



Comparative Analysis of the Use of Multilingual Support in Websites of Educational Institutions in India

Geethanjali .V. Samarasan, Prof. Anup Palsokar
SIES College of Management Studies, Mumbai,
Maharashtra, India

Abstract— *In today's world, there is rapid growth in the usage of internet amongst people of all age group and more specifically the young generation. Every organisation today, be it commercial, social or educational has a website to make their presence felt on the Internet which is also referred to as the virtual world. English being the language of business throughout the world almost all websites are built in English, and thus remains inaccessible to people who do not know English. Use of multilingual support in websites provides an effective solution to this issue. Educational institutions in India and abroad have started using their websites as the primary interface in providing information about their existence and activities from quite some time now. By providing multilingual support in their website, educational institutions can reach wider target audience. This paper presents a survey carried on over hundred websites of educational institutions in India including Central Universities and private unaided institutions, as to find out whether their website provides multilingual support along with the technologies used to implement the same. The paper also examines the technologies used to implement the multilingual support in websites and highlights the key issues and problems faced in their implementation.*

Keywords— *Multilingual Support, Google Translators, Google Language API, Go Translate, Content Management Systems*

I. INTRODUCTION

As per the University Grants Commission, India has in all 754 Universities, of which 47 are Central Universities, 347 State Universities, 237 Private universities and 123 Deemed to be Universities as on date [1]. India has the largest number of institutes offering higher education in the world, primarily dominated by private players [2]. The need of having websites for educational institutions is to provide information which is reliable, effective, appealing and user-friendly for Prospective/Regular Students, Parents or Guardians and Faculty. The advantage of having a website is to provide a way to produce and present information to large number of people in a cost-effective manner, and does not limit the volume of information to be displayed. The information displayed on the website of an institution needs to be regularly updated and the contents should be user friendly. Crashes and Uptime is major issue in maintaining a website. The need of Multilingual Support in websites of educational institutions enables users to reduce their effort to comprehend information, making them understand the presented content or information easier as they can switch from western to any local Indian languages. Due to the proliferation of Private Universities in almost every state and Private Unaided Institutions in India, there is a fierce competition amongst these institutions in attracting students. Moreover due to the availability of abundant information in the public domain about various educational institutions, it becomes easy for students to locate good institutions even at far off places from their home city. Many a times, students educated in vernacular mediums find it difficult to understand the information displayed on websites of these educational institutions. Hence, incorporating multilingual support in websites of educational institutions has gained importance, thus facilitating a larger reach within the student community.

II. LITERATURE REVIEW

Multilingual support means multiple language support in a website which translates the content of a website into a chosen language. Translation of a website in a cultural language is the first step towards removing language barriers in communication and dissemination of information to the targeted audience. Building a multilingual website implies an effort with a clear-cut objective in mind to reach the masses. Localization is nowadays an international marketing strategy as it is made profitable by the customers and also does not cost more if this feature is integrated from beginning [3]. Bourdon et al in their paper discussed the localization pattern for multilingual websites which reduces the increasing cost of localization [4]. This clears the perception for using the localization more than internationalization in accessing a multilingual website.

Researchers have developed technologies like the Language Grid Toolbox as the open source multilingual communication tool which can only be used for internationalization purpose and not for localization to translate words using dictionary service. Toolbox has a basic function of creating language from dictionaries, which are used to combine

with translation services to improve the quality of translation [5]. Here need for multilingual website arises for localization as understanding of website contents helps customers in making decisions.

When the website is in more than one cultural language, important communication issues related to site content and structure become even more complex. Issues while developing multiple lingual site such as naming convention for a website (e.g., en.xyz.com) and content structure being visually denser / sparse are based on language switchers [6]. There may also be social conventions and linguistic or religious laws that must be adhered to and depends on the country where the website is accessed. Other issues that need to be addressed as well are graphical logos, photographs, local selling price and tailoring presentation styles [7]. The solutions for some of these issues are discussed below in the overview of technologies used for Multilingual Support.

III. OVERVIEW OF TECHNOLOGIES USED FOR MULTILINGUAL SUPPORT

Considering various issues faced while incorporating multilingual support in websites, certain technologies & tools are discussed here. The solution for the naming convention of the site can be resolved by using subdirectories named based on language such as www.xyz.com/en or www.xyz.com/hi or by embedding a language switcher on top of every page. The issue of localization like translating graphical logos can be done by photo translator application whereas the issue of presentation styles can be addressed by using Content Management Systems (CMS). The degree of overlapping between more than two versions (languages) in a CMS cannot happen as separate settings have to be configured for each, before content creation. Separate settings in CMS to translate website includes interface and content translations. Translating interface involves translating miscellaneous text used in the website (like button labels) using modules. The users would feel the same presentation styles in all versions with different localized text.

There are many other technologies available for supporting multilingual feature in websites. Languages like PHP, JAVA, ASP.NET, Open Source Content Management System tools like Drupal, WordPress, etc. and browser tools like GoTranslate are also used to support multilingual feature in websites.

The Multilingual feature in PHP is implemented using PHP class and JSON where the data can be encoded using JSON encode and decode in UTF8_general_ci. For maintaining dynamic content for website, all the fields must have collation UTF8_general_ci. The other alternative solution for using any programming technology is by using Google Language API embedded in the technology chosen.

In ASP.NET technology, using resource files we can translate monolingual site into multilingual or can opt for Google language API with ASP.net. Resource Files are used to store images, XML files, sound clips and other files in different local languages and can be loaded dynamically. Resource files are typically used to store user interface strings that are translated into other languages.

For Using Google language API with ASP.net technology, an enum class is created for all the languages need to be stored in separate public string variable. A method Translate is then created that returns a translated string which accepts three parameters (the string to translate, the language to translate from, and the language to translate to). Further a URL is built that sends a request and gets the response. The API is accessed via Google's Rest Interface and the response is returned through a Stream object where the returned string encoded from the stream is cleaned and returned as the translated string. The translate method thus built is then called to get the translated strings.

Every technology which can be used in developing multilingual websites has some Pros and Cons. So it is also important to know them with their scope. Some of the Pros and Cons of Open Source CMS for WordPress and Drupal are given in table I and table II.

Table I. Wordpress

Pros	Cons
Everything gets translated by default.	Additional tables are required to be translated by some plugins.
Some plugins use - for theme's displayed terms - the language files delivered with localizable themes. No need to re-translate all, just add specific terms and translations in target languages.	May cause excessive database grow and slow performance as a result.
Other plugins that analyse contents keep working correctly.	To Find other plugin is time consuming if not known.

Table II. Drupal

Pros	Cons
Provides different content in different languages by duplicating content type and using a different content for each language.	Efforts are required to duplicate all the custom labels on a site for each language. One node cannot be translated into multiple

	languages.
Drupal is easier scalable and more secure to use.	If one is used to older systems, getting used to this script will take some time.

Most popularly, CMSs are used as they are compatible with latest browsers, operating systems and hardware. Core technologies can be used with variation of other tools for compatibility with the browser. The easiest way to provide multilingual feature is by implementing Google Language API with chosen technology.

IV. BACKGROUND OF THE SURVEY

It has been observed that almost all websites of educational institutions are in English today, but major audience speak their own cultural languages. So to provide un-restricted access to major audience, need of Multilingual Support in Websites is necessary. Multilingual support is nowadays also required for business domain as business today is not limited to geographical boundaries. To do business profitably, language barrier should not be a limitation. In a country like India, where there is a disparity between languages because of demographic dividend, it is advisable that all Institutions within India should facilitate multilingual support. Especially with reference to educational institutions where the student’s population is not restricted to a specific geographical region, students from one migrate across regions in search of good education. The importance of Multilingual Support in educational website comes alive where Students from vernacular medium or for Parents/Guardian needs to access such websites which has certain convenient way to switch to their cultural languages other than English so as to make a decision to choose colleges. This feature in websites of Colleges and Universities would make audience attract to their sites. Hence there is a need of a structured study that would provide an insight into the multilingual support provided by websites of various educational institutions in India. This paper discusses a study performed on websites of various categories of educational institutions in India to ascertain the use of multilingual support in education domain.

V. METHODOLOGY

A survey on Educational Websites of 103 institutions in India was conducted. There are a large number of private universities and private affiliated colleges in India. The present study was conducted on the availability of multilingual support websites of Educational Institutes. During the study, websites of over a hundred educational institutions were surveyed for their multilingual support covering educational institutions from across India. These educational institutes were categorized into six namely Central University, Private University, State University, Deemed University, Private Affiliated Colleges and Apex Bodies. The composition of these categories in the total sample of the survey is as shown in Table. III. All these websites were explored thoroughly for the multilingual support provided (if any) by them and the technologies used for its implementation. The entire data thus collected was tabulated and analysed using MS Excel.

Table III. Composition of Institutions surveyed

No. of Institutes	Percentage
Private Affiliated Colleges	28.15%
Private University	11.65%
State University	14.56%
Central University	31.06%
Apex Level Bodies	3.88%
Deemed University	10.67%

The survey found that 73 out of 100 educational websites were monolingual whereas 30 educational websites are multilingual as shown in Fig.1.

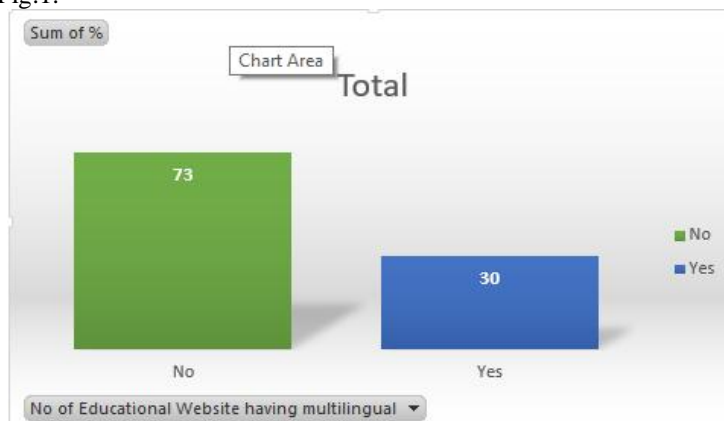


Figure. 1 Statistics showing number of Educational Websites using Multilingual Support

VI. ANALYSIS

From the present study, It is evident that 73 out of the total 103 websites surveyed did not had multilingual support. On performing a comparative analysis of the multilingual support in websites of various categories of educational institutions, it was found that most of the websites of Central Universities had multilingual support. A graph showing the number of educational institutions providing multilingual support in their websites in each category is represented in Fig.2.

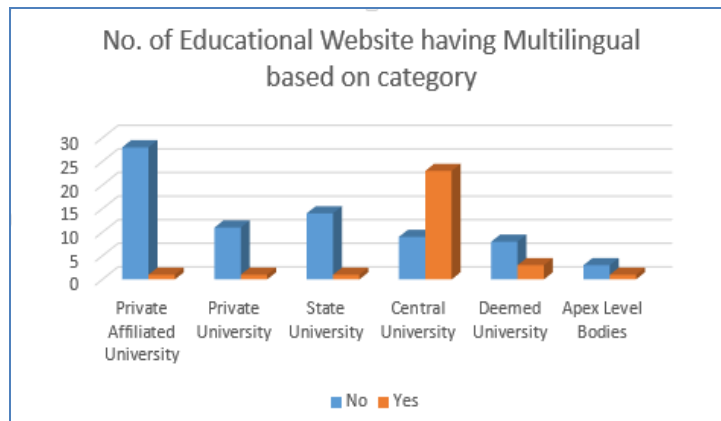


Fig. 2. Number of Educational Website having Multilingual Support based on category

It is pertinent to note that out of the 29 Private affiliated colleges only one college in New Delhi provided multilingual support in their website. Even though the number of Private Unaided educational institutions is too large in India hardly a handful of institutions provide multilingual support in their websites thus loosing students. It was also found that even websites of certain renowned private educational institutions in the country with an illustrious history also do not provide multilingual support, thus depriving students from vernacular medium and parents/guardians of these students from information sources essential for a student’s career.

It is also clear from the graph shown in Fig.2 that a sizable number of Central and Deemed Universities have implemented multilingual support in their websites. This may be the reason for their popularity amongst students and might be the reason for drawing students from across India. During the study of websites of various educational institutions, it was also observed that websites of certain Private Affiliated Colleges do not even have basic websites. It is therefore essential for the Government to enact certain laws and regulations regarding providing multilingual support in websites of all educational institutions with a view to increase their reach, ultimately helping the student population and the institution itself.

These days certain apex bodies in education like the University Grants Commission (UGC), All India Council for Technical Education (AICTE), Medical Council of India(MCI) etc. have made it mandatory for all educational institutions under their respective jurisdiction to have websites but still remain silent on the multilingual support feature.

During the study of websites of 103 educational institutions, a survey of technologies used to implement multilingual support was also carried out. Various technologies used for implementing multilingual support in websites of institutions were also tabulated. A graph representing the percentages of respective technologies used in these websites is presented in Fig.3.

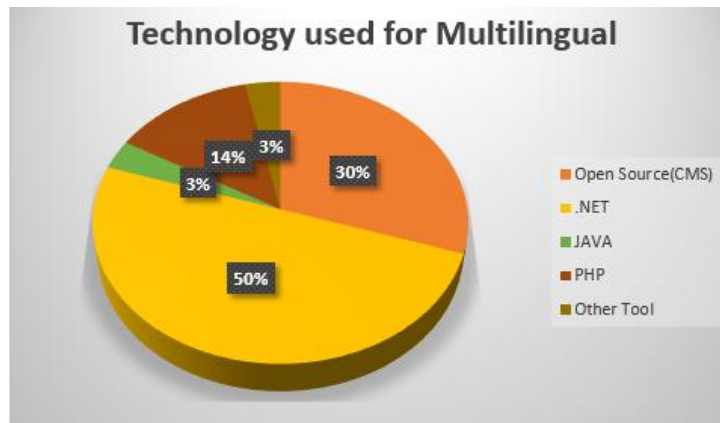


Fig. 3 Technologies used in Educational Website for Multilingual Support

Almost 50% of the websites of educational institution uses ASP.NET as their technology along with Google Language API, 30% uses Open source technology (CMS) and 14% use PHP. CMS also uses PHP technology, so overall 44% uses PHP technology to provide multilingual feature. Remaining 6% use JAVA or other tools for providing this feature in websites of educational institutions. Even though Asp.net is a little out-dated technology but is still used to provide multilingual support for sites. However, it is provided by PHP technology.

VII. CONCLUSIONS

In this paper, data has been collected from websites of various educational institutions. From the survey, it was observed that most of the Private Affiliated Institutions and Private University's websites are not designed to support multilingual feature whereas most of the Central University's website provide this feature. In order to provide an access to students from vernacular mediums, Private Institutions and Private / Deemed Universities should be directed by the concerned regulatory or governing bodies to have their websites designed with Multilingual Support.

A review of technologies involved in implementation of Multilingual Support was also carried out. It was observed that ASP .Net remains the preferred choice of developers while implementing the Multilingual Support in websites of Educational Institutions. Considering the need of the masses it is also proposed that public enterprises / undertakings / bodies should also be directed by the government to include multilingual support in their websites. A detailed analysis of the use of multilingual support in websites of various government undertakings and businesses houses is indicated as a scope of further research.

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