

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



PA2
USER ANALYSIS

Subject: User Interface Design

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TABLE OF CONTENTS

A. INTRODUCTION	3
1. Group information	3
2. Assign task.....	3
B. USER ANALYSIS	4
1. Introduction.....	4
1.1. Purpose of the Report:	4
1.2. Scope of the Research:	4
1.3. Methodologies Used:	4
2. Brainstorming Session	4
3. Identified User Problems	4
3.1. Group 1: LACK OF CONTEXT FOR WORDS.....	4
3.2. Group 2: BORING AND NON-INTERACTIVE FLASHCARDS DESIGN	5
3.3. Group 3: VOCABULARY SET WITHIN A DECK OF FLASHCARDS LACKING A COMMON THEME.....	5
3.4. Group 4: SPENDING A LOT OF TIME CREATING A CUSTOM DECK OF FLASHCARDS	6
4. Generated Solution Ideas	6
4.1. Solution 1: PROVIDING WORD CONTEXT THROUGH SHORT VIDEOS	6
4.2. Solution 2: ENHANCING FLASHCARDS DESIGN TO MIMIC THE TikTok BROWSING EXPERIENCE	7
4.3. Solution 3: ORGANIZING VOCABULARY BY THEME	9
4.4. Solution 4: DEVELOPING A TOOL TO SUPPORT CREATING CUSTOM FLASHCARDS	10
5. Affinity Diagram.....	11
5.1. Overview of Affinity Diagram:.....	11
5.2. Steps to Create the Affinity Diagram:.....	11
5.3. Grouping and Categorization of Problems and Solution Ideas:	11
5.4. Visual Representation:	12
6. References.....	12

A. INTRODUCTION

1. Group information

GROUP 14			
No.	Student ID	Fullname	Email
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3	21127495	Lê Ngô Song Cát	linscat21@clc.fitus.edu.vn
4	21127659	Bùi Ngọc Kiều Nhi	bnknhii21@clc.fitus.edu.vn

2. Assign task

No.	Responsibility	Task	Level of completion
1	Nguyễn Lê Anh Chi	1.1, 1.3, 3.2, 3.3, 4.2, 4.3	100%
2	Nguyễn Xuân Quỳnh Chi	1.2, 3.1, 3.4, 4.1, 4.1, 5.2	100%
3	Lê Ngô Song Cát	1.3, 2, 3.1, 3.4, 4.1, 4.4, 5.3	100%
4	Bùi Ngọc Kiều Nhi	3.2, 3.3, 4.2, 4.3, 5.1, 5.4	100%

B. USER ANALYSIS

1. Introduction

1.1. Purpose of the Report:

- Identify the main problems users encounter when learning English vocabulary using online flashcards.
- Develop potential solutions to address these problems.
- Provides detailed information about the research process, results collected, and analysis of potential solutions.

1.2. Scope of the Research:

- This study focuses on identifying user problems in learning English vocabulary using online flashcards through the *Brainstorming* method.
- Potential solutions are proposed based on the problems identified and evaluated based on feasibility, effectiveness and creativity.

1.3. Methodologies Used:

- **Group brainstorming:** Use *Figma* to take notes and group ideas.
- **Affinity Diagram Analysis:** Organize ideas into groups of related problems and solutions.

2. Brainstorming Session

Tools and Techniques Used:

- **Tools:** Sticky notes, Figma.
- **Techniques:** Affinity diagramming.

3. Identified User Problems

3.1. Group 1: LACK OF CONTEXT FOR WORDS

- **Explanation:** Lack of Context for Words refers to the challenge of learning vocabulary words in isolation without seeing them used in meaningful sentences or situations. Flashcards often present a single word, image on one side and its definition or translation on the other, which can make it difficult for learners to understand how the word fits into real-life usage.
- **Problem analysis:**
 - **Limited Understanding:** Without context, learners might grasp the meaning of a word but struggle to use it correctly in sentences or conversations. Understanding a word's meaning in isolation does not always translate to knowing how to apply it appropriately. This can lead to misunderstandings of words, as learners might not fully grasp the nuances or connotations of the word.
 - **Reduced Practical Application:** Vocabulary words are often used in specific contexts or collocations. Flashcards do not always provide examples of these contexts. Learners

may find it challenging to recognize or produce these words in natural language settings, such as writing essays or having conversations.

- **Memory Retention:** Learning vocabulary in context can enhance memory retention. Words used in meaningful sentences or stories are more memorable than those learned in isolation. Without context, the cognitive connections between the word and its usage are weaker, making it harder for learners to recall and use the word effectively later.

3.2. Group 2: BORING AND NON-INTERACTIVE FLASHCARDS DESIGN

- **Explanation:** Boring and Non-Interactive Flashcards Design refers to the lack of engaging features and interactive elements in some online flashcard apps. These design limitations can lead to a monotonous and uninspiring learning experience, which may affect motivation and overall effectiveness.
- **Problem analysis:**
 - **Monotonous Learning Experience:** Flashcards with a static, simple format (e.g., a word and image on one side and definition on the other) can become repetitive and uninspiring. Learners may quickly lose interest and motivation, leading to inconsistent study habits and reduced learning effectiveness.
 - **Lack of Multimedia Integration:** Digital flashcards that do not incorporate multimedia elements, such as images, audio, and video clips, can provide a monotonous and uninspiring learning experience. The absence of multimedia can make it harder for learners to connect with the words, resulting in lower engagement and retention. This can lead to decreased motivation to study and a less effective learning process overall.

3.3. Group 3: VOCABULARY SET WITHIN A DECK OF FLASHCARDS LACKING A COMMON THEME

- **Explanation:** Lack of a Common Theme refers to the issue where flashcards within a deck cover a wide range of unrelated topics, making it difficult for learners to find connections and patterns among the vocabulary words. This can hinder the learning process and reduce the effectiveness of vocabulary acquisition.
- **Problem analysis:**
 - **Disjointed Learning Experience:** Flashcards that are not organized around a common theme can present vocabulary in a fragmented and scattered manner. Learners may struggle to form meaningful connections between words, making it harder to remember and use them effectively.
 - **Reduced Cognitive Association:** The brain forms stronger memories when new information is related to existing knowledge. Without a common theme, this associative learning is weakened. Vocabulary words learned in isolation are more difficult to retain and recall, leading to less effective language acquisition.
 - **Challenges in Practical Application:** Thematic learning helps learners apply vocabulary in practical situations, such as travel, business, or academic contexts. A lack of theme can make it difficult to practice and use words in these scenarios. Learners may find it challenging to transfer their vocabulary knowledge to real-life situations, reducing the practical utility of their learning efforts.

3.4. Group 4: SPENDING A LOT OF TIME CREATING A CUSTOM DECK OF FLASHCARDS

Explanation: Spending a Lot of Time Creating a Custom Deck of refers to the time and effort required to design and organize a set of flashcards tailored to individual learning needs. This process can be time-consuming and may impact the efficiency and effectiveness of the learning experience.

- **Problem analysis:**

- **Time-Consuming Process:** Creating a personalized deck involves selecting vocabulary, writing definitions and example sentences, and possibly adding multimedia elements. This can be a labor-intensive task. The time spent on deck creation may detract from actual study time, leading to inefficient use of resources and potential delays in learning progress.
- **Overwhelming Customization Options:** With numerous options for customization (e.g., layout, multimedia, example sentences), learners might feel overwhelmed and unsure of the best approach. This can lead to decision paralysis, where learners spend excessive time on design choices rather than focusing on actual study.

4. Generated Solution Ideas

4.1. Solution 1: PROVIDING WORD CONTEXT THROUGH SHORT VIDEOS

- **Explanation:**

To address the lack of context, short videos can be incorporated into flashcards, which can significantly enhance vocabulary learning by providing rich contextual information and engaging multiple senses. Videos can depict conversations, scenarios, and usage examples, demonstrating how words are used in real-life situations and offering learners practical examples and reinforcing meaning through both visual and auditory cues. This solution can address the problem of lacking word context, helping learners remember words longer and apply them more effectively. Below are the key benefits:

- **Contextual Learning:** Videos show vocabulary in context, helping learners understand usage and nuances.
- **Multisensory Engagement:** Engaging sight and hearing can improve memory retention.
- **Increased Engagement:** Videos often capture learners' interest better than text alone.
- **Visual and Auditory Cues:** These can aid in remembering words and their pronunciation.
- **Real-life Examples:** Authentic scenarios make learning more relevant.
- **Repetition and Reinforcement:** Videos can be replayed for repeated exposure.

- **Illustration:**



→ The image above is from a short video on social media. The word to be learned in the video is highlighted – “resilient”. Learners watch the short video and see how the word “resilient” is used in a real-life context.

- **Supporting Studies:**

- **Mayer’s Cognitive Theory of Multimedia Learning:** Mayer's theory suggests that *people learn better from words and pictures than from words alone*. This theory supports videos to enhance vocabulary learning by combining visual and auditory information.
- **Paivio’s Dual Coding Theory:** Paivio's theory posits that information is better remembered when it is processed *through both verbal and visual channels*. Videos, which engage both channels, can improve vocabulary retention.
- A study by Plass, Chun, Mayer, and Leutner (1998) found that *learners who used multimedia annotations (including videos) performed better on vocabulary tests than those who used text-only annotations*.
- A study by Al-Seghayer (2001) showed that *learners who used video clips to learn new vocabulary outperformed those who used static images or text alone*.

4.2. Solution 2: ENHANCING FLASHCARDS DESIGN TO MIMIC THE TikTok BROWSING EXPERIENCE

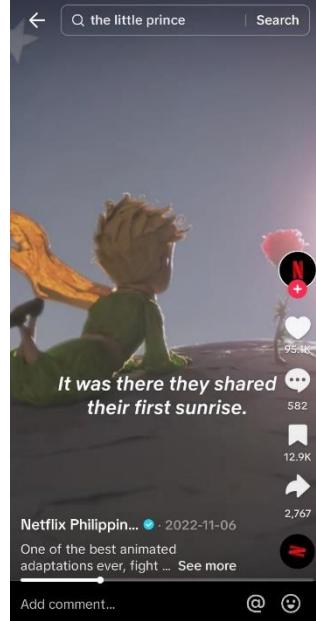
- **Explanation:**

To address the limitations of boring and non-interactive flashcards, the design can be improved by incorporating interactive elements like those found in TikTok videos. This approach, in addition to using videos to provide context for words (as in solution 1), includes additional features to increase interaction with the word, such as: marking known words, saving words to a personal list, marking important words, and adding notes. The marking function is like the emotion expression feature. The saving function is akin to saving videos. The adding note function is like commenting. These additional features create a more engaging and effective learning experience by increasing interaction and personalization.

- **Marking Known Words:** Learners can mark words they already know, which will then be removed from their active vocabulary list.
- **Saving Words to a Personal List:** Learners can save words they want to revisit or focus on later.
- **Marking Important Words:** Marking words that are crucial or challenging for individual study.
- **Adding Notes:** Allowing learners to add personal notes or observations related to the words.

Below are the key benefits:

- **Enhanced Interaction and Engagement:** Interactive features like marking and saving words help learners engage more deeply with the material, making the learning process more effective and capturing learners' interest and maintain motivation to reduce monotony and enhancing the learning experience.
- **Personalized Learning:** Allowing learners to manage their vocabulary lists and notes makes the learning process more adaptive to individual needs and progress.
- **Illustration:**



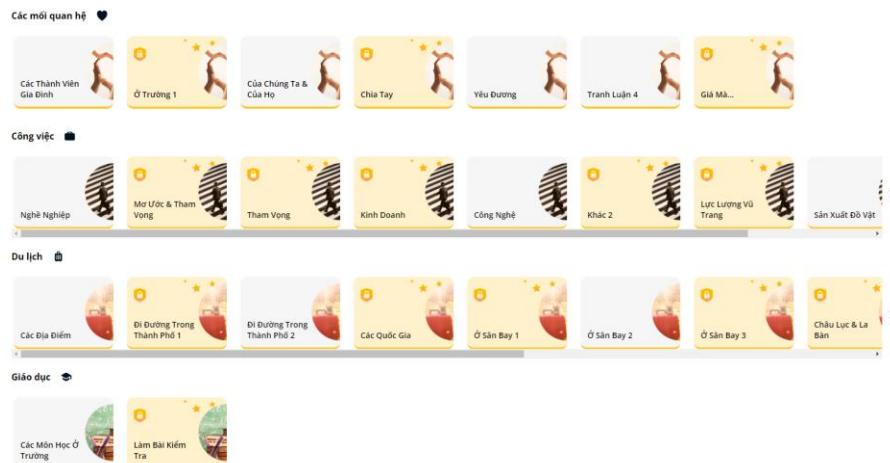
→ The image above is from a short video on TikTok. Each TikTok video has interactive features such as expressing emotions, sharing videos, commenting, and saving to a personal collection. These interactive features will be adapted into features that support vocabulary learning in each flashcard. The table below lists the features of flashcards corresponding to TikTok features:

No.	Tiktok features	Flashcards app features
1	Expressing emotions	Marking important words
		Marking known words
2	Commenting	Taking notes
3	Saving videos to personal collection	Adding flashcards to personal list

4.3. Solution 3: ORGANIZING VOCABULARY BY THEME

- **Explanation:** To address the issue of flashcards lacking a common theme, the solution involves organizing vocabulary sets within a deck around specific themes. This approach groups related words into thematic categories, which helps learners find connections and patterns among the vocabulary, enhancing the learning process. Below are the key benefits:
 - **Enhanced Connection and Pattern Recognition:** Thematic organization allows learners to see how words relate to each other, facilitating better understanding and recall by connecting new vocabulary to existing knowledge.
 - **Improved Cognitive Association:** Grouping vocabulary by theme strengthens associative learning, as related words are easier to remember when they are connected to a common context or concept.
 - **Practical Application:** Thematic learning aligns vocabulary with real-life scenarios, such as travel, business, or academic contexts. This makes it easier for learners to practice and apply words in practical situations, increasing the utility of their vocabulary knowledge.
 - **Structured Learning Experience:** A well-organized vocabulary deck helps prevent a fragmented learning experience, making it easier for learners to build and retain their vocabulary systematically.

- **Illustration:**



→ The image above depicts learning vocabulary through different themes. Learners can choose the themes they are interested in and learn vocabulary related to those themes.

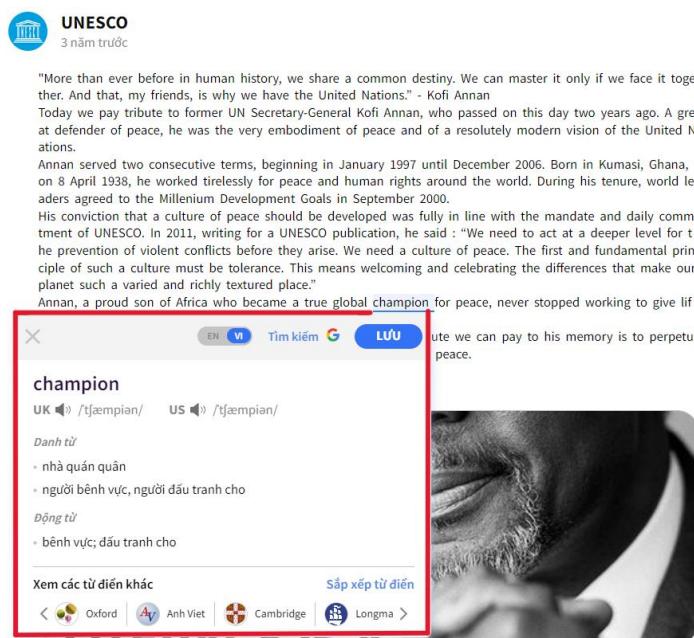
- **Supporting Studies:**

- **Schema Theory:** Schema theory suggests that *information is better understood and remembered when it is organized into meaningful patterns or themes*. Thematic organization of vocabulary aligns with this theory by providing a structured context for learning.

- **Cognitive Load Theory:** According to cognitive load theory, *organizing information into coherent themes reduces cognitive load*, making it easier for learners to process and retain new information.

4.4. Solution 4: DEVELOPING A TOOL TO SUPPORT CREATING CUSTOM FLASHCARDS

- **Explanation:** To tackle the issue of spending excessive time creating custom flashcards, the solution is to develop a tool that assists learners by automating the process of flashcard creation. When learners encounter a new word in reading materials (e.g., e-books, Facebook posts, articles), they can use this tool to automatically retrieve and organize information about the word, such as pronunciation, meaning, and images. The tool will then generate a flashcard and add it to the learner's personal list. The only task remaining for the learner is to add an example sentence into the flashcard, which can be the one from the context where the word was found. Below are the key benefits:
 - **Time Efficiency:** Automates the retrieval of word information and flashcard creation, significantly reducing the time and effort required for custom deck development.
 - **Seamless Integration:** Allows learners to easily create flashcards from words encountered in their daily reading without interrupting their reading flow.
 - **Enhanced Learning Experience:** By automating the tedious aspects of flashcard creation, learners can focus more on studying and less on administrative tasks, leading to a more efficient and engaging learning process.
- **Illustration:**



→ The image above depicts learners finding the meaning of an unknown word while reading an article. If they wish, learners can save the word to their personal list for later review. The tool will assist learners in automatically creating a flashcard for the word, including information such as spelling, pronunciation, meaning, and an image. The

only step left for the learner is to include an example sentence into the flashcard, which could be taken from the context where the word was encountered. After that, the newly created flashcard will be added to the learner's vocabulary list.

5. Affinity Diagram

5.1. Overview of Affinity Diagram:

- An affinity diagram was created to visually represent the relationships between identified user problems and potential solutions.

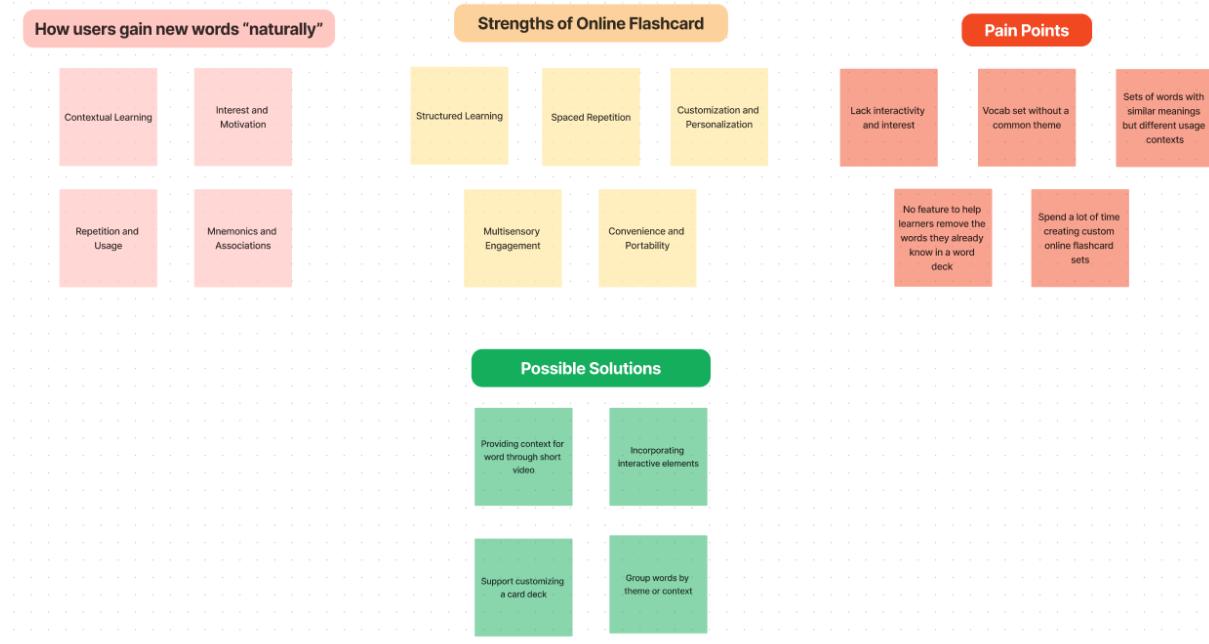
5.2. Steps to Create the Affinity Diagram:

1. **Gather Data:** Collect all relevant data, ideas, or issues. Write each idea or piece of data on a separate sticky note or card.
2. **Display the Notes:** Place all the sticky notes or cards on a large surface like a wall, whiteboard, or table.
3. **Organize into Groups:** Start grouping the notes that seem related or share a common theme. Continue organizing until all notes are grouped.
4. **Create Headings for Groups:** Once the groups are formed, create a heading for each group that captures the essence of the ideas within it. Write the headings on a different color of sticky note or a larger card and place them above or next to the corresponding group.
5. **Review and Refine:** Review the groups and headings with your team. Discuss any disagreements or unclear groupings. Refine the groups and headings as needed to ensure they accurately represent the data.
6. **Analyze and Interpret:** Analyze the final diagram to identify patterns, themes, and insights. Use these insights to inform decision-making, problem-solving, or to generate further ideas.

5.3. Grouping and Categorization of Problems and Solution Ideas:

- To understand and address the various challenges faced by users in learning English vocabulary, we utilized an affinity diagram. This method allowed us to systematically organize and categorize the data collected from user research.
- Our affinity diagram is divided into 4 main sections: **Strengths of Online Flashcard, how we learn new words naturally, Pain Points and Possible Solutions.** By combining the strengths of the current online flashcard support tools, people's habit when learning new words and struggles that make users not using this method anymore, we have generated some ideas that may resolve the problems but will not affect their strengths now.

5.4. Visual Representation:



6. References

- [1] <https://www.mheducation.ca/blog/richard-mayers-cognitive-theory-of-multimedia-learning>
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- [3] <https://nyuscholars.nyu.edu/en/publications/supporting-visual-and-verbal-learning-preferences-in-a-second-lang>
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