VocaBoost
Vision Document

Version 2.0

Revision History

Date	Version	Description	Author
26/05/2025	1.0	This version includes the initial overview of the project's vision, outlining the purpose, scope, objectives, and key requirements	All team members
13/06/2025	2.0	Enhanced product position statement with competitor weakness, detailed solution for AI features	All team members

Table of Contents

Vision (Small Project)

1.   Introduction

The purpose of this document is to collect, analyze, and define high-level needs and features of the VocaBoost. It focuses on the capabilities needed by the stakeholders and the target users, and **why** these needs exist. The details of how the VocaBoost fulfills these needs are detailed in the use-case and supplementary specifications.

2.   Positioning

2.1   Problem Statement

The problem of	Lack of effective methods and tools for vocabulary learning and retention
Affects	English learners who forget vocabulary quickly and teachers struggling with student retention
The impact of which is	Wasted time, effort, and money without achieving desired learning outcomes, leading to frustration and discontinued learning
A successful solution would be	Successfully implementing the scientifically-proven Spaced Repetition method in an accessible platform Enhancing user experience with personalized vocabulary lists, progress tracking, smart reminders, and AI-generated contextual examples

2.2   Product Position Statement

For	English learners (students, professionals, self-learners) and English teachers
Who	Need an effective, Spaced Repetition method to learn and retain vocabulary long-term. Many lack dedicated tools to assist in both learning and teaching vocabulary effectively.
The VocaBoost	Is a web-based vocabulary learning platform
That	Allow learners to revise their vocabulary list by learning method: Flashcard, Fill-in-blank, etc. Uses Spaced Repetition algorithm to optimize review intervals. Offer classroom management features for teachers. Uses AI to provide contextual examples.
Unlike	Traditional learning vocabulary apps (Quizlet, Duolingo, Anki) Quizlet: lacks effective Spaced Repetition, AI-generated examples. Duolingo: focuses on general language skills, doesn't allow custom vocabulary lists, personalized review, or classroom management. Anki: has strong Spaced Repetition but is complex to use, lacks interactive formats, and offers no support for teachers or class tracking.

Our product	Combining Spaced Repetition with interactive learning methods such as Flashcard, Fill-in-blank, Word Association helped learners to remember vocabulary easily. Support teachers create, manage classrooms and assign tasks for students.

3. Stakeholder and User Descriptions

3.1 Stakeholder Summary

Name	Description	Responsibilities
Development Team	Group 5 members responsible for building VocaBoost	Design and implement the system Ensure system quality and performance Maintain and update the platform
Teaching Assistance (Mr. Phạm Hoàng Hải)	TAs supporting the Software Engineering course	Review project progress weekly Provide technical feedback and suggestions Help resolve implementation issues Guide teams on best practices Evaluate and grade project deliverables
Theory Lecturer (Mr. Nguyễn Văn Vũ)	Software Engineering course lecturer	Provide theoretical knowledge and lectures Create and deliver course materials Evaluate and grade project deliverables Set project requirements and standards

3.2 User Summary

Name	Description	Responsibilities	Stakeholder
Individual Learner	Students, professionals and self-learners studying English vocabulary	Create and manage vocabulary lists Track learning progress Join classes when enrolled	Self-represented
English Teacher	Educators teaching English at various levels	Create and manage classrooms Design vocabulary lists for students Monitor student progress Provide feedback	Educational Institutions or Self-represented
Guest User	Visitors exploring the platform	Browse public vocabulary lists Try limited features Decide on registration	Potential users

Admin	Platform managers responsible for system stability and content quality	Manage user accounts and roles Monitor and moderate public content Support users with technical issues Ensure platform security, data integrity Track platform usage & performance	Platform Owner/ Technical Team

3.3 User Environment

Working environment	Description
Number of people involved in completing the task	**Individual Learners**: Study by themself (1 person) **Teachers**: Manage 15-30 students per class, typically teaching 2-5 classes at the same time **Administrators**: 1-2 admins managing the entire platform
Task cycle	**Individual Learners:** - Daily review sessions: 5-10 minutes - New vocabulary learning: 20-40 minutes - Weekly progress review: 5 minutes **Teachers:** - Weekly vocabulary list creation: 30-60 minutes - Daily student progress monitoring: 10-15 minutes - Monthly performance reports: 30 minutes
Unique environmental constraints	No constraint
Platform	Any devices have access to the Internet can use

3.4 Alternatives and Competition

Name	Pros	Cons	Our Advantage
Duolingo	- Large user base - Gamification - Free tier	- Not focused on vocabulary - Too many ads - Limited or simplified Spaced Repetition - Heavy automation by AI limiting learner control	- Dedicated vocabulary focus - Proper Spaced Repetition implementation - No ads - Use AI appropriately
Anki	- Powerful SR algorithm - Customizable	- Complex interface - Steep learning curve - No collaboration features	- User-friendly design - Built-in classroom features - AI assistance
Quizlet	- Popular in schools - Social features	- Limited Spaced Repetition functionality - Paid features locked	- Full Spaced Repetition implementation - Comprehensive free features
Traditional Methods	- No technology needed - Familiar approach	- Ineffective retention - Time-consuming - No progress tracking	- Scientific methodology - Automated scheduling - Data-driven insights

4. Product Features

4.1 Account & Authentication

No.	Feature	Description	Priority
1.1	User Registration	- Email-based registration with verification link - Strong password requirements (min 8 chars, mixed case, numbers) - Optional social login (Google/Facebook) for future	High
1.2	Password Management	- Forgot password with email reset - Change password with old password verification - Password strength indicator - Password history (prevent reuse)	High
1.3	Profile Management	- Update display name and avatar - Set learning preferences (daily goal, reminder time) - Language preference - Email notification settings	Medium
1.4	Role Management	- Three roles: Admin, Teacher, Learner - Teacher role request and approval process - Role-based permissions - Role switching for users with multiple roles	Medium
1.5	Secure Login/Logout	- Session management with timeout - Remember me option - Multi-device login tracking - Force logout from all devices	Low

4.2 Vocabulary Management

No.	Feature	Description	Priority
2.1	Create Vocabulary Lists	- Add word, meaning, example - Generate contextual example sentences (manual/AI) - Add images for visual learning - Privacy settings (public/ private/ classroom) - Category/topic tagging	High
2.2	Edit & Delete Lists	- Inline editing of vocabulary items - Bulk operations (select multiple)	High

2.3	List Organization	- Create folders and subfolders	High
		- Multi-tag system	
		- Advanced search and filter	
		- Sort by date/name/progress	
2.4	Sharing & Collaboration	- Share via link or email	Medium
		- Set permissions (view/copy/edit)	
		- Clone public lists	
		- Attribution for cloned lists	
2.5	Import/Export	- Import from CSV/Excel with template	Low
		- Export to CSV/Excel/PDF	
		- Batch import validation and error handling	

4.3   Revised Vocabulary Method

No.	Feature	Description	Priority
3.1	Spaced Repetition Engine	- SM-2 algorithm implementation (one of the most popular Spaced Repetition algorithms)	High
		- Customizable intervals (1, 3, 7, 14, 30 days)	
		- Overdue card prioritization	
		- Learning queue management	
3.2	Flashcard Mode	- Front/back card flip animation	High
		- Analyze performance	
		- Skip and mark for review	
3.3	Fill-in-the-Blank	- Auto-generate blanks from sentences	High
		- Analyze performance	
3.4	Word Association	- Match word to meaning	Medium
		- Image to word matching (optional)	
		- Synonym/antonym exercises	
		- Timed challenges	
3.5	Multiple Choice	- 4-option questions	Medium
		- Explanation for correct answers	
		- Question bank rotation	
		- Analyze performance	
3.6	AI Learning Assistant	Technical solution:	Low
		- For text generation: use Google Gemini API	
		- For image generation (optional): use Google Imagen 3 API	

		Features: - Generate contextual example sentences - Provide word usage in different contexts - Generate common collocations - Create visual memory aids (future)	

4.4 Administration

No.	Feature	Description	Priority
4.1	User Management	- Search and filter users - View user activity logs - Block/Unblock accounts - Delete accounts	High
4.2	Teacher Verification	- Review teacher applications - Approve/reject with reasons - Revoke teacher status	High
4.3	Content Moderation	- Report system for inappropriate content - Moderation queue - Auto-flag suspicious content - Warning system - Content restoration	Low
4.4	System Monitoring	- Real-time user statistics - Server performance metrics - Error tracking and logs	Low

4.5 Teacher Features

No.	Feature	Description	Priority
5.1	Classroom Creation	- Unique classroom codes - Custom classroom names and descriptions	High
5.2	Classroom Management	- Add/remove students - Invitation via email or code	Medium
5.3	Assignment System	- Assign vocabulary lists to classes - Auto-grading for objective exercises - Send announcements and feedback	Medium
5.4	Teacher Dashboard	- Class overview with all students - Individual student progress tracking	Medium
5.5	Communication Hub	- Announcements with read receipts	Low

		- Direct messaging to students	
		- Feedback on assignments	
		- Q&A forum for each class	
		- Email notifications for important updates	

4.6   Progress & Analytics

No.	Feature	Description	Priority
6.1	Learning Statistics	- Words learned per day/week/month - Retention rate percentage - Time spent learning - Best/worst performing words	Medium
6.2	Progress Visualization	- Calendar heatmap of activity - Progress bars for lists - Charts (line, bar, pie) - Milestone celebrations - Comparative analysis	Medium
6.3	Streak System	- Daily streak counter - Streak freeze (1 per week) - Weekend mode (optional)	Low

4.7   Supporting Features

No.	Feature	Description	Priority
7.1	Notification System	- Email notifications (configurable) - Push notifications (future) - Study reminders	Medium
7.2	Search & Discovery	- Global search across all content - Filter by topic/creator - Recommended based on learning history - Save searches	Medium

5.   Non-Functional Requirements

5.1. Performance:

Homepage and main pages must load within 3 seconds on an average network connection.

Response time for word searches must be under 1 second.

The system must support an increasing number of users without significant performance degradation.

5.2. Security:

Secure user passwords using hashing.

There must be clear and defined access control mechanisms for different user roles (learner, teacher, admin).

5.3. Availability:

The system must have high availability with 99.5% uptime.

Display user-friendly and meaningful error messages to users in case of issues.

5.4. Usability:

Visually appealing interface, easy to understand and use main functionalities without detailed instructions.

Consistent design across the entire website.

The website should display well and be easy to use across different devices (desktop computers and mobile phones).

Provide clear feedback for user actions.

5.5. Maintainability:

Modular design, reducing dependencies between components for easy updates and maintenance, allowing for quick bug fixes and feature enhancements.

5.6. Scalability:

Database optimization for large datasets to efficiently handle significant increases in the volume of vocabulary, lessons, and user data.

5.7. Compatibility:

Operates correctly on the latest versions of popular web browsers (Chrome, Firefox, Safari, Edge) and current popular operating systems (Windows, macOS, Linux).