



BUILDING REPOSITORY OF DIGITAL LEARNING OBJECTS: EMERGING NEEDS AND EFFORTS FOR LOCALIZATION

K.Jayashree

M.C.A., M.Phil.Assistant Professor, Dept. of Computer Science, Tagore Government Arts and Science College, Pondicherry

ABSTRACT This paper discusses about the impact of Covid in the education system. It mainly elaborates on how the entire education system adapted to the New Normal from the traditional in-person learning system. The Digital Learning Objects which is the “content” with “metadata” is the centre of the Digital Object Repository which is built by enhancing it with the concept of Localization. The paper also discusses about the content management system to manage the Learning Objects and to create repositories for the Digital Learning Objects.

KEYWORDS :

II. Definition of the Problem

Over the past 2 to 3 years, due to the pandemic situation, the entire world was brought to a standstill. Though there was a lot of struggle to adapt to the “New Normal” from traditional in-person learning to an online system, it is pertinent that for the uninterrupted education, the education sector relies on the availability of and access to digital infrastructure including the Internet, laptops and phones.

Ultimately, the goal is to meet out the requirements of the stakeholders of pedagogy – the educators and the learners. There are a large amount of resources available in the form of Digital repositories and libraries, but unfortunately these resources are mainly in English. India is known for its linguistic and cultural diversity. So there is a necessity for language localization which is a process of adapting to a specific region. It mainly differs from translation activity, as it mainly focusses on culture to adapt to the local needs. Thus an effective localization tool is required to be incorporated along with the Digital Object Repositories.

With the emergence of technological advancements education has found a new dimension with the use of technologies like ML, AI, Virtual Reality and Virtual Classrooms. According to a study by KPMG called “IndiaTrends 2018”, India has the largest education system and it is increasing at a growth rate of 20 percent [7]. It is to be realized that it is not possible to reach the people at the grass root level where prior to the pandemic the education was imparted in the local language. Though there are many technological advancements, the main requirement is to meet the learners' requirements, that is, localize all the above mentioned technological advancements. To meet the humongous users of Indian languages, the digital object repository must have a localized interface that will increase the ease of the users. The localization should start from the signing in to the drop-down menus and the navigation throughout the repository. The above mentioned methods can be followed for those file formats that supports localization.

In certain cases this cannot be done, like certain old videos. Under such situations subtitles can be given in the local language and meet the requirements of the learners.

III. The Proposed Repository of Digital Learning Objects[1][2][3] Incorporating Feature of Localization.

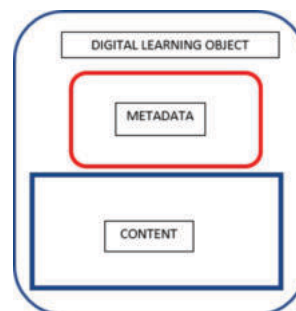
Digital repositories are basically computer based applications that store, manage, preserve, and provide access to digital content. Accordingly, the format of the data and objects are beyond simple file or bit-stream preservation. It is the actual information content of a document, data-set, or sound or video recording that should be preserved, not the Microsoft Word file, the power point presentation, or the media player movie. The latter represent specific file format that will become obsolete in the future. Therefore, preservation methods as well as standards are required to define how to manage digital assets in a repository to avert the risk of content loss as well as the compatibility related issues. They specify, amongst other things, data storage requirements, preservation actions, and responsibilities. Additionally, information as to whether the localization is possible can be provides. Else availability of sub-title in local language and be done.

Localization of Metadata.

The digital content, which is the learning object, is within the physical control of the repository. They have to be uniquely and persistently identified and retrieved in the future. All information is available so that digital content can be understood by its designated user community. Significant characteristics of the digital assets are preserved even as data carriers or physical representations change.

The Digital Learning Objects (DLO) is the information that describes the digital content in the repository using the metadata, which is preserved for a long-term and in turn ensures a long-term accessibility. The localization concept should be incorporated in the DLO as well, so as to facilitate the learners to get the details by glancing the metadata.

The digital preservation goals are to ensure that physical media are cared for and the Digital objects remain executable and unaffected. Media standards for the Digital Learning Objects ensure consistency and compatibility across the media elements used in the screen layout/size, textual elements, graphics, animation, audio and video. When identifying the media standards and elements, the details of the localization has to be mentioned, that is, the language supported in addition to the language in which the Digital Learning Object was initially created. In the case of the video files for which sub-titles in the local language are provided, the metadata should incorporate this information.



Metadata is one of the core issue for the creation of repositories. In the internet age, the 'metadata' is structured data about data, information that describes other information. A metadata record defines the data, and quite often contains necessary information that is useful both to users and to the system providers. By storing information such as author's name, version number, subject of the material we can help people to find information more easily, and allow computers to process it more effectively. These details can also be localized, so as to help the local language learners search and retrieve the required file according to their choice.

This revised metadata definitions may be one of the perpetual requirements due to the new formats, specifications, and compatibility requirements for localization.

Localization of Content Management System.

The Content Management System which is an aggregation of content services and features providing access to the content stored and these two collectively is referred to as Digital Repository. It is done in ways

which simplifies the retrieval or aggregation of the content. It is a low-level, application-independent component which can be used in a variety of ways to build substantial content-driven applications and systems. This can be easily handled by the use of scalable platforms like S3WaaS which is primarily a cloud service designed by The Government of India^[4].

Collectively we can state that the delivery of the digital content is no longer simply about HTML or Word pages; a whole range of gadgets, contexts and channels must be considered, inclusive of browser, desktop, mobile, tablet, Mobile apps, Kiosk devices, etc. In short it is an integration of User Interface and User Experience. It acts as an “intelligent library” or “hub” of content in the local language. There is a necessity for language localization which is a process of adapting to a specific region. It mainly differs from translation activity, as it mainly focusses on culture to adapt to the local needs.

It should be designed with necessary features to address our requirement – Provide choice of the language in which the data should be available. The features should include the ease of updation, analytics of various data, localization for the diversified students, support and development efforts, allowing multi-channel engagement. It should pave a way for building necessary catalogue with the localization feature, for easy retrieval of data as well as links to the appropriate digital data sets. Pertaining to the tertiary education the overall curriculum is to a great extent the same in all the branches. So when a Digital repository is built with the Digital learning objects designed during the pandemic for the tertiary education, the focus should be on meeting the linguistically diversified culture of India and raise to localization specified as above.

In order to meet out the above mentioned issue – localization, we need to use certain tools in the digital repository. Based on the method of localization chosen by the learner, the appropriate tool should be used such that the ultimate goal of preserving the originality of the digital content is appreciated.

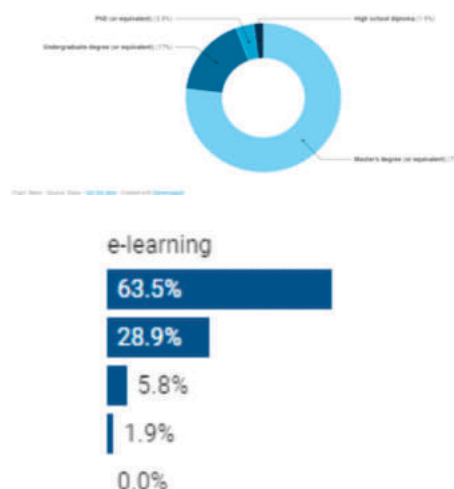
The repository should mention the compatible tools in the metadata so as to assist the user in choosing the appropriate tool for the localization. Such tools which can be used for the e-learning Digital repository are: 1. Computer Assisted Translation (CAT) helps in translation process with improved speed. The special feature is, the content of locale dictionary is added with repeated translations. 2. Translation Management System (TMS) helps in managing different versions of languages for a single source file content. 3. Text to Speech, replaces the human voice actor performing within a studio with a computer-generated voice within minutes to a local language. 4. Neural Machine Translation is capable of providing a translation of voluminous text of within minutes. It caters for a row of languages and topics. As is does the translation within minutes, there is a necessity for the expert to intervene in the language nuances for adding the last bit of accuracy. 5. Automated Speech Recognition is a software platform capable of taking audio or video files and producing a same-language text script within minutes.[6] 6. Divi[8] which is a popular WordPress theme that offers a website-building platform. It also supports around 32 languages.

The repository should be able to primarily adjust to the local environment, subsequently, proceed with the translation and adapt to the user interface and translate the document. This translation process should include the metadata which has the relevant information about Digital learning resources which aids the searching and retrieval process. The localization tools should take care of the grammatical rules of the locale and protect the meaning to the digital contents.

IV. A report on the study of Responses given by Language Service Providers

In the study it is found out that a vast majority of respondents were holding a Master's degree or equivalent as their highest academic qualification (77%), while some hold an undergraduate degree or equivalent (17%). Some 44% of respondents hold at least one academic qualification related to translation, interpreting or languages, while 56% have no language-related academic qualifications.

The study also observed that there was greater demand for e-learning localization during the COVID-19 as the pedagogy was through online localization was the best method to reach the learners.



V. Conclusion

In pedagogy, the digital divide between institutions, educators and the learners can be addressed by the major factors like metadata, standards and building Digital repositories that provides the digital content to the choice of the learners' local language. By using scalable platforms like S3WaaS clubbed with tools like 1. Computer Assisted Translation (CAT) 2. Translation Management System (TMS) 3. Text to Speech, 4. Neural Machine Translation 5. Automated Speech Recognition. 6. Divi these above requirements for the New Normal can be easily addressed. These platform and tools helps in generating secure, scalable and accessible repositories. It helps in catering to the educators and the learners' requirements, which is the localization.

The repository should be able to primarily adjust to the local environment, and subsequently, proceed with the translation and adapt to the user interface and translate the document. This Digital repository should include the metadata which has the relevant information about Digital learning resources which aids the searching and retrieval process. The localization tools should take care of the grammatical rules of the locale and protect the meaning to the digital contents. The digital learning service sectors, which are compounding to the requirements, should be encouraged to build such seamless integration of learning objects repositories incorporated with importance to due security and standards.

REFERENCES

- [https://www.researchgate.net/publication/224572728_A_Framework_for_Learning_Objects_Reusability_within_Learning_Activities_29199214.pdf\(core.ac.uk\)](https://www.researchgate.net/publication/224572728_A_Framework_for_Learning_Objects_Reusability_within_Learning_Activities_29199214.pdf(core.ac.uk))
- <https://s3waas.gov.in/>
- Digital Preservation Metadata Standards (loc.gov)
- <https://elearningindustry.com/localization-technology-learning-and-development-content-implementation>
- <https://summalinguae.com/localization/localization-tools-your-team-needs>
- <https://revereinc.com/e-learning/redefine-online-education-in-india-with-localization/>
- <https://www.elegantthemes.com/blog/theme-changesbug-fixes/divi-goes-global-now-fully-translated-into-32-languages-including-rtl-support>