Pre-service Teacher Awareness of Open Educational Resources

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ABSTRACT

The concept of Open Educational Resources (OER) evolved from the integration of two movements: the open source / free software movement in the late 1990s and the introduction of the Creative Commons licensing system in 2001. UNESCO (2002) coined the term "open educational resource" (p. 6) during the 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries. While the OER movement began with a focus on technology-driven instructional materials, today open educational resources are "teaching, learning, and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (William and Flora Hewlett Foundation, 2018). OER continue to grow in popularity, yet awareness of OER from a teacher perspective has not reached universal acceptance.

□前教□□开放教育□源的认知

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摘要：

开放教育□源(OER)的概念由两大运动□合演□而来：20 世□ 90 年代末的开源/自由□件运□和 2001 年的知□共享(Creative Commons) 许可制度引入。联合国教科文□□ (2002 年) 在 2002 年□展中国家高等教育开放课程影响□□中引入了"开放教育□源"一□(p. 6)。虽然 OER 运□最开始关注的是技□□□的教学材料，但今天的开放教育□源是"在公共领域存在的，或已在开放□可下□布，允许他人不受限制或在有限限制下免费访问、使用、修改和重组的以任何媒介形式表现的纸质或数字化教学、学□和研究材料"(休利特基金会，2018 年)。虽然 OER 的普及度不断提高，但从教□的角度来看，人们对 OER 的□知□没有达到普遍接受的程度。

Conocimiento previo de los maestros sobre los recursos educativos abiertos

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RESUMEN

El concepto de Recursos Educativos Abiertos (REA) evolucionó a partir de la integración de dos movimientos: el movimiento de código abierto / software libre a fines de la década de 1990 y la introducción del sistema de licencias Creative Commons en 2001. La UNESCO (2002) acuñó el término "recurso educativo abierto" (p. 6) durante el Foro de 2002 sobre el Impacto del Software Abierto para la Educación Superior en los Países en Desarrollo. Si bien el movimiento de REA comenzó con un enfoque en los materiales de instrucción impulsados por la tecnología, los recursos educativos abiertos de hoy en día

son "materiales de enseñanza, aprendizaje e investigación en cualquier medio, digital o de otro tipo, que residen en el dominio público o se han publicado bajo una licencia abierta. eso permite el acceso, el uso, la adaptación y la redistribución sin costo para otros sin restricciones o con restricciones limitadas" (William y Flora Hewlett Foundation, 2018). Los REA continúan creciendo en popularidad, pero el conocimiento de REA desde la perspectiva de un maestro no ha alcanzado una aceptación universal.

Palabras Clave: REA, movimiento REA, concienciación del profesorado pre-servicio

INTRODUCTION

While most published research reports on PK-12 in-service teacher and higher education instructor OER awareness levels, a small research team at James Madison University (JMU) is exploring OER awareness among pre-service teachers. This initial research explores the level of OER and copyright awareness JMU pre-service teachers have through their courses, practicums, and student teaching placements and specifically addresses the following three research questions:

RQ1: To what extent are JMU undergraduate and graduate students enrolled in the College of Education aware of OER?

RQ2: Are pre-service teachers aware of PK-12 OER initiatives?

RQ3: Do pre-service teachers understand the licensing side of OER (free-to-use versus openly licensed)?

LITERATURE REVIEW

The open education movement has the potential to be a significant economic and cultural shift to the current educational environment. According to Rogers' diffusion of innovations theory (2003), "diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system." In the case of OER use (the innovation), the members of the social system include educators and others in educational institutions. Following Rogers' theory (2003), the first stage in the innovation-decision process is to widely introduce the concept of OER to build awareness.

To date, researchers have measured educator awareness of OER at the PK-12 and higher education levels, and this research shows that, while rising, OER awareness is not yet ubiquitous throughout education systems. Allen and Seaman (2017) surveyed PK-12 educators in 584 school districts on their general awareness of OER concepts. Their survey found awareness of OER and Creative Commons licensing was low, with only 28% responding as "aware" or "very aware". Districts were more likely to know and adopt specific OER materials, with two-thirds of districts aware of at least one full OER course curriculum material and over one-third having actively considered one. Sixteen percent of districts have adopted openly licensed full-course curricula materials. Districts with higher child poverty levels are more likely to adopt OER than those with low child poverty levels. In summary, Allen and Seaman (2017) provided a snapshot of the PK-12 educational environment that pre-service teachers will experience as future educators.

There is a dearth of literature that explores pre-service teacher awareness of OER. Most current literature focuses on practicing teacher knowledge and use of OER. Ramírez-Montoya, Mena, and Rodríguez-Arroyo (2017) discussed how training teachers in digital competence is necessary for preparing teachers to use OER. Training in this area helps teachers build the skills and confidence necessary to access, use, and create OER materials (Ramírez-Montoya et al., 2017).

Kimmons (2014, 2015, 2016) researched the impact of providing in-service teachers immersive training on OER concepts. He surveyed participating teachers before and after training (n=80) and found that teachers entered the institutes with limited knowledge of OER and some misconceptions about concepts of fair use and copyright (Kimmons, 2014). Kimmons (2014, 2015) found that training increased teacher knowledge and desire to use OER in their classrooms, helped clear up misconceptions about OER, and helped educators understand how to incorporate OER in their classrooms. Kimmons' survey found that teachers were excited about OER concepts after learning more about them. The research also found that educators were interested in innovating, sharing, and creating OER materials regardless of their years of experience. Kimmons' (2014, 2015, 2016) research demonstrates that providing education on OER topics is useful to increase open education literacy and decreasing misconceptions about OER.

Kimmons (2015, 2016) also surveyed the in-service teachers on their perception of the quality of OER materials compared to traditional copyrighted textbooks. Kimmons (2015) reported that open textbooks were considered higher quality than copyrighted textbooks, and that open-adapted textbooks were of higher quality than open textbooks. In his most recent publication on this topic, Kimmons (2016) used mixed methods to identify PK-12 in-service teachers' perceptions of OER beyond cost considerations. The

data collection spanned teachers' perspectives of the potential, and the barriers to OER use both during a series of structured summer OER institutes and after a return to the classroom environment (*n*=30). Researchers collected qualitative data at the end of the institutes, and used those results to create a follow up survey to "accurately portray the perspectives of institute attendees as a group" (Kimmons, 2016, p. 11). Conclusions included the potential for openness to help solve pedagogical, economic, and professional issues and also acknowledged barriers at the macro, local, and personal levels.

A smaller, but also important, segment of the educator landscape is students in education programs, or pre-service teachers. Prior to entering careers as educators, pre-service teachers are still learning the basics of pedagogy in their areas of specialization, and they are both students and teachers as they complete their programs of study. To date, research into the awareness levels of pre-service teachers has been much less frequent than research of PK-12 and higher education instructors. Morales and Baker (2018) provided an up-to-date review of the research conducted on perceptions of OER in education; however, pre-service teacher training or awareness was not included in their review.

Despite the limited discussion of pre-service teacher awareness of OER in the literature, many in-service teacher studies hypothesize that introducing these concepts to future educators during teacher training may lead to increased interest, understanding, and likelihood of using OER in their careers (Misra, 2014; Tur, Urbina & Moreno, 2016; Ramírez-Montoya, et al., 2017). While focusing on training for in-service teachers, these studies also indicate a consistent lack of pre-service teacher awareness of OER concepts prior to becoming teachers. After learning about OER concepts, in-service teachers show high levels of interest and confidence in using and even creating OER in their future classrooms. Misra (2014) concluded "that understanding and knowledge about OER at an initial stage of their professional training will help teachers to use it throughout their careers for personal and professional development" (p. 381).

The literature includes an increase in OER awareness among teachers when they used OER during teacher training (Misra, 2014; Tur et al., 2016). Misra (2014) found that training teachers to use OER can help them realize the vast resources available for use in diverse and varied educational settings around the world, and also determined that the lack of awareness and understanding keeps teachers from using OER for educational purposes.

In another in-service teacher study, Kelly (2014) concluded that including OER in teacher education programs is worth exploring. Inclusion of OER materials during pre-

service teacher training can positively impact knowledge of OER concepts and materials (Kelly, 2014; Tur et al., 2016; Kwak, 2017).

In one research study, the experiences of pre-service teachers learning to create OER materials in their coursework was explored. Tur et al. (2016) conducted research focused on pre-service teachers who created OER as students in their degree-granting programs for potential inclusion in an education repository. In this study, pre-service teachers were surveyed on OER perceptions and concepts. The researchers found that pre-service teachers had an overall positive perception of OER once introduced to these concepts and noted the importance of engaging them while they are students to maximize interest and perceived value of OER (Tur et al., 2016). After learning about OER and creating their own resources, 84% of pre-service teachers (n=128) responded favorably to wanting to use OER in their future classrooms.

Internationally, there has been a lack of OER training in teacher education programs. Kwak (2017) reinforced the concept that introducing OER in teacher education and professional development is critical to provide guidance in the practical use of OER. The current lack of teacher training on OER concepts in South Korea's education programs is a barrier to in-service teachers using and adopting OER in their classrooms. Kwak (2017) stressed that without proper training on these concepts and skills, OER cannot be used effectively.

The lack of training and awareness of OER is exacerbated by the practice of pre-service teachers utilizing the Internet for lesson planning (Sawyer & Myers, 2018). Platforms such as Pinterest and Teachers Pay Teachers offer many options for both free and paid lessons. In a study conducted between students in two different teacher training programs, Sawyer & Myers (2018) found that students turn to the Internet for lesson planning ideas because the platforms offer anonymity and ease of access. Even though the Internet remains a popular option, the quality of such lessons is suspect, often lacking clear objectives or measurable outcomes (Patton, 2008).

A lack of training and general awareness of OER concepts at all levels for education professionals is a theme found across the literature. The literature shows that introducing these concepts to teachers of any experience level creates interest and desire to use--and even create, OER in their own classroom. The current lack of OER awareness research in pre-service teachers provides ample opportunity to contribute to the knowledge and literature on this topic. Ultimately this work can inform future researchers and educators as they develop training and professional development in OER for pre-service teachers.

ANALYSIS

Demographics

The pre-service teacher awareness survey was conducted within the College of Education at James Madison University. The institution is a large public co-ed University in the mid-Atlantic region and was founded in 1908 as a women's-only teacher preparation school. As one of seven Colleges in the University today, the College of Education continues that legacy. The College of Education offers a five-year Master of Arts in Teaching (MAT) degree program for students interested in teaching certification for grades PK-12 and beyond. Teacher licensure at JMU requires completion of an undergraduate and graduate degree. Once students complete the College of Education undergraduate degree requirements, they are required to complete the graduate program (5th year) in order obtain teacher licensure. Throughout the program, students complete courses within either the Early Education program or Middle and Secondary program. Education enrollment numbers for the research year included 1,385 students in Early Education programs and 431 students in Middle and Secondary Education programs.

PK-12 classroom immersion experiences are a core element of the MAT curriculum. Students complete multiple field observations, practicums, and student teaching placements during their five years of study. Students begin the program by completing field observations during their freshman and sophomore years. In their junior through senior years, students participate in several practicum placements; and during their graduate year, students complete two student teaching placements.

DESIGN AND METHODOLOGY

The research team developed an eleven-question survey about pre-service teacher awareness of OER. Researchers used questions adapted from the Babson Survey Research report, *What we teach: K-12 school district curriculum adoption process* (Allen & Seaman, 2017) and Seaman and Seaman's (2017) originally-authored *Opening the textbook: U.S. higher education.* The survey items provide insight into respondents' level of education and level of field placement completion, but do not include questions which would reveal personally identifiable information.

While reviewing the Babson Survey Research reports (Allen & Seaman, 2017; Seaman & Seaman, 2017), the JMU research team noted the development process for the OER survey questions used in those reports. Over several successive iterations of the OER survey questions, the research team responsible for modifying the survey items from the

What we teach report (Allen & Seaman, 2017) revised the questions toward maximizing the respondent's ability to accurately self-report on a topic about which they may have little, or no background knowledge. Relying on this iterative question development process, the JMU research team adopted the format and wording of several survey questions from the *What we teach* (Allen & Seaman, 2017) and *Opening the Textbook* (Seaman & Seaman, 2017) reports for use in the pre-service teacher awareness survey. Using the same wording on the pre-service teacher survey also helps situate pre-service teacher awareness of OER with the level of awareness among PK-12 and higher education instructors.

The pre-service teacher survey was designed to collect quantitative responses in the following question formats: select all responses that apply, select a single response, and Likert-scale. While the survey design resulted in numerical data, the main methodological approach was descriptive, which enabled the research team to observe various levels of respondent understanding.

To obtain self-selected participants, the researchers emailed all Education students via the College's student email listserv. The researchers also contacted nineteen College of Education faculty to share the survey with their students. The faculty participants were selected to best represent the ratio of students in the various programs. To encourage participation, participants had an opportunity to register to win one of three $5 coffee gift cards. To register for the gift card drawing, participants could click on a link at the end of the survey to enter their contact information, which was entirely separate and in no way connected to the pre-service teacher survey responses. Institutional Review Board (IRB) approval was given for this project.

SURVEY RESULTS

Survey Items Providing Respondent Background Information

The survey was open March 12, 2018 - April 17, 2018, and 65 students completed the survey (Authors, 2018). The first four questions on the survey focused on background information. The participants identified their University education level as freshman, sophomore, junior, senior, and graduate or professional students. The majority of responses reflect students enrolled in College of Education programs who have moved beyond general education courses and are focusing on the required courses in the Education degree program (see Figure 1).
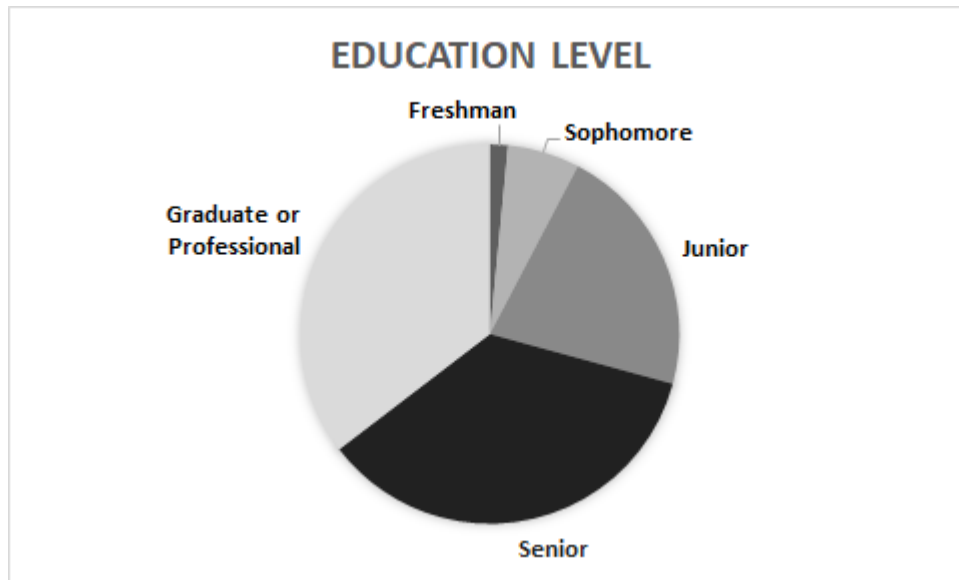
Figure 1. Education Level of Pre-service Teacher Participants

Participants were asked which general grade level they planned to teach after graduation, which is the same as their program of study. Of the participants, 73% plan to teach Pre-Kindergarten/Elementary level and 27% plan to teach Middle and Secondary grades. This sample is representative of the enrollment numbers in each program, which have significantly more students enrolled in Early Education than the Middle and Secondary Education program.

Participants also identified which formal field experiences they have completed to date. As they advance, students in the Education program complete multiple comprehensive in-classroom experiences beginning with field observations, progressing to practicum placements, and finishing with student teaching assignments. Of the 65 responses, 8% had completed the first level of field observations, 55% had reached the mid-level of practicum placements, and 37% had experience with student teaching. Graduate students reported the most field experiences, which is consistent with the progression of field experiences within the program.

RQ1: To what extent are JMU undergraduate and graduate students enrolled in the College of Education aware of OER?

Researchers asked several survey questions about OER awareness. Two questions on the survey asked participants to situate their awareness of OER on a five-point Likert scale. While the fifth question broadly asked about their awareness of OER, the eighth question specifically asked about their level of awareness of open textbooks. The

questions included definitions of OER and open textbooks, respectively. The lowest number of participants responded they are very aware or aware of OER (6%) and open textbooks (9%), while more participants identified as being somewhat aware, or having heard of OER (32%) and open textbooks (21%). In response to both questions, the majority of participants reported being unaware of OER (62%) and open textbooks (70%) (see Figure 2).
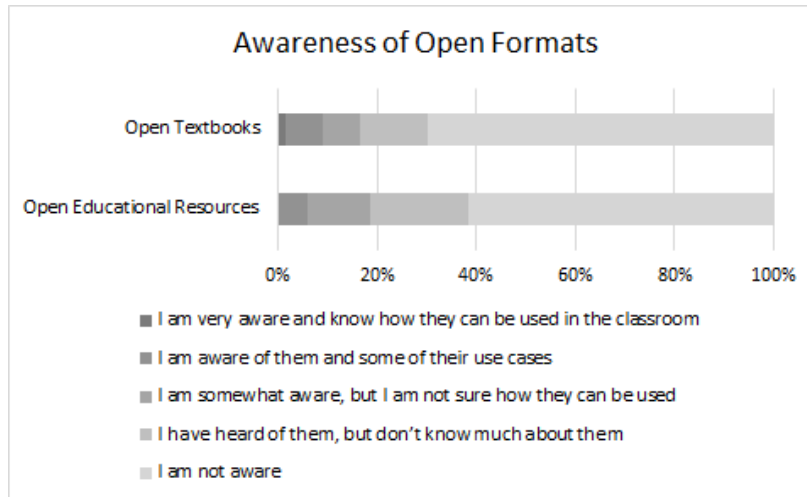

Figure 2. Awareness of Open Formats

Respondents at the practicum level of field placements reported moderate OER awareness (31%) and open textbook awareness (31%). These awareness percentages include all of the responses with any level of awareness, including having heard of OER and open textbooks. Respondents that had reached the highest level of field placements, student teaching, reported higher levels of awareness (54%) than unawareness (46%) of OER. For open textbooks, respondents at the student teaching level reported awareness at 29% and unawareness at 71%.

Two questions on the survey focused on the inclusion of open education resources and/or open textbooks in course work (question 9) or in field experiences (question 10). The answers were separated into four options: 1) Used as required course material; 2) Used as supplemental course material; 3) Have not used; and 4) Don't know. Participants were able to select multiple answers for this question. For example, a participant could select that he or she observed open textbooks being used as both a required material and a supplemental material in his or her field experience.
In their course work, 42 respondents stated that they had used OER as required course material with 57% selecting the broad category of OER and 43% selecting open textbooks specifically. No respondents indicated that they had used both OER and open textbooks as required materials.

Fifty respondents indicated they had used OER or open textbooks as supplemental course material with 62% selecting OER and 38% selecting open textbooks; no respondents choose both OER and open textbooks.

Sixty respondents indicated they had not used OER or open textbooks as course material with 45% selecting OER and 55% selecting open textbooks. Again, no respondents selected both OER and open textbooks in response to having not used OER.

Fifty-six respondents indicated they did not know if OER or open textbooks were used as course material with 59% selecting OER and 41% selecting open textbooks; no respondents choose both OER and open textbooks.

In a follow up question, students were asked if they had observed OER or open textbooks being used by teachers in their field observations, practicums, or student teaching placements.

Twenty-eight respondents stated that they had observed OER or open textbooks being used as required course material in their field study experiences with 60% selecting OER resources and 40% selecting open textbooks; no respondents choose both OER and open textbooks.

Thirty-nine respondents stated that they had observed OER or open textbooks being used as supplemental course material in their field study experiences with 72% selecting OER resources and 28% selecting open textbooks; no respondents choose both OER and open textbooks.

Fifty-four respondents stated that they had not observed OER or open textbooks being used as course material in their field study experiences with 46% selecting OER resources and 54% selecting open textbooks, no respondents chose both OER and open textbooks.

Finally, 53 respondents stated that they did not know if they had observed OER or open textbooks being used as course material in their field study experiences with 51% selecting OER resources and 49% selecting open textbooks, no respondents choose both OER and open textbooks.

RQ2: Do pre-service teachers understand the licensing side of OER (free-to-use versus openly licensed)?

Researchers asked one survey question about copyright and licensing. The fourth survey question asked participants to identify their level of awareness of copyright, public domain, and Creative Commons on a four-point Likert scale. On the scale, three of the four values assigned some level of awareness including "very aware," "aware," and "somewhat aware," with the last value listed as "unaware." While the majority of participants had some level of awareness of copyright (71%) and public domain (64%), the majority of participants were unaware of Creative Commons licenses (64%). Participants reported moderate levels of copyright awareness, with 9% identifying as "very aware" and 28% "aware," and public domain awareness, with 6% identifying as "very aware" and 21% "aware." Participants reported much lower Creative Commons awareness, with 3% identifying as "very aware" and 8% "aware." (see Figure 3)
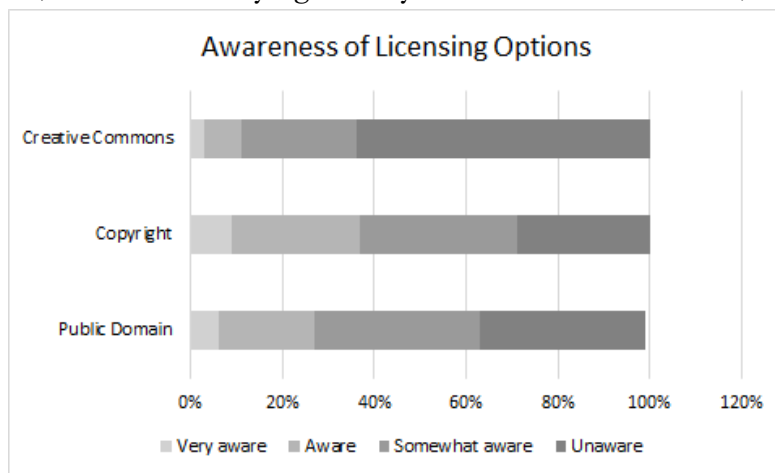

Figure 3. Awareness of Licensing Options

The majority of respondents at the practicum level of field placements indicated awareness of public domain (58%) and copyright (72%). These awareness percentages include all of the responses with any level of awareness, including being somewhat aware. Respondents that had reached the student teaching level reported even higher levels of public domain (75%) and copyright awareness (74%). For Creative Commons, respondents at the practicum level reported awareness at 33%, and respondents at the student teaching level reported slightly higher awareness at 38%.

RQ3: Are pre-service teachers aware of PK-12 OER initiatives?

Researchers asked one survey question about branded PK-12 OER resources and initiatives. The seventh survey question asked participants their level of familiarity with a list of eight specific OER initiatives based on a three-point Likert scale. The familiarity scale ranged from "have used" to "familiar" to "not familiar" with the resources. General familiarity with seven of the OER resources listed - #GoOpen, OER Commons, CK-12,

Common Lit, Curriki, Share my Lesson, and Smart History - were low. The familiarity of these seven OER had responses of less than 18% of the participants when combining the total "have used" and "familiar" responses. Khan Academy was the only resource with a more even distribution of responses across the scale. The majority of participants reported they "have used" (53%) Khan Academy, while 24% reported being "familiar" and 23% were "not familiar" with it (see Figure 4).
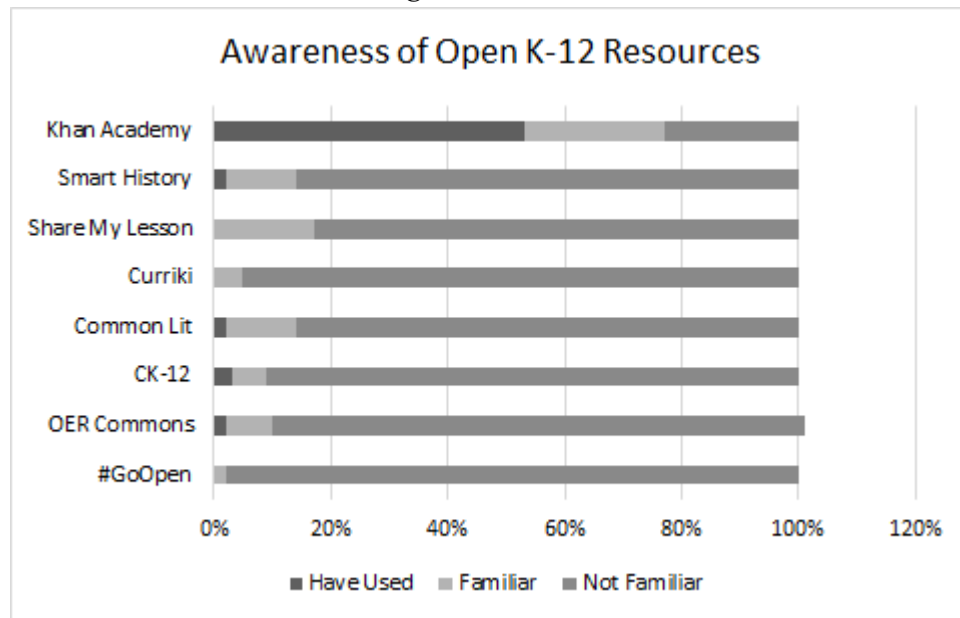

Figure 4. Awareness of Open K-12 Resources

A moderate number of students at the practicum level reported being familiar with or having used (23%) seven of the eight OER initiatives listed in the survey. Students at the student teaching level reported moderate levels of familiarity with or having used (16%) all eight of the OER initiatives listed. Practicum students indicated they have used Smart History (6%) and Khan Academy (61%), and respondents at the student teacher level indicated they have used OER Commons (4%), CK-12 (4%), CommonLit (4%), and Khan Academy (33%).

General survey responses. For one survey question, respondents were asked to choose how they would describe OER to a colleague. The sixth question on the survey included a prescribed list of descriptions, and respondents were directed to choose whether they "would include," "may or may not include," or "would not include" each option in their description. The list of descriptions contained the following options: *Is available for free, Remix and repurpose, Creative Commons license, Easy to modify, Combine with other course materials, High quality,* and *More up to date*. Only 18% responded that they would include *Creative Commons licenses* in a description of OER, yet 74% would include that *OER are Available for free*. More than half of the respondents would include *Is available for free,*

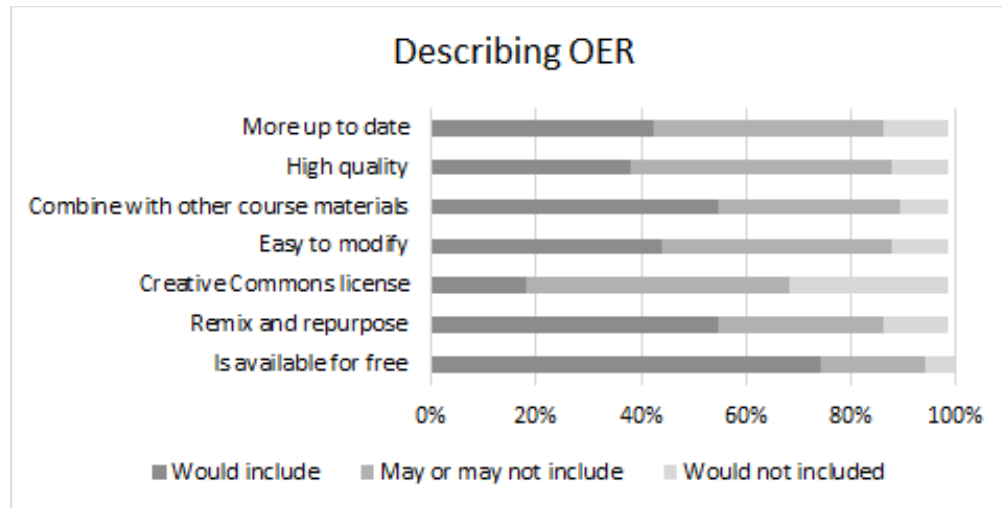*Remix and repurpose*, and *Combine with other course material* as descriptions of OER (see Figure 5).

Figure 5. Describing OER

DISCUSSION

The survey results revealed that JMU pre-service teachers have a greater awareness of copyright and public domain than they do of Creative Commons licensing, and in fact, many respondents would not include *Creative Commons licenses* (30%) in a description of OER. The majority of respondents described OER as being *Available for free*, which can lead to confusion with copyright and fair use rights. Based on these results, pre-service teachers have not grasped the difference between free-to-use materials versus openly-licensed materials. The low awareness of *Creative Commons licenses* (36%) aligns with respondents self-reported low level of OER (38%) and open textbook (30%) awareness, which also supports the idea that pre-service teachers do not understand the basic tenets of open educational resources.

JMU pre-service teachers also have little awareness of many PK-12 OER initiatives. Seven of the eight initiatives listed in question seven showed less than 18% awareness; the outlier being Khan Academy with 77% of respondents familiar with or having used the materials. Without the reported high awareness of Khan Academy, the awareness of OER initiatives matches the low level of awareness of OER and open textbooks in general. Allen and Seaman (2017) reported higher levels of awareness of at least one OER product listed in their survey (66%) than their respondents' reported levels of OER awareness (50%). Pre-service teachers also reported higher levels of awareness of at least one OER initiative listed in this survey (85%) versus their reported OER awareness (38%). Educators may be aware of OER products and yet not be aware of the concept of

OER. These results indicate that teachers do not require an understanding of OER to recognize the educational value of OER products.

Responses to the four questions on the survey presenting to what extent JMU undergraduate and graduate students are aware of OER and open textbooks indicate confusion among pre-service teachers about the concept of open educational resources. While the majority of pre-service teachers responded that they are unaware of OER (62%) and open textbooks (70%), a moderate number also responded that they used OER (51%) and open textbooks (43%) as required course materials in at least one JMU class. These findings support previous observations by Allen and Seaman (2017) in which survey respondents struggle to accurately self-report awareness if they have a limited understanding of OER. Pre-service teacher reported observations of OER (61%) and open textbooks (39%) use in external placements was also at odds with the reported lack of awareness of OER and open textbooks.

To attempt to identify the source of respondents' confusion, the researchers looked at the distribution of answers that seemed to indicate a lack of clarity as to where students were encountering and using OER and open textbooks. This confusion is apparent when looking at responses to the question concerning using OER and open textbooks in college courses. Responding to this question, several respondents (32%) indicated they have both used and have not used OER and open textbooks. Twenty nine percent of respondents showed similar levels of confusion by indicating some combination of have used, have not used, and don't know if they have used OER and open textbooks. The confusion was distributed across field placement experiences. In the case of those who indicated they had both used and had not used OER and open textbooks, 40% of those with field observation experience selected this combination of responses, while 52% of those at the practicum level and 41% of those that have reached student teaching selected this combination of responses.

This confusion was not as prevalent, but still continued across questions concerning the use of OER and open textbooks in field experiences. Responding to this question, 23% of participants indicated that they had both used and have not used OER or open textbooks. Thirty-three percent of respondents showed similar levels of confusion by indicating some combination of have used, have not used, and don't know if they have used OER and open textbooks. As with experience within courses, the confusion was distributed across field placement experiences. In those that indicated that they have and have not used OER 25% have completed practicum placements and 25% had completed their student teaching. No respondents that had solely completed field observations indicated they had and had not used OER in these experiences, which may be due to lack

of interaction with curricular materials in these field experiences.

The authors of this study speculated that pre-service teachers may be exposed to OER in their JMU coursework or in their PK-12 field experiences. When the results of the four awareness questions and the PK-12 initiatives questions are reviewed together, the responses indicate that respondents do not understand the concept of OER well enough to identify OER or open textbooks in use. While pre-service teachers may have incidentally encountered OER products, the survey results indicate they are unable to recognize OER at this stage of their education. This lack of awareness may also be attributed to the language used to describe OER. If the researchers and educators in the local area are using different language to describe these resources, then confusion about whether a class or school is using OER is to be expected.

LIMITATIONS

The survey returned more than one hundred responses, but many were incomplete and were not included in the final analysis. Researchers anticipated that the subject of open education would be new to this audience and designed the survey questions to include response options like "unaware" and "not familiar" so participants who have not been exposed to OER could still answer all questions. Due to a survey design error, the questions were initially set to "request" response. When the research team realized that participants were not answering all of the questions, they changed the survey to "forced" response for all questions. By requiring responses, the researchers were able to collect 65 completed surveys.

Some participants reported a problem with survey questions 9 and 10. The final survey question (#11) was an open field response, in which several participants noted they wanted, but were unable to, change their responses to question 9 and/or question 10. While these survey questions were set up with the same parameters as earlier, similarly structured Likert-scale survey questions, participants only reported issues recording their responses to questions 9 and 10. Researchers attempted to remedy the issue, but have no way of knowing if all participants that experienced this issue self-reported the error in question 11. In future surveys, the researchers plan to redesign questions 9 and 10 and run several pre-survey tests for errors.

Finally, while the localized survey results are not generalizable, the survey design and methodology can be replicated by anyone wanting to explore OER awareness of pre-service teachers at other institutions.

CONCLUSION

While teachers and researchers acknowledge rising levels of OER awareness across the educational community, this research team believes a critical audience is being left out of the research – pre-service teachers. The results of this survey indicate an opportunity to build awareness of OER among pre-service teachers. Building on the results of this survey, planning is underway to improve awareness and dispel confusion around OER concepts and advance pre-service teachers to the second stage of the innovation-decision process when they begin weighing the benefits and barriers to using OER (Rogers, 2005). Locally, the researchers plan to offer classroom and workshop training on OER concepts and use to College of Education faculty and students. This future action plan is based on Kimmons research which found training to be successful for increasing overall knowledge, enthusiasm, perception of value, and likely future use of OER (Kimmons 2014, 2015, 2016). Similarly, Misra (2014) concluded that early career teachers have more opportunities to use OER throughout their careers. This research team agrees and believes that diffusion of OER as an innovation will position pre-service teachers for success in the economically and culturally changing educational environment.

Authors

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REFERENCES

Allen, I. & Seaman, J. (2017). What we teach: K-12 school district curriculum adoption process, 2017. Babson Survey Research Group. Retrieved from https://www.onlinelearningsurvey.com/reports/k12oer2017/whatweteach_2017.pdf.

Kelly, H. (2014). A path analysis of educator perceptions of open educational resources using the technology acceptance model. *The International Review of Research in Open and Distance Learning, 15*(2). https://doi.org/10.19173/irrodl.v15i2.1715

Kimmons, R. (2014). Developing open education literacies with practicing K-12 teachers. *The International Review of Research in Open and Distributed Learning, 15*(6), 71-92. https://doi.org/10.19173/irrodl.v15i6.1964

Kimmons, R. (2015). OER quality and adaptation in K-12: Comparing teacher evaluations of copyright-restricted, open, and open/adapted textbooks. *The International Review of Research in Open and Distributed Learning, 16*(5), 39-57. https://doi.org/10.19173/irrodl.v16i5.2341

Kimmons, R. (2016). Expansive openness in teacher practice. *Teachers College Record, 118*(9), 1-34.

Kwak, S. (2017). How Korean language arts teachers adopt and adapt open educational resources: A study of teachers' and students' perspectives. *International Review of Research in Open & Distance Learning, 18*(4), 193-211. https://doi.org/10.19173/irrodl.v18i4.2977

Morales, R. & Baker, A. (2018). Secondary students' perceptions of open science textbooks. *Journal of Interactive Media in Education, 1*. http://doi.org/10.5334/jime.455

Misra, P. (2014). Online training of teachers using OER: Promises and potential strategies. *Open Praxis, 6*(4), 375-385. http://dx.doi.org/10.5944/openpraxis.6.4.155

Patton, B. A. (2008). Evaluation of lesson plans: Is the internet helping or hindering the teacher candidate? *CEDER Yearbook V*, 127-134.

Ramírez-Montoya, M-S., Mena, J., & Rodríguez-Arroyo, J. (2017). In-service Teachers' self-perceptions of digital competence and OER use as determined by a xMOOC training course. *Computers in Human Behavior, 77*, 356-364. https://doi.org/10.1016/j.chb.2017.09.010

Rogers, E. (2003) *Diffusion of innovations*. 5th ed. New York: Free Press

Sawyer, A.G. & Myers, J. (2018). Seeking comfort: How and why preservice teachers use internet resources for lesson planning. *Journal of Early Childhood Teacher Education, 39*(1), 16-31. https://doi.org/10.1080/10901027.2017.1387625

Seaman, J.E. & Seaman, J. (2017). Opening the textbook: Educational resources in U.S. higher education, 2017. Retrieved from https://www.onlinelearningsurvey.com/reports/openingthetextbook2017.pdf.

Thompson, L., Lantz, J., and Sullivan, B. (2018). Pre-service teachers OER awareness [Research Data].

Tur, G., Urbina, S., & Moreno, J. (2016). From OER to open ed perceptions of student teachers. *BRAIN: Broad Research in Artificial Intelligence and Neuroscience, 7*(2), 34-40. Retrieved from http://www.edusoft.ro/brain/index.php/brain/article/view/594.

UNESCO. (2002). Forum on the impact of open courseware for higher education in developing countries. Retrieved from http://unesdoc.unesco.org/images/0012/001285/128515e.pdf.

William and Flora Hewlett Foundation. (2018). Open educational resources. Retrieved from https://www.hewlett.org/strategy/open-educational-resources/

Appendix A: OER Preservice Teacher Survey Spring 2018

Identification of Investigators & Purpose of Study: You are being asked to participate in a research study conducted by Elizabeth Thompson, Jessica Lantz, and Brian Sullivan from James Madison University. The purpose of this study is to understand preservice teachers' perceptions of Open Education Resources.

Research Procedures: This study consists of an online survey that will be administered to individual participants through email or Canvas using Qualtrics (an online survey tool).

You will be asked to provide answers to a series of questions related to your perception of Open Education Resources.

Time Required: Participation in this study will require less than 10 minutes of your time.

Risks: The investigator does not perceive more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

Benefits: There are no direct benefits to participants in this study.

Confidentiality: The results of this research will be presented at conferences and published in academic journals. While individual responses are anonymously obtained and recorded online through the Qualtrics software, data is kept in the strictest confidence. No identifiable information will be collected from the participant and no identifiable responses will be presented in the final form of this study. Qualitative data, written responses from participants, and any demographic data will be kept in a secure location on the researchers' password protected computers. Quantitative data, the multiple choice questions from the survey, will be stored on the Open Science Framework platform to be made available to other researchers. The researcher retains the right to use and publish non-identifiable data. Final aggregate results will be made available to participants upon request.

Participation & Withdrawal: Your participation is entirely voluntary. You are free to choose

not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind. However, once your responses have been submitted and anonymously recorded you will not be able to withdraw from the study.

Questions about the Study: If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

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Giving of Consent

I have been given the opportunity to ask questions about this study. I have read this consent and I understand what is being requested of me as a participant in this study. I certify that I am at least 18 years of age. By completing and submitting this anonymous survey, I am consenting to participate in this research.

What best describes your current college education level?

○ Junior
○ Senior

○ Graduate

○ Post-graduate /

○ Professional Other

What field experiences have you completed or are currently completing? (select all that apply)

☐ Field observations

☐ Practicum placement

☐ Student Teaching

What grade level do you plan to teach professionally? (select all

that apply)

☐ Pre-school

☐ Elementary

☐ Middle

☐ Secondary

☐ Other

How aware are you of the following licensing mechanisms?

	Very aware	Aware	Somewhat aware	Unaware
Public Domain		○	○	○
Copyright		○	○	○
Creative Commons		○	○	○

How aware are you of OER? OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditional copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

○ I am not aware of OER

○ I have heard of OER, but don't know much about them

○ I am somewhat aware of OER but I am not sure how they can be used

○ I am aware of OER and some of their use cases

○ I am very aware of OER and know how they can be used in the classroom

If you were to describe the concept of open resources for education to a colleague, which of the following would you include in your description? (not included, may or may not include, would include)

	Would include	May or may not include	Not included
Is available for free	○	○	○
Has the ability to remix and repurpose	○	○	○
Is provided with a Creative Commons license	○	○	○
Is easy to modify	○	○	○
Is easy to combine with other course materials	○	○	○

	Agree	Neutral	Disagree
Is of high quality	○	○	○
Is more up to date than textbooks	○	○	○

Are you familiar with these examples of OER programs and/or repositories?

	Have used	Familiar	Not familiar
#GoOpen	○	○	○
CK-12	○	○	○
CommonLit	○	○	○
Smart History	○	○	○

How aware are you of Open Textbooks? Open textbooks are textbooks that are freely available with nonrestrictive licenses. Covering a wide range of disciplines, open textbooks are available to download and print in various file formats from several web sites and OER repositories.

○ I am not aware of Open Textbooks

○ I have heard of Open Textbooks, but don't know much about them

○ I am somewhat aware of Open Textbooks but I am not sure if they are appropriate
   for my needs

○ I am aware of Open Textbooks and some of their use cases

○ I am very aware of Open Textbooks and know how they can be used in the classroom

Have any of your JMU courses used Open Educational Resources or Open Textbooks in any of the following ways?

	Used as required course materials	Used as supplemental course material	Have not used	Don't know
Open Educational Resources	☐	☐	☐	☐
Open Textbooks	☐	☐	☐	☐

Have you observed any of your field observation, practicum, or student teaching classrooms use Open Educational Resources or Open Textbooks in any of the following ways?

	Used as required course materials	Used as supplemental course material	Have not used	Don't know
Open Educational Resources	☐	☐	☐	☐
Open Textbooks	☐	☐	☐	☐

We welcome your comments. Please let us know your thoughts on any of the issues covered in this survey.

Thank you for completing the survey about preservice teachers' perceptions of Open Education Resources.

If you would like to be entered to win one of four $5 Starbucks gift cards, please click here to be taken to the entry form. The survey and the entry form are not connected in any way, so your survey responses cannot be linked to the personal information in your entry form.