

# The Educational Guidance Platform via Artificial Intelligence Chatbot to Promote Vocational Aptitude for Vocational Students

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## Abstract

The educational guidance platform via artificial intelligence chatbot to promote vocational aptitude for vocational students or the educational guidance platform via AI Chatbot is a research tool that was designed with the combination of educational guidance process, artificial intelligence technology, and chat platforms like LINE and Messenger. The platform in this study is intended primarily to be used as a tool to analyze vocational aptitude and provide personalized educational advice, which will assist learners to choose suitable programs for further study in vocational education level. This study were aimed to (1) study and synthesis the conceptual framework of the educational guidance platform via AI Chatbot, (2) develop the educational guidance platform via AI Chatbot, and (3) evaluate the results of the developed the educational guidance platform via AI Chatbot. There were nine participants from different institutions included in this research, derived by means of purposive sampling, and with experience in the design and development application. The research instruments include (1) the architecture the educational guidance platform via AI Chatbot, and (2) evaluation form on the architecture the educational guidance platform via AI Chatbot. The results of this study, which were derived from the study on the prototype design of the architecture of the educational guidance platform via AI Chatbot, are designated to be used as a guideline for future studies in order to develop the educational guidance platforms via AI Chatbot that can be put in practical use in an effective manner. The results of this study show that the overall suitability of the development of the architecture of the educational guidance platform via AI Chatbot is at strongly agree level. Nevertheless, there are still some research gaps in this study that need to be further addressed in the future. For instance, the future studies should cover a wider range of application of the developed platforms by conducting the survey with more diverse population and broader educational environments. This is to confirm the suitability of the development of the architecture of the educational guidance platforms via AI Chatbot that can be used as a guideline for future development coupled with the related technologies.

**Keywords:** educational guidance, artificial intelligence, Chatbot, mobile application, vocational aptitude

## 1. Introduction

The Vocational Education Development Agenda of the Office of the Vocational Education Commission for fiscal year 2024 have placed importance on equipping personnel with skills and abilities in response to the needs of labor market in the age of dynamic world. The emphasis is placed particularly on the improvement of learners' vocational skills and competencies in terms of both theories and practices (Chatwattana et al., 2024), while promoting digital learning that can be accessed anywhere and anytime with an aim to expand educational opportunities (Vocational Education Commission, 2024). In addition, the development of vocational education curricula and dual vocational education management have been actively promoted in order that students can obtain real experiences from workplaces. Not only that, the aforementioned agenda also focus on the development of vocational skills in such a way that students must be able to earn income during their studies (Learn to Earn), along with the measurement system and certification of vocational standards so that students keep improving their own skills and set foot in the labor market successfully. All of the aforementioned are designated to elevate the quality of life and create stability for both students and general public (Vocational Certificate Curriculum, 2024).

It is highly essential to develop human resources in order to satisfy the demands of labor market and catch up with modern technologies, especially in the vocational education sector, which is playing a significant role in the

creation of skilled and competent workers in response to the needs of industries. Therefore, the use of artificial intelligence (AI) technology in the educational guidance process and vocational aptitude development is considered an interesting approach because it is believed that AI can analyze learners' abilities, aptitudes, and interests in a precise and systematic manner. As a result, this approach, coupled with the aid of popular applications on social media, can help learners make decision on the suitable career path that is consistent with their potentiality (Kingchang et al., 2024). According to the study of researches related to artificial intelligence technology (Russell & Norvig, 2010; Mukhamediev et al., 2022; Tian et al., 2023; Chatwattana et al., 2024; Sittichanbuncha, 2021), it is found that the application of artificial intelligence technology in education can effectively enhance the quality of education, learning methods, and practices, resulting in active learning and collaborative activities that can interact with one another in real time.

Recently, artificial intelligence (AI) has been widely known as an emerging technology that makes use of a huge amount of data to do analysis, forecast, and prediction in order to find out new algorithms for further prediction in a more effective manner (Chatwattana et al., 2024). The remarkable capabilities and features of this technology have made it become an emerging technology that can effectively respond to the needs of learning and usage (TechTarget, 2023), for instance, the use of chatbots to provide automated services and recommendations in education and businesses, the use of ChatGPT to perform email correspondence, data filtering, data search, and summarizing complicated data into a coherent story, etc. The aforementioned case studies insist that the practical application of AI is in good tendency, and it is increasingly widely used. Also, the accessibility anywhere and anytime of this technology can lead to proactive communication, which can respond to and support the current global situations.

Artificial intelligence (AI) is concerning the creation of machines that possess intelligence and cleverness like humans, for example, thinking and acting rationally like humans. The core science that equips AI technology with such intelligence and human-like learning is machine learning (ML) (Code Genius Academy, 2024). Thereby, artificial intelligence is composed of five main elements as follows: (1) Machine Learning: This refers to a set of algorithms in artificial intelligence that helps predict new properties of data in accordance to the training data. (2) Robotics or Robot Arm: It is a robotic model imitating human body parts, which is controlled by a computer. Robotics is usually intended to replace humans while carrying out dangerous tasks. (3) Natural Language Processing System: This element is a system that enables computers to understand text and speech like humans do. (4) Speech Recognition System: It is a computer system that can understand human languages and can remember human speech. (5) Expert System: It is a smart computer system that analyzes problems based on reasons, making use of existing knowledge or experiences derived from solving some problems to solve other problems in a logical manner (Kingchang et al., 2024).

Educational guidance is a process of providing knowledge and understanding about education with an intention to help learners or service recipients know the guidelines about further study, educational trends, and educational opportunities. With helpful educational guidance, learners or service recipients are able to choose their educational paths in line with their intellectual abilities, aptitudes, and interests, which will also affect their future career choices (Thongmeekwan et al., 2023).

Chatbot is a software that can interact with users by means of texts or speech in varied languages and it is designed to imitate humans' common interactions. Chatbot will automatically respond to conversations via texts or voice in an instant manner, and it is compatible with many applications on social media, such as Line, Messenger, Instagram, etc. (Kingchang et al., 2023). Chatbot is also recognized as a very popular tool in today's digital age since it provides automated question answering services that are quite convenient for users. The functions of chatbot are divided into five categories as follows, i.e., Scripted or Quick Reply Chatbot, Keyword Recognition Based Chatbot, Voice-enabled Chatbot, Hybrid Chatbot, and Contextual Chatbot (Chatwattana et al., 2024).

Vocational aptitude refers to an individual's abilities, interests, and characteristics that are suitable for working in a particular career. Aptitude may result from development of skills, trainings, or experiences, and it enables persons to have confidence and adroitness while working in that field. Vocational aptitude is very important as it helps people choose the careers that are corresponding to their abilities and interests, leading to happiness and success in workplaces. Besides, good understanding of vocational aptitude can also be useful when planning the long-term career development (Kirdpitak & Malakul Na Ayudhaya, 2016; Potha, 2018).

According to the principles and reasons above, the researchers have had an idea to develop the architecture of the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students. The platform in this study is intended to be used as a tool to analyze vocational aptitude and allow learners to receive

useful educational guidance more easily and more conveniently by means of chat platforms equipped with automated personalized guidance process. It is expected that this platform, coupled with the utilization of digital technologies and innovations, enables learners to discover their own interests and employ this information to make precise decision on appropriate programs when further studying in vocational education level.

## 2. The Study and Research Objectives

This study is designated to explore the perspectives of the participants towards the development of the architecture of the educational guidance platform via AI Chatbot; thereby, all the participants in this study were willing to answer all questions in the evaluation form and they were also well protected with the policies of confidentiality and anonymity (Chatwattana et al., 2024). This is to find out to what extent the architecture of the educational guidance platform via AI Chatbot is suitable for use as a guideline to develop other educational guidance platforms via AI Chatbot, which can be put in practical use in the future. The objectives of this research are as follows:

1. To study and synthesis, the conceptual framework of the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students.
2. To develop the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students.
3. To evaluate the results of the developed the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students.

The suitability of the developed the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students is at a agree level.

## 3. Method

This study was conducted based on the pre-experimental research method with a one-shot case study to examine the established research hypotheses. The development of the educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students, the methodology of this development is as follows:

### 3.1 Participants

There were nine participants from different institutions included in this research, derived by means of purposive sampling, and with experience in the design and development application.

### 3.2 Instruments and Data Collection

The research instruments include (1) the architecture the educational guidance platform via AI Chatbot, and (2) evaluation form on the architecture the educational guidance platform via AI Chatbot. The data analysis included the mean and standard deviation.

### 3.3 Method

The methodology of this research can be concluded based on the concept of systems approach theory (Khemmani, 2018; Utranan, 1982) along with SDLC technique of Robert et al. (2013) devided into three stages as follows.

Phase 1: Synthesis the documents and research relevant to vocational certificate curriculum B.E. 2567, educational guidance, artificial intelligence technology, chatbot, and mobile application. The conceptual framework is illustrated in Figure 1.

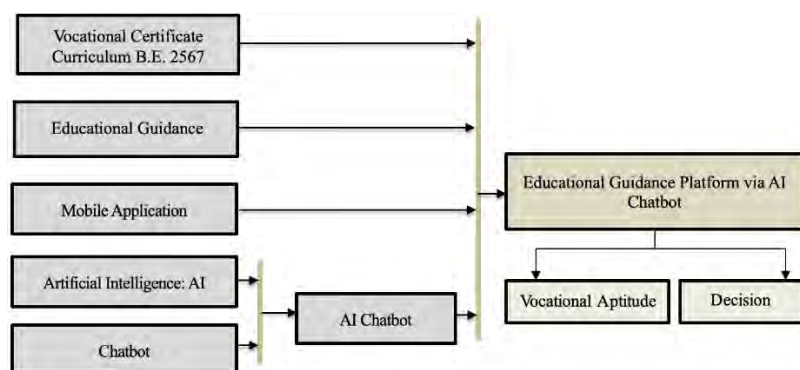


Figure 1. Conceptual framework of the architecture the educational guidance platform via AI Chatbot

Phase 2: Develop the educational guidance platform via AI Chatbot. In this stage, the researchers applied the principles of systems approach along with SDLC theories as guidelines for the design and the development. The components of the architecture the educational guidance platform via AI Chatbot consists of three parts i.e., input factor, components and platform development process, and output.

Phase 3: Study of suitability on the development the educational guidance platform via AI Chatbot with nine participants, which had experience in the design and development application from different institutions in higher education.

#### 4. Findings

The educational guidance platform via AI Chatbot to promote vocational aptitude for vocational students is intended to be used as a research tool to analyze vocational aptitude and provide personalized educational guidance. The platform was fabricated by integrating educational guidance process with artificial intelligence technology and chat platforms like LINE and Messenger, with expectation that it can help promote vocational aptitude for vocational students. The design and the development of the educational guidance platform via AI Chatbot can be summarized as below:

##### 4.1 The Architecture of the Educational Guidance Platform via AI Chatbot to Promote Vocational Aptitude for Vocational Students

The architecture of the educational guidance platform via AI Chatbot was developed with an intention to be used as a guideline to further develop other educational guidance platforms via AI Chatbot to promote vocational aptitude for vocational students. In this study, the researchers integrated educational guidance process with artificial intelligence technology in order to devise a tool that can provide services via chat platforms like LINE and Messenger. It is expected that this platform will help learners receive educational advice more easily and more conveniently. The design and the development of the architecture of the educational guidance platform via AI Chatbot are based mainly on system approach, which consists of three main elements, i.e., input factor, components and platform development process, and output.

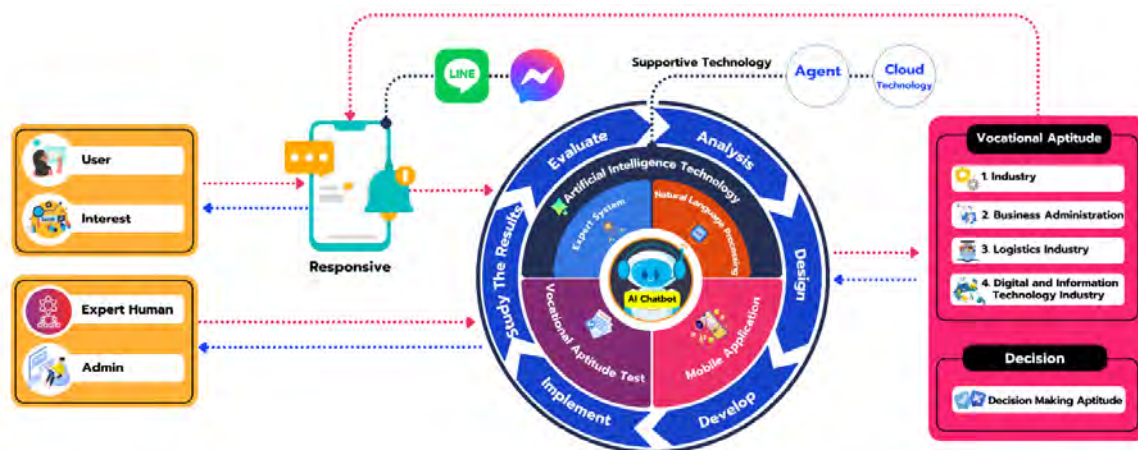


Figure 2. Architecture of the educational guidance platform via AI Chatbot

Figure 2 illustrates the architecture of the educational guidance platform via AI Chatbot, which comprises three main elements as follows:

- 1) Input factor: This refers to all elements that are required in the development of the architecture of the educational guidance platform via AI Chatbot, i.e., user, interest, expert human, admin, and responsive.
- 2) Components and platform development process: The researchers integrated artificial intelligence technology with educational guidance process and provided services via a platform application, which is composed of five main components: 1) system development process, consisting of six steps, i.e., analysis, design, develop, implement, study the results, and evaluate; 2) artificial intelligence technology; 3) mobile application; 4) vocational aptitude test; and 5) supportive technology.
- 3) Output: This element is the personalized educational guidance derived from the consideration of skills and interests, which will be taken into account when choosing the programs for further study in Phanatnikhom Industrial and Community College. Whereby, the outcome herein includes vocational aptitude and

decision-making aptitude.

#### 4.2 The Suitability for Development the Architecture the Educational Guidance Platform via AI Chatbot

From the study on suitability for development the architecture the educational guidance platform via AI Chatbot with nine participants from different institutions, derived by means of purposive sampling, and with experience in the design and development application. The details of the evaluation are shown in Table 1 and Table 2.

Table 1. The suitability for development the architecture the educational guidance platform via AI Chatbot (overall elements)

Items	Mean	SD	Level of agreement
1. Principles and concepts for developing the educational guidance platform via AI Chatbot.	4.89	0.31	Strongly agree
2. The suitability of the components of the educational guidance platform via AI Chatbot.			
2.1 Input factor	4.56	0.50	Strongly agree
2.2 Components and platform development process	4.78	0.42	Strongly agree
2.3 Output	4.67	0.47	Strongly agree
Total mean	4.72	0.42	Strongly agree

In reference to the results of evaluation in Table 1, it is found that the suitability in the overall elements of the development of the architecture of the educational guidance platform via AI Chatbot is at strongly agree level (Mean = 4.72, SD = 0.42). Thus, it can be concluded that the architecture of the educational guidance platform via AI Chatbot contains all necessary elements, and it can be applied as a guideline to further develop other educational guidance platforms via AI Chatbot for practical use in the future. The results are in line with the research of Kingchang et al. (2023), who said that the integration of the design theories in system development life cycle (SDLC) with the systems thinking concepts can help the design have all complete elements.

Table 2. The suitability for development the architecture the educational guidance platform via AI Chatbot

Items	Mean	SD	Level of agreement
1. Input factor			
1.1 User	4.78	0.63	Strongly agree
1.2 Interest	4.67	0.67	Strongly agree
1.3 Expert human	4.78	0.42	Strongly agree
1.4 Admin	4.89	0.31	Strongly agree
1.5 Responsive	4.78	0.51	Strongly agree
2. Components and platform development process			
2.1 System development process			
2.1.1 Analysis	4.78	0.42	Strongly agree
2.1.2 Design	4.89	0.31	Strongly agree
2.1.3 Develop	4.78	0.42	Strongly agree
2.1.4 Implement	4.89	0.31	Strongly agree
2.1.5 Study the results	4.89	0.31	Strongly agree
2.1.6 Evaluate	4.67	0.47	Strongly agree
2.2 Artificial intelligence technology			
2.2.1 Natural language processing	4.78	0.63	Strongly agree
2.2.2 Expert system	4.78	0.42	Strongly agree
2.3 Mobile application	4.67	0.47	Strongly agree
2.4 Vocational aptitude test	4.78	0.42	Strongly agree
2.5 Supportive technology	4.67	0.47	Strongly agree
3. Output			
3.1 Vocational aptitude	4.78	0.42	Strongly agree
3.2 Decision making aptitude	4.67	0.47	Strongly agree
Total mean	4.77	0.44	Strongly agree

According to the results in Table 2, it is obvious that the overall suitability of the development of the architecture of the educational guidance platform via AI Chatbot is at strongly agree level (Mean = 4.77, SD = 0.44). This can be summarized that the architecture of the educational guidance platform via AI Chatbot is composed of appropriate elements, and it can be applied as a guideline for use in measuring vocational aptitude of vocational students. It is believed that the results obtained from this platform can be helpful for learners to select appropriate programs with more likelihood of successful graduation.

## 5. Conclusion & Discussion

The educational guidance platform via AI Chatbot is intended to be used as a tool to analyze vocational aptitude for vocational students. The design and the development of this platform are based primarily on artificial intelligence technology integrated with chat platforms like LINE and Messenger, aiming to provide learners with automated personalized educational advice on the selection of programs corresponding to their skills and interests. To illustrate, the platform will analyze and assess learners' skills and interests and then provide guidance about vocational education that matches well with their potentiality. This will help learners make right decision on the suitable programs to study with higher chance of successful graduation.

Regarding the results of evaluation on the development of the architecture of the educational guidance platform via AI Chatbot, it is found that (1) the suitability in the overall elements of the development of the architecture of the educational guidance platform via AI Chatbot is at strongly agree level (Mean = 4.72, SD = 0.42), and (2) the overall suitability of the development of the architecture of the educational guidance platform via AI Chatbot is at strongly agree level (Mean = 4.77, SD = 0.44). Once considering the results above, it can be concluded that the architecture of the educational guidance platform via AI Chatbot consists of appropriate elements, and it can be employed as a guideline to further develop the more efficient platforms that can be put in practical use in the future. It is expected that the educational guidance platform of this kind is capable of analyzing vocational aptitude of vocational students and giving useful personalized suggestions that can help them choose the programs suited to their potentiality with more likelihood to graduate successfully.

The findings above are in accordance to the research of Zaky (2023), who stated that applying the new forms of technologies to create fun experiences in education can promote and support the achievement of specific goals, and meanwhile increase students' engagement and motivation in learning. Also, the results are consistent with the research of Kabataş (2021), who insisted that the use of smartphones in the instruction management makes learning sound much more entertaining. In addition, these devices enable learners to have quick access to information sources in social media networks. Above all, the use of digital technologies makes them feel more satisfied as they are able to perceive information in a proactive manner. This is also in line with the research of Chatwattana et al. (2024), who examined the perspectives towards the development of the education recommendations system with AI Chatbot. The research found that the application of AI Chatbot in the development of education recommendations systems can fulfill users' needs in terms of not only efficiency and capabilities in analysis of questions but also the provision of accurate information that is beneficial to education guidance. In addition, the results of this research indicate that the users were highly satisfied with the real-time interaction on the applications that could be accessed anywhere and anytime.

## 6. Future Research and Scientific Contribution

The main objectives of this study are to develop the architecture of the educational guidance platform via AI Chatbot and to examine the perspectives of the research participants towards the said platform. Thereby, all of the participants gave their consent to answer the questions in the evaluation form and they were well protected with the policies of confidentiality and anonymity. This is all to find out to what extent the architecture of the educational guidance platform via AI Chatbot developed herein is suitable to be used as a guideline to further develop other educational guidance platforms via AI Chatbot that can be put in practical use in the future. Regarding the discussion with all participants in this research after the evaluation on the suitability of the architecture fabricated in this study, it is found that the architecture of the educational guidance platform via AI Chatbot is composed of the complete structure and all necessary elements; therefore, it can be applied in the design and the development of other educational guidance platforms via AI Chatbot in order to provide guidance related to vocational education for vocational students anywhere and anytime.

Nevertheless, there are still some limitations in this study that need to be addressed in the future studies. First of all, the research results concerning the suitability of the development of the architecture were derived from only seven research participants; thus, the findings herein are considered merely a pilot study that may be employed as a guideline for future development. The other limitation is that the context of this study is limited to the chatbot technology only. So, the future researches may focus on the design of more diverse technologies so as to obtain the guidelines for developing the tools that can respond to future applications in a more effective manner. In conclusion, this research still has a significant role since it can be used as a guideline to further develop other educational guidance platforms via AI Chatbot, which can be put in practical use in the future in order to promote educational guidance for vocational students.

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research properly.

### Authors contributions

Mr. Manus Phuttawong develops the main idea of this research, wrote and compose the manuscript, developing the tools and studied the results. Assoc. Prof. Dr. Pinanta Chatwattana revised and compose the writing quality of the manuscript and rechecked the manuscript before it was to be submitted. The two authors have approved the final version of this manuscript for publication.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

### Ethics approval

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### Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

### Data sharing statement

No additional data are available.

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