

Evaluating Open Educational Resources as an
Affordable Method of Obtaining Curriculum Materials

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Abstract

This design-based research study evaluated using open educational resources (OER) as an affordable curriculum material for homeschool teachers. The target demographic is Utah homeschool teachers. The instructional problem, “Due to the lack of knowledge when it comes to obtaining homeschool curriculum materials, many homeschool teachers may not be aware of the existence of affordable alternatives such as open educational resources when obtaining curriculum resource” guided the research questions. The research questions included the following: (1) How does implementing an e-learning solution focused on OER impact homeschool educators’ perceived knowledge of how to implement the OER in their classrooms? and (2) How would understanding how to implement the OER in their classrooms impact homeschool educators’ perception of using OER sources versus using costly curriculum materials? These questions were addressed by data collection instrument, which consisted of 10 questions targeted at addressing implementation and cost of using open educational resources (OER). The stakeholders included homeschool teachers from a Facebook homeschool teacher group. This is a mixed-method research study, with a convergent data analysis focusing on specific themes. The study concluded that the design of the e-learning intervention would need to be redesigned to target specific grade levels. Additionally, the data collection instrument would need to be reworked. The stakeholders appreciated the knowledge gained, but the implementation methods and time needed to implement OER may not be adequate based on the time constraints placed on homeschool teachers.

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Chapter 1: Introduction

Instructional Problem

Due to the lack of knowledge when it comes to obtaining homeschool curriculum materials, many homeschool teachers may not be aware of the existence of affordable alternatives such as open educational resources when obtaining curriculum resources.

Research Problem

Homeschool teachers are faced with the burden and costs associated with curriculum materials. When it comes to deciding what is important when it comes to household duties such as childcare, food supplies, and technology needs, homeschool teachers may be forced to choose between living expenses and purchasing curriculum materials (Hartwell et al., 2021). The goal is to provide a solid homeschool experience for their children. If awareness of open educational resources as an affordable alternative to curriculum materials is addressed, homeschool teachers may not be knowledgeable on how to implement the technology in their classrooms.

Research Purpose

Current methods of obtaining homeschool curriculum materials include paying hundreds or thousands of dollars, utilizing home and public libraries, and attending public education. In 2019, UNESCO released its “Recommendation on Open Education Resources: Supporting universal access to information through quality open learning materials”. This study will focus on educating homeschool teachers so that they have the knowledge to implement open educational resources in their classrooms.

Research Question(s)

This research project will be guided by the following questions:

1. How does implementing an e-learning solution focused on OER impact homeschool educators' perceived knowledge of how to implement the OER in their classrooms?
2. How would understanding how to implement the OER in their classrooms impact homeschool educators' perception of using OER sources versus using costly curriculum materials?

Chapter 2: Literature Review

Introduction to the Literature Review

The literature about homeschooling and open educational resources (OER) is vast. Therefore, the homeschooling research is centered on the researcher's home state of Utah. Open educational resources research centered on emerging issues, and recommendations made by organizations focused solely on OER research. Themes addressed in the literature include the impact of COVID-19 on Education, homeschooling options, developing open education practices (OEP), and improving equity and inclusion in open education practices.

Impact of COVID-19 on Education

During the recent outbreak of COVID-19, many schools were forced into online teaching in response to the school closure. This left teachers with a very narrow window to prepare for the new delivery format. The constraints and lack of resources led to challenges for teachers in delivering instruction. This impact also had emotional and financial implications relating to childcare, work-life balance, and technology. With school closures, schooling moved online adding to concerns about having enough devices for students at home and access to a stable internet connection (Hartwell, 2021; Tang et al., 2021).

Homeschool teachers Have a Variety of Options

Homeschool teachers have a variety of curriculum options, such as purchasing expensive materials, using religious themes, and affordable methods such as part-time public school. Libraries provide support for homeschoolers, distributing free materials, and enable Wi-Fi hotspots to users (Gomez, 2022). This was helpful during COVID-19 school closures, as non-homeschool families were also forced online, and some chose to homeschool (Gubnitskaia & Smallwood, 2020; Murphy, 2012).

Homeschooling is a personal choice, often embedded in cultural and religious beliefs. For those who homeschool, Facebook and other support groups can help provide additional resources. Pod-learning is a small group of homeschooled students being taught by a private teacher in their neighborhood. The cost is split among families. Homeschooling programs can also be supplemented by public STEM programs, art classes, and field trips (Hamlin & Peterson, 2022; Jolly & Matthews, 2020).

Developing and Recommending Open Educational Practices (OEP)

Using open educational practices (OEP) has the potential to provide outside connections to the learning taking place by making connections to communities and families outside of classrooms. This helps online learning by expanding learning boundaries. It is theorized that by sharing experiences, learning is personalized and thereby increases equity. Open educational practices (OEP) used in this context can be defined as “practices which support the re (use) and production of open educational resources (OER) through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning paths” (Roberts, 2022). OER is also recognized by Educause’s Horizon Report (2020) on educational technologies as an emerging technology.

According to UNESCO (2019), Open Educational Resources (OER) are “learning, teaching and research materials in any format and medium that reside in the public domain or are under the copyright that have been released under an open license, that permits no-cost access, re-use, re-purpose, adaptation and redistribution by others.” OER provides instructors with multiple options and resources including a variety of easily accessible and open materials. OERs help change the educational landscape by adapting, enhancing, or improving curriculum (UNESCO, 2019). This helps show the potential and opportunity for improved outcomes by

encouraging the integration of various teaching methods and assessments. Global educational organizations such as the Community College Consortium for Open Educational Resources (CCCOER), and the University of Minnesota's Open Textbook Library are developing and providing a wealth of open educational resources for use by teachers, students, and academics. These resources are free of licensing, and other royalties (Educause, 2020).

The creation and sharing of OER improve equity and inclusion of educational materials in underserved communities. However, the community lacks an understanding of the technological challenges faced when implementing OER (Levin, 2018). The expectations about the role of technology in teaching and learning continue to evolve rapidly. There is a parity issue when it comes to access to technology and tools among those wanting to implement OER. Therefore, requirements need to be developed, such as file types, platforms, and improved standards (Sommer et al., 2022).

Improving Equity and Inclusion in Open Educational Practices

Most students and faculty have never heard of OER, leading to a lack of knowledge on what is available or how to use them. Teachers require proper support and tools to help with student outcomes when it comes to using open educational practices. However, lack of training and support can hinder the flexibility OER provides (Levin; 2018; Hewlett Foundation, 2020). Barriers such as lack of institutional support and teachers' expertise and willingness in adopting OER are some reasons for lack of acceptance. To overcome these barriers, open educational practices (OEP) are being introduced in teacher preparation and professional development programs to increase teacher awareness of OER (Tang et al., 2021). For example, awareness of OER and the potential of integrating OER in classrooms improved after deliberating the selection, adapting/creating, and then publishing OER (Tang, 2021). Providing teachers with

examples and best practices helped to improve awareness and overall technology acceptance.

Outside of increasing awareness, it is unclear if OEPs can improve teachers' acceptance of OER in classrooms (Sommer et al., 2022; Veletsianos, 2021).

OERs allow students who cannot afford textbooks with free and open access to educational resources. This cost-cutting measure creates the opportunity for increased equity in underdeveloped areas. However, these population areas may not effectively adapt OER due to the digital divide. The cost of commercial textbooks can be a burden for students, along with impact of such costs and the difficult environment that students face such food and housing costs, and occasional homelessness. The costs also come with other issues, such as students do not have access to texts on the first day of the course. This leads to decreased educational outcomes (Tang, 2021; Veletsianos, 2021).

As a solution to equity and inclusion, libraries could advance and advocate for open education practices (OEP) and the adoption of open textbooks. Colleges, and institutions could also devise policies to support, incentivize, and reward adoption of OER and open practices. OERs in the online environment provide elements to support student learning experiences such as turning learning activities into more interactive experiences. However, since these experiences may not be curated with the guidance of a professional educator, students will need to engage in advanced learning strategies such self-reflection and goal-setting (Sommer et al., 2022; Veletsianos, 2022). More research is needed on OEP and OER to determine student success and engagement practices (Hewlett Foundation 2020).

Conclusion

As COVID-19 impacted education, organizations and researchers emerged to place an emphasis on developing practices and recommendations for the use of open educational

resources. Literature shows that OER does improve outcomes and equity when it comes to use in digital and online education. However, the digital divide and technology acceptance issues remain when it comes to developing open educational practices. Spreading awareness of OEP and improving acceptance rates remain a concern. More research is needed to assess methods of improving acceptance, equity, and inclusion.

Chapter 3: Research Methodology

Instructional Problem Overview

The instructional problem “due to the lack of knowledge when it comes to obtaining homeschool curriculum materials, many homeschool families may not be aware of the existence of open education resources as an affordable method in obtaining curriculum resources” is based on research gathered from case studies of the prospective demographic, Utah homeschool teachers gathered from university research studies. The data gathered is relevant to this research project because it targets homeschooling in Utah specifically, and the researcher used the target data to observe demographics specific to Utah homeschooling.

Potential Solutions

The researcher evaluated various solutions to addressing the instructional problem by looking at themes from the literature review and evaluating challenges still faced to implementing OER in the classroom.

Solution 1

Solution 1 focused on creating an e-learning course showing homeschool teachers how to utilize library resources for finding affordable curriculum materials. Libraries provide free databases, textbooks for checkout, and even videos for checkout. The lack of knowledge could be an unfamiliarity with what libraries could offer homeschool teachers. This solution utilizes the library as an affordable method of obtaining curriculum materials.

Digital tools would include a computer or laptop, internet access, an LMS such as Moodle and an e-learning design tool such as Articulate 360 or Canvas. The LMS would host the course, and depending on the LMS chosen, the e-learning could be designed within the LMS, or a rapid-design tool would be needed. This solution requires access to a computer and the internet.

As an advantage to this solution, learners have an opportunity to learn more about how the library could be used to support learning. The solution would familiarize learners with various research databases and catalogues that could be used in various curriculum strategies.

One challenge that could pose an issue to implementing this solution is that not all library database sources are free. They could require a subscription service or other organization affiliation. This presents a problem to equity for learners. To address this the following steps could be taken:

1. Provide only free sources within the module. This would improve equity by not requiring learners to purchase additional materials.
2. Provide a list of free subscriptions or a list of educational organizations (which the learner may be part of) that provide extra supports for accessing research databases.

Solution 2

Solution 2 focused on creating an e-learning course that focuses on technology acceptance in open educational practices. Based on the literature reviewed, technology acceptance remains an important barrier when looking at institutional and faculty support. By showing how emerging technologies can assist in the affordability of curriculum materials, technology acceptance is approached in a careful and meaningful way. This also addresses the instructional problem by addressing the affordability problem by using emerging technologies.

Digital tools would include a computer or laptop, internet access, an LMS such as Moodle and an e-learning design tool such as Articulate 360 or Canvas. The LMS would host the course, and depending on the LMS chosen, the e-learning could be designed within the LMS, or a rapid-design tool would be needed. This solution requires access to a computer and the internet.

The one big advantage to this solution is that it increases awareness of open educational practices. The solution would help with the lack of knowledge and technology acceptance issues by introducing the emerging technology to teachers. By showing how outcomes are increased, the solution would help lower material costs and help with inclusion strategies.

One challenge that this solution faces is support from educational institutions. This is also mentioned in Chapter 2: Literature Review. This becomes a barrier to increasing acceptance of OEP. The following steps could be taken to address this:

1. Providing open education examples for teachers just starting with OEP. This could provide example tools and knowledge for those unsure of the benefits of using the technology.
2. Provide a case study or two of the technology being used in education.

Solution 3

Solution 3 would focus on creating an e-learning course module showing homeschool teachers how to utilize open educational resources, where to find them, and how to utilize various OER databases. This module would also explain licensing, reuse strategies and sharing of materials. As the instructional problem focuses on affordable curriculum materials, this module would address the problem by introducing OER as an affordable method.

Digital tools would include a computer or laptop, internet access, an LMS such as Moodle and an e-learning design tool such as Articulate 360 or Canvas. The LMS would host the course, and depending on the LMS chosen, the e-learning could be designed within the LMS, or a rapid-design tool would be needed. This solution requires access to a computer and the internet.

The one big advantage of this solution is that it increases knowledge of open educational resources. As shown in the instructional problem, lack of knowledge plays big role in how

curriculum materials are chosen by homeschool teachers. This would help show an affordable method of obtaining curriculum materials.

One possible challenge to this solution is that not all homeschool teachers may have access to the internet. If the teacher is using print-based materials only, then an online course may be a hindrance to how they obtain materials. The following step could be taken to help solve this challenge:

1. Provide a PDF and/or print version of the course along with OER lists and hyperlinks to the materials. Many OERs can be printed, such as free textbooks. This would provide a method that only requires the teacher to go online to obtain the material but does not require a sustained online presence.

Chosen Solution to Instructional Problem

To meet the criteria of affordability in obtaining homeschool curriculum materials, the researcher focused on “creating a course module showing homeschool teachers how to utilize open educational resources, where to find them, and how to utilize various OER databases.” This module would also explain licensing, reuse strategies and sharing of materials. As the instructional problem focuses on affordable curriculum materials, this module would address the problem by introducing open educational practices (OEP) such as open educational resources (OER) as an affordable method. The researcher reviewed all solutions that mentioned in the previous sections to come to a solution that would help solve the instructional problem. Exploring the “utilization of libraries” and “technology acceptance with emerging technologies” to address the affordability barrier would solve some of the issues, it would not solve all of them. For example, not all library database sources are free. This would require an examination of library databases and resources to determine which ones are free. Focusing on technology acceptance also

requires support from academic institutions. This research study is focused on homeschool teachers exclusively. Therefore, the chosen solution will focus on educating homeschool teachers so that they have the knowledge to implement open educational resources in their classrooms.

E-Learning Unit of Instruction Description

Title: Creating a Home School Curriculum Using Open Educational Resources (OER)

Module Overview: This module will introduce homeschool teachers to OER, provide resources for finding OERs, provide tutorials on how to attribute OERs, and how assess OERs for quality and accessibility.

Target audience: Utah Homeschool Teachers

The goal of this module is that homeschool teachers will be able to implement open educational resources in their classrooms. The module objectives are as follows:

- Homeschool teachers will be able to identify what OERs are and how to locate them using open and free online databases.
- Homeschool teachers will be able to select proper licensing attributions when utilizing OER in their classrooms.
- Homeschool teachers will be able to evaluate OERs for quality and accessibility using a standards checklist
- Homeschool teachers will be able to choose curriculum materials that can be used in creating an earth science lesson on “global temperature changes and its effects on regional climates.”

For formative assignments, each page also has a “reflection on learning” section that provides extra resources to study and reflect on. These provide a formative assessment that the learner can use to gauge their learning. Formative assessments in the course include:

1. Reading a report discussing 7 OER myths in North America and asking the learner to find free resources and open websites. They will then reflect on which resources are open and which ones are not.
2. Taking a quiz on OER and open-source attributions.
3. Asking users to reflect on the publishing of open resources and decide what creative commons license they would use.
4. The learner will choose two different OERs that could be used in a course, and will assess licensing and usage rights, quality of materials, and finally the learner will use a standards checklist to assess accessibility of their chosen OERs. The learner will recommend any changes that need to be made to the OERs based on their evaluations.
5. Learners will find an OER that they can adapt for a course. They will then adapt to their needs, taking into consideration localization, accessibility, quality, and accuracy.

The summative assessment asks the learner to create an Earth/Physical science lesson on “Measuring global temperature changes and its effects on regional climates”. They will be able to use textbooks, videos, simulations, infographics, etc. The curriculum choices beyond the topic are left up to the teacher. A rubric is provided for them to assess their course design and materials. They are also provided themes to focus on as they create their lesson.

Learner Needs

Homeschool teachers enjoy the flexibility of teaching when they want and implementing a self-paced environment for their students. They also enjoy being able to interact with other homeschool teachers. Outside of the classroom, they rely on their Facebook and other social groups to provide support.

Considering these needs, the module is self-paced with no due dates to account for the flexibility needed when homeschooling their students. The module includes a discussion board with theme prompts that help to get the discussion going. That accounts for the social aspect. As this module is aimed at homeschool teachers, the target social group remains the same.

E-Learning Tools

The e-learning tools used in the module are the Canvas LMS environment and the HTML markup tool within the Canvas authoring environment. The Canvas LMS will allow the module to be self-paced and be able to host the e-learning module titled, “Creating a Home School Curriculum Using Open Educational Resources (OER)”. The markup tool allowed the researcher to customize module content such as allowing links to open in a new tab. This is helpful when learners are referencing OER checklists and evaluating quality and accessibility standards.

Addressing the Instructional Problem

The module addresses the instructional problem by introducing OER as an affordable method of obtaining curriculum materials. In addition, learners are educated on what OERs are, and how to locate them, and are even provided open databases containing OERs. Learners are also given knowledge on how copyright and creative licenses help with the use of OERs, and the various restrictions placed on the licenses. The knowledge is assessed with a quiz within the module. Lastly, learners are educated on how to adapt OERs to their student’s needs. Examples of how to adapt various OER types are presented, and a learning activity focused on finding a suitable OER is available for learners to reflect on their learning.

Research Methodology

Method

The researcher has chosen to conduct a mixed-methods research study. The data collection needed to obtain the answers to the research questions are both qualitative and quantitative. The justification of each type of data collected for each question is explained below.

Research question 1 focuses on educators' knowledge of how to implement the OER in their classrooms. This question will focus on prior knowledge and experience with OER. This is a quantitative question, as it asks about perceived knowledge of implementing OER in the classroom. The question will focus on prior knowledge compared to gained knowledge by implementing the e-learning solution.

Research question 2 focuses on perceived cost versus using OER. This is a quantitative and qualitative question that focuses on the cost of using OER sources versus using costly curriculum materials. The quantitative portion will focus on using costly curriculum materials, while the qualitative portion will focus on perceived cost of OER and if money is saved.

Participants/Stakeholders

The setting of the study includes the following: The target stakeholder group is Utah homeschool teachers. Homeschool teachers are responsible for obtaining curriculum materials, with their education level varying from high school graduates to post-graduate level. Their age group varies from 18 to over 70. It should be noted to help eliminate bias, anyone with responsibility for obtaining homeschool materials could be included as a potential stakeholder, such as librarians, private organizations offering services, and pod-learning groups. By including these other groups in the stakeholder grouping, the broader homeschool community will have access to the research being conducted. The setting is virtual, as the target participant group

varies by city. Availability of participants may be a factor in how data is collected and may affect the sampling size, and will be discussed below.

Sampling will be conducted based on the identified stakeholders. In this case, the target demographic is Utah homeschool teachers and others who are responsible for obtaining curriculum materials for students. The sampling size will be at least 5 with no more than 10. This will ensure that enough data is collected to make observations and determine results. The sampling technique is convenience sampling, as the researcher aims to find willing participants based on the demographic data explained above.

Data Collection Instrument(s)

The data will be collected via a post-intervention survey. Survey questions for the mixed-methods design-based research include were based on the research questions discussed in Chapter 1: Introduction:

1. How does implementing an e-learning solution focused on OER impact homeschool educators' perceived knowledge of how to implement the OER in their classrooms?
2. How would understanding how to implement the OER in their classrooms impact homeschool educators' perception of using OER sources versus using costly curriculum materials?

The data collection instrument aims to answer research question 1 by asking stakeholders if they have heard of OER based on where they currently obtain their curriculum materials. The survey also asks about homeschool teachers' experience and whether they agree with various statements about implementing OER. Implementing OER is also mentioned in survey questions by asking about borrowing and sharing educational resources. These first 4 questions are aimed at answering survey question 1 by targeting previous knowledge,

feelings on OER, and feelings on sharing and borrowing of resources. The questions seek to provide data on how gaining knowledge of how to implement the OER in their classrooms will affect homeschool teachers implementing OER in their classrooms?

The data collection instrument also aims to answer research question 2 about implementing OER versus other costly curriculum materials. Questions 5 through 7 ask about the cost of materials and if stakeholders think they will save money using OER. By asking how much they spend and if they think they will save money, the researcher aims to gauge the perception of paying for materials versus using OER. Question 7 focuses on a qualitative measure by asking for comments on the hidden costs associated with OER. These questions provide data on homeschool educators' perception of using OER sources versus using costly curriculum materials.

Finally, questions 8 and 9 ask the stakeholder about implementing OER and the kind of support they would need to implement OER. Question 10 is a comment box. These last three questions are aimed at providing data for further research and improvements.

Data Analysis Technique(s)

As this will be a mixed-methods research study, time is a consideration in data collection and analysis. Therefore, the convergent design process will be used in collecting quantitative and qualitative data. The data will be analyzed concurrently using a one phase design process. This will also allow the researcher to gather multiple viewpoints on the questions being asked. The researcher chose this process because data collection instrument is one survey and will be data will be collected at one time. Each dataset can then be compared, and any correlations noted. The convergence or divergence between the research will be discussed in further detail in the results found.

Based on data analysis technique chosen, the following steps will be taken:

1. Collection via data collection instrument will gather quantitative and qualitative data.
2. Data analysis of quantitative data by using descriptive statistics. This will focus on frequency distribution using charts and tables to distinguish the datasets using percentages and numbers.
3. Data analysis of qualitative data by using thematic analysis. This will look at selected themes pulled from the collected data. This will be from comments and any other non-numerical data within the data collection instrument.
4. Data merging of any significant quantitative variables with themes identified within the qualitative analysis.
5. Data interpretation by discussion of converging or diverging themes. Evaluate how data either validates or invalidates the research questions. The data will be used to make a hypothesis on why the issues are apparent in the data and propose solutions or further research.

The convergent mixed-methods will allow the researcher to determine if the data collected validates or invalidates the research questions asked in Chapter 1: Introduction.

Expected Timeline

Start date: 04/20/2023

End date: 05/31/2023

The dates above focus on when the research problem was first synthesized by identifying the start date. The end date is when the researcher aims to have all data collected and analyzed.

The dates allow time for consent forms, time for participation with the e-learning interventions and conducting analysis of data collected.

Data Security and Confidentiality

Participation in the research study will be strictly confidential and no identifying data will be recorded during the study. Hyperlinks to the intervention and post-module survey are private and will only be sent once the participant agrees to take part in the research. The post-module survey is anonymous, and no identifying data will be collected.

During the data analysis portion, all data is kept in the researchers' possession, and analysis will be conducted on a private computer system. All data collected from the study will be securely stored in a password protected section of the researchers' hard-drive. All paper data collected will be stored in a locked cabinet. If any data is made public, any identifying information will be redacted from publication. This includes if the study results are made public. Data will be deleted from the researcher's hard drive and papers shredded following the three-year storage period.

Conclusion

After identifying the instructional problem, the researcher evaluated various methods that could be used to solve the instruction problem. Among the several evaluated, the researcher focused on "creating a course module showing homeschool teachers how to utilize open educational resources, where to find them, and how to utilize various OER databases." The module addresses the instructional problem by introducing OER as an affordable method of obtaining curriculum materials.

The research study takes a mixed-methods approach as both quantitative and qualitative data will be collected. This method will allow the two research questions to be answered using a

convergent design process where all data will be analyzed concurrently. Data will be collected via a 10-question post-module survey.

The proposed dates for the study are 04/20/2023 through 05/31/2023. Participation in the research study will be strictly confidential and no identifying data will be recorded during the study. All data collected from the study will be securely stored in a password protected section of the researchers' hard-drive. Data will be deleted following a three-year period and any papers collected will be shredded.

Chapter 4: Results

Summary of Research

Instructional Problem Overview

The instructional problem “due to the lack of knowledge when it comes to obtaining homeschool curriculum materials, many homeschool families may not be aware of the existence of open education resources as an affordable method in obtaining curriculum resources” is based on research gathered from case studies of the prospective demographic, Utah homeschool teachers gathered from university research studies. The data gathered is relevant to this research project because it targets homeschooling in Utah specifically, and the researcher used the target data to observe demographics specific to Utah homeschooling.

Research Problem

Homeschool teachers are faced with the burden and costs associated with curriculum materials. When it comes to deciding what is important when it comes to household duties such as childcare, food supplies, and technology needs, homeschool teachers may be forced to choose between living expenses and purchasing curriculum materials (Hartwell et al., 2021). The goal is to provide a solid homeschool experience for their children. If awareness of open educational resources as an affordable alternative to curriculum materials is addressed, homeschool teachers may not be knowledgeable on how to implement the technology in their classrooms.

Research Purpose

Current methods of obtaining homeschool curriculum materials include paying hundreds or thousands of dollars, utilizing home and public libraries, and attending public education. In 2019, UNESCO released its “Recommendation on Open Education Resources: Supporting universal access to information through quality open learning materials”. This study will focus

on educating homeschool teachers so that they have the knowledge to implement open educational resources in their classrooms.

Research Question(s)

This research project was guided by the following questions:

1. How does implementing an e-learning solution focused on OER impact homeschool educators' perceived knowledge of how to implement the OER in their classrooms?
2. How would understanding how to implement the OER in their classrooms impact homeschool educators' perception of using OER sources versus using costly curriculum materials?

Participants/Stakeholders

The stakeholder group is Utah homeschool teachers. Homeschool teachers are responsible for obtaining curriculum materials, with their education level varying from high school graduates to post-graduate level. Their age group varies from 18 to over 70. It should be noted to help eliminate bias, anyone with responsibility for obtaining homeschool materials could be included as a potential stakeholder, such as librarians, private organizations offering services, and pod-learning groups. By including these other groups in the stakeholder grouping, the broader homeschool community will have access to the research being conducted. The setting is virtual, as the target participant group varies by city.

The sampling was conducted based on the identified stakeholders. In this case, the target demographic is Utah homeschool teachers and others who are responsible for obtaining curriculum materials for students. The sampling size was 5 participants. This ensured that enough data was collected to make observations and determine results. The sampling technique

is convenience sampling, as the researcher aimed to find willing participants based on the demographic data explained above.

Data Collection Instrument(s)

The data was collected via a post-intervention survey. Survey questions for the mixed-methods design-based research include were based on the research questions discussed in Chapter 1: Introduction.

The data collection instrument aimed to answer research question 1 by asking stakeholders if they have heard of OER based on where they currently obtain their curriculum materials. The survey also asks about homeschool teachers' experience and whether they agree with various statements about implementing OER. Implementing OER is also mentioned in survey questions by asking about borrowing and sharing educational resources. These first 4 questions are aimed at answering survey question 1 by targeting previous knowledge, feelings on OER, and feelings on sharing and borrowing of resources. The questions seek to provide data on how gaining knowledge of how to implement the OER in their classrooms will affect homeschool teachers implementing OER in their classrooms?

The data collection instrument also aims to answer research question 2 about implementing OER versus other costly curriculum materials. Questions 5 through 7 ask about the cost of materials and if stakeholders think they will save money using OER. By asking how much they spend and if they think they will save money, the researcher aims to gauge the perception of paying for materials versus using OER. Question 7 focuses on a qualitative measure by asking for comments on the hidden costs associated with OER. These questions provide data on homeschool educators' perception of using OER sources versus using costly curriculum materials.

Finally, questions 8 and 9 ask the stakeholder about implementing OER and the kind of support they would need to implement OER. Question 10 is a comment box. These last three questions are aimed at providing data for further research and improvements.

Data Analysis Technique

As this will be a mixed-methods research study, time was a consideration in data collection and analysis. Therefore, a convergent design process was used in collecting quantitative and qualitative data. The data was analyzed concurrently using a one phase design process. This allowed the researcher to gather multiple viewpoints on the questions being asked. The researcher chose this process because data collection instrument is one survey and will be data will be collected at one time. Each dataset can then be compared, and any correlations noted. The convergence or divergence between the research will be discussed in further detail in the results found.

Based on analysis technique chosen, the following steps were taken to analyze the data collected:

1. The data collection instrument will gather quantitative and qualitative data.
2. Analysis of quantitative data by using descriptive statistics. This focused on using charts and/or tables to distinguish the datasets using percentages and numbers.
3. Analysis of qualitative data by using thematic analysis. This will look at selected themes pulled from the collected data. This will be from comments and any other non-numerical data within the data collection instrument.
4. Data merging of any significant quantitative variables with themes identified within the qualitative analysis.

5. Data interpretation by discussion of converging or diverging themes. The data will be used evaluate how data either validates or invalidates the research questions. The data will be used to make a hypothesis on why the issues are apparent in the data and propose solutions or further research.

The convergent mixed-methods allowed the researcher to determine if the data collected validates or invalidates the research questions asked in Chapter 1: Introduction. A summary of the results is described in the next section.

Summary of Results

As mentioned above, data is gathered from the post-intervention survey and comments given by participants. A total of 5 homeschool teachers participated in the study. The survey consisted of 10 questions and was conducted using Survey Monkey. In addition, after participants were done, member-checking was conducted with those who responded to the further gather any comments. This allowed for observations and memos to be gathered for analysis on the e-learning intervention.

Post-Intervention Survey

Question 1 asked, “Based on where you currently obtain your curriculum materials from, are open educational resources mentioned by the support groups, organizations, or companies?

(Select the best answer).” The results were as follows:

- 1 (20%) responded “No.”
- 2 (40%) responded “Yes.”
- 2 (40%) responded I use a paid curriculum provider; therefore, they would not provide free materials.

Other possible responses for question 1 included, “they have mentioned OER, but I never investigated the technology.”

Question 2 asked, “Based on your experience as a homeschool teacher, which of these do you agree with, when considering the use of OER in the classroom? (Select the best answer).”

The results were as follows:

- 2 (50%) responded “Increase learners’ interest in the subjects taught.”
- 1 (25%) responded “Increase learners’ satisfaction with the learning experience.”
- 1 (25%) responded “Lead to improved student grades.”
- 1 (25%) responded “Develop learner’s independence and self-reliance.”
- 3 (75%) responded “Increase learners’ experimentation with new ways of learning.”
- 1 (25%) responded “Increase collaboration among learners.”
- 3 (75%) responded “Increase learners’ enthusiasm for future study.”
- 3 (75%) responded “Lead to learners becoming interested in a wider range of subjects than before they used OER.”
- 3 (75%) responded “Allow me to better accommodate diverse learner needs.”

Other possible responses for question 2 included, “Increase learners’ participation in class discussions”, “Help me build learner confidence”, “Increase learner engagement with lesson content.”

Question 3 asked, “How do you feel about “BORROWING” educational resources? (Select the choices you feel strongly about)” The results were as follows:

- 1 (20%) responded “Borrowing resources will save me time and money.”
- 1 (20%) responded “I have trouble finding high quality resources.”

- 2 (40%) responded “It is not easy to adapt the resources to meet my curriculum needs.”
- 1 (20%) responded “I don’t really know where to look for OER and open materials.”

Other possible responses for question 3 included, “I only use resources from trusted sources”, “I’d only use resources recommended by colleagues, family, and friends.”, “I prefer to work independently and source my own resources.”

Question 4 asked, “Indicate how do you feel about SHARING your educational resources? (Select the choices you feel strongly about). The results were as follows:

- 4 (80%) responded “I believe in open education and open materials.”
- 1 (20%) responded “I’d be pleased for someone to adapt my resources.”

Other possible responses for question 4 included, “Sharing resources will develop my reputation as a good teacher”, “I would need to be recognized as the creator”, “I have no support for making materials open to others”, “I have concerns over licensing rights”, “Why give away resources to other institutions and organizations?”, “I don’t wish to give other teachers the advantage of using my resources”, “I don’t wish to share resources that I’ve spent time preparing and creating.”

Question 5 asked, “How much do you currently pay to obtain materials? (Select the best answer). The results were as follows:

- 1 (20%) responded “0 - 25”
- 2 (40%) responded “26-100”
- 1 (20%) responded “101-250”
- 1 (20%) responded “251-500”

Other possible responses for question 5 included, “501-1000”.

Question 6 asked, “Do you think you will save money by using open educational resources?” The results were as follows:

- 4 (80%) responded “Yes.”
- 1 (20%) responded “Don’t know (please comment)”. The comment is as follows, “I only use curriculum if I see a need and generally if there is a need I am looking for something specific. If I were referred to a specific resource and it happened to be OER then that would be great, but I don't really use organized lesson plans very much in our homeschool.”

Other possible responses for question 6 included, “No”.

Question 7 asked, “Do you think there are hidden costs associated with the use of OER? (Yes or No). If yes, please comment.” The results were as follows:

- 5 (100%) responded “No.”

Other possible responses for question 7 included, “Yes”.

Question 8 asked, “What support and resources could help you with implementing the use of OER? (Select all that apply)” The results were as follows:

- 3 (60%) responded “Technical assistance.”
- 2 (40%) responded “Clarity over copyright licensing.”
- 5 (100%) responded “More information about where and what kinds of materials are available.”

Question 9 asked, “Please indicate the reasons why you would not implement OER.” The results are as follows:

- 1 (20%) responded “Materials are already inexpensive.”

- 3 (60%) responded “Materials for my classes are unavailable through OER.”
- 4 (80%) responded “I do not have time.”

Question 10 asked, “Are there any other comments you would like to make about the module or open educational resources?” The results are as follows:

- Comment 1: “These can be very helpful to those who don't where to look for resources not as easy to access.”
- Comment 2: “I think there should have been more of a focus on how to search for relevant material and less focus on the licensing etc. The module seemed like it was written for classroom/professional use who does not homeschool/personal use. Why would a homeschooler have to site references if they were just using material to teach their own kid? It isn't like sitting down and making a lesson plan, I just find interesting things and share them with the kids.”

Member-Checking Comments

One participant described their experience with the following quote “It was good information and straightforward. I took two days to get through it, because there was a lot. It was geared towards educators at higher levels. My son is 10, and I purchase all the curriculum we use because it doesn't require prep time for me. However, I see OER resources being helpful in the future. My older child is studying engineering at university, and I was surprised that she hasn't had to purchase very many textbooks like I did in college. Perhaps her professors are utilizing these types of resources. Thank you for the opportunity to learn something.”

Another participant described their experience with the following quote “I went through the modules but after looking through the OER links for the assignment I couldn't find anything that I would want to use as a resource for a homeschool. I was looking for sources that addressed

both sides of the climate change/ population growth issue but couldn't find anything. Also, searching through all the material seemed way more daunting of a task than I have time for as a homeschool parent. It would be much easier just to look up videos on YouTube or check out a stack of books from the library. I am wondering how familiar you are with homeschooling, as the module seemed more geared towards a professional setting. It didn't seem very applicable to a homeschool parent."

The last participant that commented had this to say: "I like having the curriculum options available with OER. Unfortunately, OER might not work with every situation with time schedules and learning preferences."

Visual Representation of Data

Figure 1

Question 1

Based on where you currently obtain your curriculum materials from, are open educational resources mentioned by the support groups, organizations, or companies? (select the best answer)

Answered: 5 Skipped: 0

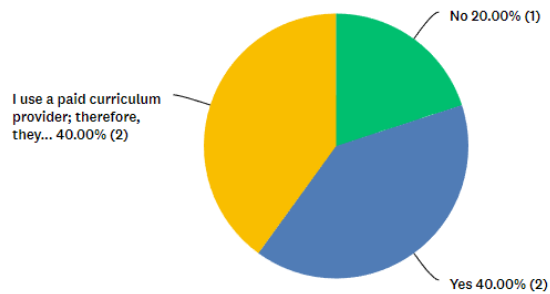


Figure 2

Question 2

Based on your experience as a homeschool teacher, which of these do you agree with, when considering the use of OER in the classroom?

Answered: 4 Skipped: 1

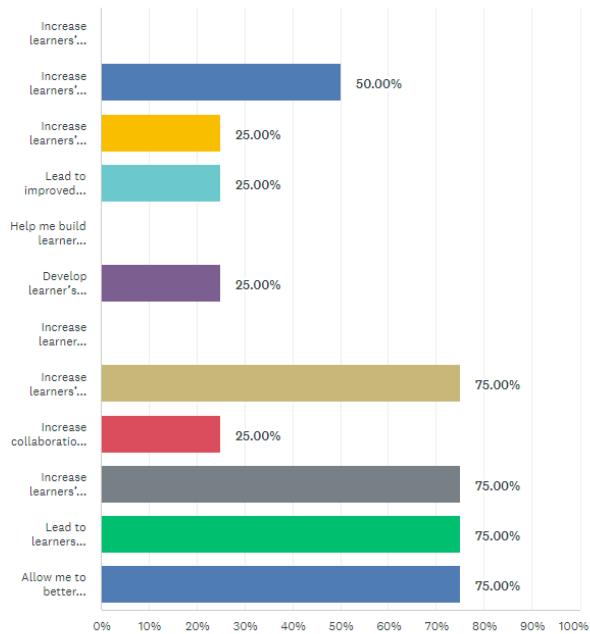


Figure 3

Question 3

How do you feel about “BORROWING” educational resources? (Select the choices you feel strongly about)

Answered: 5 Skipped: 0

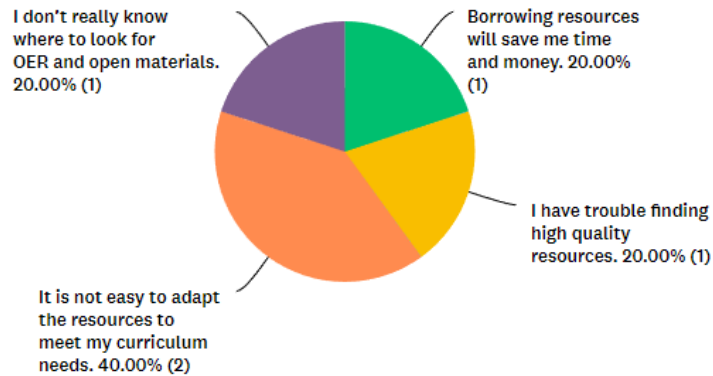


Figure 4

Question 4

Indicate how do you feel about SHARING your educational resources? (Select the choices you feel strongly about)

Answered: 5 Skipped: 0

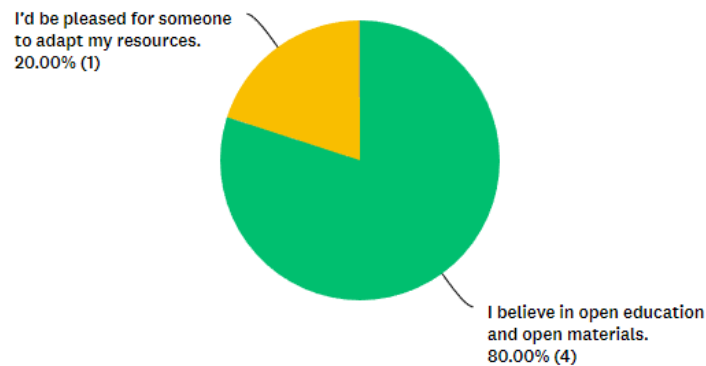


Figure 5

Question 5

How much do you currently pay to obtain materials? (Select the best answer)

Answered: 5 Skipped: 0

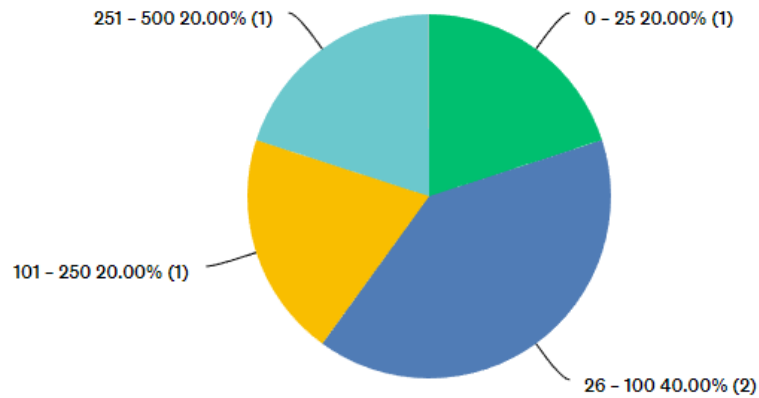


Figure 6

Question 6

Do you think you will save money by using open educational resources?

Answered: 5 Skipped: 0

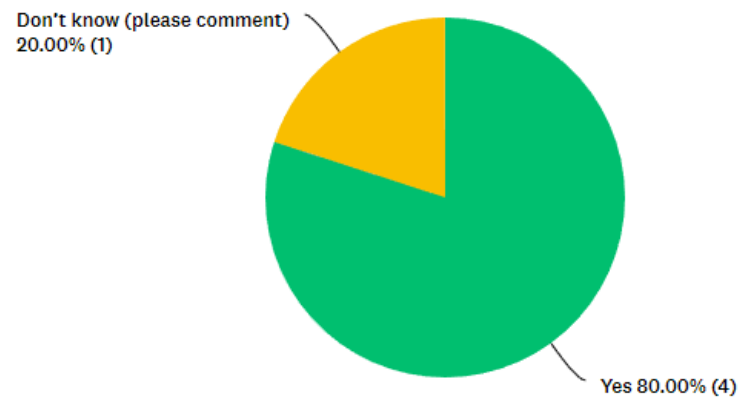


Figure 7

Question 7

Do you think there are hidden costs associated with the use of OER? (Yes or No). If yes, please comment.

Answered: 5 Skipped: 0

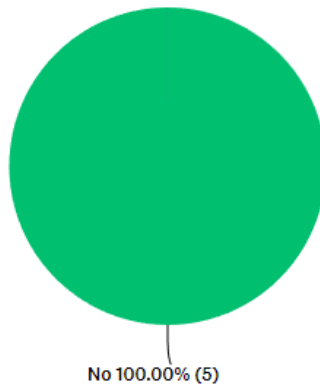


Figure 8

Question 8

What support and resources could help you with implementing the use of OER? (Select all that apply)

Answered: 5 Skipped: 0

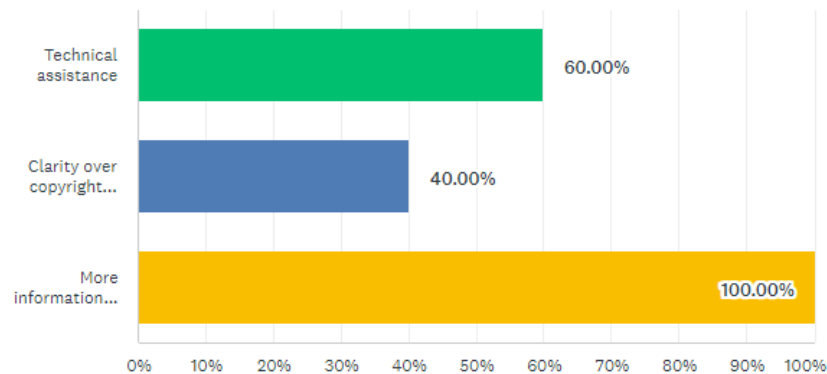
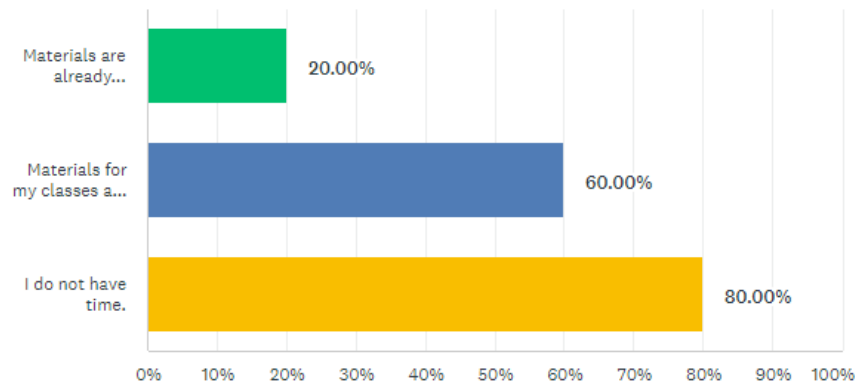


Figure 9

Question 9

Please indicate the reasons why you would not implement OER.

Answered: 5 Skipped: 0



Interpretation of Data

This research project was guided by the following questions:

1. How does implementing an e-learning solution focused on OER impact homeschool educators' perceived knowledge of how to implement the OER in their classrooms?

2. How would understanding how to implement the OER in their classrooms impact homeschool educators' perception of using OER sources versus using costly curriculum materials?

Descriptive Statistics

The statistical analysis percentages listed below are based on a total of 5 participants that took the post-intervention survey.

- At least 40% of the survey participants knew about OER.
- 50% of the survey participants responded that OER will increase interest in subjects taught in the classroom.

- 75% of the survey participants responded that OER will Increase learners' experimentation with new ways of learning.
- 75% of the survey participants responded that OER will "Increase learners' enthusiasm for future study."
- 75% of the survey participants responded OER will "Lead to learners becoming interested in a wider range of subjects than before they used OER."
- 75% of the survey participants responded OER will "Allow me to better accommodate diverse learner needs."
- While 20% of participants agree that borrowing resources will save time and money, the same 20% say they have trouble finding high quality resources.
- 40% of the survey participants say that it's not easy to adapt the resources to their needs. It could be that finding resources is difficult, as 20% of participants answered that they don't know where to look.
- 80% of the survey participants say that they believe in open educational resources.
- It looks like homeschool curriculum can cost into the hundreds based on survey responses. The highest cost was 251-500.
- 80% of the survey participants think they can save money using OER, while 20% were unsure and commented that, "I only use curriculum if I see a need and generally if there is a need I am looking for something specific. If I were referred to a specific resource and it happened to be OER then that would be great, but I don't really use organized lesson plans very much in our homeschool." 100% think there are no hidden costs.
- As far as implementing OER, 60% of the survey participants say that support would be needed for technical assistance, 40% say copyright licensing needs more clarity, and

finally 100% say that more information is needed on what types of OER material is available for homeschoolers.

- As for why participants would not implement OER, 20% say that materials are already inexpensive, and 60% say that materials for their classes if unavailable. 80% say that they do not have time to implement OER.

Thematic Analysis

Increasing learner awareness and participation

Open Educational Resources can increase learner awareness and interest in a variety of subjects. Participant data shows that 75% of respondents believe that OER will increase learner experimentation and enthusiasm with a wider range of subjects that are available due to OER usage. In addition, at least one participant believes that OER will be able to accommodate diverse learner needs.

This theme relates to research question 1 by showing the impact that homeschool educators' perceived knowledge of how to implement the OER in their classrooms varies based on subject matter. I believe that increasing overall subject matter awareness would better address this question and maybe ease any doubts raised in the comments about implementing OER.

Saving Time and Money

At least one participant believes that OER will save time and time, but trouble finding quality OER remains a difficulty due to unfamiliarity of where to look. Based on the data gathered, homeschool curriculum, cost can range into the hundreds, with the highest cost being at least \$500. 80% of participants believe they can save money with 20% commenting that "I only use curriculum if I see a need and generally if there is a need I am looking for something

specific. If I were referred to a specific resource and it happened to be OER then that would be great, but I don't really use organized lesson plans very much in our homeschool.”

Apparently, time could be an issue, as one participant commented that they “purchase all the curriculum we use because it doesn't require prep time for me.” Another commented that “...searching through all the material seemed way more daunting of a task than I have time for as a homeschool parent. It would be much easier just to look up videos on YouTube or check out a stack of books from the library.”

This theme relates to research question 2 by spreading homeschool educators’ perception of using OER sources versus using other costly curriculum materials. However, the definition of what costly means to each homeschool teacher has not been defined for this study. Therefore, the perception that OER saves money may be irrelevant based on the comments above.

Ease of Use

As mentioned in the previous theme, along with saving time and money, ease of use becomes a factor when considering time needed to implement OER in their classrooms. This leads me to consider implementation efforts when using OER. As for why participants would not implement OER, 20% say that materials are already inexpensive, and 60% say that materials for their classes if unavailable, another 80% say that they do not have time to implement OER. Additionally, support systems are needed to help implement and consider OER as a viable curriculum resource.

This theme relates to research question 2 by spreading homeschool educators’ perception of using OER sources versus using other costly curriculum materials. However, when considering the time and effort needed to implement OER, the comments show that building

awareness of OER does not necessarily mean homeschool teachers are open to using such materials. In conclusion, cost saving does not always equate to ease of use.

Supports Needed

As far as implementing OER, 60% say that support would be needed for technical assistance, another 40% say copyright licensing needs more clarity, and finally 100% say that more information is needed on what types of OER material is available for homeschoolers. This is also backed up by the fact that it's not easy to adapt the resources to their needs. Perhaps there is a need to provide a better understanding of what OER types exist various grade levels.

One participant commented on clarity and information, "I think there should have been more of a focus on how to search for relevant material and less focus on the licensing etc. The module seemed like it was written for classroom/professional use who does not homeschool. Why would a homeschooler have to site references if they were just using material to teach their own kid? It isn't like sitting down and making a lesson plan, I just find interesting things and share them with the kids."

Initial Conclusions

I have concluded that I was mistaken in my review of the demographic and target audience, and the interpretation of homeschool teachers based on my research gathered. This led to a biased approach to my study based on knowledge I perceived to be correct, which was flawed. In as such, my research questions were not fully answered, and there is no straight answer on the perception of implementing OER and saving money by using OER.

Understanding Bias

I had recognized that I was biased in my interpretation of how homeschool teachers conduct their classrooms. I had expected homeschool teachers to behave and participate in a

certain way. This led to my research design being put together a certain way to answer my research questions. By focusing on my research study design, the design of intervention suffered due to lack of research data being collected on the intervention. This led to me having to use participant comments to get feedback on my intervention. My correction to minimize this bias is described in the next section.

Minimizing Bias

After considering the bias I had, I set out to follow my data analysis steps and get a clear picture data and obtain any feedback from participants with an open mind. I used member-checking to obtain further comments on my e-learning module. I recorded every comment to consider all viewpoints for my study and e-learning module. This allowed me to further obtain data on homeschool teachers outside of my data collection instrument and information gathered from my literature review. This will also allow me to make recommendations on future iterations, which are explained below.

Proposed Iteration(s) of E-Learning Solution

The research problem was based around homeschool teachers, who are faced with the burden and costs associated with curriculum materials. The e-learning intervention sought to help solve the problem by introducing open educational resources as an affordable curriculum resource. While knowledge of OER was gained by implementing the e-learning solution, it is apparent that there is confusion on how to find, implement, and obtain support for OER in a homeschool setting. This is further complicated by time constraints faced by homeschool teachers. Therefore, a redesign of the e-learning module and data collection instrument is needed to properly attend to needs and learning preferences of homeschool teachers.

E-Learning Module Refinements

For the e-learning module, it appears that it targeted at more advanced learners and higher education. This is an issue, as the module is aimed at homeschooling teachers, who teach K-12 students. The content would have to be modified to target the lower grades and subject levels. The module would need to be modified to make it more manageable for homeschool teachers. To address this, the module could be divided into other subject areas by grade level and subject area. This would involve providing grade specific materials in the sections regarding creating lesson plans, and subject areas.

The module is also a bit lengthy and not necessarily 1 hour, more like 4-8 hours. Time is an issue for homeschool teachers, so having more bite-sized lessons could be an advantage if other subject areas are included. While the module may grow, each subject area could target the hour learning timeframe.

The refinements would help me better understand the specific demographic, homeschool teachers. I had rushed to the conclusion that the data collection instrument would answer my study questions without considering how the module could be modified and would influence the stakeholder. This forced me to rely on their comments for feedback on my module.

New Methodology

Based on the need to change the e-learning module, a new methodology is needed to address the learning needs and preferences of the stakeholders. The design-based research project would evolve from mixed-methods into a qualitative-based research project. This would allow the project to be targeted to the social and behavioral demographic, homeschool teachers.

This new methodology would come with new challenges such as such as how to conduct interviews, focus groups, record keeping, and case study research. Data collection would be

conducted by interviews, focus groups, and in-person observations. This would allow for a more usability driven focus on the module. Also, feedback from stakeholders would drive design changes with each iteration.

Data Collection Instrument

One area of bias identified in my study is the data collection instrument. I was focused on getting data for answering the research questions. Even though the research questions are based on whether the e-learning module adds to participants knowledge, feedback is needed ease of use, timing, and module revisions.

The question of perceived participant knowledge is also at stake here, as the data collection instrument does not address whether the content is relevant to knowledge gained. Even if knowledge is gained, the cost and time taken to gain such knowledge may not be worth it to the stakeholders. The question of perceived time versus value is a major factor in whether the module helps the stakeholder. Questions about the quality of the materials presented and how to obtain quality materials could be added to the data collection instrument.

Further questions would be needed on how the course influenced their knowledge or OER and whether the curriculum materials were affordable could be added to the data collection instrument. In addition, questions about cost versus time could be included in the data collection instrument. This would allow the data to take on a more valid role in the research study as it targets the needs of stakeholders and homeschool teachers.

Justifications for Refinement

Revision 1

For the e-learning module, it appears that it is targeted at more advanced learners and higher education. This is an issue, as the module is aimed at homeschooling teachers, who teach

K-12 students. The content would have to be modified to target the lower grades and subject levels. This would involve providing other OER options and grade specific curriculum materials. The comments below justify the refinement.

Comment from participant 1: “It was geared towards educators at higher levels. My son is 10, and I purchase all the curriculum we use because it doesn't require prep time for me.”

Comment for participant 2: “I am wondering how familiar you are with homeschooling, as the module seemed more geared towards a professional setting. It didn't seem very applicable to a homeschool parent.”

Revision 2

The module is also a bit lengthy and not necessarily 1 hour, more like 4-8 hours. The module would need to be modified to make it more manageable for homeschool teachers. Some of the content may not be targeted toward homeschool teachers and therefore may not be needed based on student curriculum needs. Maybe dividing the module into subject area and grade levels would help this issue. The comments below justify the refinement.

Comment from participant 1, “I took two days to get through it, because there was a lot.”

Comment from participant 2, “...searching through all the material seemed way more daunting of a task than I have time for as a homeschool parent. It would be much easier just to look up videos on YouTube or check out a stack of books from the library.”

Chapter 5: Discussion

Conclusion(s) Based on Results

Research question 1 asked, “How does implementing an e-learning solution focused on OER impact homeschool educators’ perceived knowledge of how to implement the OER in their classrooms?”

With proper knowledge and perception, Open Educational Resources (OER) could increase learner awareness and interest in a variety of subjects. Participant data shows that some respondents believe that OER will increase learner experimentation and enthusiasm with a wider range of subjects that are available due to OER usage. In addition, at least one participant believes that OER will be able to accommodate diverse learner needs. Increasing overall of the existence of OER would better address this question and maybe ease any doubts raised in the comments about implementing OER.

Ease of use becomes a factor when considering time needed to implement OER in their classrooms. Implementation efforts must be considered when using OER and whether homeschool teachers can easily find and implement OER. As for why participants would not implement OER, 20% say that materials are already inexpensive, 60% say that materials for their classes is unavailable, another 80% say that they do not have time to implement OER.

Support systems are needed to help implement and consider OER as a viable curriculum resource. As far as implementing OER, 60% say that support would be needed for technical assistance, another 40% say copyright licensing needs more clarity, and finally 100% say that more information is needed on what types of OER material is available for homeschoolers. This is also backed up by the fact that it’s not easy to adapt the resources to their needs. Perhaps there is a need to provide a better understanding of what OER types exist various grade levels.

One participant commented on clarity and information, “I think there should have been more of a focus on how to search for relevant material and less focus on the licensing etc. The module seemed like it was written for classroom/professional use who does not homeschool/personal use. Why would a homeschooler have to cite references if they were just using material to teach their own kid? It isn't like sitting down and making a lesson plan, I just find interesting things and share them with the kids.” This leads the researcher to conclude that the subject matter was not relevant to a homeschool teacher. As mentioned in revisions needed in Chapter 4: Results, revisions would be needed to address this issue.

Research question 2 asked, “How would understanding how to implement the OER in their classrooms impact homeschool educators’ perception of using OER sources versus using costly curriculum materials?” The e-learning solution aimed to change homeschool educators’ perception of using OER sources versus using other costly curriculum materials. However, when considering the time and effort needed to implement OER, the comments show that building awareness of OER does not necessarily mean homeschool teachers are open to using such materials. In conclusion, cost saving does not always equate to ease of use.

At least one participant believes that OER will save time and time, but trouble finding quality OER remains a difficulty due to unfamiliarity of where to look. Based on the data gathered, homeschool curriculum cost can range into the hundreds, with the highest cost being at least \$500. 80% of participants believe they can save money with 20% commenting that “I only use curriculum if I see a need and generally if there is a need I am looking for something specific. If I were referred to a specific resource and it happened to be OER then that would be great, but I don't really use organized lesson plans very much in our homeschool.”

As mentioned above, the researcher was mistaken in the review of the demographic and target audience, and the interpretation of homeschool teachers based on my research gathered. This led to a biased approach to this study based on knowledge I perceived to be correct, which was flawed. In as such, my research questions were not fully answered, and there is no straight answer on the perception of implementing OER and saving money by using OER.

Limitations

There are a few limitations that need to be considered when reviewing this study. First, the data collection instrument was not targeted to comments about the e-learning module. Therefore, all data gathered about the module was from comments from participants. Second, the definition of what costly means to each homeschool teacher has not been defined for this study. Therefore, the perception that OER saves money may be irrelevant based on the comments received. The data collection instrument would need to be modified to address this, as mentioned in Chapter 4: Results. Lastly, the subject matter of the e-learning module is not appropriate for the targeted demographic, Utah homeschool teachers. A redo of the learner and/or needs analysis could be needed to gain further clarity on this. This limitation also affects how the stakeholders interact with the module. Based on comments and analysis, ease of use is a major factor in whether homeschool teachers would implement OER. Making it easier to find content and materials would prove valuable in time constraints addressed in the results.

Implications of Research on Educational Practice

Design principles played a major role in how the e-learning module was developed for this study. The design was based on the learner analysis and personas developed using the case study from a major Utah university that focused on homeschoolers, and the implications of COVID-19 and childcare on women (Hartwell et al., 2021). This plays a role because for a

redesign of the module, further research on the demographic would be needed. The current design is placed in the Canvas LMS and was designed using the Canvas e-learning design tools. A redesign might include a new learning management system and e-learning tool based on updated demographic data and further stakeholder feedback.

Furthermore, the alignment of design principles with the research questions would allow for a better iterative cycle to be completed. By using feedback from stakeholders, further recommendations could allow for targeting specific subject matter and grade levels. This would allow future investigators to pick up this study and proceed to develop new findings and recommendations. Implications for this study include gaining support from the homeschool community including teachers, students, librarians, support staff such as special education and administrative faculty. Without support for the design and implementation factors, open educational resources will remain unknown to the broader homeschool community.

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Appendix A

E-learning Module Description

Title: Creating a Home School Curriculum Using Open Educational Resources (OER)

Module Overview: This module will introduce homeschool teachers to OER, provide resources for finding OERs, provide tutorials on how to attribute OERs, and how assess OERs for quality and accessibility.

Target audience: Utah Homeschool Teachers

The goal of this module is that homeschool teachers will be able to implement open educational resources in their classrooms. The module objectives are as follows:

- Homeschool teachers will be able to identify what OERs are and how to locate them using open and free online databases.
- Homeschool teachers will be able to select proper licensing attributions when utilizing OER in their classrooms.
- Homeschool teachers will be able to evaluate OERs for quality and accessibility using a standards checklist.
- Homeschool teachers will be able to choose curriculum materials that can be used in creating an earth science lesson on “global temperature changes and its effects on regional climates.”

For formative assignments, each page also has a “reflection on learning” section that provides extra resources to study and reflect on. These provide a formative assessment that the learner can use to gauge their learning. Formative assessments in the course include:

6. Reading a report discussing 7 OER myths in North America and asking the learner to find free resources and open websites. They will then reflect on which resources are open and which ones are not.

7. Taking a quiz on OER and open-source attributions.
8. Asking users to reflect on the publishing of open resources and decide what creative commons license they would use.
9. The learner will choose two different OERs that could be used in a course, and will assess licensing and usage rights, quality of materials, and finally the learner will use a standards checklist to assess accessibility of their chosen OERs. The learner will recommend any changes that need to be made to the OERs based on their evaluations.
10. Learners will find an OER that they can adapt for a course. They will then adapt to their needs, taking into consideration localization, accessibility, quality, and accuracy.

The summative assessment asks the learner to create an Earth/Physical science lesson on “Measuring global temperature changes and its effects on regional climates”. They will be able to use textbooks, videos, simulations, infographics, etc. The curriculum choices beyond the topic are left up to the teacher. A rubric is provided for them to assess their course design and materials. They are also provided themes to focus on as they create their lesson.

Homeschool teachers enjoy the flexibility of teaching when they want and implementing a self-paced environment for their students. They also enjoy being able to interact with other homeschool teachers. Outside of the classroom, they rely on their Facebook and other social groups to provide support.

Considering these needs, the module is self-paced with no due dates to account for the flexibility needed when homeschooling their students. The module includes a discussion board

with theme prompts that help to get the discussion going. That accounts for the social aspect. As this module is aimed at homeschool teachers, the target social group remains the same.

The e-learning tools used in the module are the Canvas LMS environment and the HTML markup tool within the Canvas authoring environment. The Canvas LMS will allow the module to be self-paced and be able to host the e-learning module titled, “Creating a Home School Curriculum Using Open Educational Resources (OER)”. The markup tool allowed the researcher to customize module content such as allowing links to open in a new tab. This is helpful when learners are referencing OER checklists and evaluating quality and accessibility standards.

The module addresses the instructional problem by introducing OER as an affordable method of obtaining curriculum materials. In addition, learners are educated on what OERs are, and how to locate them, and are even provided open databases containing OERs. Learners are also given knowledge on how copyright and creative licenses help with the use of OERs, and the various restrictions placed on the licenses. The knowledge is assessed with a quiz within the module. Lastly, learners are educated on how to adapt OERs to their student’s needs. Examples of how to adapt various OER types are presented, and a learning activity focused on finding a suitable OER is available for learners to reflect on their learning.

Appendix B

Data Collection Instrument

Data Collection Instrument

The following question asks about your previous knowledge of OER.

1. **Based on where you currently obtain your curriculum materials from, are open educational resources mentioned by the support groups, organizations, or companies? (Select the best answer)**

No
Yes

I use a paid curriculum provider; therefore, they would not provide free materials. They have mentioned OER, but I never investigated the technology.

The following questions are asking about your feelings on OER after learning about the technology.

2. **Based on your experience as a homeschool teacher, to what extent do you agree with the following statements about implementing OER in your classroom?**
[Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree]

The use of open educational resources in the classroom will...

- Increase learners' participation in class discussions.
- Increase learners' interest in the subjects taught.
- Increase learners' satisfaction with the learning experience.
- Lead to improved student grades.
- Help me build learner confidence.
- Develop learner's independence and self-reliance.
- Increase learner engagement with lesson content.
- Increase learners' experimentation with new ways of learning.
- Increase collaboration among learners.
- Increase learners' enthusiasm for future study.
- Lead to learners becoming interested in a wider range of subjects than before they used OER.
- Allow me to better accommodate diverse learner needs.

3. **How do you feel about "BORROWING" educational resources? (Select the choices you feel strongly about)**

Borrowing resources will save me time and money.

I only use resources from trusted sources.

I have trouble finding high quality resources.

I'd only use resources recommended by colleagues, family, and friends.

It is not easy to adapt the resources to meet my curriculum needs.

I don't really know where to look for OER and open materials.
I prefer to work independently and source my own resources.

4. **Indicate how do you feel about SHARING your educational resources?** (Select the choices you feel strongly about)

I believe in open education and open materials.
Sharing resources will develop my reputation as a good teacher.
I'd be pleased for someone to adapt my resources.
I would need to be recognized as the creator.
I have no support for making materials open to others.
I have concerns over licensing rights.
Why give away resources to other institutions and organizations?
I don't wish to give other teachers the advantage of using my resources.
I don't wish to share resources that I've spent time preparing and creating.

The following questions ask about the cost of educational materials.

5. **How much do you currently pay to obtain materials?** (Select the best answer)

0 - 25
26 - 100
101 - 250
251 - 500
501 - 1000

6. **Do you think you will save money by using open educational resources?**

Yes
No
Don't know (please comment)

7. **Do you think there are hidden costs associated with the use of OER?** (Yes or No)

If yes, please comment.

The following questions ask about implementing OER in your classroom.

8. **What support and resources could help you with implementing the use of OER?**
(Select all that apply)

Technical assistance
Clarity over copyright licensing
More information about where and what kinds of materials are available.

9. **Please indicate the reasons why you would not implement OER.**

Materials are already inexpensive.
Materials for my classes are unavailable through OER.
I do not have time.

10. **Are there any other comments you would like to make about OER?**

Appendix C



Completion Date 21-Feb-2023
Expiration Date 21-Feb-2026
Record ID 54564892

This is to certify that:

Andrew Davila

Has completed the following CITI Program course:

Not valid for renewal of
certification through CME.

Human Subjects Research (HSR)
(Curriculum Group)
Human Subjects Research SBE Comprehensive
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Western Governors University

CITI

Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w85317460-0c74-4da2-afd4-2f00fa3ea807-54564892

Utah Homeschoolers Network

04/03/2023

Dear Andrew Davila

We have reviewed your request regarding your study and am pleased to support your Capstone Research Project entitled "Evaluating Open Educational Resources as an Affordable Method of Obtaining Curriculum Materials." Utah Homeschoolers Network agrees to collaborate with you for data collection. The study involves participating in an e-learning course via Canvas LMS and taking an anonymous post course survey via Survey Monkey.

This permission covers the period of 04/20/2023 to 05/31/2023 We look forward to supporting your capstone research. We understand your study requires the determination of the Western Governors Institutional Review Board as exempt research and data collection will not begin until this determination is received.

Sincerely,



Administrator

Utah Homeschoolers Network



Informed Consent Form

You are invited to participate in a Capstone Research Project entitled Evaluating Open Educational Resources as an Affordable Method of Obtaining Curriculum Materials. The dates for this study go from 4/17/2023 to 5/17/2023. You were selected as a potential participant due to your role as a homeschool teacher in the state of Utah. Please read this form and ask any questions you may have before acting on this invitation to participate in the project. This research project is being conducted by Andrew Davila at Western Governors University and determined to be exempt research by the WGU Institutional Review Board (IRB).

Background Information: The purpose of this research project is to evaluate the use of open educational resources as an affordable method of obtaining curriculum materials. The project will involve approximately 5-8 participants.

Inclusion Criteria: You can participate in this project if you:

- Live in the state of Utah.
- Are homeschool teachers.

Procedures: If you agree to be in this project you agree to the following procedures:

1. You will be asked to sign an informed consent form agreeing to participate in the research study (approximately 10 minutes).
2. Take an e-learning module educating on the use of open educational resources (approximately 1-3 hours).
3. Complete a post-module survey regarding open educational resources, and your opinions and thoughts on the technology (approximately 15-20 minutes).

Voluntary Nature of the Project: Your participation in this project is strictly voluntary. Your decision whether to participate will not affect your current or future relations with Utah Homeschoolers Facebook group or Western Governors University. If you initially decide to participate, you are free to withdraw at any time later without affecting those relationships.

Risks and Benefits of Participation: There is *no more than minimal risk* associated with participating in this project, which means participation in this project does not involve risks beyond those associated with normal day-to-day living. There is no individual benefit to participation in the project. However, project findings may provide the overall benefit of educating homeschool teachers on the potential of open educational resources as an affordable method of obtaining curriculum materials.

In the event you experience stress or anxiety during your participation in the project, you may terminate your participation at any time. You may refuse to answer any questions you consider invasive or stressful.

Compensation: There will be no compensation provided for your participation in this project.

Recording: I understand my participation involves no recording of any type.

Confidentiality: Any data or records gathered from your participation will be kept private. All data collected will be kept for a period of 3 years as guided by established norms. Data will be stored on a password-protected section of the principal investigators hard drive until such time when data is able to be deleted via deletion or a paper shredder. In any report of this project that might be published, the researcher will not include any information that will make it possible to identify you. Research records will be securely stored and only accessible to the Student Investigator.

Contacts and Questions: You may ask any questions you have related to the consent to participation. Contact the Student Investigator at adavila@wgu.edu. If you have questions about exempt research or have any concerns related to this project, contact the WGU IRB at IRB@WGU.EDU.

Documentation of Consent

I have read the above information, have been given adequate time to consider the information, and understand I may stop participation in the project at any point. I have asked questions and received answers. I consent to take part in this project. You will be offered a copy of this signed form from the Student Investigator.

Typed Name of Participant _____ [Date]

Participant Signature _____ [Date]
X _____

Signature of Student Investigator _____ 04/17/2023
X  _____