

Smart Indic Lyrics For Language Learning

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Objectives

- To build an interactive music player that helps language learners independently learn and improve vocabulary.
- A system to annotate lyrics with word definitions, sentences depicting contextual usage of words and pictorial illustrations.
- A revisiting mechanism that allows users to save word annotations for long-term learning.
- A pilot user study with 10 intermediate-level Hindi learners to compare dual Hindi-English lyrics and Smart Indic Lyrics in terms of vocabulary learning, overall comprehension and enjoyment of the song.

Dual Lyrics

मेरा जूता है जपानी
My shoes are from Japan

- Emphasis on comprehension than vocabulary.
- Provides translation of phrases not words.

Smart Indic Lyrics

Mera Joota Hai Japani / मेरा जूता है जापानी

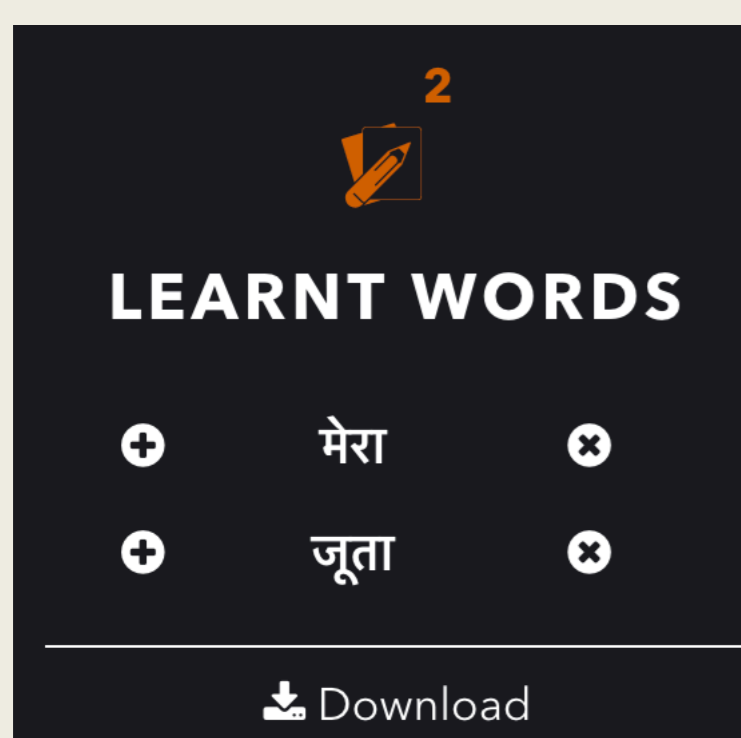
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HINDI ENGLISH
British ☆
Learn More

मेरा जूता है जापानी ये पतलून इंगलिशतानी
सर पे लाल टोपी रूसी फिर भी दिल है हिन्दुस्तानी

निकल पड़े हैं खुल्ली सड़क पर अपना सीना ताने
मंजिल कहाँ, कहाँ रुकना है, उपरवाला जाने

- Highlights currently played word to focus on pronunciation.
- Word-level vocabulary annotations on hover for quick reference.
- Pictorial illustrations for nouns & verbs are shown on hover.
- Star words & download for later reference.
- Phrase level translations to English.
- Implemented for Hindi & Tamil.



Shoe ☆

Part Of Speech: Noun

Example Sentences:

- मेरे जूते बारिश में गीले हो गये। (My shoes got wet in the rain)
- मैंने आज नीले जूते खरीदे। (I bought blue shoes today)

मेरा जूता है जापानी ये

User study

- Conducted with 10 (5 male & 5 female) intermediate-level learners studying Hindi.
- They self-reported that they were from non-Hindi speaking background.
- Participants listened to two 4-minute Hindi songs, one on each tool.
- Half the participants listened to the first song using Smart Indic Lyrics followed by dual lyrics and the other half followed the reverse order.

Vocabulary Quiz

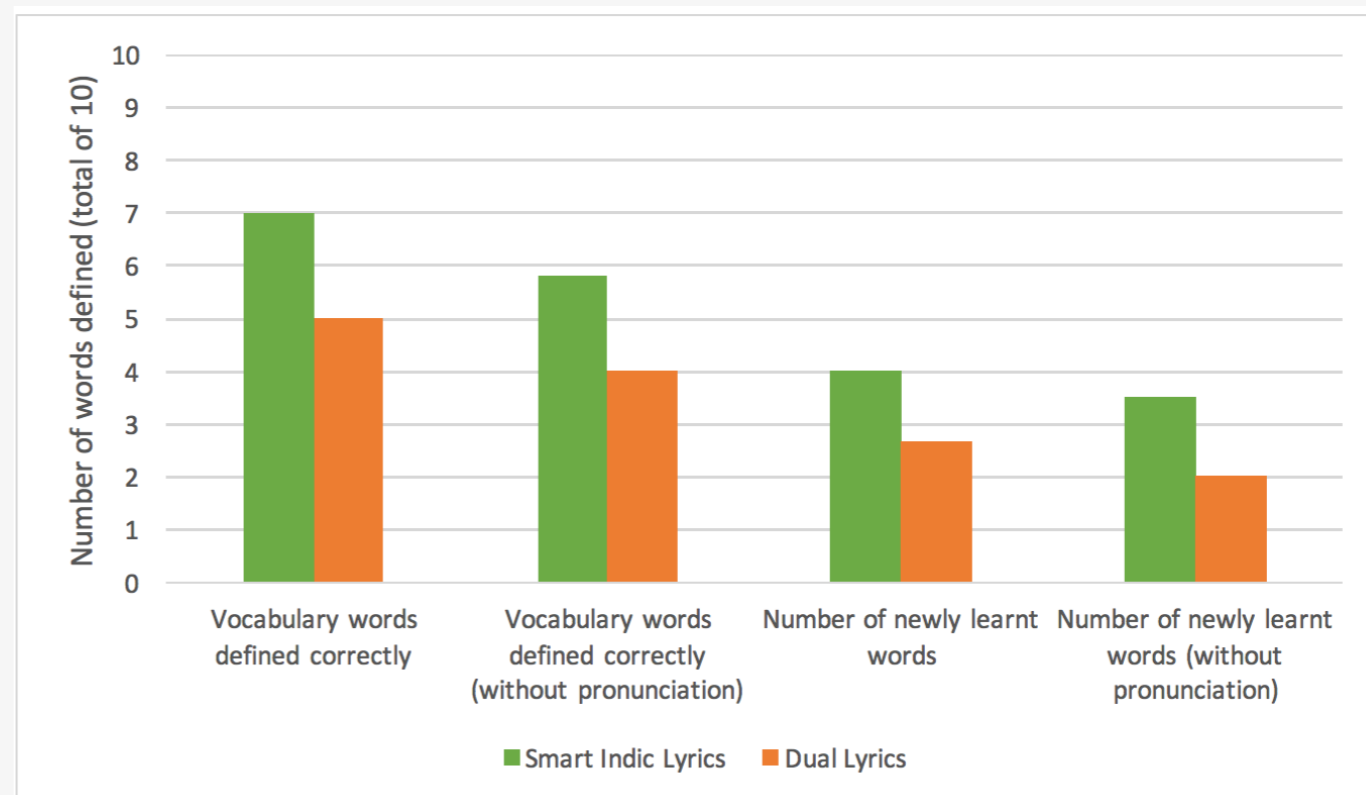
- 20 questions (10 on each song) of two types were asked :
1) Definition when given the word 2) Definition given the word in the context of a sentence.
- Additional 10 questions were asked to test the definition of the word given its picture. This was asked only for words that appeared using Smart Indic Lyrics.
- For every question, participants were asked if already knew the meaning of the word before listening to the song or was it newly learnt.
- Participants could opt to listen to the pronunciation of the word while taking the quiz.

Feedback Questionnaire

Participants gave feedback of their listening and learning experience with each tool on a 5-point Likert scale.

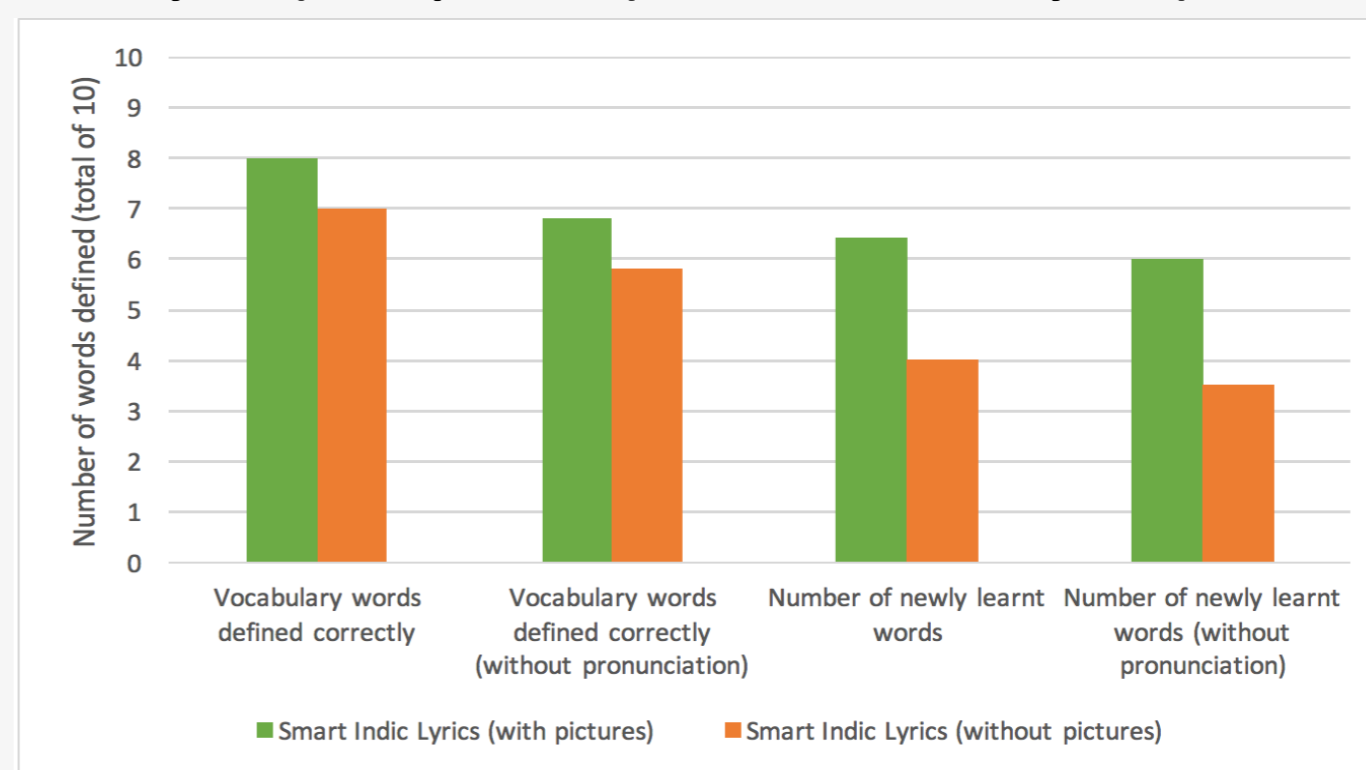
Vocabulary Quiz Results

Dual Lyrics VS Smart Indic Lyrics (without pictures)



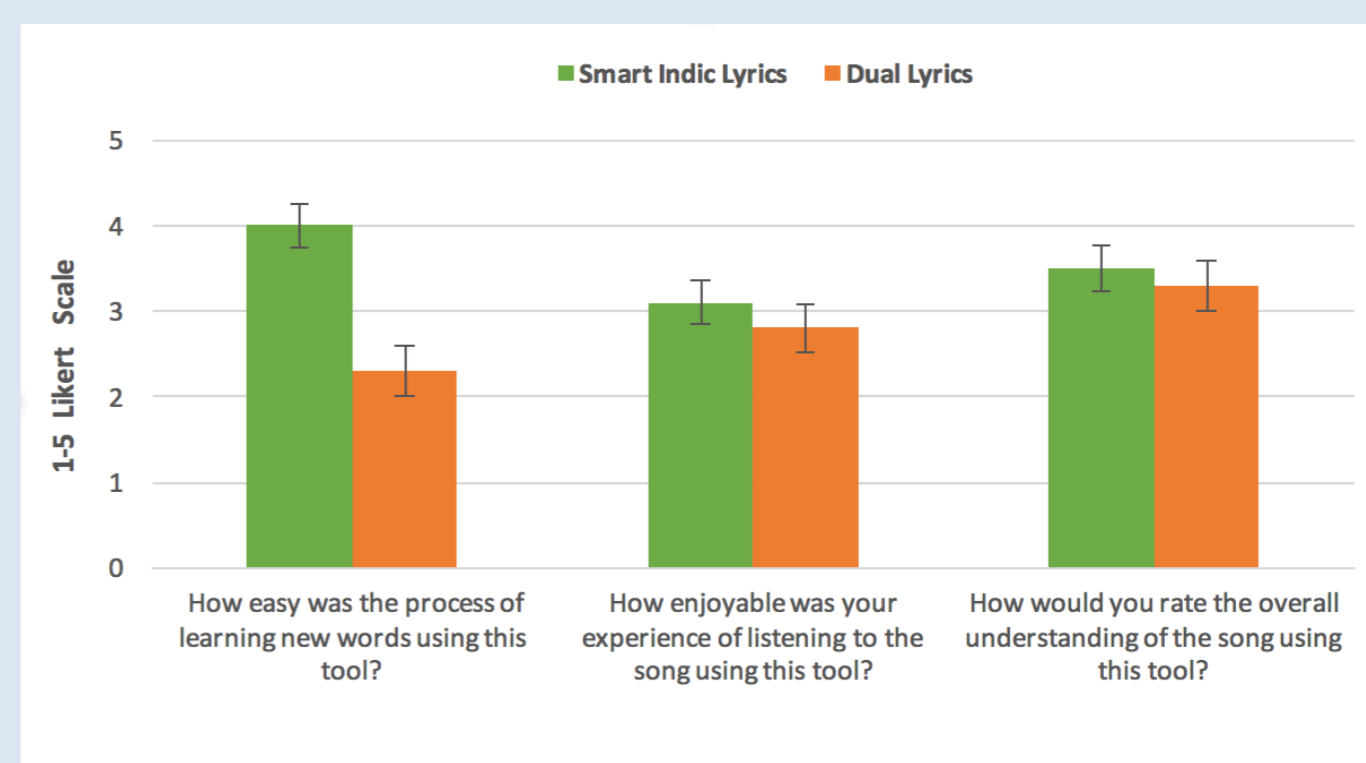
Users correctly defined 1.5 times as many new words, more questions were correctly answered ($t = 2.4097$, $df = 9$, $p < 0.0393$) and more new words were correctly defined ($t = 2.6234$, $df=9$, $p= 0.0277$) when using Smart Indic Lyrics.

Smart Indic Lyrics (with pictures) VS Smart Indic Lyrics (without pictures)



Users correctly defined 1.6 times as many new words, more questions were correctly answered ($t = 1.2910$, $df = 9$, $p = 0.2289$) and more new words were correctly defined ($t = 7.3193$, $df=9$, $p= 0.0001$) indicating that pictures are better recognized and recalled than their labels.

Feedback Questionnaire Results



Users considered it easier to learn new words with Smart Indic Lyrics ($t=5.28$, $df=9$, $p = 0.0005$). Listeners enjoyed using both tools almost equally and rated their overall understanding of the songs as similar in both cases.

Feature Usage During User Study

FEATURE	USAGE STATISTIC	DEDUCTION
Tool usage	8-10 minutes on Smart Indic Lyrics and 6 minutes on dual lyrics	Although Smart Indic Lyrics is time consuming; vocabulary quiz results prove it is more effective.
Hover over words	75% of the lyrics of song (avg.)	
Expanded hover	20% of hovered words (avg.)	
Click on English tab	For 30% of the phrases (avg.)	Word-level translations are often sufficient for intermediate- level learners to understand lyrics.
Starring of words	60% of words (avg.)	Combined with the results of the number of newly learnt words, this suggests that bookmarked words were also used for familiar words to understand their complete context.
Download bookmarked words	6 out of 10 participants	Learners would revisit words at a later stage.

Future work

- Further investigation must be performed to understand effectiveness of Smart Indic Lyrics with 1) Beginner and advanced level language learners 2) Variety of languages 3) Different genres of music.
- Further evaluation is needed to judge how helpful downloaded words proved to be in long-term learning.