An Ideal e-Learning Content Catering to Indian Language Education

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Abstract

Education is undergoing a rapid upgrade in terms of technological developments and selection of curriculum design. The education domain is making a shift from traditional teaching-learning approaches to digitally driven, innovative, and dynamic methods. The availability of well-planned and efficiently delivered e-content is crucial to enhance the teaching-learning experience. Language education through digital media has been rapidly widespread. Hindi is one of the most widely spoken languages among Indian languages in the world. However, there is a lack of quality Hindi e-learning content in sync with the syllabus. This paper demonstrates pitching the Hindi Language e-learning content that can cater to the school curriculum. *Hindi Shabdamitra*[1] is one such e-learning tool that provides quality e-learning content to language learners, which is in sync with the school curriculum. Using the expansion approach other Shabdamitra viz., Marathi Shabdamitra, Sanskrit Shabdamitra, and Konkani Shabdamitra, etc., are being developed at various research centers of India.

1 Introduction

With recent technological advancements, e-learning in education domain is growing enormously. The digital language learning is one of the emerging areas of research and application development. Hindi, an Indo-Aryan language, is one of the widely spoken languages in the world[2]. The official script for Hindi is Devanagari[3]. A lot of digital content is available online for learning Hindi. This content is in the form of conversations, stories, poems, games, *etc*. However, there is lack of Hindi e-learning content which is in-sync with school curriculum. Also, less attention is given to the detailed grammatical and lexico-semantic features.

Education has developed rapidly from black boards to black screens. In the era of digital classrooms, it is crucial that education is made accessible anywhere, anytime. With the help of e-learning tools, students are offered with a different set of skills rather than those in a traditional classroom setting. According to Dike (1989), audio-visual resources do not only increase the motivation of the teachers and learners, but they also add clarity to the topic taught and make learning more interesting. The pedagogical aspect of e-learning has become prominent in the past years, hence curriculum-specific e-learning content is the need of the hour.

2 Literature Survey

Computers and other educational devices are increasingly found in homes and schools every year, and they are found effective as an aid to the teachers and students. Research in e-learning shows positive outcomes that it can be advantageous for both, the students and teachers. With technology in place, the ease of multi-modal learning environments has been studied in different settings (Mayer and Moreno, 2003; Moreno and Mayer, 2007; Shams and Seitz, 2008; Sankey et al., 2010). Mobile Assisted Language Learning (MALL) is also being explored as mobile technologies are becoming an integral part of the lifestyle. The findings (Yang, 2013) show that MALL has not reached its potential and it is moving towards being the new stage of Computer Assisted Language Learning (CALL).

Pedagogical experts have stressed on the need

[1] http://www.cfilt.iitb.ac.in/hindishabdamitra/

[2] https://www.britannica.com/topic/Hindi-language

[3] https://www.babbel.com/en/magazine/the-10-most-spoken-languages-in-the-world

for improving various approaches to enhance the willingness of the learners for self-directed technology to maximize the technology potential for language learning (Lai et al., 2016). The use of gamification is seen as an effective pedagogical strategy which can engage and motivate the learner to learn in a relaxed environment, which is fundamental to any learning (Werbach and Hunter, 2012; Figueroa Flores, 2015).

In language learning, using semantic network relations for learning new word helps in better understanding of its meaning (Lin, 1997). The wordnet (Fellbaum, 1998), a semantic-based rich lexical resource, has been used for various language learning applications such as - the semantic and lexical relations between synsets enables the learners to know the connotations of a word along with its various possible contexts (Hiray, 2015).

3 The Ideal Content

Maintaining the standard of education in more than a million schools, offering training programs to teachers, and keeping a good balance with the education system is a big challenge. The digital aid, *Hindi Shabdamitra* (Redkar et al., 2017a), designed in sync with the school curriculum, has provided the ideal content which can help in overcoming the above challenges. This aid was developed to cater to the formal teaching-learning environment as well as informal learning environment. The formal setup is suitable for school curriculum, whereas self-learners, organizations, NGOs, NRIs, *etc*., belong to the informal learning environment.

3.1 Designing the ideal content

Learning a language requires an understanding of underlying concepts and vocabulary. Designing the content for the school curriculum has always been challenging, and with the periodic changes in the syllabus, the content needs to be remodeled. Considering this major challenge, a digital aid *Hindi Shabdamitra* has been developed. It is designed in respect to the school curriculum. The main focus of Hindi Shabdamitra is vocabulary and grammar learning; enhancing the teaching-learning experience (Redkar et al., 2017b). It uses a rich lexical resource - Hindi Wordnet[4] as a base on which it can be further developed. The concepts are pictorially depicted, grammatically enriched, and further simplified depending upon the learner's level of understanding. Words are provided with pronunciations and word-level grammar. The tool has a wider reach.

[4] http://www.cfilt.iitb.ac.in/wordnet/webhwn/wn.php

Layer	Level	Class
Layer 1	Beginner (प्राथमिक)	1 and 2
Layer 2	Intermediate (माध्यमिक)	3, 4 and 5
Layer 3	Proficient (कुशल)	6, 7, 8, 9 and 10
Layer 4	Advanced (उन्नत)	11 and 12
Layer 5	Proficient (विशेषज्ञ)	Above 12

Table 1: Proficiency criteria for *Hindi Shabdamitra*

Since, *Hindi Shabdamitra* interface has a layered architecture, it allows the search navigation in two ways – level wise (हिंदी ज्ञान स्तर के अनुसार, *hiMdii GYaana stara ke anusaara*) and class wise (कक्षा के अनुसार, *kaxaa ke anusaara*). The level of a leaner is determined by using the class-wise proficiency selection criteria as shown in table 1. The same word can be studied by the learner at all five levels. At each level, incremental information is produced. The information rendered in both the interfaces are the functional and unique features of the given word. The list of features has been provided in the next section.

3.2 Delivering the ideal content

The major advantage of *Hindi Shabdamitra* is that it covers the major part of the vocabulary in a given class or lesson. At the same time, the grammatical features like gender, countability, *etc*. and semantic relations like antonyms, synonyms, *etc*. can be taught to the students.

Hindi Shabdamitra provides functional features and unique features (Redkar et al., 2017b). These features help learners in understanding the concept clearly. Also, it helps the teachers and parents to explain the concept in detail. The list of features with respect to the classes and levels is given in table 2.

Functional Features

The functional features are most commonly found in regular dictionaries or thesauri. These features are available for all the levels. The list of functional features are given in table 2

Unique Features

These features provide much deeper grammatical information, *i.e.*, lexico-semantic relations. These are not commonly found in regular dictionaries or

Functional Features	Unique Features
Part-Of-Speech	Affix
Polysemy	Junction
Audio Pronunciation	Kinds of POS
Illustrations	Indeclinable
Simplified gloss & example	Spelling Variation & Transitivity
Original gloss & example	Also See Troponymy
Gender	Hypernymy, Hyponymy
Synonym	Meronymy, Holonymy
Antonym	Modifies Verb / Noun
Countability	Causative & Entailment
Number	Link Type & Attribute

Table 2: Features of *Hindi Shabdamitra (Redkar et al., 2017b)*

thesauri and are made available from level 3. The list of unique features is given in table 2.

3.3 Gaps in delivering the ideal content

There are numerous factors which cause the gaps in the process of delivering the ideal content. Some of them are pointed below:

- **Rapid digitization in the field of education:** The rapid digitization has created a gap due to the unavailability of digital resources in the field of language learning. There is a scarcity of digital teaching aids for languages, which can be used by both teachers and students.

- **Need for better learner engagement in classrooms:** With the ever-increasing size of the classes, there is a need to devise ways and means for better classroom management and learner engagement. The goal is to create such learning environments where students are actively engaged in the learning process. *Hindi Shabdamitra* caters to the need in the most effective way by providing an audio-visual enhanced teaching aid for language acquisition.

- **The burden of the school bag:** This is a long-standing problem of the school going children. Various strategies are opined to reduce this burden, which becomes one of the major causes of the musculo-skeletal pain. *Hindi Shabdamitra* will reduce the burden of carrying bulky dictionaries and thesauri, and the children can access information through mobiles and such devices.

Hindi Shabdamitra, with its ideal content, has the potential to overcome these factors.

4 Hindi Shabdamitra assisting Current teaching and learning trends

In the ever-growing field of education, technology-supported learning and instruction have captivated everyone's eye. The technologies that support learning environments use a variety of realistic representations of data in the form of graphic, auditory, *etc*.

Following are the techniques by which this aid can be helpful.

4.1 New trends in teaching vocabulary:

It is motivated by the **communicative theory**, which focuses more on using forms than teaching them explicitly. There is much reliance on language games, reading and concordance programs. The new and emerging methods of teaching are as follows:

- **Context-based method:** The idea is to learn the meaning through the context of a sentence. The method involves game-based activities, such as crossword puzzles, quizzes, match the pairs, *etc*. With *Hindi Shabdamitra*, students gain knowledge through the usage of the word provided in the tool and use of the word in a natural way. This helps to retain the new words permanently.

4.2 Innovative Instruction Techniques:

- **Use of Multimedia:** The electronic texts accessible *via* mobile smart phones, tablets, e-readers and other mobile devices are more interactive, allowing both instructors and students to annotate, add or change material. *Hindi Shabdamitra* is available on the website and mobile app for ease of access.

- **Blended learning:** Blended teaching and learning is such an approach where the teacher records a lecture and/or provide access to videos, readings, learning objects, quizzes, and other resources. Classroom time is spent on the interaction between students and instructor through discussion, practical

Figure 1: Hindi Shabdamitra

exercises, *etc*. Using *Hindi Shabdamitra*, the teacher is able to validate on the understanding of the students, *viz.*, S/he can play an audio pronunciation and illustration several number of times.

- **Anywhere, anytime, any size learning:** There is a growing demand from learners for 'just in time', 'just for me' learning modules that fit an immediate learning need. Mobile learning with smart phones, tablets, and other devices, is the basis of anywhere, anytime learning provided through online learning. *Hindi Shabdamitra* can be made offline and used anytime, anywhere and for any size learning.

Further, *Hindi Shabdamitra* promotes following aspects with the help of audio-visual facility for learning:

- **Experiential Learning:** Digital learning redefines the boundaries of a classroom. Sitting in a class, the students experience the application of a concept through dynamic content[5]. *Hindi Shabdamitra* provides digital experience in both classroom as well as at home.

- **Flipped Classroom approach:** The reversal of traditional teaching provides active learning. Students are accustomed to interacting with audio and video on electronic devices, so it stands to reason that they would digest educational content in this manner as well[6]. Using *Hindi Shabdamitra*, the students are able to put up their queries to the teachers there and then.

[5] https://www.academia.edu/33866288/DIGITAL_CLASSROOMS_A_BOON_FOR_ACHIEVING_QUALITY_EDUCATION_IN_INDIA

[6] https://www.academia.edu/16071067/Effects_of_Flipped_Classroom

5 User Response based on Field Test

In order to test whether the content provided on *Hindi Shabdamitra* is an ideal or not, the prototype of this digital aid was demonstrated in various schools. The feedback was sought for the content, ease of handling the application, classroom impact and overall experience by teachers and students. Following are the observations:

- The digital aid helped teachers in explaining concepts clearly with the help of illustrations and simplified concepts.
- Audio clips helped in understanding the pronunciation of a selected word.
- Students could understand the concepts though they were learning it for the first time.
- Use of illustrations reduced the efforts of reiterating the concepts for better retention.
- Access to standardized pronunciation as it is developed by native Hindi speakers.
- The aid assisted teachers in better classroom management.

6 Limitations

The paper presents the study with respect to only one Indian Language, *viz.,* Hindi. However, other Indian languages are not covered in this study due to the scope of the presentation. Further, different Indian languages have different grammatical properties which need to be considered while designing the ideal content considering all Indian languages.

7 Conclusion

This paper addresses the need for ideal e-Learning content for the school curriculum. Since *Hindi Shabdamitra* acts as an aid for teachers and students, it would help in better classroom management and make the vocabulary learning more interactive. The idea of the kind of content of this Hindi Wordnet-based tool is presented here. Current factors leading to gaps in the field of education are identified, and it is noticed that *Hindi Shabdamitra* has the potential to resolve those. Using the expansion approach, other Indian Shabdamitras *viz.*, Marathi Shabdamitra, Sanskrit Shabdamitra, Konkani Shabdamitra, *etc*. are being developed across Indian Institutes.

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