

**HO CHI MINH CITY NATIONAL UNIVERSITY  
UNIVERSITY OF NATURAL SCIENCES  
FACULTY OF INFORMATION TECHNOLOGY**



**PA3**  
**FORMATIVE TESTING**

Subject: User Interface Design

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## A. INTRODUCTION

### 1. Group information

GROUP 14			
No.	Student ID	Fullname	Email
1	21127234	Nguyễn Lê Anh Chi	<a href="mailto:nlachi21@clc.fitus.edu.vn">nlachi21@clc.fitus.edu.vn</a>
2	21127235	Nguyễn Xuân Quỳnh Chi	<a href="mailto:nxqchi21@clc.fitus.edu.vn">nxqchi21@clc.fitus.edu.vn</a>
3	21127495	Lê Ngô Song Cát	<a href="mailto:linscat21@clc.fitus.edu.vn">linscat21@clc.fitus.edu.vn</a>
4	21127659	Bùi Ngọc Kiều Nhi	<a href="mailto:bnknhii21@clc.fitus.edu.vn">bnknhii21@clc.fitus.edu.vn</a>

### 2. Assign task

No.	Responsibility	Task	Level of completion
1	Nguyễn Lê Anh Chi	1, 2, 3.2.1, 4.2	100%
2	Nguyễn Xuân Quỳnh Chi	4.1, 5, 3.2.2	100%
3	Lê Ngô Song Cát	4.1, 3.1	100%
4	Bùi Ngọc Kiều Nhi	4.2, 5	100%

- Demo video: [\[21KTPM3 - Group14 - UI/UX\] PA3 - YouTube](#)

## B. FORMATIVE TESTING

### 1. Introduction

#### 1.1. Purpose of the Report:

- This report presents the findings from formative testing of two proposed solutions for an improved flashcard system. The testing aims to evaluate how effectively each solution supports users in learning new words with contextual understanding. Through this testing, we seek to identify the strengths and weaknesses of each prototype and gather insights to guide further development.

#### 1.2. Importance of Formative Testing:

- Formative testing is a crucial step in the development of any educational tool, particularly when it involves user interaction and learning. By conducting formative testing, we can observe how users engage with the prototypes, understand their preferences and pain points, and gather qualitative data that informs design decisions. This process allows us to refine the prototypes early, ensuring that the final product is both user-friendly and effective in meeting the learning goals.

### 2. Testing Plan

#### 2.1. Testing Objectives:

- Evaluate the usability and effectiveness of Solution 1 (learning new words through short videos) in providing contextual understanding of vocabulary.
- Assess the usability and effectiveness of Solution 2 (background app with OCR tool) in facilitating on-the-spot word learning from external content.
- Compare user experiences between the two solutions to determine which better supports vocabulary acquisition.
- Identify any usability issues or barriers to learning that users encounter with either solution.

#### 2.2. Target User Groups:

- Language learners who use digital tools to enhance their vocabulary.
- Individuals who frequently engage with digital content (e.g., articles, social media) and are interested in learning new words as they encounter them.
- Users who prefer learning through multimedia content, such as videos, and those who favor learning in-context from textual content.

#### 2.3. Testing Methods:

- **Usability Testing:** Where participants will interact with both solutions, performing tasks designed to simulate real-world usage scenarios.
- **Observations:** To monitor user behavior, identifying any difficulties or unexpected interactions during the testing sessions.

- **Surveys/Questionnaires:** To collect structured feedback on users' perceived usefulness, ease of use, and overall satisfaction with each solution.

#### 2.4. Criteria for Success:

- **User Engagement:** How actively and willingly users interact with the prototype.
- **Learning Outcomes:** Users' ability to correctly understand and recall new words in context after using the solution.
- **Ease of Use:** How intuitive and user-friendly the prototype is, based on observed interactions and user feedback.
- **Satisfaction:** Overall user satisfaction with the learning experience provided by each solution.

### 3. Testing Sessions

#### 3.1. Participant Selection:

- **Minh, 20-year-old College Student:** Minh is a 20-year-old college student majoring in International Relations. He recently started focusing on widen his English vocabulary range to enhance his future career prospects and is using mobile apps to support his learning. Minh prefers visual learning, often turning to YouTube videos to grasp new concepts. His digital habits include spending a lot of time on social media and streaming platforms, where he primarily consumes video content.
- **Linh, 21-year-old Marketing Intern:** Linh is a 21-year-old marketing intern working in a multinational company. She has an intermediate level of English, which she has learned through self-study, reading online articles, and communicating with English-speaking colleagues. Linh prefers to learn new words in context by reading, and she regularly engages with blogs and professional articles. Her digital habits involve frequent use of online resources and translation tools while reading content.
- **Hieu, 25-year-old Software Engineer:** Hieu is a 25-year-old software engineer with a passion for learning languages. He has advanced proficiency in English, which he learned through a mix of formal education and self-study. Hieu enjoys using both video content and reading materials to reinforce his learning, often alternating between watching English dramas and reading novels. His digital habits include browsing tech-related content in English and using a variety of digital tools to enhance his language skills.

#### 3.2. Testing Results and Observations:

##### 3.2.1. Solution 1

- **Minh (20-year-old College Student):**

**1A:** Found the concept of short videos appealing. The simple sketches and storyboard-like presentation of the videos helped him visualize the final product, and he was excited about how the visual aids could support his learning. He felt that the visual approach would enhance his retention, even though he couldn't fully experience the video's effect without animations.

**1B:** Intrigued by the concept of instant word selection and saving, finding it highly convenient for his social media usage. He appreciated the ability to visualize how the tool would integrate into his daily reading habits.

**1C:** Feels that the "Save words to personalist" feature in prototype 1C is great. The feature allows him to search for words they are interested in and save them to a personal list, which ensures they only focus on vocabulary they want to learn. This customization means that he doesn't have to spend time studying words he is not interested in. Minh understands how to look up words on the app and save them to his personal flashcard deck. This makes him feel that it is indeed a novel and useful feature. The app functions both as a dictionary and as flashcards.

→ **Conclusion:** Minh is excited about the 1C idea the most since it fits more to his personal preference in terms of interest and visualization.

- **Linh (21-year-old Marketing Intern):**

**1A:** Found the experience less immersive due to the absence of actual video content. However, she appreciated the overall concept and could see the potential for effective learning through contextual videos.

**1B:** Linh found the lo-fi prototype of Solution 2 interesting, especially the idea of learning words in context while reading. However, the lack of interactivity in the prototype made it challenging for her to fully grasp how the tool would work in practice. **1C:** Linh wonders if the contextual videos are too long, which could make her feel quite discouraged about having to watch them in full.

**1C:** Linh wonders if the contextual videos are too long, which could make her feel quite discouraged about having to watch them in full.

→ **Conclusion:** Linh prefers the approach of idea 1B as it is suitable for her reading habits and personal activities.

- **Hieu (25-year-old Software Engineer):**

**1A:** He feels that the idea behind this prototype lacks novelty and excitement.

**1B:** This approach provided more information for each word and cost him least effort to generate a flashcard.

**1C:** Hieu feels that integrating videos into flashcards could help him improve his English listening skills. Additionally, he is very excited about the "save searched words for later review" feature, which saves him time by eliminating the need to manually create flashcards.

→ **Conclusion:** Hieu prefers 1 better considered his hectic schedule and he believed that this method can keep up his interest in the long term compared to the other one.

### 3.2.2. Solution 2

- **Minh (20-year-old College Student):**

→ Conclusion: Even though both 2A and 2C is about combining with short videos, 2A stood out more to him since it did not require him to choose a topic or level everytime logged into the app.

- **Linh (21-year-old Marketing Intern):**

→ Conclusion: Despite not really into the idea of learning using short context video, Linh admitted that the 2A design was the most appealing due to its comprehensive information.

- **Hieu (25-year-old Software Engineer):**

→ Conclusion: Hieu prefers prototype 2A the most because the design of the flashcards strongly stimulates curiosity and interest while guessing the meaning of the words, giving him the feeling of playing a word-guessing game.

## 4. Analysis and Selection of the Best Prototype

### 4.1. Analysis of Results:

- **Contextual Learning:** Both prototype 1A and 1C help users learn vocabulary more deeply through watching contextual videos. Prototype 1B helps users to add the contextual sentence into the flashcard by using OCR to capture the image of the contextual sentence.
- **Increased Learning Engagement:** In prototype 2A, 2B and 2C, the design of the flashcards is improved and the interaction with the flashcards is like surfing TikTok videos, which enhances the learner's engagement and interest in studying.
- **Minimize Selection Actions:** In prototype 2A, before starting to learn new vocabulary, users need to select the difficulty level of the word and the topic they want to study, with these options located on a single screen, helping users avoid unnecessary repetitive actions. In contrast, prototype 2C places these two options on separate screens, which makes users feel uncomfortable due to the repetitive actions required to select the level.
- **The design of the flashcards stimulates strong interest and curiosity from users:** In prototype 2A, the first side of the flashcards contains a video with English subtitles. Users use the context in the video to guess the meaning. The second side shows the meaning of the word in English. Users once again rely on the English description of the word to guess its meaning, which enhances their deep engagement with the word. In contrast, in prototype 2C, the flashcard structure is not optimized: during the vocabulary learning process, when users swipe to the second side of the flashcard with both English and Vietnamese subtitles, they already know the meaning of the word. As a result, they may skip the third side, which provides detailed information about the word, and move on to the next word. This leads to the third side of the flashcard being underutilized and becoming redundant.
- **Time Saving:** In prototype 2A, the "Remove known words" feature removes words that users already know, helping them save time in their learning process, enhancing the experience.

- **Complete and Detailed Word Information:** In prototype 2A, the third side of the flashcards provides the most detailed and comprehensive information about the word, organized in a clear and easy-to-view manner.
- **Interesting vocabulary hints:** In both prototype 2A, during vocabulary review, if users can't remember a word, they can use a hint. However, the hint is simply the English definition of the word, which does not help users recall the word effectively. Furthermore, this hint requires users to read more text-based information, which may lead to feelings of frustration. In contrast, in prototype 2C, the hint is the context video that the user previously watched in their learning process, which is interesting, effective, and helps users remember the vocabulary more deeply.
- **Short video duration:** In prototype 1A and 1C, when users watch a video to learn the context of the word they are studying, if the video is too long, they may become frustrated and feel that it is time-consuming, leading them to not want to continue watching. In contrast, in prototype 2A and 2C, the video is short (under 60 seconds, like TikTok videos), which makes users feel that watching the video doesn't take too much time, so they are less likely to skip it and will watch it in full.

#### 4.2. The Best Prototype and Reasons for Selection:

- The best prototype among the six prototypes: **Prototype 2A**.
- Reasons for Selection:
  - **The design of the flashcards stimulates strong interest and curiosity from users:** The first side of the flashcards contains a video with English subtitles. Users use the context in the video to guess the meaning. The second side shows the meaning of the word in English. Users once again rely on the English description of the word to guess its meaning, which enhances their deep engagement with the word. This is the most important reason for choosing this prototype.
  - **Minimize Selection Actions:** The difficulty level of the words and the topic to be studied are displayed on a single screen, helping users avoid unnecessary repetitive actions.
  - **Time Saving:** The "Remove known words" feature removes words that users already know, helping them save time in their learning process, enhancing the experience.
  - **Complete and Detailed Word Information:** The third side of the flashcards provides the most detailed and comprehensive information about the word, organized in a clear and easy-to-view manner.
  - **Short video duration:** The video is short (under 60 seconds), which makes users feel that watching the video doesn't take too much time, so they are less likely to skip it and will watch it in full.

### 5. Design Idea for The Improved Prototype

- The design idea for the improved prototype is similar to the best prototype (Prototype 2A) with enhancements in the "Review words" section.

- The "Review words" feature will use the design from Prototype 2C, where the vocabulary hint is the contextual video. This approach is very effective, engaging, and helps learners remember vocabulary for a longer time. Learners may not need to watch the entire video but can still recall the meaning of the word.