Integrating Wikis into Open and Distance Learning

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Abstract

In the past, Open and Distance Learning (ODL) was primarily conducted through snail mail where institutions sent reading and other materials to learners. With the advent of Internetand related digital technologies, this has gradually changed. This paper explores how a freeand open digital technology like MediaWiki, and Wikimedia open knowledge projects can beused as pedagogical tools to access content online, collaboratively create and share learningresources with participants, thereby facilitating and integrating wikis into ODL.

The paper also discusses how MediaWiki and Wikimedia projects are currently being used by IT for Change (ITfC) to promote open, collaborative and distance learning, to illustrate how these technologies can support and promote ODL at individual, institutional and systemic levels. Not only does the use of MediaWiki enhances the availability of learning resources for ODL programs, it also enables the participation of teachers and learners as co-constructors of knowledge, in line with constructivist approaches to learning.

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1 Introduction

ODL offers a system where teachers and learners have the flexibility of not necessarily being present in the same physical location. It helps learners pursue their education without compromising on quality. ODL increases the learning choices available to learners located at educationally disadvantageous locations. In this process, communicating and interacting with learners is vital. The use of Information and Communication Technologies (ICTs), especially when they are free and open, can help enable this.

In the early stages of World Wide Web's evolution, often referred as retronym Web 1.0, the digital content creation process was tedious and required high technical expertise. As technological tools improved, the web as platform became Web 2.0 and wikis were a part of this revolution. The word "wiki", is a Hawaiian for quick. A wiki is a type of website whose contents can be edited collaboratively from the web browser, and which keeps a version history for each editable web page. MediaWiki is the most commonly used wiki software and all of Wikimedia[1] projects use it.

In the early stages of World Wide Web's evolution, often referred to as Web 1.0, the digital content creation process was tedious and required high levels of technical expertise. Over time, these tools were improved and made more user-friendly. "The web as platform", which became Web 2.0, and wikis were also part of this. The word "wiki" is a Hawaiian word meaning "quick". It is a type of website in which content can be edited collaboratively from the web browser, and a version history is maintained for each editable web page. Wikis are often, but not always, editable by any visitor to the site. Both the software and the free knowledge projects are being used across the world to support teaching and learning. Later in this paper, we will see how these tools can be integrated into ODL and how are they employed at IT for Change.

[1]Wikimedia Foundation is the not-for-profit organization that has created Wikipedia, the worlds most used encyclopedia, and which continues to maintain it. The Wikimedia Foundation also maintains several sister projects of Wikipedia, including repositories for images, dictionaries, quotes etc.

2 Wikimedia and MediaWiki

2.1 Wikimedia

Wikimedia is the collective name for the Wikimedia movement, around a group of inter-related projects, including Wikipedia, Wiktionary, Wikiquote and others, which aim to use the collaborative power of the Internet, and the wiki concept, to create and share free knowledge of all kinds. The Wikimedia movement is the aggregate of people, activities, and values which revolve around Wikimedia sites and projects. It constitutes:

- a collection of values shared by individuals (freedom of speech, knowledge for everyone, community sharing, etc.)
- a collection of projects (Wikipedia, Wiktionary, Wikimedia Commons, Wikinews, Wikiquote, Wikidata, Wikivoyage, Wikisource, Wikispecies, Wikiversity, Wikibooks, Incubator, etc);
- a collection of activities (conferences, workshops, wikiacademies, etc.);
- a collection of organizations (Wikimedia Foundation, Wikimedia chapters, etc.), as well as large number of individual contributors.

Wikipedia, the flagship of the Wikimedia movement, is a project dedicated to the building of free encyclopedias in all languages of the world and is by far, the most well-known project currently available in more than 303 languages. Its vision, is Knowledge for all, of all and by all, meaning that it aims to create a world where all are able to access knowledge (for all), create knowledge (by all) and own knowledge (of all).

Wikimedia Commons is an online repository of free-use images, sound, spoken texts and other media files. Wikiversity is a project dedicated to the creation and use of free learning materials and activities. Other notable projects include Wiktionary, Wikivoyage, Wikibooks, Wikisource, Wikiquote, Wikispecies, and Wikidata, each serving a different purpose towards the broader goal of creating and sharing free knowledge of all kinds.

2.2 MediaWiki

MediaWiki is a free and open software, licensed under the GNU General Public License (GPL). It is a wiki software developed for and used by Wikipedia

and the other Wikimedia projects[1]. It is also designed to host and serve other free and open digital content. It is internationalized, with support for all languages across the world and is extensible, scalable, and customizable to fit into large use cases for hosting Open Educational Resources (OER)[2]

MediaWiki provides a simple user-interface for reading content. Creation of categories and tags for metadata makes classification and hierarchical browsing of the content easier for the users. Searching the content across pages is also enhanced with categories. The contributor edits are logged in the page history and the wikis provide the ability to roll back changes to any point in history, which is very useful in the case of community created content. Every content page has talk page linked to it to allow for discussions which can be used by the peer editor groups. Currently the MediaWiki is localized to 289 languages and supports language input for all of these languages. The editing is made easier with Visual Editor which is akin to using desktop text editors. The embedding of images, videos, maps, and other kinds of content is made simpler with ready-to-use templates.

3 Wikis in ODL

Wikis democratize knowledge and encourage participatory learning, which can play an important role in imparting quality education through ODL. The basic principles of sharing knowledge for, by and of all teachers and learners are imbibed technologically in the wikis. Teaching and learning with technology will help sharing the content knowledge easier. Wikimedia can be integrated in ODL by using, re-using, modifying, and sharing learning and teaching resources. MediaWiki can be used as an OER repository integrated within courses offered via ODL.

3.1 Learning by use and re-use

Since a MediaWiki repository can be easily edited by people from across the world, it is also possible to keep it up to date. Wikipedia is often used to

[2]Open educational resources (OER) are freely accessible, openly licensed text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes.

access current information, as it is immediately updated. Since any number of topics and sub topics can be easily created and linked through simple hyperlinking and tagging processes, diverse perspectives can be provided in a MediaWiki based encyclopedia like Wikpedia. Contextual information can also be provided easily. For instance Wikipedia provides country wise and language wise pages for many topics.

Information in Wikimedia projects is easily available which is current and latest with diverse perspectives due to large number of volunteer contributors adding the content. Support for multiple languages allows the addition of localized and contextual information. This can be readily used and re-used in learning without re-creating them again. If any learning resource is not suitable and needs to be modified, then it can be easily done without worrying about copyright restrictions since all content is available as OER.

3.2 Learning by creating resources

Learners can also easily create content and collaborate with others on the Wikimedia projects. Resource creation in regional languages can increase the availability of OERs. According to current statistics on Wikipedia articles, English Wikipedia contains more than 60 lakh entries, while the Hindi Wikipedia has only about 1 lakh entries. Most Indian languages have fewer than that.

3.3 MediaWiki as OER repository and for web content

Institutions offering courses via ODL can run their MediaWiki instances to host OER created by teachers. The pages can also contain lesson plans with activities pertaining to the course along with all the related but different type of content like images, videos, simulations, animations, etc. For courses enrolled on a learning management system like Moodle, the resources can be linked to Wiki where teachers can easily manage them. Guides and manuals to use and access different software can be also written on wiki collaboratively by all teachers working on the course.

3.4 Challenges

Access to Internet and digital devices is often a major challenge for both learners and teachers. While the problem can be mitigated by providing offline resources as the MediaWiki allows offline access, the challenges with owning or getting a digital device can still be there. The availability of cheaper mobile digital devices can hopefully alleviate this problem to an extent.

4 Wikis at IT for Change

IT for Change (ITfC), a NGO based in Bengaluru, has been using Free and Open Source Software (FOSS) in its education projects for more than a decade. The Center for Education and Technology at ITfC has supported the deployment of FOSS at various public educational institutions. Both MediaWiki as a platform and Wikimedia projects are currently used for various educational projects run by the organization. Similar efforts where the MediaWiki is used for open education include WikiEducator[2] and WikiToLearn[3] where academics from around the world contribute in sharing knowledge by creating high quality content.

4.1 MediaWiki

MediaWiki is currently used for a collaborative project of teachers and teacher educators from different states of India, to access, create, review, re-mix, re-use, retain and re-distribute OER that is relevant to both classroom teaching of different subjects in Indian schools, and for teachers professional development.

IT for Change consciously chose the MediaWiki platform for developing the learning resources for the Subject Teacher Forum program[4], because it intended that teachers should actively participate in creating OER for their own use as well as share with other teachers with similar contexts and needs. Thus the byline of KOER is of the teachers, for the teachers and by the teachers.

The Karnataka Open Educational Resources (KOER)[5] portal was first started as a bilingual OER repository in Kannada and English in 2012, with

contributions by teachers, as part of the Karnataka School Education Department's Subject Teacher Forum of DSERT[6], where IT for Change was the resource institution. KOER has embedded concept maps, videos, images, simulations, animations to make the resource rich and diverse, connecting concepts, illustrations, activities and problems. The web pages, with connecting illustrations, activities and problems provide resources for lesson plans aligned to Karnataka state curriculum.

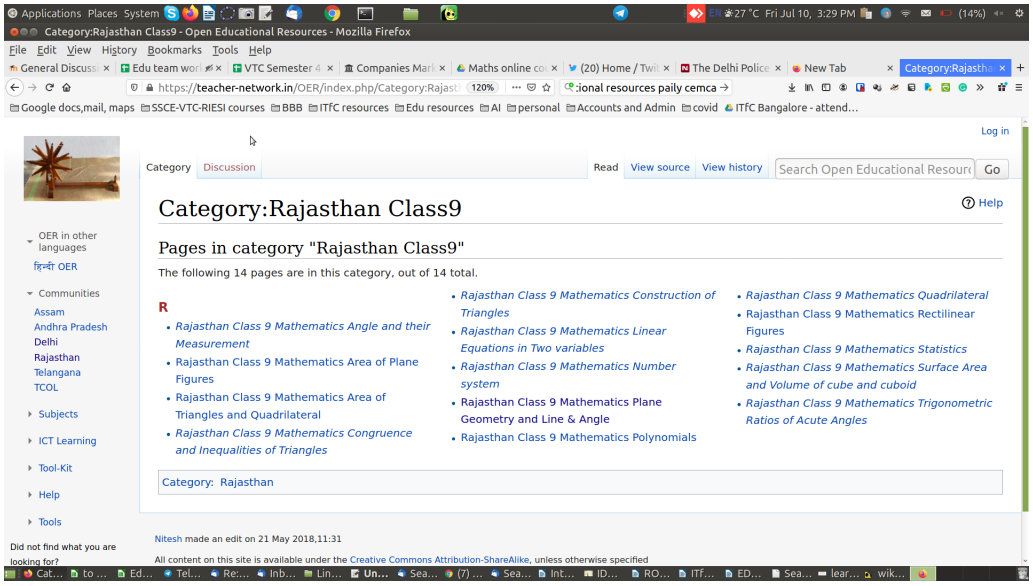

Figure 1: Use of Categories to organize content

ITfC has also used the *category* method of maintaining metadata, to allow for accessing the topics for mathematics and science by the text book organization of different states. It is easy to access materials in English for many topics, but quite difficult to access in Indic languages. So KOER was intentionally made bilingual (English and Kannada) from the beginning and teachers were encouraged to contribute in either language. Since most of the participating teachers worked in Kannada medium government high schools, large part of their contribution was in Kannada.

Particulars	English KOER	Kannada KOER	Ratio of Kannada to English content
Web pages created	6,412	4,368	68%
Resource files uploaded	3,554	1,948	54%
	English Wikipedia	**Kannada Wikipedia**	
Number of articles	6,119,482	36,351	0.006%

All the teacher and teacher educator training workshops and related content are part of the wiki. Various types of resources like concept maps, videos, images, simulations and animations are all categorized across file types and lessons in textbooks.

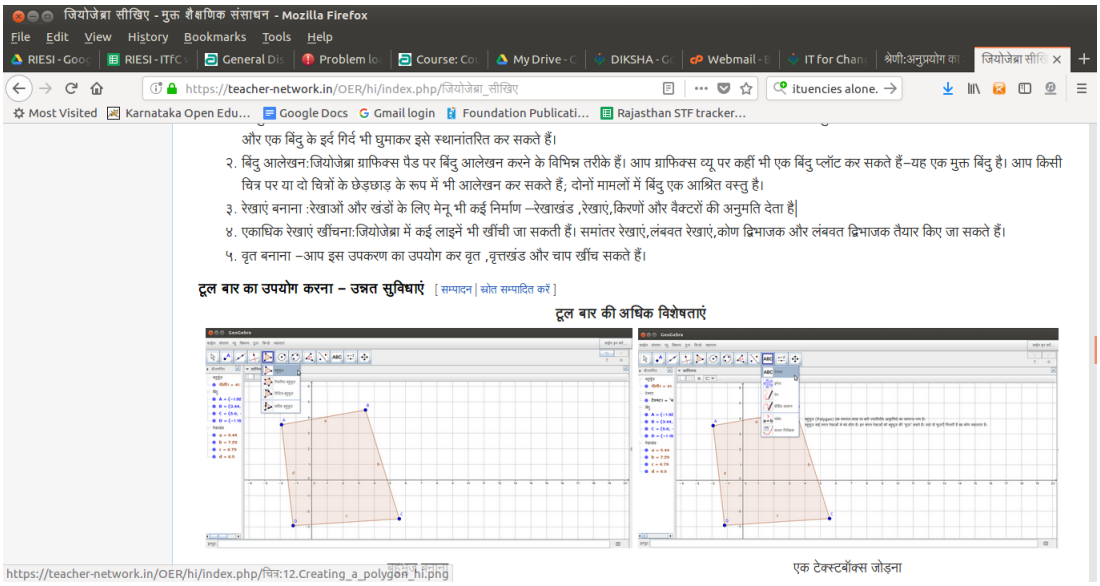

Figure 2: Screenshot of learn Geogebra page

The manuals and guides exploring various FOSS educational applications that ITfC uses are also built on wiki pages. The ICT Student textbook and Teacher handbook for Telangana SCERT (State Council of Educational

Research and Training, Telangana)[3] was collaboratively created using Wikibook. Two teachers' tool-kits, one for creating and re-purposing OER using FOSS[6] and another for Professional Learning Community Approach for Teacher Development and OER creation were also built on MediaWiki. The toolkit for creating and re-purposing OER using FOSS aims to promote the creation, re-purposing and publishing of OER using FOSS applicationsi. The toolkit on Professional Learning Community Approach for Teacher Development and OER creation is aimed at helping senior education officials to plan for a similar program, adapting it to local context, needs and priorities[7]. This model, called the PLC-OER (Professional Learning Community OER) model, is an example of using ICT for empowering teachers, while many ICT programs disempower and deskill teachers. Curriculum experts can use the toolkit for exploring digitally enabled participatory approaches to curriculum design and material development.

4.2 Wikimedia projects

ITfC has designed and transacting a ICT integrated learning course for student teachers of the Bachelors in Education course at Vijaya Teachers College (VTC), Bengaluru. This is the first B.Ed. course based on the National ICT Curriculum, 2013 of Central Institute of Education Technology (CIET), NCERT.

As part of the course, an unit on ICT and Society requires student teachers in the final semester to develop, revise and publish OER on Kannada Wikipedia, as a graded assignment. The quality and quantity of content determines grading. The Wikimedia community has developed a content translation tool which aides the contributors to translate content easily by integrating with Google Translator[8]. To make the process of translation of Wikipedia English pages into Kannada easier, we are also planning to use the voice to text input tool of Google. The aim is also to increase the availability of regional OER content on the web. When this approach is used by more teacher educator institutions, it will greatly help in increasing OER in Indian languages. Copyrighted content restricts the people in education sphere to

[3]State Council of Educational Research and Training (SCERT), Telangana functions as the Academic wing of Department of School Education and academic authority for RTE in the state of Telangana.

use/re-use while OER content can help a lot in making the knowledge accessible, which can support ODL.

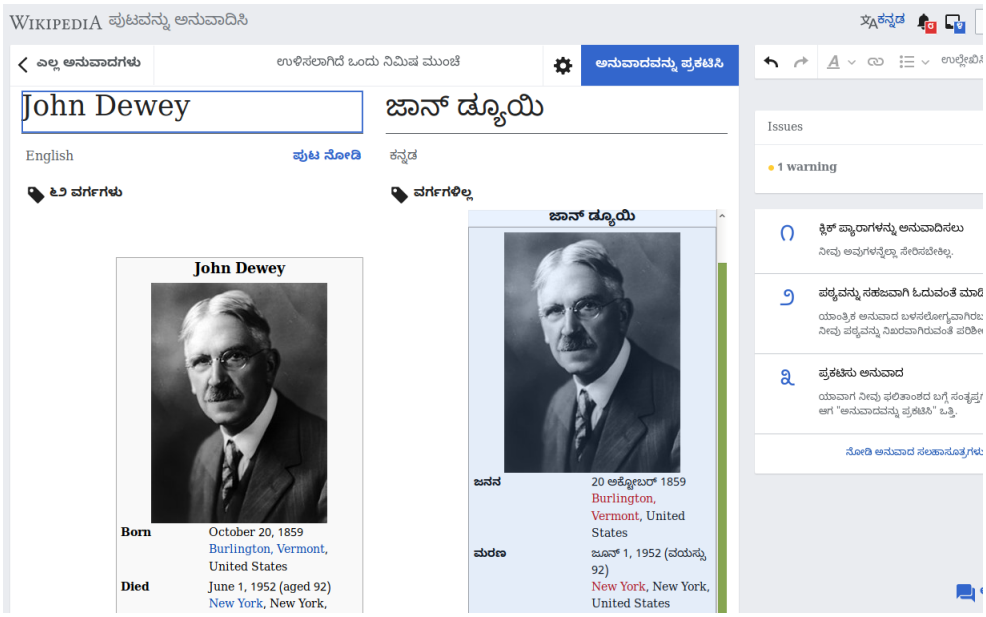

Figure 3: Content Translation tool used to translate an article from English to Kannada Wikipedia

In the current COVID context, ITfC is transacting a course ICT integrated learning for the student teachers of the B.Ed. Program at both VTC and Sri Sarvajna College of Education, as ODL program. While the program uses the Moodle platform as the LMS, it also connects to the KOER wiki platform for support on learning resources for the students. Both the MediaWiki and Moodle are FOSS and can be installed either locally within college network or on the Internet. By using these two FOSS platforms together, the institutions can ensure the privacy of the people using the platforms since the data is controlled within the platforms and is not shared with third party proprietary platforms. **Using proprietary platforms in teaching-learning will also risk the security of the people since the code is not publicly audited.**

Along with programs for teacher education institutes, ITfC also works

with schools through Teachers Community of Learning (TCOL) program. It is an intensive program by IT for Change in Government Aided High Schools in Bengaluru South 3 block focusing on developing classroom strategies and teacher development programs through ICT integration at the class, school and block levels, that can result in meaningful and empowering educational experiences for teachers and students. As part of the program, ICT labs at schools are provided an offline repository of OER which includes off-line Wikipedia in Simple English and regional languages. The custom distribution, Kalpavriksha, made by IT for Change also includes a multilingual Indic dictionary based on Wiktionary project.

Simple school web pages have also been created on the Wiki to share the work and achievements of the schools. (This is on the lines of the https://schoolwiki.in program of the Kerala education department, and can be a simple and workable model for every government, aided and non-elite private schools in the country to create its own webpage).

With the use of MediaWiki in various projects, from a knowledge repository to contributing content to enriching regional content, ITfC is leveraging the various benefits of the platform to make the creation, adaption, sharing, and publishing of information easy and powerful. Two eminent teacher educators working in ICT and Education, have, as a part of their evaluation of the MediaWiki repositories created by ITfC, have appreciated the value to teachers.

> *"The Subject Teacher Forums and the Karnataka Open Educational Resources programme aim to bring teachers into a collaborative learning community, hoping to engage them in OER access-creation-curation-publishing, leveraging this engagement into a professional development exercise Overall, the programme presents an interesting model of ICT mediated collaboration and OER exchange, suitable for most contexts, particularly in the developing world."*
> - Prof Rajaram Sharma, Joint Director, NCERT (retired) in Vignettes of Selected Asian Experience", Wawasan Open University. Malaysia[9].

"Introduction to wiki through KOER, and that too in Kannada, made teacher educators realize that they too can be the creator of information and share it for the use of others"
- MU Paily Professor at RIE, Mysuru[10].

5 Power of Wiki

By deploying wiki in different education projects ITfC aims to demonstrate the ways in which it can democratize education. Wiki allows schools, teachers, and even students, to participate in knowledge construction activities by accessing/downloading and by publishing/uploading content.

As wiki easily enables embedding of resource files in image, video, and animation formats, the KOER resource portal provides a multi-media learning experience for teachers. The entire KOER backup has been shared offline on school servers to enable access even without Internet connectivity which is a feature of MediaWiki.

6 Conclusion

Research suggests that digital technologies have increased the knowledge gap across languages. Knowledge resources in English far outnumber those in Indian languages. Cultural ideas are passed on through the vessel of language and crowd-sourced open knowledge in their own languages has the potential to significantly impact the future of humanity.

Hence it is essential for a massive program to develop knowledge resources in Indian languages urgently. Wiki provides the ideal platform that can support a program of this nature and magnitude. Developing resources in Indian languages will also provide a fillip to ODL programs in these languages and further the generation of and access to knowledge. Teachers and teacher educators have a special role in such development, as they are, ultimately, the users of knowledge in traditional and ODL programs.

References

[1] MediaWiki software - https://www.mediawiki.org/wiki/MediaWiki

[2] WikiEducator community - https://wikieducator.org/Main_Page

[3] WikiToLearn community - https://en.wikitolearn.org/Main_Page

[4] Subject Teacher Forum (STF) Program - https://karnatakaeducation.org.in/KOER/en/index.php/Subject_Teacher_Forum

[5] Karnataka Open Educational Resources (KOER) - https://karnatakaeducation.org.in/KOER/en/index.php/Karnataka_Open_Educational_Resources:About

[6] The Hands-On Toolkit for Teachers to Create, Re-purpose and Publish Open Educational Resources (OER)using Free and Open Source Software (FOSS) - https://teacher-network.in/OER/index.php/Teachers%27_toolkit_for_creating_and_re-purposing_OER_using_FOSS/Preface

[7] Professional Learning Community Approach for Teacher Development and OER creation - A toolkit - https://teacher-network.in/OER/index.php/A_Professional_Learning_Community_Approach_for_Teacher_Development_and_OER_creation_-_A_toolkit/Preface

[8] Content Translation Tool by Wikimedia - https://www.mediawiki.org/wiki/Content_translation

[9] OER: VIGNETTES OF ASIAN EXPERIENCE - Case study on the Karnataka STF-KOER program-KOERprogram, Wawasan Open University, Malaysia - https://woulibrary.wou.edu.my/pdf/epub/epub_0116.pdf

[10] Professional Development of Teacher Educators on ICT Integration in Education for Establishment ofCommunity of Practice for Sharing Learning Resources and Teaching-learning Practice: An Evaluation - http://oasis.col.org/handle/11599/2605?show=full