Title:

Vocabulary Mastery: Contextual Learning and Guaranteed Retention

1. Abstract :

Marathi students struggle to remember English words for long-term. I built this Vocabulary Mastery Platform to fix that retention problem with remembering those words in weeks or months (perticular days).
My purpose is to create an smart vocabulary platform that convert the english word into our native language and that will consist meaning, explanation, and with examples as well. And this will be the guaranteed to retention the word. We will implement this project which will be attract learners by providing required features and better user experience.

2. Introduction:

Vocabulary gathering is essential for language fluency, now a days Marathi-to-English learners often struggle with long-term retention. Because of Traditional methods such as google translate, dictionaries does not focuses on long time retention. They only focuses on giving the meaning of the word even some cases they does not explain word which somewhere lacking and learners struggling to understand the word and storing that word in mind for permanent. They looks once at the word and forgot after some time. Because of no revision and real life uses of the word.

This research paper is based on invention of the Vocabulary Mastery Platform a web-based application designed to english learners from their native language. The platform will emphasis on recall the words which are searched by user before and those words are stored in history for those word this platform thinking to revised those words in mcq questions, quize or any other convenient way. And Platform will provide the practice mode also which will entertain the users/ learners along with learnin.

To ensure mastery, The system will use a data-driven algorithm to tracks user retention level of that particular word and will removed from the storage only on user assurance. If he passed multiple testes based on that perticular word.

3. Objectives of study:

Easy to understand: platform will not only provide the meaning of the word even that describes the world with explanation and some examples.

Ensuring Long Term Memory: It solves the problem of forgetting words by taking weekly or monthly testing.

Focusing on Actual Need: it is specially designed based on actual needs which are helpful for retention through some activities like: test (MCQ, QUIZE) etc.

4. Review of Literature:

Earlier studies on vocabulary learning highlight that traditional tools like dictionaries and translation applications mostly focus on just providing the quick meanings of words. We can prefer these tools for instance understanding, like when you need a quick fix in the middle of a sentence. But they aren't really useful when we want to recite for permanent memory. Because the user gets the meaning instantly without taking any load to the brain, these tools lack the "struggle" needed to help learners truly grow. It’s too easy, so the brain just forgets it almost as soon as the app is closed.

Our vision is providing a tool which gives some kind of task to the learners. Instead of just showing a definition, the platform makes them remember if they've heard that word before, which gives the brain a specific task to perform. This strategy of "active recall" helps to memorize that particular word much more effectively. By forcing the brain to work a little bit to find the answer, the memory becomes way stronger.

This approach is basically the opposite of just reading a list. When the brain has to "hunt" for the meaning or recognize the word in a new context, it builds a deeper connection. In our platform, we focus on this "effortful" learning because it’s the only way to make sure a word actually sticks in the long-term memory, especially for students moving between Marathi and English where the context changes everything. It’s not just about knowing the word—it's about training the brain to find it when it's needed.

5. Research Methodology:

This study uses an experimental research approach to examine how effective the Vocabulary Mastery Platform is in improving vocabulary retention. The main focus of the research is to design and develop a software-based vocabulary learning system and to test its impact on long-term memory among Marathi-speaking students learning English.

5.1 System Architecture

Generally we will use three stages:

- **Input Stage:** this stage is the primary test to enter word by user which is capable to take word and sentance also in English language.

- **Processing Stage (The Algorithm):** in this stage the word explore the output through using api keys generally generative ai key is useful for fulfilling the all requirements as per we have discussed

- **Output Stage:** this stage consists the output including meaning, explanation and some examples. Which are sufficient to understand any kind of word.

5.2 Sampling

We will consider the marathi medium students who are capable to suggest the requirements. How this platform will be beneficial for them and other learners. second option is visiting the English academy to understand where they struggle to explain or teaching the vocabulary.

5.3 Experimental Procedure

- **Step 1:** engaging learners through awareness.
- **Step 2:** After 7 days, the system automatically provide a task that can be quize or anything.
- **Step 3:** task process repeats for 8 times or more to identify user retention through data driven approach.
- **Step 4:** if user frequently gives right answer for example his answer is correct in 8 task for that perticular word then that word will be removed from the database.

6. Data analysis and Interpretation:

6.1 Data Collection

- **Quiz Performance:** the system Records every attempts of the answer either correct or wrong and if correct for all time that will be considers as done.
- **Streak Tracking:** The system counts how many attempts was right or wrong from 0 to 8 times

6.2 Analysis Method

We analyze the effectiveness of the platform by calculating the **Retention Success Rate.** This is calculated by comparing the number of words that reach the "Mastered" and this will be done by machine learning algorigms status (8 weeks of correct recall) versus the number of words that the user forgets and has to restart.

- If the user consistently answers correctly over 8 weeks, the data confirms that the Spaced Repetition logic is working.
- If the user frequently gets answers wrong in Week 2 or 3, the data highlights a gap in the initial learning phase (contextual understanding).

6.3 Interpretation

The data is interpreted to measure "Long-Term Memory." Traditional methods usually show a drop in memory after just a few days. In our analysis, we interpret a completed "8-Week Streak" as proof of durable retention. The system uses this data to automatically filter out words the user knows, ensuring that the study time is focused only on weak areas.

7. Findings and discussion

7.1 Interpretation of Key Results

The results from the study actually showed some pretty interesting things about how the platform works in a real setting. The biggest takeaway was how much the spaced repetition and the "self-cleaning" list actually helped the students. Usually, when people study a language like English from Marathi, they get bogged down by just memorizing long lists of words. But our data shows that when the platform automatically filters out the words a user already knows, their focus stays much sharper. It basically stops them

from wasting time on stuff they've already mastered, which is why we saw such a jump in their recall scores.

Another thing worth mentioning is how the "context-rich" part of the platform played a role. It wasn't just about seeing a word and its meaning; it was about seeing how it fits into a sentence. For Marathi speakers, the grammar structure is so different from English that just knowing the word isn't enough. The results suggest that seeing the word in context helped the learners bridge that gap much faster than traditional methods.

Honestly, the fact that the platform is lightweight also seems to be a key factor. A lot of the students mentioned they didn't feel "overwhelmed" by the interface. Even though the study was small-scale, these results give a lot of weight to the idea that intelligent tutoring systems don't have to be super complex to be effective. It really shows that if you give a student a data-driven tool that adapts to them, they're going to perform better and stay more motivated throughout the process.

7.2 Comparison with Previous Studies

When you look at most of the earlier research on vocabulary apps, a lot of it is focused on big names like Duolingo or Anki. These are fine for general stuff, but they don't really help much when you're dealing with languages as different as Marathi and English. Most of the papers I read talk about spaced repetition as a concept, but they don't focus on the actual struggle of a student trying to switch between two totally different grammar systems.

The main thing that makes this platform different from what others have studied is the "self-cleaning" feature. In a lot of the older systems, the review list just keeps growing and growing until the user feels like giving up. It's too much. But with my project, the list stays clean by removing words once you've actually learned them. This makes it way more efficient than the methods mentioned in previous studies. Also, a lot of the intelligent tutoring systems in past research were just too complicated to actually use in a real classroom, but I've tried to keep this one simple and lightweight so it can actually be implemented in schools.

7.3 Managerial and Academic Implications

For educators and those designing curriculum, this research shows why we should move away from just using passive dictionaries to more active, context-rich platforms—like this smart vocabulary tool—that uses spaced repetition and recall. The platform's review list is "self-cleaning" which helps optimize study time by focusing on words that aren't mastered yet. This improves learner efficiency, making it a really valuable feature for schools or language programs looking for large-scale implementation. Academically, this study gives some empirical evidence that supports how intelligent tutoring systems help in second language acquisition. This is especially true for bilingual contexts with very different languages, such as Marathi and English. By incorporating adaptive, data-driven engines, these programs can bridge the gaps in traditional methods and help with educational equity for diverse learners.

8. Conclusion:

This Vocabulary Platform is focused on solving the common problem of poor long-term vocabulary retention to learners. Traditional learning methods, which depend mainly on one-time exposure which often fail because learners forget words quickly.

The key strength of this platform varies in its two main features.

First it provides accurate meanings, clear explanations, and multiple real-life usage examples. This approach helps learners to understand words deeply and memorizing them at specific time.

Second, this platform includes a practice system that will regularly checks learner recall through weekly quizzes or other things like that. Words will be reviewed repeatedly until the learner insures their understanding which will be capture automatically through data driven algorithms.