, then ALICE in 1995, which employed natural language processing techniques, and SmarterChild in 2001, which was capable of learning from interactions (Gonçalves, 2024).

Over time, voice assistants such as Apple's Siri emerged in 2011, followed by Facebook's chatbot platforms in 2016, enabling organizations to interact intelligently with users (Silva et al., 2024). Intelligent chatbots are used in education to enhance the learning experience through personalized instruction, assisting students with assignments, understanding concepts, preparing for exams, and encouraging collaboration and discussion (Gill et al., 2024). Prominent examples include Google's Bard, OpenAI's ChatGPT, Ada, Replika, and Socratic (Mogavi et al., 2024). ChatGPT is a language model based on GPT (Generative Pre-trained Transformer) technology and is characterized by its ability to generate coherent, natural text and respond to user inquiries within conversational contexts (Ratten & Jones, 2023; Titila, 2023).

Chatbots are classified according to their functional architecture into rule-based chatbots, hybrid chatbots, AI-based chatbots, virtual assistants, voice assistants, and social chatbots (Biocina, 2024; Onal & Kulavuz, 2024). The fundamental principles of chatbots rely on machine learning and natural language processing, including sentiment analysis, entity recognition, and part-of-speech tagging. Studies show that chatbots provide a wide range of educational applications, such as creating intelligent learning pathways, offering immediate support, personalizing the learning experience, delivering multimedia content, interactive exercises, assessments, and reading recommendations (Valova & Kanev, 2024; Gill et al., 2024; Mogavi et al., 2024). These tools contribute to enhancing critical thinking, problem-solving skills, and effective communication, enabling students to learn at a personalized pace while receiving immediate feedback and facilitating continuous learning beyond traditional classrooms.

Despite their benefits, chatbots face challenges related to data privacy and security, as they handle sensitive personal and academic information, requiring robust encryption algorithms, access control mechanisms, and compliance with data protection regulations (Rawas, 2024). Ethical issues also arise regarding potential bias in training algorithms and the risk of students' overreliance on chatbots to complete assignments or engage in academic dishonesty. This necessitates faculty supervision and the establishment of clear guidelines for their educational use (Alhumaid et al., 2023).

## **Second: Previous Studies**

The most recent study by Ismail (2024) aimed to develop a distance training program to enhance skills in using learning management systems and digital intelligence among faculty members at the College of Education in Oman. The study adopted descriptive and quasi-experimental approaches with a sample of 29 faculty members. The results confirmed statistically significant differences at the 0.01 level between pre- and post-measurements, demonstrating the effectiveness of distance training programs in improving faculty members' digital and technological competencies.

In the same year, Karakose et al. (2023) explored the impact of interacting with ChatGPT on discussions related to the effects of the COVID-19 pandemic on education, using

collaborative analysis between artificial intelligence and human input. Data were generated through synchronous interviews with the chatbot. Results indicated that ChatGPT is capable of generating accurate, clear, and concise information, with the ChatGPT-4 version demonstrating higher levels of classification, synthesis, critical thinking, and inference. This highlights the potential for ethically and safely integrating chatbots into scientific research to support academic work.

Also in 2023, Abdeljawad investigated a proposed framework for activating the role of artificial intelligence in improving the performance of faculty members in colleges of education in Egypt. Using a descriptive approach and a questionnaire administered to 266 faculty members, the study revealed that integrating AI at organizational and administrative levels involves cooperation with experts, holding conferences and workshops, and diversifying teaching methods to enhance interaction. Additionally, AI applications were found to improve faculty research capabilities and support awareness campaigns on ethical AI use.

In the field of writing skill development, Haggag (2023) assessed the effectiveness of a program based on a pre-trained generative transformer in improving descriptive paragraph writing skills and English grammar among English major students in Egypt. Statistically significant improvements were observed between pre- and post-tests, reflecting the capability of generative transformers to support language learning and enhance writing skills.

### **Distinctiveness, Objectives, and Methodology of the Current Study**

The present study aims to design a training program based on connectivist theory to employ artificial intelligence applications (ChatGPT) at the University of Jordan and to assess its suitability from participants' perspectives. The study adopts a descriptive and qualitative approach using both a questionnaire and interviews to enable multidimensional data collection. Unlike prior research that focused solely on measuring effectiveness or evaluating individual skills, this study emphasizes designing an integrated, connectivist-based training program and evaluating its suitability, providing practical and applied value for future AI-based faculty training.

### **Methodology and Procedures**

#### **Research Design**

To achieve the objectives of the study, the researcher adopted a mixed-methods approach, which integrates both quantitative and qualitative research components. This approach is consistent with the nature of the current study, which aims to design a proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT) among faculty members at the University of Jordan and to identify the degree of its suitability from their perspectives (Denzin & Lincoln, 2018).

## **Population and Sample of the Study**

The study population included all faculty members at the University of Jordan from the Faculty of Educational Sciences, the Faculty of Engineering, and the King Abdullah II School of Information Technology, totaling 356 members. The questionnaire was distributed to a random sample of 332 faculty members via email and social media (WhatsApp) after obtaining their consent. Additionally, a purposive sample of 15 faculty members who had reviewed the training program participated in interviews to identify the standard specifications for the proposed training program.

## **Study Instruments**

Given that the study aims to identify a proposed training program and the level of its suitability from the perspectives of faculty members, and due to the use of a mixed-methods approach, the researcher developed two main instruments: a questionnaire and an interview protocol. This was done after following the established steps for instrument construction and verifying their validity and reliability, in addition to determining the procedures for their implementation.

### **First: Interview Protocol**

The interview protocol was developed by first identifying its main purpose, which was to identify the standard specifications that should be available in a training program based on connectivist theory for employing artificial intelligence applications to enrich educational situations, from the perspectives of faculty members at the University of Jordan. This process included designing specific, open-ended questions aligned with the study objectives, ensuring coverage of multiple aspects of the topic, and determining the time and place for conducting the interviews. The interview protocol consisted of five open-ended questions.

### **Validity of the Interview Protocol**

The interview protocol was reviewed by a panel of 15 experts from various fields, including educational technology, AI, computer science, measurement, across Jordanian universities. They assessed its relevance and clarity, and the researcher incorporated their feedback, producing a final version with five open-ended questions.

### **Reliability of the Interview Protocol**

The reliability of the interview protocol was verified using inter-rater reliability. The researcher collaborated with a colleague experienced in qualitative analysis to ensure consistency in analysis procedures and to minimize personal bias. The inter-rater agreement coefficient was calculated using Cooper's formula, yielding an agreement rate of 90.3%, which indicates a high level of reliability and supports the dependability of the interview instrument for data collection.

## **Questionnaire Instrument**

The questionnaire was designed to measure the degree of suitability of the proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT). The researcher followed several steps, including reviewing relevant previous studies, identifying the main domains, formulating the items, and adopting a four-point Likert scale to classify responses into low, moderate, and high levels.

## **Validity of the Questionnaire**

The validity of the questionnaire was verified through expert judgment, by presenting the initial version to 15 experts from various fields and making the necessary revisions. In addition, Pearson correlation coefficients between the items, domains, and the overall instrument showed high values that were statistically significant at the 0.01 level, confirming strong internal construct validity.

## **Reliability of the Questionnaire**

The reliability of the questionnaire was assessed using Cronbach's alpha coefficient, which indicated high internal consistency across the different domains. The values ranged from 0.902 to 0.929 for the domains and reached 0.975 for the instrument as a whole, demonstrating a high level of reliability and confirming the instrument's suitability for the purposes of the study.

## **The Training Program**

1. **Design Reference and General Framework:** The proposed training program was designed using the ADDIE model, building on studies by Al-Faqrah & Al-Saqrat (2021), Roshdi (2022), and Al-Obaidi & Zidan (2023). It is based on connectivist theory and aims to enhance faculty members' capabilities at the University of Jordan through AI applications such as ChatGPT.
2. **Steps for Developing the Training Program:** The program follows the phases of analysis, design, development, implementation, and evaluation. Analysis identified faculty needs and AI knowledge, as well as available resources and challenges. The design phase formulated learning objectives and instructional content, while development prepared materials and ensured AI tools' accessibility. Implementation involved workshops and hands-on sessions, with guidance during ChatGPT use, and evaluation collected feedback to improve effectiveness.
3. **Foundations of the Training Program:** The program relies on core connectivist principles, including effective interaction, clear communication, promoting dialogue, improving non-verbal communication, intelligent responses, and continuous feedback. It also considers philosophical and technological foundations and aligns general and specific objectives with participants' skills and abilities.

4. **Proposed Training Strategies:** Strategies include interactive workshops, live ChatGPT sessions, practical applications for educational projects, interactive discussions to generate ideas, continuous skill-enhancement courses, and ongoing feedback to improve educational performance.
5. **Components of the Training Program:** The program includes sessions on AI and ChatGPT introduction, fundamentals of ChatGPT, practical skill development, communication enhancement, evaluation, and future development. Its total duration is 16 hours and encompasses needs analysis, goal setting, practical content, workshops, performance follow-up, continuous support, and documentation.

### **Validity of the Training Program**

The validity of the training program was verified by presenting it to a panel of experts specialized in educational technology, measurement and evaluation, and psychology to ensure the appropriateness of the content and activities and the achievement of the educational objectives. The program was revised based on their feedback.

### **Statistical Analysis**

Data were analyzed using SPSS through several methods, including Pearson correlation coefficients to verify the construct validity of the questionnaire, Cronbach’s alpha to measure internal consistency reliability, and the calculation of means, standard deviations, ranks, and the degree of suitability of the training program from the participants’ perspectives.

## **Results of the Study**

### **Presentation and Analysis of Results**

This section presents the study results based on the responses of the sample to the research instruments, following data collection and statistical analysis, to address the study’s research questions. The findings are organized as follows:

**First: Results Related to the First Research Question: “What is the proposed training program based on connectivist theory for employing artificial intelligence applications (ChatGPT) at the University of Jordan from the perspective of faculty members?”**

To determine the standard specifications for the proposed training program, the researcher developed an interview protocol aligned with the study’s objectives. Fifteen faculty members from the Faculty of Educational Sciences at the University of Jordan, who had reviewed the program, were interviewed to assess its suitability from their perspectives.

**Table (1): Frequencies and Percentages of Faculty Members’ Proposals Regarding the General Framework of the Training Program**

No.	Proposals	Frequency	Percentage
1	Formulating general and specific objectives to be clear, applicable, and measurable	14	93.3%
2	Identifying the target group and its needs	12	80.0%
3	Continuous assessment, evaluation, and feedback collection from trainers and trainees	12	80.0%

4	Preparing appropriate training content that meets trainees' needs	10	66.7%
5	Using suitable training methods and strategies and determining required materials and tools	9	60.0%
6	Defining program components, timetable, training sessions, and their sequencing	9	60.0%
7	Educational theories and general philosophy	6	40.0%
8	Selecting trainers based on specific competency and experience criteria	4	26.7%
9	Diversity and inclusiveness	3	20.0%
10	Employing modern technology in program implementation	1	6.7%
11	Professional ethics (intellectual property, privacy, honesty, integrity in use)	1	6.7%

The results in Table (1) indicate that faculty members had a strong understanding of the training program's general framework. Most participants (93.5%) emphasized the importance of formulating clear, applicable, and measurable objectives. Eighty percent highlighted the need to identify the target group, assess training needs, and ensure continuous evaluation and feedback. Two-thirds (66.7%) stressed preparing engaging content that motivates skill acquisition. A small proportion (6.7%) noted the integration of AI applications, such as ChatGPT, and the importance of adhering to professional ethics, including intellectual property, privacy, honesty, and integrity.

### **Results Related to the Characteristics of the Proposed Training Program Based on Connectivist Theory for Employing Artificial Intelligence Applications (ChatGPT)**

The results showed that faculty members highlighted several key characteristics for the training program. Nearly half (46.7%) emphasized the importance of flexibility and adaptability in design, preparing realistic and relevant content tailored to trainees' needs and abilities, and promoting communication, interaction, participation, and motivation, while ensuring the program is organized, measurable, and practically applicable.

**Table (2): Frequencies and Percentages of Training Program Characteristics from Faculty Members' Perspectives**

No.	Characteristics	Frequency	Percentage
1	Flexibility and adaptability	7	46.7%
2	Preparing realistic, appropriate, and clearly defined content that considers trainees' needs, abilities, and interests	7	46.7%
3	Communication, interaction, participation, and motivation	7	46.7%
4	Organization, measurability, and applicability	7	40.0%
5	Grounded in theories, skills, knowledge, and competencies with practical application	6	40.0%
6	Encouraging self-directed and collaborative learning, critical thinking, and problem-solving	6	40.0%
7	Inclusiveness and diversity of topics	5	33.3%
8	Reliance on modern technology and safe applications and websites	4	26.7%

9	Clarity and transparency	4	26.7%
10	Diversity of instructional methods (kinesthetic, visual, auditory) and availability of learning resources	3	20.0%
11	Adopting a gradual, organized, and systematic learning approach	3	20.0%
12	Modernity and encouragement of innovation and exploration	3	20.0%
13	Designing the program based on objectives	2	13.3%
14	Continuous improvement and post-training support	2	13.3%
15	Cost-effectiveness	1	6.7%

Overall, the results indicate that faculty members emphasized flexibility, relevance of content, interaction and motivation, and the program's applicability. Six members (40%) stressed encouraging self-directed and collaborative learning and developing critical thinking and problem-solving skills. Two members (13.3%) highlighted objective-based design and continuous improvement with post-training support, while one member (6.7%) emphasized cost-effectiveness.

### **Results Related to the Vision of the Proposed Training Program Based on Connectivist Theory for Employing Artificial Intelligence Applications (ChatGPT)**

**Table (3): Frequencies and Percentages of the Training Program Vision from Faculty Members' Perspectives**

No.	Vision	Frequency	Percentage
1	Developing research skills, improving the educational process, and empowering learning	10	66.7%
2	Enhancing communication, interaction, and collaboration to provide collective learning experiences	9	60.0%
3	Responding to technological changes, especially AI, and developing beneficiaries' skills	9	60.0%
4	Encouraging innovation and self-directed, exploratory, experimental, analytical, and logical learning	8	53.3%
5	Achieving program objectives and developing knowledge, attitudes, and skills	6	40.0%
6	Addressing the target group with a clear, purposeful message and linking prior and new knowledge	3	20.0%
7	Providing advanced tools for data analysis	2	13.3%
8	Achieving human-AI integration and building a knowledge society supporting sustainable learning	2	13.3%

The results indicated that faculty members primarily viewed the program's vision as developing research skills, enhancing the educational process, and empowering learning (66.7%). Additionally, 60% emphasized promoting communication, interaction, and collaboration, 53.3% highlighted fostering innovation and self-directed, analytical learning, and 40% noted achieving program objectives and developing participants' knowledge, attitudes, and skills.

## Justifications for the Proposed Training Program

**Table (4): Justifications for the Proposed Training Program Based on Connectivist Theory for Employing Artificial Intelligence Applications (ChatGPT)**

No.	Justifications	Frequency	Percentage
1	Keeping pace with technological development and employing AI in education	12	80.0%
2	Developing trainees' technological skills and ethical use	6	40.0%
3	Improving acquisition of cognitive, affective, and skill competencies through innovative content	4	26.7%
4	Diversity of instructional strategies and the need for an interactive learning environment	4	26.7%
5	Developing self-directed, exploratory, and sustainable learning skills	3	20.0%
6	Changes in the training needs of the target group	3	20.0%
7	Providing an integrated learning experience and improving interaction and communication	3	20.0%
8	Facilitating and accelerating access to resources and educational content	3	20.0%
9	Automating educational processes and supporting distance learning and openness to others' experiences	2	13.3%
10	Enabling continuous evaluation and development	1	6.7%

The primary justification was keeping pace with technological development and employing AI in education (80%). Other justifications included developing ethical technological skills (40%), improving learning outcomes through innovative content (26.7%), and enhancing interactivity and strategy diversity (26.7%).

**Second: Results Related to the Second Research Question: "What standard specifications should be available in the proposed training program based on connectivist theory for employing artificial intelligence applications to enrich educational situations from the perspective of faculty members at the University of Jordan?"**

The results revealed that most faculty members (86.7%) emphasized the importance of social and cultural foundations, understanding community needs, and preserving national and human identity as core standards of the training program. Additionally, 80% highlighted the necessity of scientific integrity and ethical foundations when employing AI, while 33.3% stressed adherence to philosophical, theoretical, scientific, and cognitive foundations, including appropriate content selection.

**Table (5): Standard Specifications Required in the Training Program from Faculty Members' Perspectives**

No.	Specifications	Frequency	Percentage
1	Social and cultural foundations, understanding community needs, preserving national and human identity	13	86.7%
2	Scientific integrity and religious and ethical foundations in using AI applications	12	80.0%
3	Philosophical, theoretical, and scientific foundations	5	33.3%
4	Cognitive foundations and appropriate content selection	5	33.3%
5	Accessibility to ready information anytime and anywhere with cost reduction	4	26.7%
6	Encouraging scientific research	3	20.0%
7	Technological foundations and rapid developments in information technology	3	20.0%
8	Achieving sustainability	2	13.3%
9	Encouraging self-directed learning	2	13.3%
10	Enhancing psychological flexibility and openness to others	2	13.3%
11	Inclusiveness, integration, objectivity, effectiveness	1	6.7%
12	Interactivity between sender and receiver	1	6.7%

Overall, the findings indicate strong emphasis on social, cultural, ethical, and integrity-related standards, alongside theoretical, cognitive, and technological considerations, to ensure the effectiveness and sustainability of the proposed training program.

## Discussion of Results and Recommendations

### First: Discussion of Results Related to the First Research Question

The study's results indicated that faculty members demonstrated a thorough understanding of the proposed training program's general framework. Fourteen members (93.5%) emphasized the importance of formulating clear, applicable, and measurable objectives as the foundation for guiding content, strategies, and evaluation. Twelve members (80%) highlighted the necessity of identifying the target group and assessing training needs, as well as ensuring continuous evaluation and feedback to maintain program flexibility and effectiveness. Ten members (66.7%) stressed preparing appropriate, engaging content that meets trainees' needs and motivates skill acquisition.

Regarding program characteristics, seven members (46.7%) emphasized flexibility and adaptability, linking theoretical knowledge with practical application, enhancing communication, interaction, and participation, and ensuring that the program is organized, measurable, and applicable. Six members (40%) highlighted promoting self-directed and collaborative learning, critical thinking, and problem-solving skills.

Concerning the program's vision, ten members (66.7%) stated that it aims to develop research skills, improve the educational process, and empower learning. Nine members (60%) underscored the importance of enhancing communication and collaboration, providing collective learning experiences, and responding to technological changes. Eight members (53.3%) emphasized fostering innovation and self-directed, analytical learning,

while six members (40%) noted the significance of achieving program objectives and developing participants' knowledge, attitudes, and skills.

Regarding program justifications, twelve members (80%) identified keeping pace with technological development and integrating artificial intelligence into education as the main rationale. Six members (40%) emphasized developing technological skills and ethical technology use, while four members (26.7%) highlighted improving skill acquisition through innovative content, interactive learning environments, and diverse instructional strategies. Overall, the findings confirm faculty members' awareness of the importance of clear objectives, identifying trainees' needs, selecting suitable content, maintaining program flexibility, enhancing interaction and communication, and integrating modern technology to achieve effective learning and improve training quality.

### **Second: Discussion of Results Related to the Second Research Question**

The results showed that the majority of faculty members (86.7%) emphasized the necessity of incorporating social and cultural foundations, understanding community needs, and preserving national and human identity within the training program. These elements play a vital role in meeting societal needs, promoting sustainable development, and creating an inclusive and interactive educational environment.

In addition, twelve faculty members (80%) stressed the importance of maintaining academic integrity and adhering to religious and ethical principles when using artificial intelligence applications, in order to promote social responsibility, cooperation among stakeholders, and ensure the quality of research and information provided. Similarly, five faculty members (33.3%) agreed on the importance of adhering to philosophical, theoretical, and scientific foundations, as these contribute to the development of critical thinking skills, deeper conceptual understanding, and logical organization of training content. Another five faculty members (33.3%) emphasized the importance of cognitive foundations and appropriate content selection, due to their role in fostering a culture of sustainable learning, stimulating independent thinking and problem-solving, and ensuring alignment between training content and trainees' prior knowledge and skills to enhance educational effectiveness.

### **Recommendations**

Based on the findings of the study, the researcher recommends the following:

1. Designing training content that focuses on enhancing communication and interaction among trainees, while adopting strategies that support active participation and increase motivation toward learning.
2. Formulating clear and well-defined objectives for training programs that align with trainees' needs and expectations, ensuring that these objectives are measurable and practically applicable.
3. Creating a flexible learning environment that enables interactive and collaborative learning through the use of technology and artificial intelligence tools to enhance the quality of the educational experience.

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