

## International Journal of Computer Science and Mobile Computing



A Monthly Journal of Computer Science and Information Technology

ISSN 2320-088X

IMPACT FACTOR: 7.056

*IJCSMC, Vol. 15, Issue. 4, April 2026, pg.234 – 241*

# AI ENHANCED CAREER GUIDANCE SYSTEM

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**DOI:** <https://doi.org/10.47760/ijcsmc.2026.v15i04.027>

**Abstract:** Students nowadays are presented with different, branching options when it comes to choosing a career option. Students often have to rely on confusing information that may not provide them with the information that they need. This gap can often leave students to select careers that are not suitable to the skills and interests that they possess. Thus, the researchers aim to bridge that gap by utilizing Artificial Intelligence to provide students with recommendations that align with their skills and interests. This study presents the development of the AI Enhanced Career Guidance System; a web-based system designed to provide students with such a capability. The system relies on a standardized set of questions based on RIASEC assessments to assess a student's skills and interests. This information is then processed by Artificial Intelligence using a database containing different career information to create recommendations that can help guide students to a career that fits their skills and interests. The system is developed using the AGILE method. The system's functionality, usability, reliability, security, and

**maintainability were evaluated using the ISO/IEC 25010:2011 SQuaRE quality model, with assessments provided by IT experts to ensure that the system works correctly. Results indicated that the system functions as expected, providing a trustworthy platform for both students and administrators. The study finds the system greatly enhances career guidance, providing students with apt recommendations that align careers to their skills and interests.**

**Keywords: Career Guidance, Artificial Intelligence, Student Careers, RIASEC Assessments, AGILE Method, SQuaRE Quality Mode**

## I. INTRODUCTION

Students today face myriad career options, making it daunting to find the best fit. This often leads to career uncertainty—doubt about choices and aspirations—that harms academic performance and post-graduation success (Perry & Franklin, 2022). Effective decision-making support is thus essential. Career guidance helps individuals choose informed paths via counselling and advice (Toni & Vuorinen, 2020). Also, according to The Organisation for Economic Co-operation and Development (2024), there is a strong basis for believing that greater student engagement in career development interventions can be expected to reduce levels of career uncertainty among young people. For senior high school students, it aligns skills, interests, and performance with labour market needs, clarifying options to boost motivation and employability.

AI offers transformative potential here. AI career advisors match skills to job demands, improving decisions (Nguyen & Tran, 2021). Personalized tools cut information overload and boost engagement (Gonzalez, 2020), making AI integration vital for schools. Traditional counselling often lacks scale and personalization. AI systems address this via machine learning, analysing academics, activities, and preferences for tailored recommendations (Kaldybaeva, 2025), freeing counsellors for deeper work.

This study develops an AI Enhanced career guidance system for grade 12 students at Colegio de Sta. Ana de Victorias Integrated School residing in Osmeña Avenue, Victoria city, Negros Occidental. It assesses skills/interests, suggests careers, and provides path info using Artificial Intelligence. Evaluation follows ISO/IEC 25010:2011, with experts rating functional suitability, performance, compatibility, usability, reliability, security, maintainability, and portability; end-users assess effectiveness, efficiency, satisfaction, risk freedom, and context coverage.

Tailored for these grade 12 students, it explores post-secondary options like vocational training, entrepreneurship, jobs, and college. Using Holland's RIASEC, it matches profiles to careers (John Holland, 1997). Features include a skills/resources database with strong privacy/security (Kaldybaeva, 2025).

## II. MATERIALS AND METHOD

### Research Design

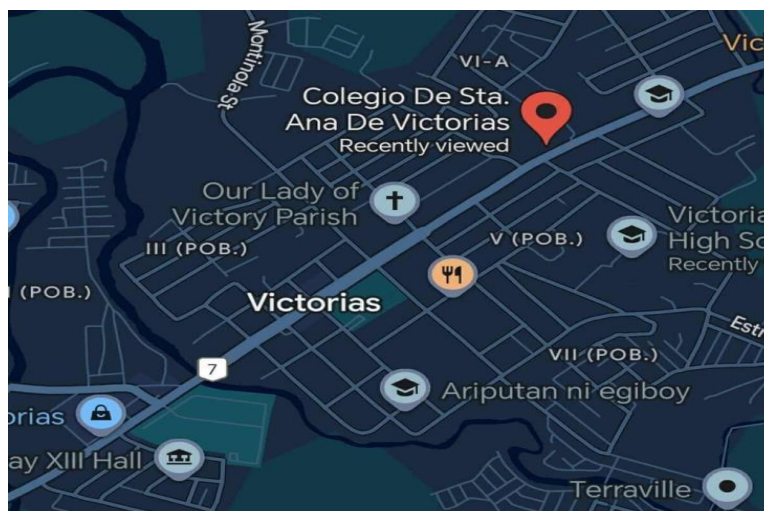


Figure 1. Locale of the Study

In Figure 1, the front view of Colegio de Sta. Ana de Victorias is shown. Located in Victorias City, Negros Occidental, this educational institution serves as the primary setting where the researchers conducted the study focused on developing the system for Grade 12 Senior High School students. The locale provides a relevant

environment to explore the use of artificial intelligence in enhancing career decision-making among students at this school.

### Sample Size

Participants	Population	Sample
Grade 12 Senior High School Students	236	111

Table 1.0 presents the population of senior high school students at Colegio de Sta. Ana de Victorias, which is approximately 236 students. Using the Raosoft sample size calculator with a margin of error of 5%, a confidence level of 85%, and a response distribution of 50%, the recommended sample size was determined to be 111 participants. This sample size represents approximately 18.2% of the total population. The selected sample aims to capture the diversity of academic performance, interests, and skills among the student body, ensuring a robust evaluation of the AI Enhanced Career Guidance System.

### Sampling Technique

The researchers employed simple random sampling to select participants, ensuring that each student had an equal chance of being included in the study. This approach was chosen to maximize representativeness and to gather insights from a broad cross-section of the Grade 12 Senior High School population.

### Respondents of the study

The respondents of this study are 111 Grade 12 Senior High School Students enrolled in Colegio de Sta. Ana de Victorias, selected from a total population of 236 students. These students were chosen as they represent the intended users of the AI Enhanced Career Guidance System.

Their participation is essential for tailoring the system’s recommendations, as they provide diverse perspectives based on their academic performance, interests, and skill.

### Reliability and Validity of the Research Instrument

To ensure the accuracy and consistency of the data collected from the 43 respondents of the Grade 12 Senior High School Students at Colegio de Sta. Ana de Victorias, the reliability and validity of the research instruments were rigorously evaluated.

Lawshe was used to assess the reliability, which measured the internal consistency of the survey items. This statistical test ensured that the questionnaire reliably captured students’ interests and skills, as aligned with the RIASEC model. A satisfactory Cronbach’s Alpha value indicated that the items consistently reflected the intended constructs across the sampled population.

The **Good and Scates** method was used to assess the validity of the research instruments used in the study. This involved a panel of subject matter experts evaluating the survey and assessment tools based on criteria such as relevance, clarity, comprehensiveness, and consistency. Their feedback was used to refine the instrument, ensuring that each item was meaningful and appropriate for the target student population.

The instrument underwent translation and cultural adaptation following the guidelines of Chávez & Canino (2005). This process ensured content equivalence and appropriateness for the local context. The adaptation procedure included rational analysis and expert consultation to confirm that each item was relevant, understandable, and meaningful within the cultural and educational environment of Colegio de Sta. Ana de Victorias. By adhering to these standards, the study ensured that the instrument accurately reflected the experiences and perspectives of the students, thereby supporting the validity and reliability of the research findings.

### Data Gathering Procedure

For the purpose of the proposed study, the proponent used a variety of data collection technologies to help acquire pertinent data. The following tools were employed to collect data for the study:

**Survey Questionnaire.** Researcher-made survey questionnaires, integrated and standardized RIASEC-based assessment tools were distributed to the 43 randomly selected respondents. The survey was designed to collect comprehensive data on students’ interest, skill, and perceptions regarding career guidance.

**Interviews.** In-depth interviews were conducted with a subset of the student respondents and with school guidance counselors. These interviews provided qualitative insights into the current challenges and needs related to career guidance, as well as feedback on the proposed AI- supported system.

**Internet Research.** Secondary data collection involved reviewing relevant literature, existing AI career guidance systems, and best practices in career counseling. This background research supplemented the primary data and informed the design and evaluation of the system. All data collection procedures were conducted in accordance with ethical guidelines, ensuring informed consent and the confidentiality of participants' responses.

**Data Analysis Procedures**

The analysis of data collected from the 43 student respondents and other sources followed these steps:

**Data Collection.** Data from survey questionnaires, interviews, and secondary sources were systematically gathered and organized for analysis.

**Data Cleaning.** The collected data were reviewed for completeness and accuracy. Incomplete, inconsistent, or ambiguous responses were identified and excluded to ensure the reliability of the dataset.

**Data Exploration.** Descriptive statistics (such as frequency distributions, means, and percentages) and visualizations (charts and graphs) were used to identify patterns and trends in students' interests, skills, and perceptions.

**Data Analysis.** Quantitative data from the surveys were analyzed using appropriate statistical methods to test research hypotheses and evaluate the effectiveness of the AI Enhanced Career Guidance System. Qualitative data from interviews were thematically analyzed to extract key insights and contextual factors.

**Interpretation.** The results of the quantitative and qualitative analyses were synthesized to draw conclusions and formulate recommendations for improving the AI Path Recommendation Support System. The findings were used to ensure that the system is responsive to the actual needs and preferences of the student population.

The descriptive developmental technique, which is the methodical study of designing, creating, and carefully evaluating programs, procedures, and products that must meet standards or criteria, was employed by the researcher.

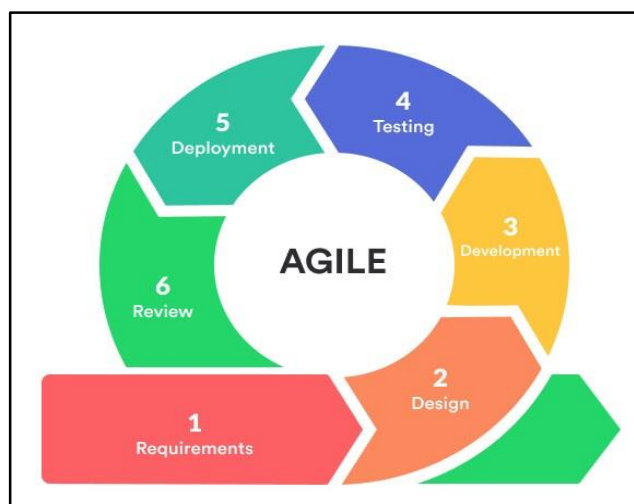


Figure 2. Software Development Life Cycle

Figure 2 shows the methodology used in the development of the proposed system. The researcher used process models of the System Development Life Cycle known as the Agile Approach Model. The approach model anticipates changes and allows for much more flexibility than traditional methods. The process involves breaking down each project into prioritized requirements and delivering each individual within an iterative cycle.

**Requirement.** In this phase, the requirements for the AI Enhanced Career Guidance System were gathered and analyzed. This includes identifying user requirements, such as personalized career recommendations and career path information, and data requirements, including academic records, interests, and skills. For the AI Enhanced Career Guidance System; this involves identifying the specific features and functions needed for data analysis, career matching, and user interaction.

**Design.** In this phase, the system architecture is designed, and detailed specifications were developed. For the AI Enhanced Career Guidance System; this involves designing the user interface, data model, and workflow for integrating AI-driven recommendation algorithms. The researchers developed blueprints as basis for development.

**Development.** This phase involves the actual development of the software. For the AI Enhanced Career Guidance System; this includes programming the application, configuring the database, and integrating AI algorithms to analyze user data and provide personalized career recommendations

**Testing.** In this phase, the system has been tested to ensure that it meets the requirements and specifications.

For the AI Enhanced Career Guidance System; this includes testing the data analysis process, career recommendation algorithms, and user interface to ensure they work correctly and provide accurate recommendations.

**Deployment.** In this phase, the system has been made available to users. This involves configuring, integrating, and deploying the AI Enhanced Career Guidance System in a production environment, ensuring it is accessible and functional for stakeholders.

**Review.** In this phase, the delivered increment has been evaluated, and feedback has been gathered from users. The feedback has been used to identify areas of improvement, address any issues or concerns, and refine the product backlog for future iterations. The result of the evaluation has been used to improve the processes of the system, ensuring it continues to meet evolving user needs effectively.

### III. RESULTS AND DISCUSSION

After thorough evaluation of the experts and respondents, the following are discovered:

Table 1. *Level of User Acceptability in terms of AI Enhanced Career Guidance System*

Criteria	Mean	Interpretation
View, Accept and Send out assessment request.	3.33	Agree
View, Accept, Edit, and Delete students and their information, as well as their assessment results.	4.67	Strongly Agree
Assign staff/users to different groups of students for easier student management.	4.67	Strongly Agree
Uses Artificial Intelligence to interpret student data to create career recommendations.	3.67	Agree
Give Artificial Intelligence information about careers in the form of a document.	4.17	Strongly Agree
<b>Grand Mean</b>	4.10	Strongly Agree

Table 1 shows that the AI Enhanced Career Guidance System was given a “Strongly Agree” across most of the criteria. In terms of Viewing, Accepting, and Sending out of assessment requests, the system achieved a mean of 3.33, implying that users can view, accept, and send out assessment requests reliably. The system’s ability to View, Accept, Edit, and Delete student information, as well as their assessment results, achieved a mean of 4.67. This implies that the system can effectively manage important student information. In terms of using Artificial Intelligence in making career recommendations, it achieved a mean of 3.67. This implies that the AI can make recommendations based on given student data. In terms of providing the system’s Artificial Intelligence career information, it achieved a mean of 4.17. This implies that the system can provide information to the AI that it can use in creating career recommendations. Overall, the system achieved a grand mean of 4.10, this implies that users found good satisfaction in the usability of important system features.

Table 2. *Level of User Acceptability in terms of determining the quality of the developed system based on ISO/IEC 25010:2011 Systems and Software Quality Requirements and Evaluation (SQuaRE) Quality Model*

Characteristic	Mean	Interpretation
Functional Suitability	4.33	Very Satisfied
Performance Efficiency	4.11	Satisfied

Compatibility	4.67	Very Satisfied
Usability	4.5	Very Satisfied
Reliability	4.56	Very Satisfied
Security	4.60	Very Satisfied
Maintainability	4.20	Satisfied
Portability	4.33	Very Satisfied
<b>Grand Mean</b>	4.41	Very Satisfied

Table 2 shows the results of the IT experts’ evaluation of the system’s quality based on ISO/IEC 25010:2011. In terms of Functional Suitability, the system received a mean of 4.33. This indicates that the system functions well and within the stated objectives of the stakeholders. In terms of Performance Efficiency, the system received a mean of 4.11, the lowest score in the evaluation. This indicates that, while the system performs in a satisfactory manner, further optimization is necessary to enhance the system’s efficiency. In terms of Compatibility, the system received a mean of 4.67, the highest score in the evaluation. This indicates that the system can perform well in an environment where it has to share resources with other necessary software without failure. In terms of Usability, the system received a mean of 4.5. This indicates that the system is highly recognizable, learnable, operable, and accessible by users. In terms of Reliability, the system received a mean of 4.56. This indicates that the system is highly reliable, consistently performs well, and can be trusted by its users. In terms of Security, the system received a mean of 4.60. This indicates that the system upholds strong security measures and meets the essential security requirements expected of a reliable software application. In terms of Maintainability, the system received a mean of 4.20. This indicates that the system is highly maintainable, demonstrating strong modularity, reusability, analysability, modifiability, and testability. In terms of Portability, the system received a mean of 4.33. This indicates that the system is highly portable, demonstrating strong adaptability, ease of installation, and effective replaceability. Overall, the system received a grand mean of 4.41, indicating that the system performs very well each criteria of the evaluation.

Table 3. *Level of User Acceptability in terms of the usability of the developed system in terms of usefulness, satisfaction, ease of use, and learning.*

Criteria	Mean	Interpretation
Effectiveness	4.67	Very Satisfied
Efficiency	4.67	Very Satisfied
Satisfaction	4.17	Satisfied
Freedom from Risk	4	Satisfied
Context Coverage	4.17	Satisfied
<b>Grand Mean</b>	4.34	Very Satisfied

Table 3 shows user feedback on the system’s usability. Effectiveness and Efficiency both received the highest ratings of 4.67 (Very Satisfied). This indicates that users found the system to be both effective and efficient when used. Freedom of Risk received the lowest rating of 4 (Satisfied). This indicates that while users feel satisfied with the system, it still needs improvements when it comes to overcoming potential risks in data security and unauthorized user access. Satisfaction and Context Coverage both received a mean of 4.17 (Satisfied). This indicates that the users are satisfied while using the system and that it gives satisfactory flexibility when it comes to managing data. Overall, the system received a grand mean of 4.34, indicating that users are very satisfied when using the system.

#### IV. SUMMARY OF FINDINGS

Based on the detailed presentation, discussion, interpretation, and analysis of research findings, the following summary is hereby presented:

1. The AI Enhanced Career Guidance System was evaluated using the ISO/IEC 25010:2023 Software Quality Model and Quality Use Criteria.
2. Assessment conducted by IT experts to confirm system met all requirements.
3. Enhanced user experience for Grade 12 students and Guidance Office staff at Colegio de Sta. Ana de Victorias.
4. End-user testing verified all functions and features.
5. System proven capable of supporting its intended purpose for career guidance.

#### V. CONCLUSIONS

The result of the alpha and beta testing activities and evaluation positively proved. Therefore, the researcher concludes that:

1. The AI Enhanced Career Guidance System enables students to take or retake career assessments.
2. It can provide personalized career recommendations based on assessment results
3. The system allows admins to manage users, students, and data within the system.

#### VI. RECOMMENDATIONS

According to Westman, et. al. (2021), the current technological advances and their implications for society pose a manifold challenge for education. There is a need to prepare students, staff and organizations for AI-enabled education, as well as to develop AI to better understand the education domain.

Therefore, we recommend to future researchers to expand upon the following points:

1. It is advisable to expand the system's scope and limitation to accommodate other grades and programs.
2. It is advisable to further expand the capabilities of the AI, such that it can support other assessment methods to give students and administrators further options.
3. It is advisable to invest in more capable hardware than what was used in this study.
4. It is advisable to use much larger datasets to allow the AI to give more accurate results.

#### CONFLICT OF INTEREST

The authors declare that for this article they have no actual, potential or perceived conflict of interests. Financial disclosure: The research work is funded by the researchers.

#### ACKNOWLEDGEMENT

The authors would like to thank Colegio de Sta. de Victorias, Inc. for providing us with the necessary infrastructure and expertise that allowed us to complete this study.

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