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"ICAOEnglish" Educational Website Prototype Based on Figma for ICAO English Language Proficiency Test Learning

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ABSTRACT

This study aims to Design a prototype of an educational website called "ICAOEnglish," developed using Figma as a Learning media for the ICAO English Language Proficiency Test. The research employed a Research and Development (R&D) method using the ADDIE Development model (Analysis, Design, Development, Implementation, and Evaluation). The instruments used included a needs Analysis questionnaire, a translational validation sheet by experts, and structured interviews with prospective users. The final product of this study is an educational website prototype named "ICAOEnglish," which contains materials based on the elements of the ICAO English Language Proficiency test. The results show that the developed website prototype meets user needs based on the needs Analysis, is validated by experts in terms of both content and technical aspects and received positive responses from prospective users after prototype testing. This study is expected to serve as a foundation for further Development of technology-based learning media in aviation education.

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1. INTRODUCTION

Politeknik Penerbangan Surabaya, through the Air Traffic Controller Study Program, is committed to developing cadet competencies, including proficiency in English as the official language of international aviation (ICAO 9835, 2010). Listening and speaking skills are key to ensuring communication safety and efficiency (Abimanto et al., 2023). The minimum standard for Air Traffic

Controllers (ATC) is ICAO Level 4, as stipulated in Annex 1 and Doc 9835, reinforced by PM 87/2021 and PR 10/2023, which require operational English for licensing.

A needs analysis of 30 cadets indicated that 60% experienced difficulties in English, 53.3% lacked confidence in speaking, 86% required supplementary learning media, and 90% were interested in an interactive website. These findings underscore the necessity of technology-based adaptive learning (Haleem et al., 2022). This study designs an educational website prototype, "ICAOEnglish," using the ADDIE model to enhance cadets' English competence in accordance with ICAO Level 4 standards.

2. METHODS

2.1. Research Design

This study employs a Research and Development (R&D) method with the objective of designing an educational website prototype, ICAOEnglish, as a digital-based learning media to support preparation for the ICAO English Language Proficiency Test. The development model applied is ADDIE (Analysis, Design, Development, Implementation, Evaluation) developed by Reiser and Molenda, but it is limited only to the prototype design stage, not a fully operational product.

2.2. Population and Sample

The research subjects comprised 30 cadets from the Air Traffic Management Study Program at Politeknik Penerbangan Surabaya, with 10 cadets selected as a limited trial sample through random sampling. Data were collected via a needs analysis questionnaire (15 indicators), semi-structured interviews with ICAO ELP raters, and expert validation using translational validation sheets (content validity and face validity).

The Analysis stage focused on identifying listening and speaking difficulties according to ICAO standards (2010). Design included content flow, navigation structure, and interface layout using Figma. Development involved creating static interface designs, compiling ICAO Doc 9835-based materials, and expert validation (Abimanto et al., 2023). Implementation was conducted on a limited scale through socialization and independent exploration by 10 cadets, accompanied by interviews to collect user feedback (Haleem et al., 2022). Evaluation was formative, reviewing expert and cadet input to identify strengths and weaknesses of the prototype.

2.3. Data Collection Techniques and Instrument Development

According to Sugiyono (2014), data collection can be conducted across various contexts, sources, and methods. This study employed three primary techniques:

1. Literature review was conducted to obtain theoretical foundations on technology-based English learning, the ADDIE model, and ICAO English Language Proficiency standards, while identifying research gaps (Creswell, 2012).
2. Questionnaire was distributed to first- and third-year cadets to analyze user needs, including their experience, difficulties, and expectations regarding the website-based learning media (Sugiyono, 2019).
3. Structured interviews were conducted with 10 cadets (5 from LLU 13 and 5 from LLU 14) to explore feedback, impressions, and suggestions after the prototype trial, covering usability, content suitability, supporting features, and development recommendations (Moleong, 2017).

Data from these three techniques were analyzed to support the website prototype design using the ADDIE model, then validated by content and media experts to ensure relevance, layout quality, and alignment with learning objectives. According to KBBI, an instrument is a tool for performing specific

tasks, including research tools such as tests or data collection devices. Sugiyono (2014) emphasizes that research instruments assist the researcher in obtaining data systematically and efficiently.

This study used three main instruments: questionnaires, validation sheets, and interview guides.

1. Closed-ended questionnaires were designed to analyze cadets' experience in learning English, difficulties, and expectations toward website-based learning media. Qualitative data from 15 Likert-scale statements (4 points) were converted into quantitative data for analysis (Sugiyono, 2019).
2. Translational validation sheets were used to assess the content and design of the website prototype by ICAO English Language Proficiency raters.
3. Semi-structured interview guides were provided to 10 cadets (LLU 13 and LLU 14) to gather perceptions and feedback after the prototype trial (Moleong, 2017)

2.4. Data Analysis Techniques

Data analysis techniques are critical to addressing research questions. This study used a descriptive quantitative approach with qualitative data supporting triangulation. Analysis was conducted after all data were collected to illustrate prospective users' responses toward the ICAOEnglish educational website prototype.

Different techniques were applied for each data type. Questionnaire data were analyzed using descriptive statistics in Microsoft Excel, calculating indices and categorizing responses as very good, good, sufficient, or poor. Translational validation data were analyzed qualitatively by interpreting valid statements from experts narratively to assess prototype feasibility. Interview data were analyzed thematically, grouping responses by similarity and summarizing narratively.

2.5. Research Location and Time

This research was conducted at the Air Traffic Management Study Program, Politeknik Penerbangan Surabaya. The location was selected for the availability of relevant data and ease of information access, facilitating smooth data collection and the completion of the final project. The research was carried out in several stages, from proposal preparation to final project implementation, from January to July 2025.

3. FINDINGS AND DISCUSSION

3.1. Overview of the Study

This study aimed to develop a Figma-based educational website prototype as a learning media for ICAO English Language Proficiency. The ADDIE development model, consisting of five stages—Analysis, Design, Development, Implementation, and Evaluation—was used. However, this study was limited to the prototype development stage, resulting in a website design that is not yet fully operational.

Data were collected using three main instruments: needs analysis questionnaires administered to 30 cadets, translational validation sheets by two ICAO English Language Proficiency raters, and semi-structured interviews with 10 cadets (5 LLU 13 and 5 LLU 14) following the prototype implementation.

The results from these instruments were presented sequentially and analyzed using descriptive quantitative methods for questionnaire data and descriptive qualitative methods for validation and interview data. The findings were then discussed in reference to the research objectives, theories of website-based learning media development, and ICAO English Language Proficiency competency standards.

3.2. Results of ADDIE Model Development Stages

3.2.1 Analysis Stage

The needs analysis aimed to identify cadets' readiness, obstacles, and requirements in preparing for the ICAO English Language Proficiency Test. The instrument used was a needs analysis questionnaire validated by two academic supervisors, Mr. Ahmad Bahrawi, S.E., M.T., and Ms. Lusiana Dewi Kusumayati, S.Pd., M.Pd.

The questionnaire comprised 4 main indicators with 15 statements: English language proficiency, ICAO English Language Proficiency Test, learning materials, and the educational website prototype.

3.2.2 Needs Analysis Questionnaire Results

Questionnaire results were presented in frequency distribution tables and percentages for each indicator. Responses were measured using a 1-to-4 Likert scale, with calculated indices categorized to facilitate interpretation.

Table 1. Likert Scale Category Classification

Index Range (%)	Category	General Description
0 – 25	Poor	Respondents do not support / disagree
26 – 50	Fair	Support or need is still low
51 – 75	Good	Majority of respondents agree
76 – 100	Very Good	Support or need is very high

Indicator 1: English Language Proficiency

Table 2. Questionnaire Results - Indicator 1

No.	Statement	Index (%)
1.	I feel not confident when speaking English in front of others.	75
2.	I have difficulty constructing grammatically correct sentences when speaking English.	78,33
3.	I often struggle to find the right words when trying to express something in English.	79,16

Based on the index calculations, Statement 1 received a score of 75% (*Good*), while Statements 2 and 3 scored 78.33% and 79.16%, respectively (*Very Good*). These results indicate that most cadets agree with the statements; however, challenges remain in speaking skills, which require support through real and contextual communication practice.

Indicator 2: ICAO English Language Proficiency Test

Table 3. Questionnaire Results - Indicator 2

No.	Statement	Index (%)
1.	I do not fully understand which English competencies are assessed in the ICAO English Language Proficiency Test.	79.16
2.	I do not fully understand the format and scoring system of the ICAO English Language Proficiency Test.	76.72
3.	I am not aware of the appropriate strategies to answer each section of the ICAO English Language Proficiency Test.	82.50

Based on the index calculations, Statements 1, 2, and 3 received scores of 79.16%, 76.72%, and 82.50%, respectively, all categorized as Very Good. This indicates that most cadets strongly agree with these statements. The results emphasize the need for learning media that not only improves English proficiency but also provides a comprehensive understanding of the structure and format of the ICAO English Language Proficiency Test.

Indicator 3: Learning Materials

Table 4. Questionnaire Results – Indicator 3

No.	Statement	Index (%)
1.	I feel that the materials provided in class are insufficient to prepare for the ICAO English Language Proficiency Test.	80.83
2.	Most of the materials I receive in class are only in the form of modules, without other supporting media variations.	81.03
3.	I need learning materials that are more relevant to the English skills tested in the ICAO English Language Proficiency Test.	85.83
4.	I feel the need for practice questions that follow the ICAO English Language Proficiency Test format as part of the learning materials.	86.67
5.	I need communication simulations, such as ATC and pilot scenarios, to practice speaking.	86.67

Based on the index calculations, Statements 1–5 received scores of 80.83%, 81.03%, 85.83%, 86.67%, and 86.67%, respectively, all categorized as Very Good. This indicates that most cadets strongly agree with these statements. The results emphasize the urgency of developing learning materials that are more practical, interactive, and aligned with real-world needs.

Indicator 4: Educational Website Prototype

Table 5. Questionnaire Results for Indicator 4

No.	Statement	Index (%)
1.	I need additional learning media outside the classroom to prepare for the ICAO English Language Proficiency test.	88,33
2.	I am interested in using prototype-based website learning media to study English.	86,67
3.	I feel that prototype-based website learning media will make it easier for me to study independently.	82,5
4.	I am more motivated to learn if the learning media is interactive and accessible at any time.	87,5

The index results for statements 1–4 ranged from 82.5% to 88.33% ("Very Good"), confirming the cadets' support for the website prototype as an effective medium for mastering English in preparation for the ICAO test. The cadets expect the media to follow the test format, include relevant materials, provide contextual communication practice, and offer flexible and engaging learning. These findings serve as the basis for designing the prototype according to user needs.

3.2.3 Questionnaire Instrument Validation

The questionnaire instrument was validated beforehand to ensure that each statement aligned with the research objectives and could be measured accurately. The validation was conducted by two academic supervisors who possess competence and relevant experience related to the research topic.

Table 6. Questionnaire Validators

No.	Validator's Name	Position
1.	Ahmad Bahrawi, S.E., M.T.	1st supervisor
2.	Lusiana Dewi K., S.Pd., M.Pd.	2nd supervisor

3.2.4 Validation Results

The questionnaire instrument was declared valid by both academic supervisors, meeting content feasibility and suitability for measuring cadets' needs in ICAO English Language Proficiency learning. All items were deemed appropriate without revision; thus, the instrument can be considered a representative measurement tool.

3.2.5 Design Stage

The design stage produced the ICAOEnglish website prototype tailored to cadets' needs, with simple menus: Home, Material, Practice, Quiz, and Glossary. The content was developed in accordance with ICAO Doc 9835 Level 4 standards through open-ended questions, audio, images, videos, and test strategies. The visual design adopted a blue-and-white color scheme, ensuring responsiveness and ease of navigation in Figma. The name ICAOEnglish emphasizes the professional and consistent identity of ICAO-based English learning.

3.3. Development Stage

3.3.1 Development Process

The prototype website was developed based on the previous design using the Figma platform. The development steps included:

1. Collecting and Organizing Content Information
   The materials were categorized per page: Home (introduction, tips, test types, objectives, navigation), Learning (texts, images, videos), Practice (interactive exercises: interview, listening, picture description, video reflection, voice-only role play), Quiz (evaluation), and Glossary (aviation terminology). All content was stored in Google Drive.
2. Creating Page Structure and Main Navigation
   The prototype structure was designed with consistent and easily accessible navigation menus to help users move between pages smoothly.
3. Designing Navigation Flow in the Form of a Flowchart
   A flowchart was created to illustrate the relationships between pages and the user's navigation flow, making it easier for the development team to understand the interactive design of the ICAOEnglish prototype.

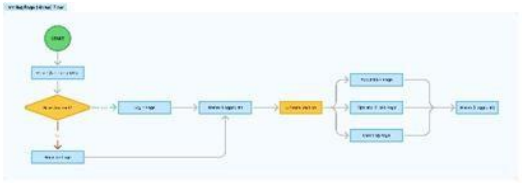

Figure 2. Flowchart Home

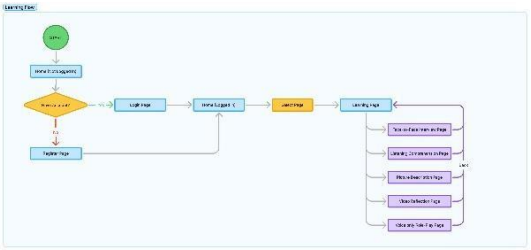

Figure 1. Flowchart Learning

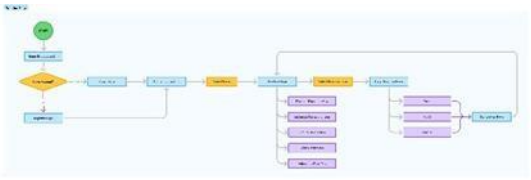

Figure 3. Flowchart Practice

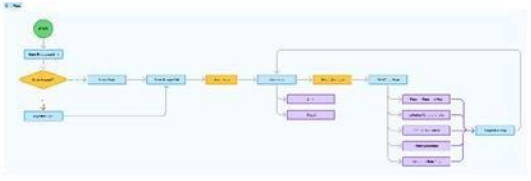

Figure 4. Flowchart Quiz

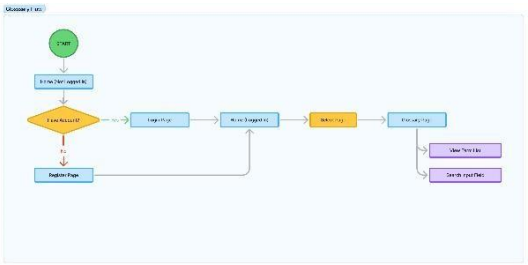

Figure 5. Flowchart Glossary

4. Organizing Content into Pages by Category
   The content was categorized and placed according to the function of each page: Material for information, Practice for interactive activities, Quiz for evaluation, and Glossary as a reference.
5. Creating Rough Sketches (Wireframes)

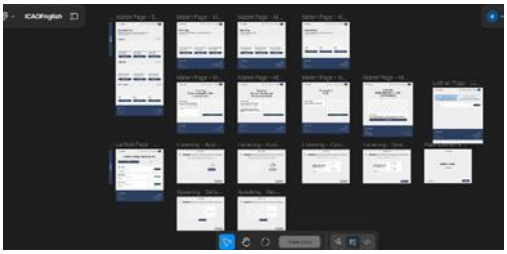

Figure 6. Wireframe ICAOEnglish

   At this stage, wireframes were developed as the initial sketches of the page layout, displaying menus, main content, and buttons in a simplified form to design the structure before moving on to the visual design.
6. Designing User Interface (UI) Components
   The visual design of the prototype in Figma included the header, navigation, buttons, icons, and content layout, following principles of simplicity, consistency, and accessibility.
7. Creating a High-Fidelity Design

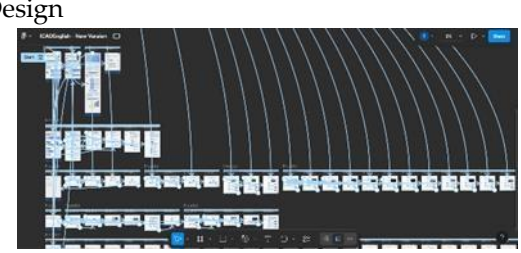

Figure 7. Design High-Fidelity ICAOEnglish

   The design was developed into a high-fidelity version with visual details resembling the final prototype, using consistent colors, typography, icons, and illustrations to ensure aesthetics and user comfort.

8. Creating Prototyping

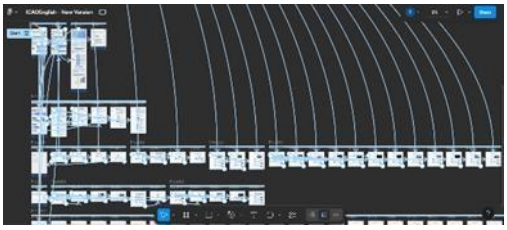

Figure 8. Prototyping ICAOEnglish

The prototyping process in Figma connects pages and interactive elements to simulate flows, transitions, and navigation, allowing the user experience to be evaluated before the technical development stage.

9. Conducting Display Testing on Multiple Devices

The prototype was tested on both desktop and mobile devices to ensure responsive display and optimal user experience across various screen sizes.

3.3.2 Prototype Website Features

The main features of the prototype include Home (information about the prototype and ICAO test), Learning (preparation materials), Practice (exercises for various test types: interview, listening, picture description, video reflection, role-play), Quiz (test simulation), and Glossary (definitions of aviation terminology).

3.3.3 Display Documentation

The display of each page was documented through screenshots and briefly described in terms of its functions. This documentation includes:

Home Page

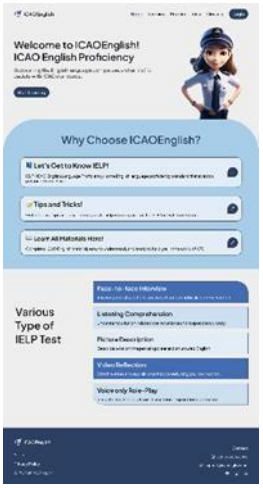

Figure 9. Home Page

The Home page of the ICAOEnglish prototype presents an introduction to the platform, its objectives, the ICAO English test, and the navigation of main features, with a simple and professional design.

Learning Page

Figure 10. Learning Page

The Learning page presents ICAO English materials through texts, images, and videos to support the understanding of emergency situations, flight instructions, and ATS communication.

Practice Page

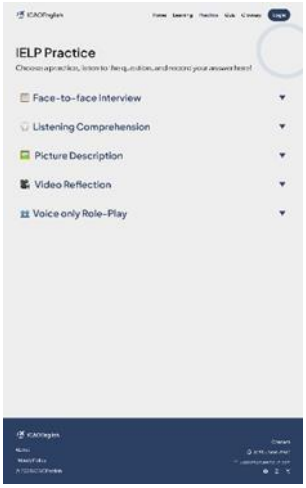

Figure 11. Practice Page

The Practice page provides interactive exercises like the ICAO English Language Proficiency test format, including Face-to-Face Interview, Listening Comprehension, Picture Description, Video Reflection, and Voice-only Role Play. These exercises are supported with instructions and audio media, presented in a minimalist and structured design.

Quiz Page

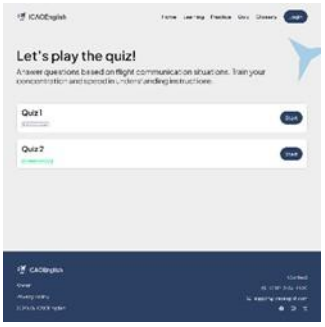

Figure 12. Quiz Page

The Quiz page presents situational aviation communication questions with two main quizzes containing five types of ICAO test tasks. The quizzes can be accessed through a "Start" button, designed in a simple and user-friendly layout.

Glossary

Figure 13. Glossary Page

The Glossary page displays aviation terminology in alphabetical order with letter-based navigation. A search bar is provided as an illustration; however, it is not yet functional in this prototype.

3.4. Translational Validation of the Website Prototype

After the prototype development, translational validation was carried out by two expert raters to ensure that the content, interface, and features aligned with the ICAO English Language Proficiency competencies and the learning needs of ATC cadets.

Table 7. Translational Validation of the Website Prototype

No.	Validator's Name	Position
1.	Wachidah Rahma Dhanty P., A.Md.	Rater
2.	Lusiana Dewi K., S.Pd., M.Pd.	Rater

The validators assessed the content, language, features, materials, navigation, and user experience. The validation results indicated that the ICAO English Language Proficiency prototype is valid, relevant, functional, engaging, and easy to use, with only minor suggestions and no major revisions required.

3.5. Prospective Users

In addition to the prototype content validation, both raters also evaluated the open-ended interview instrument used to collect responses from prospective users.

Table 8. Interview Validators

No.	Validator's Name	Position
1.	Wachidah Rahma Dhanty P., A.Md.	Rater
2.	Lusiana Dewi K., S.Pd., M.Pd.	Rater

The interview sheet covered aspects of interface, content, benefits, and suggestions. It was then validated by two raters and declared appropriate for collecting user feedback on the ICAOEnglish prototype.

3.6. Implementation Stage

A limited trial with 10 ATC cadets indicated that the ICAOEnglish prototype was engaging, offered intuitive navigation, provided relevant materials, and included effective speaking practice. Suggestions included adding more listening and reading exercises, progress tracking, automatic feedback, a discussion forum, and voice recording features.

3.7. Evaluation Stage

The evaluation aimed to assess the feasibility and initial effectiveness of the ICAOEnglish website prototype, ensuring that the development objectives were achieved, that the media aligned with user needs, and that it was ready for further implementation.

Internal evaluation showed the following:

1. Analysis: The questionnaire successfully identified user needs.
2. Design: The content and interface were consistent with learning theories.
3. Development: The prototype followed the design, was validated by experts, and met ICAO Level 4 standards.
4. Implementation: The initial trial provided input for further development.
5. Evaluation: The prototype achieved its objectives, with improvements suggested for automated evaluation and voice recording features.

3.8. Final Product

a. ICAO English Website Prototype

The ICAO English website prototype was designed in Figma with the features Home, Learning, Practice, Quiz, and Glossary to support listening and speaking learning in accordance with ICAO standards, offering interactive access via QR Code.

Figure 14. QR Code for Accessing the "ICAOEnglish" Website Prototype

b. User Guidebook

A technical guide for users to access and utilize website prototype features, provided in the form of a digital flipbook (QR Code), printed booklet, and CD/DVD-R.

Figure 15. QR Code for Accessing the User Guidebook

c. Admin Guidebook

A technical guide for administrators or examiners to edit and adjust the website prototype content in Figma, including adding/modifying content, visual elements, and navigation, without altering the main structure. It is provided as a digital flipbook (QR Code), printed booklet, and CD/DVD-R.

Figure 16. QR Code for Accessing the Admin Guidebook

3.9. Discussion

The discussion interprets the results of the ICAOEnglish prototype development based on the ADDIE model, addressing the research questions and connecting them with relevant theories.

Relevance of Cadet Needs Analysis Results. The questionnaire indicated that cadets faced difficulties in speaking and listening and lacked understanding of the ICAO test structure and strategies. The available materials were limited in variety and did not reflect the actual test format(Hendrawati, 2025). The prototype was designed to bridge this gap through practice simulations.

Accuracy of the Website Prototype Design. The design referred to the Constructivist Learning Theory (Zainal, 2022) and User-Centered Design (Febriyanti, 2018), enabling cadets to practice speaking independently through the Face-to-Face Interview and Describe Picture features with easy and interactive navigation.

Development Results Based on ICAO Standards. The content was developed according to ICAO Doc 9835, covering pronunciation, structure, vocabulary, fluency, comprehension, and interaction, oriented toward ICAO Level 4. The exercises emphasized performance-based learning consistent with task-based language learning (Demirdöken, 2021).

User Response and Expert Validation. Expert validation confirmed that the prototype was feasible in terms of content, interface, navigation, and language. Cadets considered the prototype helpful in

enhancing motivation, improving information retention, and supporting comprehension of the ICAO test (Munawarah & Kusumawardani, 2024).

Contribution to Aviation English Learning. The prototype provides specific and contextual learning media that integrate ESP (English for Specific Purposes) and digital technology, supporting self-directed practice and offering potential for further development with automated evaluation and progress tracking.

Relation to Theory and Previous Research. The findings support previous studies suggesting that digital media in the form of website-based prototypes can be effective for English learning when tailored to user needs. A constructivist approach encourages active, independent, and contextual learning.

Research Limitations

1. Scope of Implementation: The prototype was tested on only 10 cadets; thus, long-term effectiveness has not been measured. Institutional-scale implementation is required.
2. Feature Limitations: The prototype is limited to text, audio, and basic speaking exercises. Features such as automated evaluation, voice recording, and progress tracking are not yet available. The development of interactive features such as speech recognition, progress tracking, and automated evaluation is recommended for an optimal learning experience.

4. CONCLUSION

This research successfully designed the ICAOEnglish website prototype in Figma for ICAO English speaking practice using the ADDIE approach. Expert validation and cadet responses showed that the prototype is engaging, easy to use, and relevant to ICAO standards. The final products include an interactive prototype, a user guidebook, and an admin guidebook in digital, printed, and CD/DVD-R formats, demonstrating potential as adaptive and applicable learning media.

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