# E-AVIATION ENGLISH LEARNING

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**ABSTRACT**
The IELP (ICAO English Language Proficiency) examination is an important requirement for graduation from the D3 Aeronautical Communication program. It is used to assess the English language proficiency of Air Communication personnel. However, many students still struggle to adequately prepare for the IELP examination. With the rapid advancement of technology, the development of the E-Aviation English Learning website has emerged as a new innovation to serve as a learning platform and facilitate the preparation of students for the IELP examination. The research method employed in the creation of this website is Research and Development, utilizing the ADDIE development method, which consists of Analysis, Design, Development, Implementation, and Evaluation. Black box testing was used as the testing technique, and qualitative descriptive analysis was conducted using triangulation through interviews, observations, and documentation. The result of this research is the E-Aviation English Learning website, which contains materials tailored to the needs of the students, along with features for instructors and administrators to monitor students' learning progress. The conclusion of this research is that the website meets the expected requirements; however, further development is still necessary to improve its features and user interface, aiming to provide a more convenient learning experience for the students.

*Keywords: IELP; Website; Aviation English; Language proficiency; E-Aviation English Learning website.*

## 1. INTRODUCTION

E-learning is a transformation from conventional education to digital form that has been widely embraced by society, including various educational institutions such as the D3 Aviation Communication Program at Surabaya Flight Polytechnic.

The D3 Aviation Communication Program (KP) has also responded to technological advancements by developing an information system in the form of e-learning. One of the projects undertaken is the design of a Pre-IELP Exam Learning System. The IELP exam is an important requirement for graduation in the D3 KP program, but there is still a lack of preparation among students to face this exam.

To address this issue, the author has designed an information system based on a website named E-Aviation English Learning. This system is designed to assist D3 Aviation Communication students in preparing for the IELP exam. The website contains study materials, instructional videos, supporting documents, online classes with instructors, and quizzes to aid in IELP exam preparation. This website can also be accessed by ATS Personnel in Annex 11, namely Aviation Communication Guides.

The goal of this project is to enhance the quality and effectiveness of the education system at Surabaya Flight Polytechnic, specifically in the Aviation Communication program, and to better assist D3 KP students in preparing for the IELP exam.

With the implementation of this e-learning system, it is hoped that students can approach the IELP exam with more confidence and efficiency, and access the necessary information for exam preparation more easily. This project represents a tangible effort to apply information technology in supporting the education process in the digital era.1.1.

The website written by Zufria & Azhari (2017) in the Journal of Information Systems Vol. 1 No. 1, states that a website is a collection of informational pages provided

through the internet, allowing it to be accessed worldwide as long as there is an internet connection. A website is an internet facility that connects documents within a local or remote scope. Documents on a website are referred to as web pages, and links within the website enable users to move from one page to another, both among pages stored on a server and servers worldwide [1]. It is a collection of personal or company HTML documents that contain information within a Web Server (a computer system within an organization that serves as a server – a computing unit that functions to store information and manage computer networks) for the World Wide Web or the Web facility, accessible by all Internet users [2]. Web-based learning is one part of examples of electronic learning (e-learning), utilizing internet technology as a learning medium [3]. Web-based learning, known as web-based training (WBT) or web-based education (WBE), can be defined as the application of web technology in the realm of education for an instructional process [4]. ICAO English Language Proficiency (IELP) is an ICAO (International Civil Aviation Organization) standard test used to assess the English language abilities of pilots and air traffic controllers in speaking and comprehending information, particularly in the specific context of aviation. There are six dimensions measured: pronunciation, grammar, vocabulary, fluency, comprehension, and interaction. Each dimension is rated on a scale from 3 to 6. The lowest score among these six dimensions will be the final test result. In order to be deemed as passing this test, test participants must achieve a minimum score of 4 (Operational Level 4) as required by ICAO [5]. A programming language is a syntax for defining computer programs; this language enables a programmer to create an application program. A programming language is a computer language used to write programs that will be created [6]. Hypertext Markup Language (HTML) is the fundamental language for creating websites. HTML uses tags to mark different parts of the text. HTML is referred to as the foundational language because when creating a website, if only HTML is used, the web layout feels plain [7]. Hypertext Markup Language (HTML) is a fundamental programming language for managing websites. However, HTML is only limited to creating static websites (websites that cannot actively interact with users). Therefore, HTML is commonly combined with other web programming languages [8]. Design and Build is a series of procedures for translating the results of an analysis of a system into a programming language to describe in detail how the components of the system are implemented [9]. The

definition of system development or system construction is the activity of creating a new system as well as replacing or improving existing systems, both in whole and in part [10]. Design is the representation, planning, and creation of sketches or arrangements of several separate elements into a cohesive and functional unity. System design can be created in the form of a system flowchart, which is a graphical representation that can be used to show the sequence of processes within the system [11]. There are several definitions of a system, including that the term "system" originates from the Greek word "systema," which means a collection of interconnected parts or components that are organized and form a whole [12]. Web-based learning is one part of examples of electronic learning (e-learning) that utilizes internet technology as a means of learning [13].

The problem limitations used in this final project are as follows:

1. This web-based E-learning system is applicable only to Surabaya Polytechnic of Aviation.

2. The developed information system only discusses E-Aviation English Learning as taught at Surabaya Polytechnic of Aviation.

## 2. METHODS

In this study, the author employs a type of research known as Research and Development (R&D) since this method is deemed suitable to support this research. The ADDIE instructional design model (Analysis-Design-Develop-Implement-Evaluate) is a model for designing learning or training that possesses generic characteristics, serving as a reference for the development of efficient, effective, dynamic training program infrastructures that can support the performance of the training [14].

There are numerous methods that can be utilized in research, one of which is the Research and Development (R&D) research method. The R&D research method generates innovative works that are highly beneficial for institutions, particularly the Surabaya Flight Polytechnic. Hence, this research design can serve as a tool to facilitate the execution of this study. Several steps in the development research of ADDIE are as follows:

### 2.1 Analysis Phase

The steps in this phase involve problem definition, identifying sources of the problem, and determining possible solutions. In broader development research, this phase can encompass specific research techniques such as needs analysis, job analysis, and task analysis in the journal "Inovasi Pendidikan Agama Islam" (Innovation

in Islamic Religious Education). The output of this phase will serve as input and a source for the design phase. In this context, the author will investigate the issues faced by students in Advance English learning that affect their preparation for the IELP exam through an interview approach. The results will be used to develop a website design.

## 2.2 Design Phase

In this phase, the researcher will create the workflow of this study, starting from design, planning, testing, discussion, and finally concluding [15], which will be depicted in a flowchart

## 2.3 Development Phase

This phase is carried out as a development of the previously analyzed issues to enhance the quality of the product in accordance with the existing problems, in order to create a better learning media that is ready for implementation. The development phase is based on data from the analysis phase and the design phase.

## 2.4 Implementation Phase

The implementation phase is the stage for applying the results from the development phase to the target of this product, which is the web-based learning media for IELP exam preparation.

## 2.5 Evaluation Phase

This phase measures the effectiveness and efficiency of this product. The evaluation phase is carried out throughout the ADDIE development process. In this phase, the researcher will conduct testing, which will then be examined and evaluated to enhance its optimality. The testing techniques will be elaborated on in Chapter 4, regarding Testing Techniques.

## 2.6 Participants

This study consisted of twenty three participants. consisting of 23 Aeronautical Communication cadets batch 6.

## 2.7 Website Design

This website design encompasses a model (concept) of the interface for a website that presents a design reflecting the operational process of the website, depicting the flow of data usage and the role of human components within the information system. This system is constructed using a website as its foundation, which has a positive impact on the system as it can be accessed anytime and anywhere with internet connectivity.

To facilitate the use of the website in the realm of IELP exam preparation for D3 Air Traffic Control students, tailored to ICAO DOC 9831 standards, the intended website design includes features such as real-time online classes with instructors, a quiz system aligned with the Semester Learning Design (RSP), a space for submitting relevant learning documents to support students in communicating spontaneously, accurately, clearly, meaningfully, and in accordance with ICAO standards. It is expected that students will be able to attain a minimum ICAO Language Proficiency level 4.
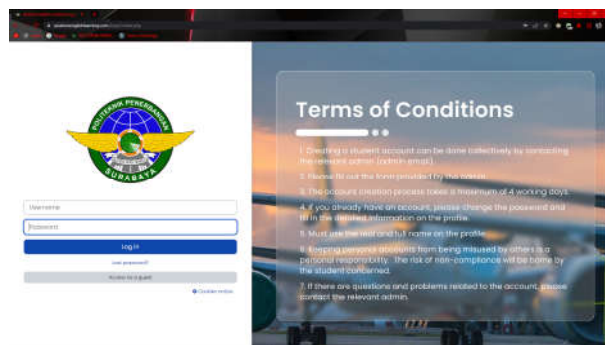


Figure above illustrates the Landing page design on the website. The Landing page is the initial page visitors encounter when accessing the website. On this landing page, visitors can learn about various aspects related to the IELP exam, including materials to prepare for the exam and supporting documents provided by the website.

Under the "Features" menu, there is a feature called IELP quiz consisting of 24 Topics:

a) Topic 1: Belly Landing

b) Topic 2: Engine Failure

c) Topic 3: Divert

d) Topic 4: Return to Base

e) Topic 5: Bird Strike

f) Topic 6: Bad Weather

g) Topic 7: Hijack

h) Topic 8: Pilot Unconscious

i) Topic 9: Comm Fail

j) Topic 10: Landing Gear Malfunction

k) Topic 11: Fuel Problem

l) Topic 12: Turbulence

m) Topic 13: TCAS

n) Topic 14: Engine on Fire

o) Topic 15: Nearmiss

p) Topic 16: Labor on Board

q) Topic 17: Stall

r) Topic 18: Air Balloon

s) Topic 19: Snake on a Plane

t) Topic 20: Animal on Runway

u) Topic 21: Heavy Storm

v) Topic 22: Laser Attack

w) Topic 23: Overrun

x) Topic 24: Volcanic Ash

From the 24 topics above, there are sub-topics comprising Task 1-10 and Task 1-5 in Chapter 2, which are outlined as follows:

Chapter 1:

a) Task 1: Introduction

b) Task 2: Read-back Radiotelephony Messages

c) Task 3: Providing Job Related Information

d) Task 4: Providing a Solution to an Abnormal Situation

e) Task 5: Sharing an Opinion

f) Task 6: Responding to a Communication

g) Task 7: Responding to an Emergency

h) Task 8: Handling a System Malfunction

i) Task 9: Expressing an Opinion

j) Task 10: Expressing an Opinion

Chapter 2:

a) Task 1: Introduction and Casual Conversation

b) Task 2: Giving Information about Habitual Activities

c) Task 3: Providing Job-Related Information

d) Task 4: Providing a Solution to an Abnormal Situation

e) Task 5: Sharing an Opinion

With these features, students can benefit from IELP exam preparation through the website. The outlined tasks have been tailored to meet the learning needs of the students. They can access the learning materials anytime and anywhere, as long as they are connected to the internet, facilitating independent learning.

The results of the design phase conducted by the researcher produced a website design tailored to the following needs:

1. 24/7 Accessibility: Since the E-Aviation English Learning website is web-based, it can be accessed anytime as long as there is an internet connection.

2. Flexibility: Cadets can access all available learning materials.

3. Cost-Effectiveness: E-Aviation English Learning eliminates the need for travel and physical classroom resources, potentially reducing costs for learners and institutions.

4. Real-Time Tracking and Assessment: The E-Aviation English Learning website provides tools for instructors to track learners' progress and performance in real-time. This enables timely feedback and the ability to address any difficulties promptly.

5. Personalized Learning: The E-Aviation English Learning website can adapt to the individual learning needs. In this case, the website is equipped with a voice note feature to aid cadets in practicing speaking. This allows for a more personalized learning experience, catering to the needs of each cadet.

## 2.8 Testing Techniques

The testing technique employed by the researcher is black-box testing or functional testing. Functional testing is conducted to determine the execution results of each feature process in the developed program, to ascertain whether the website aligns with user requirements or if there are still issues within the system.

The testing phase involves accessing the website on a specific device to analyze its strengths and weaknesses. Testing is carried out to identify whether there are any errors within the website.

## 2.9 Data Collection Technique

The data collection technique is the method used by the author to design the learning materials that will be included on the website. The materials to be included are created by the D3 Air Traffic Control students in accordance with assignments provided by the course instructor.

Data collection technique, or "data collection," is the research process in which a researcher applies scientific methods to systematically gather data for analysis

According to Djaman Satori and Aan Komariah, the definition of data collection technique in scientific research is a systematic procedure for obtaining necessary

In the data collection technique used by the author, the method of interview is employed. An interview is a purposeful conversation conducted between two parties: the interviewer who asks questions and the interviewee who provides answers to those questions. The researcher

employs the data collection technique of interviews to delve into information more deeply and to gather high-quality insights. This approach allows the researcher to adapt and develop questions according to the evolving situation.

## 2.10 Data Analysis Technique

The method used in this research is qualitative descriptive. Qualitative descriptive method is a research method based on postpositivism philosophy used to investigate natural object conditions (in contrast to experimentation), where the researcher serves as a key instrument, and data collection technique is performed through triangulation

The objective of this research is to depict, portray, explain, clarify, and provide a more detailed response to the problem under investigation by studying an individual, a group, or an event as comprehensively as possible.

## 2.11 Procedures

User Login from www.aviationenglishlearning.com

From the login screen, the user will be directed to the username and password menu. For users who already have an account, they can directly request account creation from the admin and fill in the required data such as name and password. After that, the user will enter the landing page, where there will be a menu consisting of Home, My Courses, and Account. Clicking on the Home menu will redirect back to the landing page.

When the user selects the Account menu, they will be directed to the Change Password/Edit Profile menu where the user can change their password and edit account information such as name and profile picture.

Choosing the My Courses menu on the landing page will lead to a menu where there are options for topics from topic 1 to topic 24, according to what has been enrolled in the Home menu. Inside the topic menu, there are 5 sections available: Materials, Class, Quiz Chapter 1, Quiz Chapter 2, and Answer Key. In the Materials menu, there are documents containing material from the selected topic. If the user selects the Class feature, they will be directed to a link integrated with Zoom for face-to-face learning. The Quiz Chapter 1 section contains tasks 1-10, and there are also tasks 1-5 for Chapter 2 in the Quiz Chapter 2 section. When a user selects a task, questions will appear for practicing IELP exams. The answer input is customized to cater to cadets' needs in practicing speaking, supported by the feature to answer using voice notes.

## 3. RESULTS AND DISCUSSION

The analysis conducted by the researcher so far has revealed that during the Advanced English learning process, in preparation for the IELP exam, there is still a lack of readiness among the cadets. This is attributed to many cadets not meeting the required standard scores. Through personal interactions with the subjects, it was found that cadets perceive the current learning methods to be unengaging and lacking interactivity. Additionally, they struggle to utilize their free time effectively for individual study during the testing period.

The author's analysis was carried out through conducting an interview with one of the D3 Aviation Communication cadets on June 26, 2023.

Although ideally having more than one respondent to analyze a problem, the author chose a single respondent due to limited time and resources. In this case, the author selected the most relevant respondent to the research field's situation to serve as an alternative source.

In the application development phase, the researcher created a website as a platform for teaching and learning for cadets and instructors, particularly during IELP sessions. The construction of this website was refined and tailored to meet the needs of cadets in preparing for the IELP exam. The development of the website utilized MySQL as the database, the CPanel Web server as the local host, and also XAMPP [16]. In the process of website development, the Moodle LMS was used to ensure ease of use and facilitate further innovation, such as adding features to fulfill the teaching and learning needs of cadets and instructors.

In the final phase of the ADDIE model, which is the evaluation phase, the researcher will conduct evaluations through interviews as the data collection technique sourced from two informants. The first is validation from an expert, and the second is validation from a cadet.

The researcher utilized interview procedures as follows:

1. Selecting Interviewees, which are the individuals to be interviewed.

2. Interview Preparation, involving determining the questions to be asked to the respondents.

3. Conducting the Interview, where each prepared question is asked directly to the respondent.

4. Follow-up of the Interview, involving summarizing the obtained interview results.

The expert validation data originates from Advance English course instructors who acted as validators for the developed E-Aviation English Learning website by the researcher, namely:

1. Laila Rochmawati, an Advance English course instructor at Politeknik Penerbangan Surabaya.

2. Setyabudi, an IT instructor at Politeknik Penerbangan Surabaya and an IT expert.

In this testing, the researcher interviewed the validators with four questions and one statement to gather suggestions and opinions regarding the website developed by the researcher. The interview questions are as follows:

1. According to you, is the E-Aviation English Learning website useful for IELP preparation?

2. According to you, does this innovation make it easier for cadets to prepare for the IELP exam?

3. According to you, is the E-Aviation English Learning website easy to operate?

4. According to you, do the features in the E-Aviation English Learning website function properly?

5. May I kindly ask for your suggestions and opinions on the website?

The results of the interviews conducted by the researcher with two expert respondents, namely the Advance English learning instructor and the Basic IT instructor, yielded satisfactory outcomes regarding the overall utilization of the E-Aviation English Learning website. However, further development of this website is still needed.

The data obtained from the interviews have been answered by the respondents. The researcher gathered a total of twenty-three cadets from the Diploma 3 Aviation Communication Course of the Sixth Batch.

In the interview, we obtained results indicating that the utilized website has been considered suitable for the needs and helpful in the learning process. The interview outcomes indicate that the used website aligns with the cadets' requirements in preparing for the IELP exam and contributes positively to their learning process. While there were some suggestions for improvement, the overall feedback was quite positive, and users expressed satisfaction with the experience provided by the website.

The purpose of conducting this testing is to determine whether the website functions properly or requires further improvement. The testing technique employed by the researcher is black box testing, which doesn't necessitate programming expertise. This means that anyone, even without programming knowledge, can participate in testing the website. The testing involves checking each component of the application and identifying malfunctions in the website's features.

In this testing, the researcher involved an expert respondent, Ms. Laila Rochmawati, who serves as an Advance English course instructor, acting as a teacher/educator. Additionally, Mr. Setyabudi, an expert in media, was involved. Furthermore, there were twenty-three cadet respondents from the Diploma 3 Aviation Communication Course of the Sixth Batch, serving as users on the website.

The implementation of this testing aims to determine whether the website is functioning properly or requires further improvement. The testing technique used by the researcher is black box testing, where this technique doesn't require programming expertise, meaning anyone who doesn't understand programming languages can participate in testing the website. The testing involves examining each element within the application and identifying malfunctions in the website's features. In this testing, the researcher involves one expert respondent, Mrs. Laila Rochmawati, who is an Advance English lecturer, serving as a teacher; and Mr. Setyabudi, a media expert, along with twenty-three Diploma 3 Air Traffic Control students from the sixth batch as users of the website.

Based on the results of the website testing using the black box testing technique conducted by both administrators and users, it can be concluded that the performance of the E-Aviation English Learning website meets expectations. From the login process to the log out process, everything functions as anticipated.

## 4. CONCLUSION

From the results of the E-Aviation English Learning website design, it can be concluded that this information system can be used to enhance cadets' abilities in preparing for the IELP exam. The development of the E-Aviation English Learning information system at Poltekbang Surabaya represents an innovation, particularly for the D3 Aviation Communication program. It provides a space for cadets and instructors to facilitate Advance English learning in preparation for the IELP exam. With this website, education access becomes more equitable, as all cadets/users can have equal access to various learning materials, offering flexibility for cadets to learn according to their needs.

The design of the E-Aviation English Learning website uses MySQL as the database, XAMPP as the localhost, resulting in a variety of features that have been tested with two expert respondents, an Advance English course instructor, and an IT expert. Additionally, 23 cadet respondents from the Sixth Batch of the Aviation Communication program were involved. The researcher employed the Research & Development research method

using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model, and the research process progressed smoothly.

After going through the aforementioned stages, the researcher hopes that this website will become a valuable learning tool, especially in preparing for the IELP exam, and will ease cadets' preparation process. With this website, cadets can access study materials anytime and anywhere, as long as they have an internet connection. This flexibility allows cadets to learn according to their individual schedules and needs.

For further development, observation and analysis throughout the research process are necessary to ensure that the E-Aviation English Learning website becomes even better in line with the needs of the teaching and learning process, especially in preparing for the IELP exam.

Based on expert (instructor) and user (cadet) validation assessments, the E-Aviation English Learning website product is deemed suitable for use. However, there are still some suggestions and feedback. For instance, the current version of the website does not support face-to-face class features through online classes and requires the use of additional applications like Zoom. It's also recommended to add a question bank and more learning topics in the topic selection menu to provide a broader knowledge related to aviation issues. This would enable the E-Aviation English Learning website to offer more diverse and comprehensive learning experiences for cadets.

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