

Digital Repository for English Language Teaching and Learning Resources: A Panacea in the Time of the Pandemic

Grace Hui Lin Tan and Yanti Idaya Aspura M.K.

Department of Library and Information Science,
Faculty of Arts and Social Sciences,
Universiti Malaya, Kuala Lumpur, MALAYSIA
e-mail: tangracehl@gmail.com; yanti@um.edu.my

ABSTRACT

The Coronavirus disease 2019 (COVID-19) pandemic poses a huge challenge to the education system in Malaysia. During this critical time, schools were closed and teachers were required to conduct lessons via the online platform. Thus, the use of digital teaching resources increased exponentially as these resources made lessons more effective and also more interesting. As these resources had to be systematically stored for easy retrieval, a digital repository prototype was developed specially to support English Language instruction at SMK Canossian Convent (SMKCC), Kluang, Johor. The repository facilitates the systematic storage and easy retrieval of the image, text and video collections of the English Language teaching and learning resources using the DSpace system. This was implemented using the ADDIE model which consists of five phases, namely analysis, design, development, implementation and evaluation. A total of 75 teaching and learning resources were uploaded into the system, accompanied by selected Dublin Core metadata fields which include Title, Author, Keyword, Issue Date, Publisher, Description, Uniform Resource Identifier (URI), Type and Language. A survey to evaluate the level of satisfaction was then carried out among users of this digital repository prototype. The results showed that 100% of the respondents found the digital repository useful, easy to use, easy to learn, and were satisfied in using it to browse, search and retrieve any particular item stored in the collection. This project has, indeed, delivered a good prototype of the digital repository service to the targeted users. Suggestions from users were noted for project improvement and future development of the digital repository.

Keywords: Digital repositories; DSpace; ADDIE model; Dublin Core metadata; English Language instruction

INTRODUCTION

On 11 March 2020, the World Health Organisation (WHO) declared the Coronavirus disease 2019 (COVID-19) outbreak a global pandemic (Ghebreyesus 2020). Due to a sharp rise in COVID-19 cases in the country, the Malaysian Prime Minister, Tan Sri Mahiaddin Yassin officially implemented the 'Movement Control Order' (MCO) on 18 March 2020 (Sukumaran 2020). During this pandemic, schools in Malaysia were closed indefinitely as a way to protect students from COVID-19 infections and to prevent the disease from

spreading in the community (Soo 2020). With the closure of all schools, teachers had to use available technologies and conduct teaching via the online platform (Razak 2020). They had to be creative and innovative in overcoming the limitations of online teaching and in ensuring that e-learning was effective (Othman et al. 2020; Pokhrel and Chhetri 2021).

Prior to the COVID-19 pandemic, the English Language teachers of SMK Canossian Convent (SMKCC), Kluang conducted face-to-face lessons and occasionally used digital resources available on several platforms, websites or portals such as the Johor English Digital Learning Resources (JEDLR), British Council, Teach-This.com, All Things Grammar and YouTube. These resources had to be carefully selected for lessons to be effective and interesting so as to achieve their learning objectives. During the MCO period, the use of these available digital resources has become even more popular among teachers conducting online teaching as it helps overcome the problem of having limited time to prepare individual online learning content (Huang et al. 2020).

Every English Language teacher has their collection of resources stored in electronic folders in the computer or on external hard disk for future use. The English Language teachers faced various technical problems trying to locate the resources that were stored earlier. Firstly, these resources were not localised; they were scattered, and not well-organised. Secondly, no standard metadata was used when storing these resources. Information about the resources was either not stated or was too brief, that is, only the folder name or the file title was available. Thirdly, item retrieval was time-consuming as the teachers had to select the folder, and then browse through the files according to the level and title. When these titles were renamed, the time taken for the retrieval of the items was much longer. Fourthly, redundancy due to multiple storages occurred when teachers saved the resources which already existed in their computers under a different file name. Lastly, the problem of accessibility arose when teachers, while working in school, wanted to access the image, text and video collection of resources stored earlier but did not bring their computer or external hard disk to school.

It was apparent that there was a need for a simple yet centralised and integrated system where good and effective teaching and learning resources could be pooled together, systematically stored in a specific location for easy retrieval, and shared among the teachers. Discussions with their English Language Department Head led to the decision to establish a digital repository as a database to store and manage the digital collection of teaching and learning resources. The resources to be included in this repository were Examination Questions, Fun Learning Activities and Writing Genres. Therefore, this research project aims to develop a digital repository prototype using DSpace for the image, text and video collections of teaching and learning resources of the English Language Department of SMKCC Kluang. The development of the digital repository prototype in this research project is to enhance item retrieval of the English Language teaching and learning resources.

OBJECTIVES

The purpose of this paper is to describe the development and use of a digital repository for English Language teaching and learning materials during the COVID-19 pandemic. The objectives of the study are as follows:

1. To develop structured metadata in the digital repository prototype for the image, text and video collections of the English Language Department's teaching and learning resources in SMKCC Kluang.
2. To develop a digital repository prototype for the image, text and video collections of the English Language Department's teaching and learning resources in SMKCC Kluang using the DSpace system.
3. To evaluate the level of satisfaction among users of the digital repository prototype in SMKCC Kluang.

LITERATURE REVIEW

Digital Repository

A digital repository is a collection of digital resources which helps to classify, catalogue, store, preserve, disseminate, and provide access to the knowledge assets or intellectual output of their organisations (Das and Chatterjee 2015; Murugan and Ramanan 2015). Digital repositories may be proprietary or open-source. Proprietary software refers to software accessible only to those who have purchased a special licence key. These source codes are not publicly available. On the other hand, open-source software is free and available for anyone to access and modify the source code and therefore is more widely used (Dhir and Dhir 2017). Among the open-source software which are commonly used for the creation of digital repository are DSpace and EPrints, others include Archimede, ARNO, CDSware, Fedora, Greenstone, i-Tor, MyCoRe and OPUS (Das and Chatterjee 2015). To function properly, repositories must be sustainable, trusted, well-supported and well-managed. The benefits of digital repositories are 1) resources are kept in a single, well-organised location; 2) increased visibility of resources; 3) resources are well-preserved and permanently accessible to all (Momin and Gaonkar 2016).

DSpace

DSpace is an open-source repository software that enables the sharing of digital contents (Asorey et al. 2015). It has the largest digital repository user community and developers worldwide and is used by many educational, government, private and commercial institutions (DuraSpace n.d.). First released in 2002 under a Berkeley Software Distribution (BSD) licence, DSpace was jointly developed by the Massachusetts Institute of Technology (MIT) Libraries and Hewlett Packard (HP) Labs (DuraSpace n.d.; Smith 2002). DSpace is written in Java and works on most operating systems including Linux, Mac OSX and Windows. It is built on top of free, open-source tools, such as the Apache Web server, the Tomcat Servlet engine and the PostgreSQL relational database system. The benefits of using DSpace are 1) it is free open-source software; 2) it can be installed 'out of the box'; 3) it can manage and preserve all types of digital content including images, texts and videos; 4) it is customisable to fit one's needs in terms of user interface,

metadata, browse and search configurations, local authentication mechanisms, standards compatibility, database configurations and choice of language (DuraSpace n.d.). However, the limitations of DSpace are 1) it uses a flat-file and metadata structure; 2) it does not support linked data; 3) it has limited reporting capabilities; 4) it has limited application programming interface (API); 5) it is not scalable or extensible (Verma and Kumar 2018). Thus, from the features and benefits mentioned above, DSpace was considered suitable and was, therefore, selected for this research project.

ADDIE Model

ADDIE model consists of five phases which are analysis, design, development, implementation and evaluation as shown in Figure 1. This model was originally invented by the Center for Educational Technology at Florida State University in 1975 to form an instructional systems development program for military training (Branson et al. 1975). Eventually, the model after having undergone modifications became widely used as it is a practical and simple instructional design framework (Aldoobie 2015; Bamrara 2018; Hadi et al. 2017). The analysis phase includes the assessment of needs and the establishment of goals. In the design phase, a comprehensive overview or blueprint is created, outlining how to carry out the instruction to achieve the objectives identified during the analysis phase. In the development phase, every instruction is listed in detail to meet the blueprint created during the design phase. In the implementation phase, all instructions are carried out. Finally, in the evaluation phase, feedback about the program is obtained and improvements to the program of instruction are made (Cheung 2016). Although the ADDIE model is generally an instructional design model, it can be adapted to this research project because of its core elements.

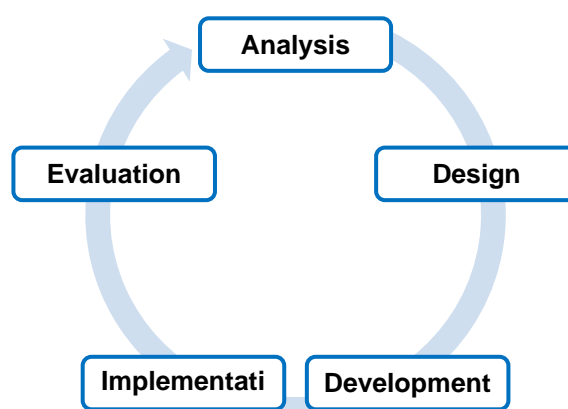


Figure 1: ADDIE Model

Metadata

Metadata refers to data about data (Baca 2016). It provides background information about the resource content, making it easier to retrieve, use and manage the resources (Mukhopadhyay 2015). There are three main types of metadata: descriptive metadata, structural metadata and administrative metadata. Descriptive metadata describes the

details about the content and form of the resource for discovery and identification. Structural metadata describes the details about the way data elements are organised in terms of their relationships and the structure they exist in. Administrative metadata describes the details required to manage the resource, including access and rights management as well as resource preservation information (Prabhune et al. 2017). To model these different types of metadata, various metadata standards are available such as Dublin Core, Machine Readable Cataloguing (MARC), Text Encoding Initiative (TEI), Metadata Encoding and Transmission Standard (METS) and Preservation Metadata Implementation Strategies (PREMIS) (Mukhopadhyay 2015). For this project, the Dublin Core metadata standard was applied in the digital repository prototype. This metadata consists of fifteen metadata fields which are Title, Author, Keyword, Issue Date, Publisher, Description, Contributor, Uniform Resource Identifier (URI), Type, Format, Source, Language, Relation, Coverage and Rights (Riley 2017).

METHODOLOGY

The development process of this digital repository guided by the ADDIE model consists of the analysis, design, development, implementation and evaluation phases.

Analysis

The eight English Language teachers participating in this project were asked to answer a needs analysis questionnaire in an effort to obtain more information from them. Based on their responses, it was found that all eight teachers (100%) faced problems when searching for and locating teaching and learning ideas and resources online. They agreed that a digital repository would be a valuable tool if it could preserve the teaching and learning resources of the school in a central location for resources to be shared among all the English Language teachers of the school. All of them were willing to contribute teaching and learning ideas and resources to this digital repository as they believed that this digital repository could allow for the long-term preservation of selected teaching and learning resources, and for the addition of new resources from time to time. For this digital repository, 7 out of 8 of the teachers (87.5%) chose to focus on teaching and learning resources for teachers' references instead of students' references. The results of the survey showed that the main focus of the teachers were Examination Questions (75%), Fun Learning Activities (62.5%), Writing Genres (50%) and 21st-Century Learning Ideas (25%). Hence, the three categories chosen for this project were Examination Questions, Fun Learning Activities and Writing Genres, that is, only images, texts and videos of teaching and learning resources that fell under the above three categories would be selected. All the teachers except one (87.5%) were willing to participate as charter members to develop a digital repository at SMKCC Kluang.

Design

In the design phase, the selected resources were placed into their designated folders according to the category of the collection as shown in Figure 2. These resources were then renamed with alphanumeric classification codes (generated from the category and level of collections) at the beginning of the file name, followed by the teaching and

learning resource title. For example, the file FLA F4-5 SPEAKING ACTIVITIES FOR ESL – 10 BEST SPEAKING ACTIVITIES EVERY TEACHER SHOULD KNOW; 'FLA' is the category code created for Fun Learning Activities, 'F4-5' is the level code for Form 4 to Form 5, and 'SPEAKING ACTIVITIES FOR ESL – 10 BEST SPEAKING ACTIVITIES EVERY TEACHER SHOULD KNOW' is the resource title.

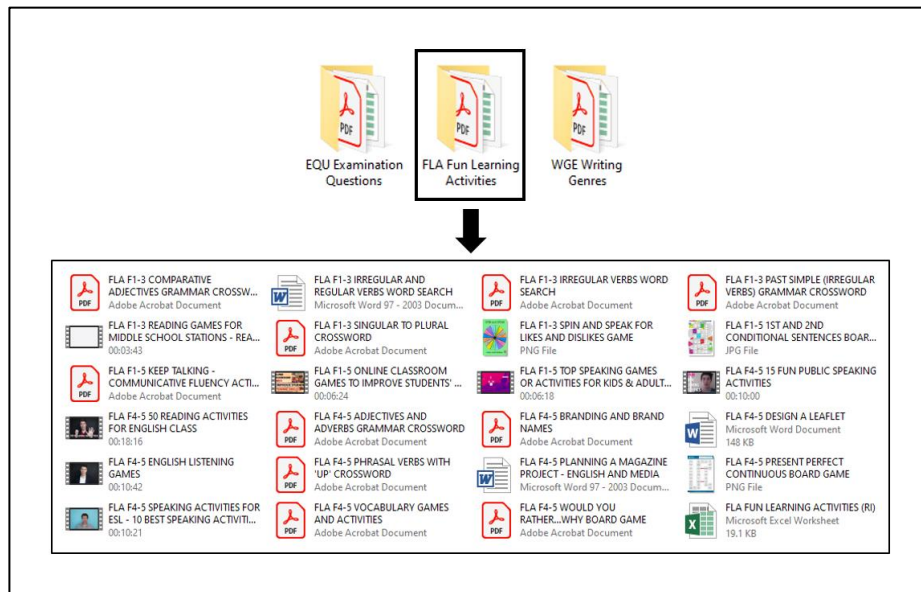


Figure 2: Folder Storage in the Computer before Setting-Up the Digital Repository

Finally, the metadata or repackaged information (RI) files for the collections of teaching and learning images, texts and videos were created using Microsoft Excel. Figure 3 shows an example of a metadata or RI file.

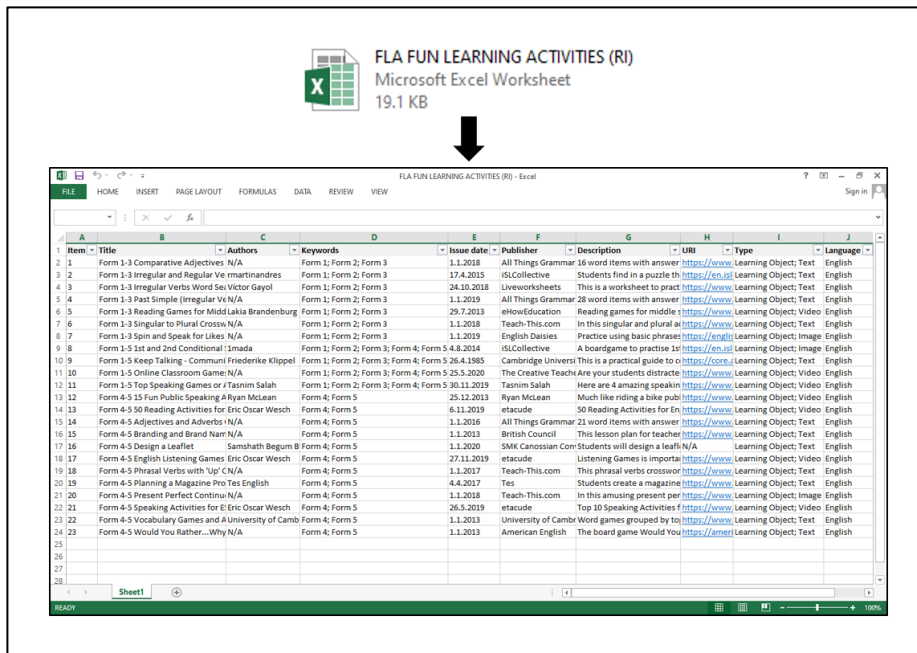


Figure 3: Example of a Metadata or RI File Created Using Microsoft Excel

Development

The first step in the development phase was the installation of all prerequisite software into the laptop computer. Details of the system requirements in this project are shown in Table 1.

Table 1: System Requirements

System	Requirement	Description
Hardware	Laptop computer	Computer running on 64-bit Windows
Software	Java SDK	jdk1.8.0_111
	PostgreSQL	postgresql-9.5.22-1
	Apache Tomcat	apache-tomcat-9.0.0.M13
	Apache Ant	apache-ant-1.9.15
	Apache Maven	apache-maven-3.3.9
	Dspace	dspace-6.3-src-release

Subsequently, the dspace.cfg file in the DSpace folder was edited using Notepad++ to create the digital repository for this project. Changes made in the dspace.cfg file are shown in Table 2.

Table 2: Changes Made in dspace.cfg File

Targeted line	Changes made
dspace.dir	C:/dspace
dspace.ui	jspui
dspace.name	Digital Repository for the English Language Teaching and Learning Resources in SMK Canossian Convent Kluang

default.language	en
mail.server	tangracehl@gmail.com
mail.from.address	tangracehl@gmail.com
feedback.recipient	tangracehl@gmail.com
mail.admin	tangracehl@gmail.com

The default system administrator was then created followed by the creation of community and collections in the digital repository. Items were registered in the appropriate collection whereby metadata was filled in, resource files were uploaded into the digital repository, and authorisations of data were done. Detailed steps for the creation of a community and a collection as well as registration of an item in DSpace are shown in Appendix 1. The final step was a simple DSpace customisation to eliminate unnecessary features in the default user interface such as jumbotron, introductory text and container banner on the digital repository homepage. Detailed steps for this DSpace customisation are shown in Appendix 2.

Implementation

The digital repository prototype which was developed was then introduced to the target users, that is, the English Language teachers of SMKCC Kluang. They were briefed on how to use the digital repository. To ensure that the digital repository prototype continues to be used and managed well by the teachers, lessons for teachers on the preservation of digital materials were also carried out.

Evaluation

A survey questionnaire was distributed to obtain user-feedback regarding the use of the digital repository prototype to retrieve items in the collection. The USE questionnaire based on Lund (2001) was used for this evaluation. It consisted of 30 questions that were based on four aspects: Usefulness, Ease of Use, Ease of Learning and Satisfaction. The level of agreement was from 1 to 7 in Likert-type scale response anchors. Number 1 indicates strongly disagree, 2 indicates disagree, 3 indicates somewhat disagree, 4 indicates neutral, 5 indicates somewhat agree, 6 indicates agree and 7 indicates strongly agree. Only 10 out of 30 relevant questions were selected for this study. The evaluation session was held in SMKCC Kluang. The tools used consisted of printed copies of the survey questionnaire and a personal laptop computer which had the developed digital repository prototype. The responses from the survey questionnaire were analysed using Microsoft Excel.

RESULTS AND DISCUSSION

Structured Metadata

The first objective of this research project was to develop structured metadata in the digital repository prototype for the English Language Department's teaching and learning resources in SMKCC Kluang. This digital repository prototype used the Dublin Core

metadata standard which is a built-in feature of the DSpace system. The Dublin Core metadata standard has fifteen classic metadata fields but for this project, only nine metadata fields were selected to describe each item namely, Title, Author, Keyword, Issue Date, Publisher, Description, URI, Type and Language as shown in Table 3. This structured metadata was set to enhance the information management of teaching and learning resources. An example of a full item record is shown in Figure 4. Having developed this structured metadata for the teaching and learning resources, the first objective was achieved.

Table 3: Selected Dublin Core Metadata Fields

Dublin Core metadata field	Namespace syntax in HTML	Description
Title	dc.title	Item name
Author	dc.contributor.author	Creator or originator of the resource
Keyword	dc.subject	Level of collection
Issue Date	dc.date.issued	Resource created or published date
Publisher	dc.publisher	Company or person that prepares and issues the resource
Description	dc.description	Explanation about the content of the resource
URI	dc.identifier.uri	URL of resource origin and item's handle
Type	dc.type	Nature or genre of the resource content
Language	dc.language.iso	Language of the resource

The screenshot displays a DSpace digital repository page. At the top, there is a navigation bar with 'Home', 'Browse', and 'Help' links, a search box labeled 'Search DSpace', and a 'Sign on to...' option. Below the navigation bar, a green header identifies the repository as 'Digital Repository for the English Language Teaching and Learning Resources in SMK Canossian Convent Kluang / English Language Department SMKCC Kluang / Fun Learning Activities'. A message prompts the user to use the identifier 'http://localhost:8080/jspui/handle/123456789/70' to cite or link to the item. The main content area features a 'Full metadata record' table with columns for 'DC Field', 'Value', and 'Language'. Below this, a 'Files in This Item:' section contains a table with columns for 'File', 'Description', 'Size', and 'Format'. A 'View/Open' button is visible next to the file entry. At the bottom, there is a 'Show simple item record' button and a copyright notice: 'Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.'

DC Field	Value	Language
dc.contributor.author	Eric Oscar Wesch	-
dc.date.accessioned	2020-12-27T08:32:43Z	-
dc.date.available	2020-12-27T08:32:43Z	-
dc.date.issued	2019-05-26	-
dc.identifier.uri	https://www.youtube.com/watch?v=ISr8koU1HY	-
dc.identifier.uri	http://localhost:8080/jspui/handle/123456789/70	-
dc.description	Top 10 Speaking Activities for English Class. Teaching ESL games and activities. Timestamps: 0:00 Questions to a partner in English; 0:48 Survey ESL; 1:09 Speed dating English Speaking; 1:46 Running sentences in English class; 2:32 Deserted Island activity in class; 3:08 Taboo Game; 4:48 2 Truths and 1 lie; 6:22 Allibi Game; 7:50 Hotseat Game; 8:27 20 Questions; 8:54 Secret Zombie Game.	en
dc.language.iso	en	en
dc.publisher	etacude	en
dc.subject	Form 4	en
dc.subject	Form 5	en
dc.title	Form 4-5 Speaking Activities for ESL - 10 Best Speaking Activities Every Teacher Should Know	en
dc.type	Learning Object	en
dc.type	Video	en

File	Description	Size	Format
FLA F4-5 SPEAKING ACTIVITIES FOR ESL - 10 BEST SPEAKING ACTIVITIES EVERY TEACHER S HOULD KNOW.mp4	Form 4-5 Speaking Activities for ESL (2019)	95.67 MB	MPEG

Figure 4: Example of a Full Item Record

Digital Repository Prototype

The second objective of this research project was to develop a digital repository prototype for the English Language Department's teaching and learning resources in SMKCC Kluang using the DSpace system. The digital repository that was built could be viewed via an internet browser after running the Apache Tomcat service under the Administrative Tools of Control Panel. DSpace supports two user interfaces: JavaServer Pages User Interface (JSPUI) and Extensible Markup Language User Interface (XMLUI). The JSPUI web-view was selected for this project and it could be accessed at <http://localhost:8080/jspui> on the internet browser as shown in Figure 5.

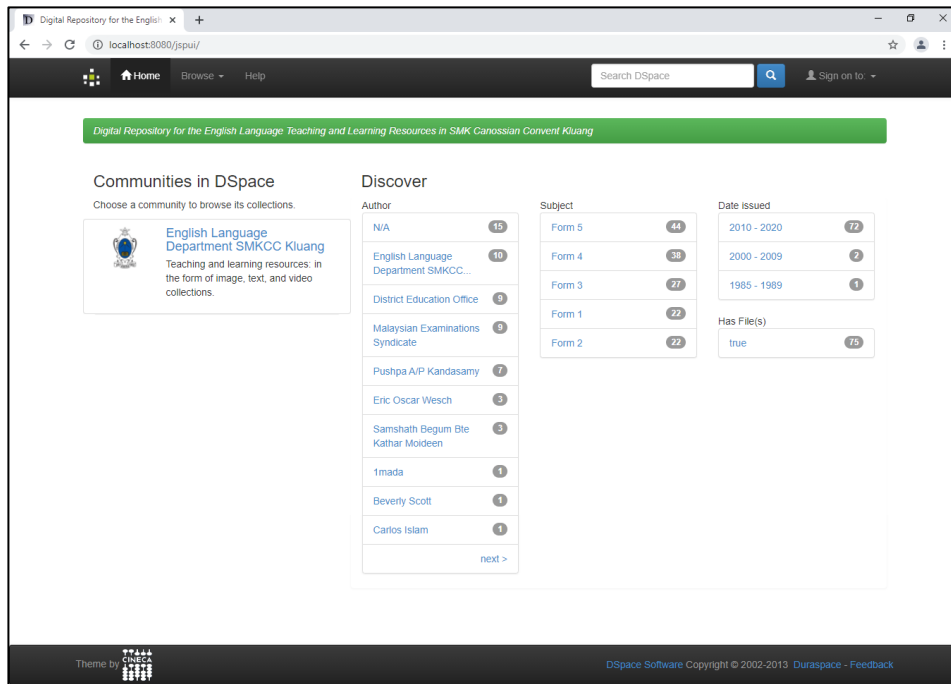


Figure 5: Digital Repository Homepage

Communities that represent parts of the organisation are groups that contribute contents to DSpace. For this project, only one community was created, that is, the English Language Department, SMKCC Kluang. All collections in this community were displayed on the Community page (Figure 6). Alternatively, users can view the collections via the Communities and Collections page as shown in Figure 7.

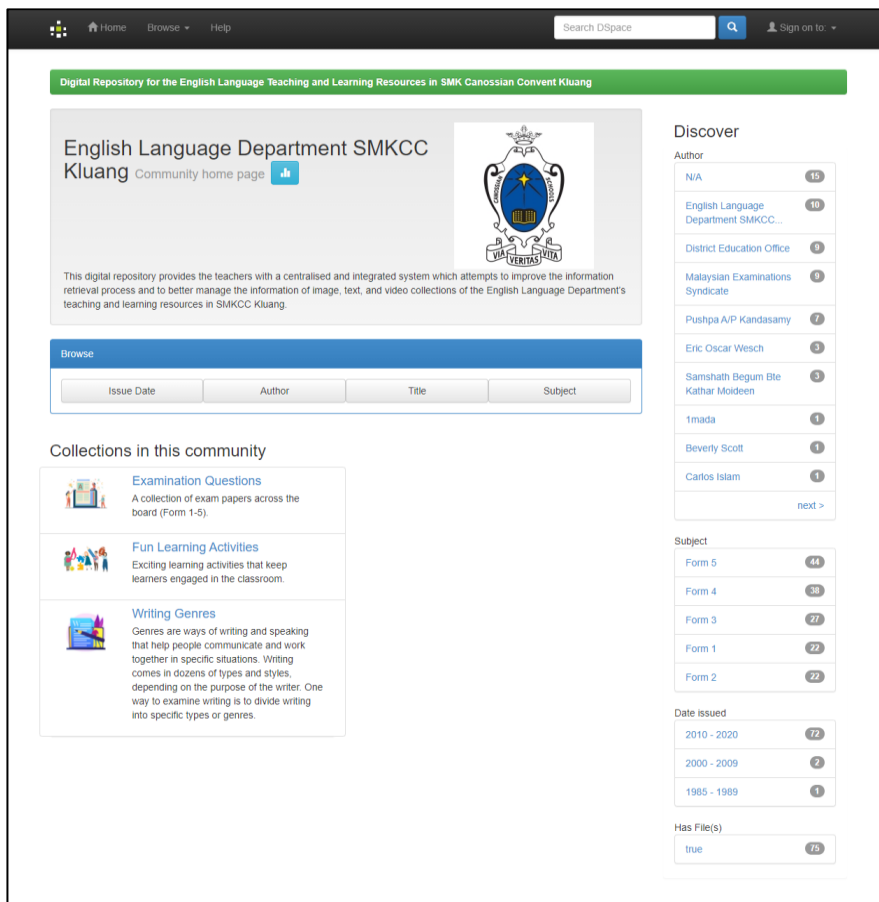


Figure 6: Community Page

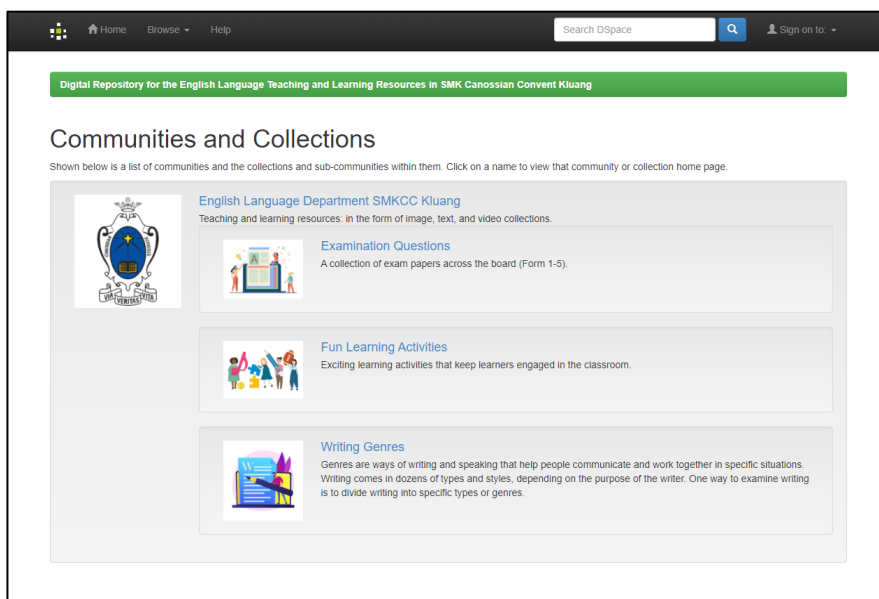


Figure 7: Communities and Collections Page

For this community, three collections were created namely, Examination Questions, Fun Learning Activities and Writing Genres. Users can view the Issue Date, Title and Author(s) of the items on each Collection page. An example of a Collection page is shown in Figure 8.

The screenshot shows a web interface for a digital repository. At the top, there is a navigation bar with 'Home', 'Browse', and 'Help' links, a search box labeled 'Search DSpace', and a 'Sign on to:' dropdown. Below this is a green banner with the text 'Digital Repository for the English Language Teaching and Learning Resources in SMK Canossian Convent Kluang / English Language Department SMKCC Kluang'.

The main content area features a 'Fun Learning Activities' collection home page. It includes a social media share button, a descriptive paragraph about making learning exciting through interactive activities, and a 'Browse' section with filters for 'Issue Date', 'Author', 'Title', and 'Subject'. There is also a 'Subscribe' button and an RSS feed icon.

The collection items are listed in a table, sorted by 'Submit Date in Descending order'. The table has three columns: 'Issue Date', 'Title', and 'Author(s)'. The items listed include various board games, vocabulary games, speaking activities, and grammar exercises, with authors ranging from 'N/A' to 'University of Cambridge Local Examinations Syndicate'.

On the right side, there are two filter panels. The 'Discover' panel shows the number of items for each author, with 'N/A' having 10 items and 'Eric Oscar Wesch' having 3. The 'Subject' panel shows the number of items for each subject, with 'Form 4' having 15 items and 'Form 5' having 10. There are also filters for 'Date issued' and 'Has File(s)'.

Figure 8: Example of a Collection Page

Items refer to the teaching and learning resources in the form of an image, text or video which belong to a collection. These images, texts and videos are in JPEG, PNG, DOC/DOCX,

PDF and MPEG formats. A total of 75 items were registered into this digital repository where each item consists of metadata, bitstream and licence. An example of an Item page is shown in Figure 9 below.

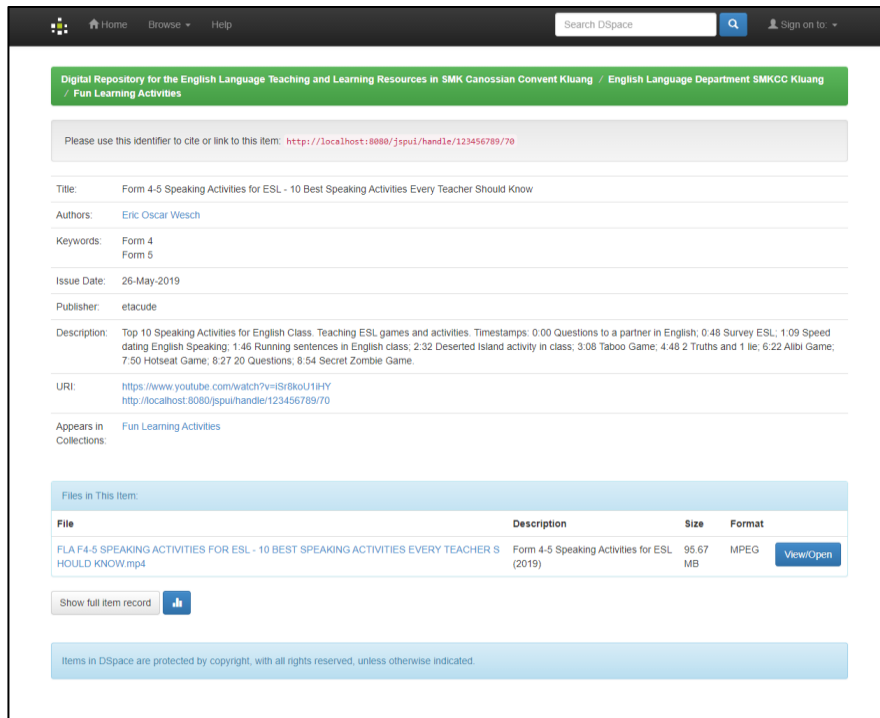


Figure 9: Example of an Item Page

The DSpace data model of the Digital Repository for the English Language Teaching and Learning Resources in SMK Canossian Convent Kluang is shown in Figure 10.

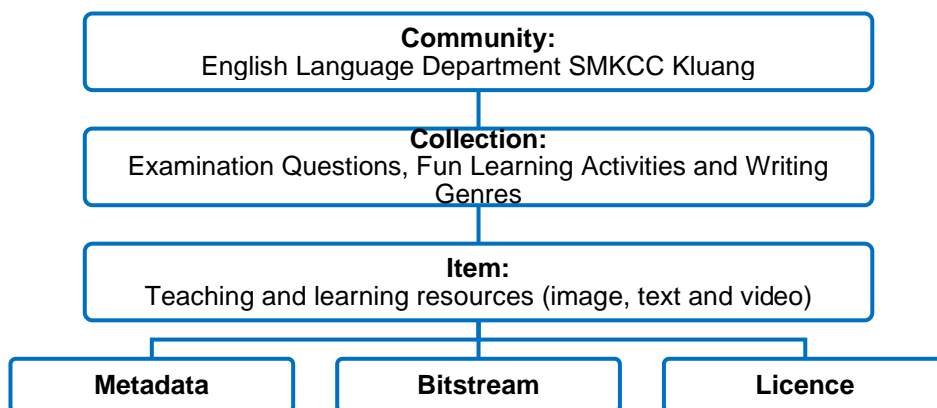


Figure 10: DSpace Data Model

DSpace allows users to access the teaching and learning resources via **Browse** or **Search**. Users can browse through the digital repository by Communities & Collections or browse items by Issue Date, Author, Title and Subject under 'Browse' at the top navigation bar as shown in Figure 11 below. Alternatively, users can also browse from the 'Discover' by

Author, Subject and Date issued on the digital repository homepage as shown in Figure 12.

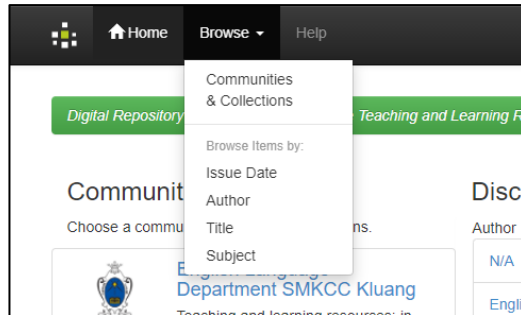


Figure 11: 'Browse' at the Top Navigation Bar

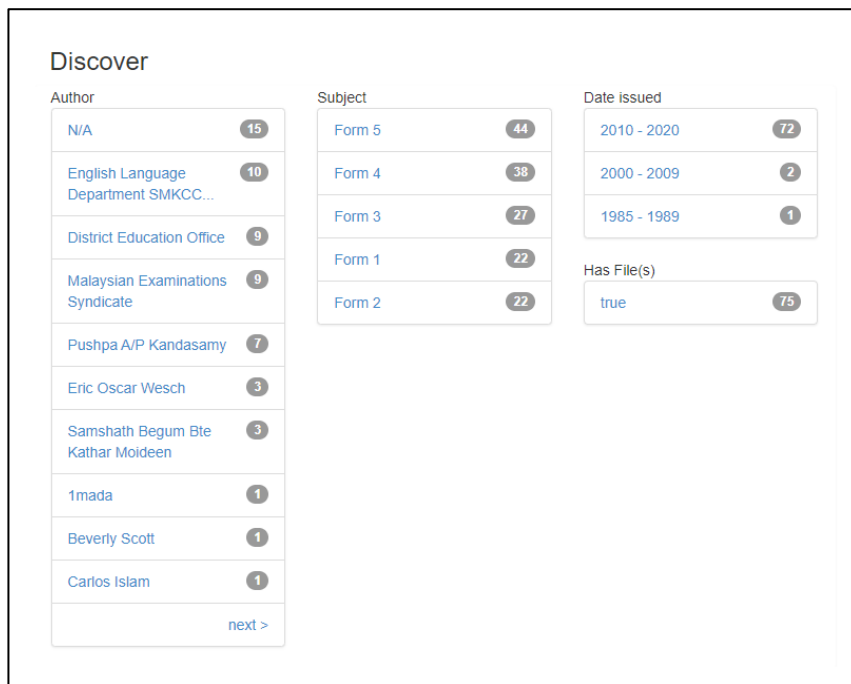


Figure 12: 'Discover' on the Digital Repository Homepage

Basic searching can be done by using the search box located on the top navigation bar to search all of DSpace as shown in Figure 13. For an advanced search, users can limit their search within a specific community by selecting the community in the search list and then using filters to refine the search results as shown in Figure 14.

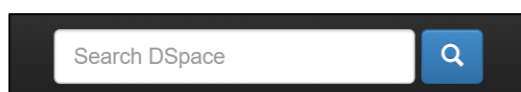


Figure 13: Basic Search

The image shows a search interface with the following elements:

- Search Bar:** Contains the text "English Language Department SMKCC Kluang".
- Buttons:** "Go" and "Start a new search".
- Filters:** A section titled "Add filters:" with the instruction "Use filters to refine the search results." Below this, there is a dropdown menu set to "Title", a dropdown menu set to "Equals", and an empty input field.
- Additional Options:** An "Add" button below the filter input field.
- Results/Sorting:** A row of controls including "Results/Page" (set to 10), "Sort items by" (set to Relevance), "In order" (set to Descending), "Authors/record" (set to All), and an "Update" button.

Figure 14: Advanced Search

DSpace uses the Jakarta Lucene search engine which supports **truncation** by using an asterisk (*) after a root word to obtain all hits of words with the same root word; **stemming** which automatically expands words with common endings to include plurals and past tenses; **phrase searching** by using quotation marks (“”) before and after the phrase; **Boolean searching** to limit searches when finding items which contain all words or phrases combined with this operator (AND), enlarge searches when finding items which contain any of the words or phrases surrounding this operator (OR), and exclude items which contain the word following this operator (NOT); **exact word match** by putting a plus (+) sign before the word if it must appear in the search result; and **eliminate items with unwanted words** by putting a minus (-) sign before the word if it should not appear in the search result. The search engine also **ignores stop words** that do not add value to the search such as ‘a’, ‘and’, ‘are’, ‘as’, ‘at’, ‘be’, ‘but’, ‘by’, ‘for’, ‘if’, ‘in’, ‘into’, ‘is’, ‘it’, ‘no’, ‘not’, ‘of’, ‘on’, ‘or’, ‘such’, ‘the’, ‘to’ and ‘was’.

The submission and approval of teaching and learning resources into the system was done by the researcher alone as this project is only a prototype. In future when this digital repository is managed by the school, users and groups setting in DSpace can be activated where only selected personnel can be authorised to handle the submission of items (accept or reject) and editing metadata of selected items. By successfully developing this digital repository prototype for the English Language teaching and learning resources in SMKCC Kluang, the second objective was achieved.

Evaluation of User’s Level of Satisfaction

The third objective of this research project was to evaluate the level of satisfaction of the digital repository prototype among users. An evaluation was done using a survey questionnaire and the responses from the eight English Language teachers of SMKCC Kluang were analysed based on the Usefulness, Ease of Use, Ease of Learning and Satisfaction of this digital repository. Table 4 shows the analysis of responses in the survey questionnaire.

Table 4: Analysis of Responses

Aspect	Question	Number of respondents						
		SD	D	SWD	N	SWA	A	SA
Usefulness	1. It is useful	0	0	0	0	0	0	8 (100%)
	2. It makes the things I want to accomplish easier to get done	0	0	0	0	0	2 (25%)	6 (75%)
	3. It saves me time when I use it	0	0	0	0	0	3 (37.5%)	5 (62.5%)
Ease of Use	4. It is easy to use	0	0	0	0	0	1 (12.5%)	7 (87.5%)
	5. It is simple to use	0	0	0	0	1 (12.5%)	5 (62.5%)	2 (25%)
	6. It is user-friendly	0	0	0	0	0	6 (75%)	2 (25%)
	7. It requires the fewest steps possible to accomplish what I want to do with it	0	0	0	0	2 (25%)	6 (75%)	0
Ease of Learning	8. It is easy to learn to use it	0	0	0	0	0	2 (25%)	6 (75%)
Satisfaction	9. I am satisfied with it	0	0	0	0	0	1 (12.5%)	7 (87.5%)
	10. It works the way I want it to work	0	0	0	0	0	0	8 (100%)

Note: SD = Strongly Disagree; D = Disagree; SWD = Somewhat Disagree; N = Neutral; SWA = Somewhat Agree; A = Agree; SA = Strongly Agree

For the Usefulness aspect, all the respondents found the digital repository useful, helped them in searching for resources, and saved time. It was far better and quicker in retrieving items on the digital repository than the folder system in the computer and hard disk storages. The structured metadata helped users to retrieve the teaching and learning resources effectively. For the Ease of Use aspect, respondents agreed that this digital repository was easy and simple to use, user-friendly, and required only a few steps. However, this digital repository was still in the prototype stage and the user interface could be further improved with the DSpace customisation. The English Language teachers responded positively on the aspect of Ease of Learning because the DSpace JSPUI is a website-like view, giving the respondents a sense of familiarity. Keywords that included the level of collections and the existing search box helped the users in learning to use and navigate around the digital repository. Finally, as in the Satisfaction aspect, the responses from the teachers were very encouraging. All respondents agreed that they were highly

satisfied with the digital repository and that it worked the way they wanted it to do. The third objective was, therefore, achieved.

SIGNIFICANCE OF THE STUDY

From this research project, the images, texts and videos of the school's English Language teaching and learning resources could be retrieved easily. Access to these resources was improved as they were indexed using structured metadata where teachers could browse and search the collection of resources better than was done previously. This digital repository prototype made it easier to keep the information up-to-date as the contents could be updated anytime. Should the resources cease to exist or be deleted from their original website, these resources will still be preserved and stored securely in this digital repository. With this digital repository, teachers could easily access a wider range of resources stored at a single location and utilise them for effective and captivating online lessons for their students during this COVID-19 pandemic period.

LIMITATIONS AND RECOMMENDATIONS

There are a few limitations in this research project. Firstly, only three collections (Examination Questions, Fun Learning Activities and Writing Genres) were selected as content as this research project was only a prototype. In the long run, it would be good to include other collections of resources and also add new items into the digital repository. Secondly, due to the lack of skill and expertise in using DSpace, only a small part of customisation was carried out to enhance the user interface. This user interface can be improved further with additional DSpace customisation so that the collection of resources can be readily displayed on the homepage whenever users open the digital repository. Finally, the server used was a local host which could only be accessed on the personal computer of the researcher and was limited to a single person per usage at a time. This digital repository project can be further improved by having it published on the internet so that resources are easily accessible by the teachers anytime and anywhere.

CONCLUSION

This Digital Repository for the English Language Teaching and Learning Resources in SMKCC Kluang built using the DSpace system, pooled all the relevant resources together and systematically organised them for easy retrieval. In addition, the structured metadata in the digital repository prototype led to better information management of the teaching and learning resources. Results from the survey showed a satisfaction rate of 100% among the users. All the users also agreed that the digital repository was useful as it helped them solve the storage and retrieval issues that they had faced prior to its introduction. The research objectives were, therefore, achieved and hopefully, this digital repository will be further improved in future. In time we hope this project will be adopted by other subject departments in the school or by other institutions.

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