Original Research

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Multimedia Open Educational Resource Materials for Teaching—Online Diversity and Leadership: Aligning Bloom's Taxonomy and Studio Habits of Mind

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Abstract

Objective: The purpose of this study was to explore, develop, test, and refine processes to incorporate meaningful and equitable use of open educational resources (OER) in online classrooms.

Method: The intent of this qualitative study was to use an action research process of interactive discussions between higher education practitioners to shape collective understanding of how to teach in an online learning environment using OER.

Results: The study resulted in the identification six exemplar learning opportunities which could be incorporated into the blended pedagogical model. Each exemplar OER included all four types of knowledge as defined by Bloom's taxonomy and required skills of observe and envision as defined in the Studio Habits of

Mind (SHoM). A second criteria for our purposive selection was that each exemplar could be used to teach in multiple contexts for multiple purposes across a spectrum of higher education online courses.

Conclusion: This study reminds us that educators need a new mindset to work with multimedia and visual resources. The blended pedagogical model provides scaffold teaching and learning opportunities that were not visible in either Bloom's taxonomy or SHoM alone. This blended pedagogical model scaffolds the "how" when using a visual approach to curriculum development that may enrich the learning experiences of students when presented in online higher education classrooms.

Implication for Practice: Educators might replicate this study or transfer findings for purposes of comparing and testing further the use of OER in their online higher education classes to further engage student learning. Applying new understanding in a project that is shared with the larger learning group is essential as students understand and begin to own new skills and insights. The blended pedagogical model presented in this paper could be helpful to educators to maximize the benefits from the integration of technology and OERs to support online higher education.

Introduction

Post-secondary online courses often replicate traditional text-based curriculum and pedagogy by continuing to rely on text and textbooks, despite a vast number of free multimedia and immersive learning options available for classroom use (Tillinghast, 2020; Vlachopoulos, 2020). Higher education online class curricula typically consists of discussion questions requiring a written response and text based reading material and writing assignments, which are content rather than process oriented. The emphasis on content over process is also noted in massively open online courses (MOOCs), where students do not receive instructions or guidance on applying fact-based knowledge (Kasch et al., 2021). Typical online classrooms lack the warmth and immediacy or connectivity of face-to-face classrooms (Cleary, 2021; Roy & Covelli, 2020). Additionally, online classroom pedagogies fail to incorporate the multi-dimensional possibilities of technology supported education (Tillinghast, 2020; Vlachopoulos, 2020) where process could be a focus, thus depriving growing numbers of students in online classrooms of a richer learning experience.

A diverse variety of visual and other multimedia tools could provide an engaging and robust learning experience like those preferred in the popular culture and contemporary society in contrast to traditional print mediums (Ren, 2019; Van Allen & Katz, 2020). Open educational resources (OER) are free educational resource materials featuring a variety of topics and subject matters readily available for public use (Kim et al., 2020). To cultivate a robust and adaptive learning experience, many secondary education schools have integrated OER into remote learning platforms to supplement instructional material (Kim et al., 2020). Resources such as media, software, e-books, and other digital assets could allow educators to tailor lessons and incorporate innovative strategies that engage an increasingly diverse student population while creating an inclusive environment (Dumitrache, 2016).

The issue explored in this paper was how post-secondary teachers might use OER resources in a pedagogy that supports engaged, active, and process-oriented learning in the online environment. Recent literature

(Flyvbjerg, 2006; Twining et al., 2017) supported the value of practitioner expertise as derived from direct experience of teaching. The intent of the present paper is to report on a teacher-led effort to improve practitioner access to and use of multi-media OER materials in online classrooms.

Literature Review

Since March 2020, many universities and colleges moved quickly, effectively, and seamlessly to transition academic courses to online and remote platforms. Achieving a successful transition accomplished without interrupting or impeding the educational and academic progress of students was a Herculean task. The COVID-19 pandemic forced local and national adaptations in every arena of daily life. College campuses were no exception, and college leaders needed to consider and contrive strategies for online teaching and learning, regardless of attitudes toward distance learning education (Bryson & Andres, 2020; Ulmer, 2020; Whitaker & Greenleaf, 2019).

The concept of online teaching and learning is not new. It first appeared in the 1980s to increase accessibility to quality education (Adedoyin & Soykan, 2020). Asynchronous and synchronous classrooms represent two approaches to online learning. The synchronous approach focuses on remote learning with real-time student-instructor interaction, whereas the asynchronous approach functions without real-time interaction between the students and the instructor (Bryson & Andres, 2020). The chosen online instructional approach depends on institutional features and technological capabilities.

Effective online teaching requires development for instruction, course design, and student engagement (Bryson & Andres, 2020). More intentional planning, orchestration of efforts, budget consciousness, and curation of educational resources is needed to support a positive value for students (Chronicle of Higher Education, 2020). To reach these goals, leaders and other stakeholders must have a thorough understanding of the advantages and disadvantages of online education (Bryson & Andres, 2020). Adaptations must offer an engaging, diverse, and immersive learning opportunity typically associated with face-to-face courses in programs that are strictly online, hybrid, and flexible (Chronicle of Higher Education, 2020). The multimedia OERs may offer some important advantages for post-secondary teaching in an online environment, but new pedagogical skills and processes are needed to support the most effective adaptations.

Potential Pedagogies for Using OERs in Distance Learning

Postsecondary institutions need a pedagogical model to follow for the navigation, design, integration, and evaluation of OER on the online learning platform. OER media could be used as instructional resources to engage a diverse range of learning behaviors and pedagogical approaches, because the freely available and diverse multi-media teaching and learning materials cover a wide range of subject matters, topics, and media tools (Kim et al., 2020). Several online educational platforms such as Khan Academy, OpenStax, and MOOC use OER resources due to their open accessibility, adaptability, and high-quality materials at no cost to the student or institution (Kim et al., 2020).

Although colleges and universities may have moved their curriculum online in response to COVID-19, some aspects of online learning may outlast the pandemic, because online experiences are convenient. A successful adaptation of OER multimedia materials could support online learning into a post pandemic future (Roy & Covelli, 2020). An opportunity to learn and apply innovative teaching strategies exists to engage students and facilitative learning online and in face-to-face classrooms (Vlachopoulos, 2020)

Two pedagogical models were scrutinized for use in visual environments. Bloom's taxonomy represents a hierarchy of competencies and outlines consecutive levels of learning outcomes (Anderson & Krathwohl, 2001); the taxonomy is widely accepted in higher education. Bloom's taxonomy consists of a sequence of hierarchical skills building from lower-level thinking to mastery learning (Eisner, 1991, 2000). The skills represented in the taxonomy are Know, Understand, Apply, Analyze, Create, and Evaluate. Critical thinking skills in Bloom's taxonomy are primarily taught through various language modalities and easily adapted to a text-based pedagogy.

In comparison, the studio habits of mind (SHoM) framework is a non-hierarchical, project-based, and learner-centered approach developed to describe teaching strategies in visual arts classes (Hetland et al., 2013; Hogan et al., 2018). This framework consists of four skills—Observe, Express, Envision, and Reflect/Assess —and includes strategies of Engage and Persist, Stretch, and Explore (Hetland et al., 2013; Hogan et al., 2018). A specific, visually oriented pedagogy incorporating a sequence of teaching activities was available to teach the SHoM model. Opportunities to learn SHoM skills were identified in other visual environments such as virtual reality or multimedia experiences (Lawlor et al., 2019; Sheridan, 2011; Steele et al., 2019).

The SHoM model teaching techniques include discussion and project-based learning to explore and understand visual information. Teaching activities include demonstration where specific skills are modelled, discussion in which the skills are connected to existing knowledge, and student work where skills are applied in specific projects. As educators seeking to improve practice in an online environment, we saw SHoM as a potential opportunity for better teaching and learning strategies that could take advantage of technology while maintaining educational rigor.

Adapting Pedagogies for Online Education

A pedagogy is broadly defined as the art and science of teaching (Onyesolu et al., 2013; Ravitch & Wirth, 2007). An adapted pedagogy is a pedagogy that is adjusted to suit a new purpose. In this instance, two existing pedagogies, Bloom's taxonomy and SHoM, were examined to assess suitability for an online environment that might go beyond a text or verbally based curriculum. The intent of this study was to improve practitioner understanding of teaching strategies in an environment where visually oriented multimedia resources are as easily accessed as textbooks in a traditional classroom.

An initial assumption was that some elements of SHoM as a visual arts-based skills model and pedagogy could be powerful learning resources in any visual environment (Onyesolu et al., 2013) such as an online classroom that integrated multimedia OER into teaching and learning experiences. A second assumption was that critical thinking represented in Bloom's taxonomy remains a valuable skill in any environment. The goal was to take full advantage of the visual modality that could be used in online classrooms while maintaining the rigor of critical thinking.

The process began with an examination of Bloom's taxonomy for possible connections with visual multimedia materials. The critical skill of knowing was identified as a potential connection between the two models. A clear and concise description or knowledge is required to execute analysis, evaluation, or creative operations. Gaining precise knowledge is often overlooked in critical thinking pedagogies. An expanded definition of knowing (see Table 1) developed by Anderson and Krathwohl (2001) was identified as a potential link between the Bloom's taxonomy skill of knowledge and SHoM skills of observe and envision.

Table 1. *Expanded Definition of Knowledge*

Factual	Conceptual	Procedural	Metacognitive
That which might be observed. For example: how do plants grow, what is the structure of the solar system? What are the phases of the moon? Science was initially an observation of what is and is not. Models were envisioned derived from observations	Theories and models. What model explains how the heart and lungs work together? Visual representations of a model can convey complex ideas in a single glance.	Skills and processes could be learned from observing an expert (how to cook, write, dance, speak a new language, and write like a scholar).	Metacognition is awareness of strategies or processes to resolve problems. Observe and assess personal thinking and means to achieve goals and categorize self-knowledge.

Note. Adapted from *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, by L. W. Anderson and D. R. Krathwohl. Copyright 2001 by Pearson Education Group

Table 1 shows how using visual representations might support learning the four aspects of knowledge identified by Anderson and Krathwohl (2001) The sequence of SHoM instructional techniques—demonstration/lecture, students at work, and critique (Hetland et al., 2013) was identified as a plausible model for teaching in an online environment (Sheridan, 2011).

An initial insight was that multimedia and immersive materials could become demonstrations in the online environment. Accordingly, the instructional or pedagogical techniques from SHoM were adapted for online use by substituting the OER experience for a visual demonstration in a face-to-face environment as shown in Table 2.

Table 2. *Adapting Studio Habits of Mind (SHoM) Instructional Strategies to Online Classrooms*

Three flexible instructional strategies defined (demonstration, student work, group critique)	Adaptation to online higher education classrooms
Demonstration/Lecture Definition: Brief visual demonstrations followed by lecture or discussion to develop and expand thinking. (Hetland et al., 2013)	Adaptation: Access to OER is presented in class for individual viewing. Students can watch individually. Follow up discussion threads allow students and teachers to exchange insights. Value: Provide brief multimedia or immersive visuals catch and engage attention. Discussions allow precise verbal insights to emerge from visual or multimedia experiences and promote deep connections or transfer. Uses: Show meaningful use of facts; illustrate concepts; and model process, skills, and character attributes. Higher education applications: Expanded support for knowledge of facts, concepts, procedures, and metacognition.

Students at work

Definition: Independent project or task. The student is centered on the work and learning shifts from teacher to student centered (Hetland et al., 2013).

Adaptation: An online project extends over several weeks/months with scheduled goals. Projects allow students to apply learning. Students receive multiple rounds of individual guidance and support from the teacher.

Value: A project-based approach places students at the center of learning. Teachers encourage self-assessment through reflections on the work as is and as might become (observe and envision).

Uses: Self-assessment is a skill that transfers to many contexts.

Higher education applications: Higher education students create complex papers/projects including a dissertation.

Group critique

Definition: Students present work to the class and request feedback. All comments are directed to future possibilities rather than past mistakes (Hetland et al., 2013).

Adaptation: Most online learning platforms can host face-to-face interactions for group critiques. Alternatively, students could present their project in class discussion threads for collaborative discussions.
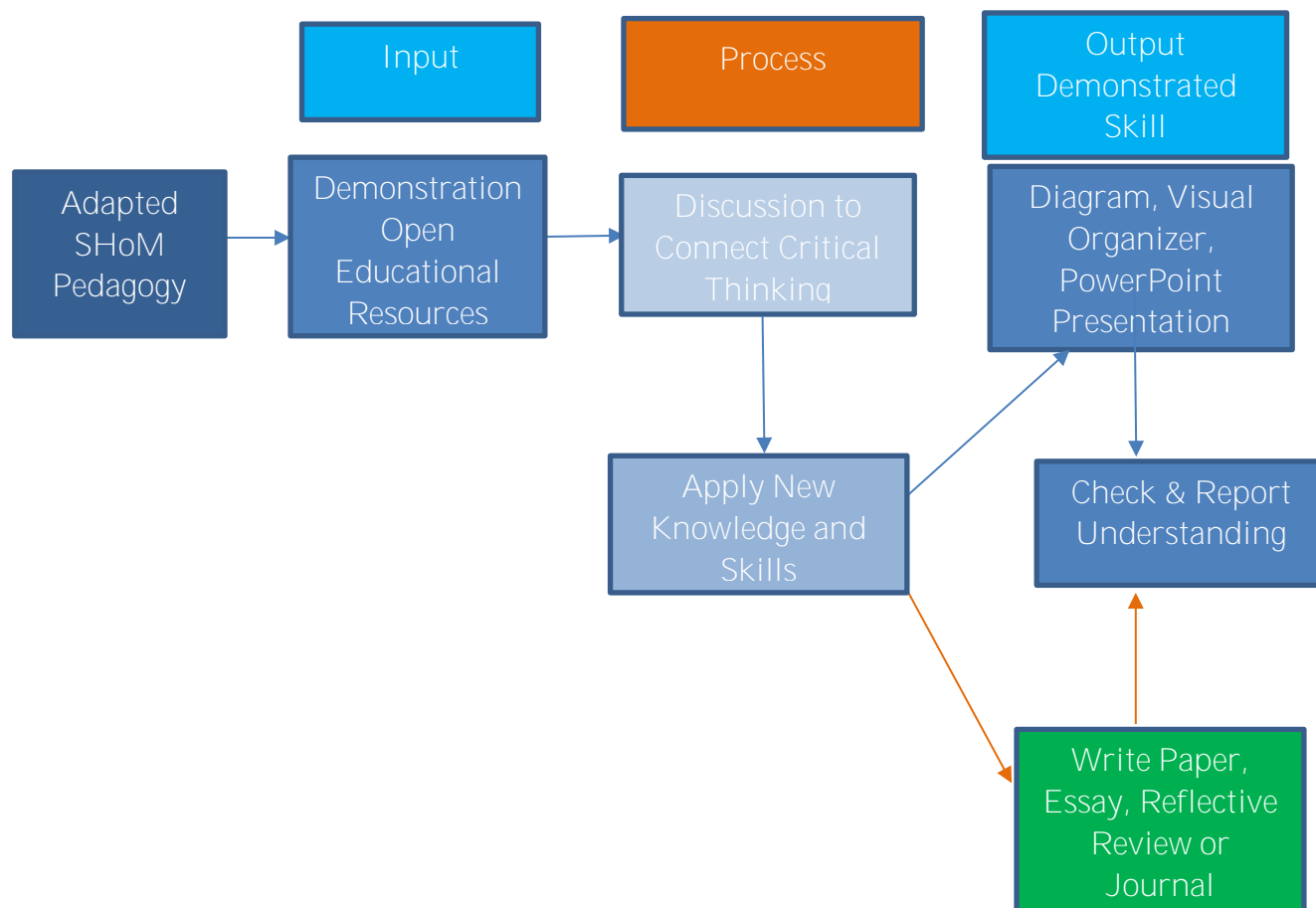
Value The entire class learns from seeing other interpretations. Students might envision other possibilities for their work to carry into future assignments.

Use: Encourage reflection and assessment to recognize and define success in personal work and that of others. Provide support for an emerging community of learners.

Higher education applications: Establish self and shared reflective habits of mind.

Note. Adapted from *Studio Thinking 2: The Real Benefits of Visual Arts Education*, by L. Hetland, E. Winner, S. Veenema, and K. M. Sheridan. Copyright 2013 Teachers College Press.

The blended model combined SHoM skills (Observe and Envision**) with Bloom's taxonom**y (Knowledge) and provided a systematic framework for reviewing OER resources to search for and imagine alternative contexts for teaching four kinds of knowledge. The first step in analyzing OERs was to define the kind of knowledge available, such as facts, procedures, concepts, and metacognition (Anderson & Krathwohl, 2001). The second step was to align two skills from the SHoM with the intent to explore and develop new processes to find and use OERs. The skill of observation is used to identify the kinds of knowledge, and the skill of envisioning is used to imagine or reimagine how that knowledge might be developed and refined. The skill of envisioning is described as a visual skill where imagination allows alternate possibilities to emerge (Hetland, et al., 2013); abductive reasoning is often described in similar terms (Benoot et al., 2016; Kolko, 2010; Thagard & Shelley, **1997). A framework (see Figure 1) was developed for lessons using OERs in the blended SHoM and Bloom's** critical thinking model.

Figure 1. *Input, Process, and Output Model adapted SHoM and Bloom's for Use in Online Classroom*

Input	Process	Output Demonstrated Skill

Adapted SHoM Pedagogy → Demonstration Open Educational Resources → Discussion to Connect Critical Thinking

Diagram, Visual Organizer, PowerPoint Presentation

Apply New Knowledge and Skills

Check & Report Understanding

Write Paper, Essay, Reflective Review or Journal

The Framework for Blended Pedagogy Model Lessons

A sample framework for lessons was developed to use when implementing the blended pedagogy model. The framework includes descriptions of the possibilities, an example of assignment instructions, directions for students, and other details. The framework included a general structure—introduction, rationale, and generic directions for a visual essay assignment as the final assignment in the blended pedagogy model. The blended pedagogy and framework were used to guide development of sample lessons that are presented in results.

Example Visual Essay Assignment

Incorporating OERs into remote learning platforms or classrooms to supplement instructional material can be seamlessly adopted in the curriculum of many post-secondary educational institutions. An example is provided below of a pedagogical assignment using OER that could be applied in many subject areas and covers a wide range of subject matters, topics, and media tools by many different learner levels to engage diverse learning behaviors and pedagogical approaches. The assignment can teach students critical leadership skills to address current and emerging issues around diversity, equity, and inclusion in their prospective career fields. Using OERs allows students to explore an immense repository of immersive media, experiences, and scenarios from diverse backgrounds and experiences. The synergistic adaptive framework can be used in higher education online classrooms or for a visual demonstration in a face-to-face environment.

Example Assignment Instructions
*We live in a visually oriented society. Much of what we read is accompanied by images that depict or support the arguments connected to specific contexts. We consume and make preliminary judgments based on the images we take in. Think about your vision as a leader in your community and how your leadership style may impact your culture. Construct or write a visual essay. This visual assignment was based on the **adage, "a picture paints a thousand words." Like an argumentative paper, the visual essay can use words** and quotes in addition to photos, videos, artwork, graphic images, tables, charts, graphs, spoken words, music, sounds, poetry, text, or cartoons. The visual essay assignment should be interesting, invoke an emotional impact, and speak to a large audience. The visual essay should be no longer than five minutes in length.*

Alternative-media options or adaptive technologies using verbal descriptions of images should be included to support all students who may be in the course.

Instructions:

- *Decide what your leadership will look like (leadership style).*
- *Gather your visual support.*
    - *Finding images for visual essays:*
        - *Wikimedia Commons*
        - *Flickr*
        - *Open Clip Art*
        - *Pixabay*
        - *Slideshare*
        - *Pikwizard*
- *Put your essay together using Apple iMovie, Windows Movie Maker, or other video software. You can include music, your voice, captions, and quotes.*
- *Publish your essay by uploading it to YouTube.*
    - *Share the link with your professor and classmates for feedback.*
        - *Include references with visual links*

Classmates will respond to the link sent and react to the visual experience.

The teaching goal had to be narrowed to develop an effective application and search strategy. The blended pedagogy would be applied using arts-based OERS to teach respect for diversity as an aspect of leadership. Teaching respect and leadership for diversity offered opportunities for teaching the four aspects of knowledge where the arts-based materials could provide shared and insightful experiences. Teaching respect and leadership for diversity is a timely topic that addresses many urgent issues in the world of the early 21st century.

Problem, Purpose, and Research Question

Online post-secondary educators lack a pedagogical model that adequately assists with navigating OER. Typical online classrooms lack the warmth and immediacy of face-to-face classrooms (Cleary, 2021). In addition, the text-based curriculum in typical online classrooms tends to be content rather than process oriented. Educators also fail to incorporate the multidimensional possibilities of technology-supported education (Tillinghast, 2020), thus depriving online students of a richer learning experience. Lost opportunities for learning in an online environment do not affect all students equally. Low income and minority students may experience the consequences of a digital divide more deeply than others during the COVID-19 pandemic and afterwards as many university programs could not manage their student needs in the online environment (Brownlee, 2020;

McKenzie, 2020). The full potential of using OER for teaching topics of diversity and leadership in higher education has not been tapped and is not yet realized (Tillinghast, 2020).

University classrooms need teaching strategies, prototypes, initiatives, and practices to ensure the success of all higher education students as the student population grows more diverse (Chen, 2017; McKenzie, 2020). Expanding teaching and learning opportunities beyond text might provide new options to integrate and teach current, relevant, and controversial topics (Tillinghast, 2020). Supporting diverse learners has the potential to transform institutions of higher education into agencies of social betterment and awareness during the 21st century inclusive of social equity and justice (Blankstein & Newsome, 2021; Chen, 2017; Goodman, 2019; Whitaker & Greenleaf, 2019). The full potential of using OER for teaching topics of diversity and leadership in higher education has not been tapped and is not yet realized (Tillinghast, 2020).

The purpose of the present study was to explore, develop, test, and refine processes to incorporate meaningful and equitable use of OER in online classrooms. The intent was to use an action-research process of interactive discussions between higher education practitioners to shape collective understanding of how to teach using OER. The research question was, *how can educators develop, test, and refine processes to use OER in meaningful and equitable ways in online higher education classrooms?*

In this insider-action research, the first insight gained from discussions with higher education colleagues was that multimedia was considered engaging but lacked educational relevance. As faculty members in higher education, we intended to offer clear explanations of the academic potential in OER multimedia teaching and learning experiences.

Method

Design

Qualitative methodology using insider action research was selected as the methodology and design. The intent was to understand the specific human lived experience of teaching and learning in an online environment. Qualitative research is preferred to understand the human lived experience (Twining, et al., 2017). Insider-action research is a qualitative research design used to understand and improve practice (Bradbury et al., 2019; Gustavsen et al., 2008; Ravitch & Wirth, 2007). The challenge was to develop actionable processes to use multimedia OER resources to provide visual and/or animated experiences and thus provide multiple resources to meet diverse learner needs. The Shani and Coghlan (2019) working definition of action research guided the work.

> Action research may be defined as an emergent inquiry process in which applied behavioural science knowledge is integrated with existing organisational knowledge and applied to address real organisational issues. It is simultaneously concerned with bringing about change in organisations, in developing self-help competencies in organisational members and adding to scientific knowledge. Finally, it is an evolving process that is undertaken in a spirit of collaboration and co-inquiry. (p. 3)

In a continuously evolving process, the research team took specific actions and collaboratively reflected on the use and applications of OERs informally for about seven years, although not every member was engaged throughout the entire time. During the inquiry period, which is documented in this article, increasingly precise insights into the use of OERs in online classrooms emerged in the cycles of action and reflection described below. These cycles of action and reflection are regarded as an essential aspect of action research (Shani & Coghlan, 2019).

A second aspect of action research is expanding relationships based on a specific practice-based interest (Shani & Coghlan, 2019); in this case, use of OERs in online classrooms. Team members shared insights within organizational frameworks through workshops, internal conferences, and informal conversations. Team members shared insights externally at national conferences (AECT, TQR, and other events). A working model emerged through several cycles of action and reflection. The model was tested on a small scale; organizational impediments identified through our work slowed the potential use of OERs.

Cycle 1

OER materials were developed for educators responsible for teaching a new program that was initiated in 2015 to introduce and acclimate new doctoral learners to the program. The training was developed by two faculty members and two administrators. The four-course program content consisted of introductions to scholarly writing, library research skills, reading research, and leadership. Faculty members were selected for this course sequence and were trained specifically for the purposes. Materials for training faculty members for the four-course entry level doctoral program were developed from a preliminary analysis of potential pedagogies applicable to OERs. A two-week training program was designed to introduce faculty to the new program content.

Two discussion questions related to OER multi-media materials were included. The first question was: *View David Perkins' video [YouTube https://www.youtube.com/watch?v=SysbpbEmh1g] on what is worth learning and consider what might be the most compelling imperative for how we design the entry-level student experience. Prepare a short reflective statement to post on Day 1.*

The second question: **How are "what if" questions used for developing original thought in scholarship? How do leaders apply "what if" thinking? Review Shell researchers who develop scenarios for possible futures based on asking "what if" questions.** *[Shell video: http://www.shell.com/global/futureenergy/scenarios.html?gclid=COahnJ_6h8ICFZSIfgodPzAA0g&gclsrc=aw.ds]*

Workshop participants found the OER materials extremely engaging. However, in their post-workshop evaluations, they doubted the long-term efficacy of videos. The research team members who collaboratively developed the training program realized that many educators who participated in the experience perceived the engaging quality of visual multi-media materials as a lack of educational rigor. Workshop participants did not recognize the multimedia OERs as holding value in the highly academic, text-oriented doctoral environment.

Cycle 2

During the years of 2016, 2017, and 2018, further multi-media OER materials were developed for use in informal internal university events such as faculty training and faculty appreciation events. Faculty members added discussion questions or informal classroom assessments that included the multi-media resources. These additions were not part of the centrally developed curriculum but represented faculty choices. Conversations about OER expanded to include more faculty and administrators.

All research team members were reading widely about OER and their potential for use in online learning. At informal meetings, conversations between the team and other faculty members revealed commonly held adverse opinions about OER. Two major objections were raised. The first was that videos were not reliably available. The second was that while OERs were engaging, they were not considered high-level learning experiences. Team members began to reflect on the need to explore explicit pedagogical value for the OERS. Some team members began analyzing, writing, and publishing about the implicit pedagogies in OERs, which were identified as primarily constructivist (Johnston et al., 2018).

Cycle 3

By early, 2019, team members were individually and collectively discussing potential applications of SHoM to **Bloom's taxonomy. Based on years of discussion, reading, and thinking about how to use OERs, team** members collaboratively developed the blended pedagogical model. Team members presented the preliminary model at several national and university conferences. Questions and comments from individuals in attendance allowed the team to gain an expanded perspective on the work. Team members began to feel they were close to a deeper understanding for using multi-media visual OERs in a stronger educational context.

By mid-2019, the team was meeting weekly to analyze online materials for possible inclusion as teaching resources and to test/refine the materials for adaptability based on the results of the analysis. By early 2020, the team had a working model of a pedagogy that blended the SHoM, **Bloom's taxonomy**, and a framework for developing lesson plans. The next step was to find a sample of OER resources that met specific criteria. Criteria included engaging presentation, potential for teaching the expanded definition of knowledge, and potential for teaching respect for diversity. By mid-2020, the model was being tested in informal settings using the blended pedagogy and materials specifically selected to meet the criteria.

Insider Participants

The six team members (see Table 3) initially met in a single online, private university either as faculty members or doctoral students. However, two individuals moved on to other organizations to accept promotions and another two accepted post-doctoral employment at public universities. One team member died during the latter part of 2019.

Still, the five remaining team members stayed connected by meeting, talking, and writing together. Extended conversations over many years revealed a common background or interest in the arts and an interest in multi-media for teaching. The insider participants who engaged in this practice-oriented study as educators had individually rich backgrounds in the arts and viewed the arts as abundant and resonant sources of engaging teaching materials.

Table 3. *Insider Participant Demographics*

Diverse roles	Arts background	Ethnicity/Age
Insider Participant 1, EdD, Faculty member at a private, non-profit university. Researcher	Visual arts undergraduate degree. Artwork shown in state and regional exhibits	White Over 60
Insider Participant 2, EdD Higher education faculty, researcher. Private university; K-12 administrator	Music and performance arts training. Artwork shown in regional exhibits. Played in college marching band and wind ensemble, community wind ensembles, and private music teacher.	White 40 to 60
Insider Participant 3, PhD. Higher Education faculty, researcher Public university	Music and performing arts training	Caucasian 40 to 60
Insider Participant 4, EdD Higher education administrator. Public university	Dance degree National professional dance experience and performer	Black 40 to 60

| Insider Participant 5, DM Consultant, Business and Operations Management | Lover of the arts | Black 40 to 60 |
| Insider Participant 6, PhD, Higher education faculty, researcher. Private and public universities. | Music training from an early age. Played in U.S. Army band. | Black 40 to 60 (deceased) |

Sample of Multimedia Materials for Online Instruction

The public multimedia materials explored and analyzed were available online between January 2016 and January 2021. As we looked for materials to use as exemplars in the collaborative inquiry, the sampling frame of OERs was further restricted to any multimedia, multimodal, or augmented reality (AR), virtual reality (VR), or mixed reality (MR) materials found online. Criteria for inclusion included engaging presentation, potential for teaching the expanded definition of knowledge (facts, concepts, procedures, and metacognition), and potential for teaching respect and leadership for diversity, which is required in most university curriculum. Text-only content was not considered, as one purpose of the study was to explore teaching materials that went beyond text and took full advantage of the technologically expanded possibilities in online classrooms.

Procedure for Identifying OERs

The search and sampling strategy comprised powerful meta-search engines including Google, YouTube, Flickr, Creative Commons, and Firefox for specific applications. Keywords were used in combination with specified filters such as Blogs, Facebook, Twitter, images, news, and more. Every box or space in the Advanced Search inquiry can limit or expand searches. Each constellation of terms produces a different result, and many were tested in the search for a purposive sample. The driving purpose was to find case exemplars that met the criteria for inclusion and could be related directly to diversity of leadership.

An Excel spreadsheet allowed side by side comparison of many potential OERs. The sample multi-media content could be any combination of words, images, animation, or other multimedia and immersive materials. The first round of analysis identified the organization or source, the media, and content (as related to diversity or leadership). Preference was given to short samples—less than a minute to no more than 20 minutes (see Appendix A). The second analysis identified the topic and engagement factor for the OER. The most promising samples were moved to another spread sheet and collaboratively evaluated again for potential value in teaching respect and leadership for diversity using the four kinds of knowledge (see Appendix B). Individual team members selected finalists for lesson development and inclusion in the article.

Results

Six exemplar learning opportunities are presented as results with a title, a descriptive text addressing the relevant concepts, pedagogical activities, possible prompts, scaffolding suggestions, and a list of sample OERs. Each exemplar was lively and engaging and could be incorporated into the blended pedagogical model.

Each exemplar OER included all four types of knowledge as defined by Bloom's taxonomy (facts, procedures, concepts, and metacognition) and required skills—observe and envision—as defined in the SHoM. A second criteria for our purposive selection was that each exemplar could be used to teach in multiple contexts for multiple purposes across a spectrum of higher education online courses. The sample OERs could be used to teach respect for diversity, and each OER could be repurposed for other educational objectives.

The blended pedagogical model where OERs substitute for an in-class demonstration was applied in each exemplar. Teacher questions stimulate discussion allowing students to connect critical thinking (Coughlan, 2008; Ulger, 2016) to the specific lesson and to an assignment for individual student work; this is followed by group critique. Dialogue supports growing student understanding after the OER and during the group critique. The skill of envision was most frequently used to speculate on alternatives in critical thinking about what had been observed. Exemplars incorporating an understanding of the blended pedagogical model are presented below.

Developing Examples: Applying the Blended Pedagogical Model to Selected OERS

Exemplar 1: Leadership for Diversity—Reshaping Identities

- Descriptive Text: The focus of the first exemplar is an examination of leadership for diversity in the reshaping of identities. Three separate OERs are used to demonstrate. William H. Johnson (1901–1970) was an American artist whose work was described as both virtuosic and eclectic. One could not **argue that Johnson's travel influenced his artistic style, but the work is open to interpretation. Maya** Angelou (1928–2014), author of *Still I Rise*, was also a singer, memoirist, dancer, civil rights activist, and author of books, plays, and television shows but is best known as a prolific poet and orator. If culture is accepted norms, expounding on how culture is displayed in the poem, *Still I Rise* is a subjective exercise where the author explores emerging identities of African Americans (*Black Folk,* in **Angelou's words). The identity of strong, colorful, independent, and active individuals emerges** further in African American dance.

- Sample Prompts: How is culture manifested and reflected through various art forms and how does it serve as an impetus to the metacognitive process? How is the act of defining an alternative identity related to leadership?

- Scaffold Learning: One derives meaning from everyday experiences which then become their way of life. Arts, as an expression of culture, is a multicultural connotation. Using art, the instructor **prompts the student to observe and envision the author's creative skill and imagination. The goal is to have students reflect and assess understanding of the artist's perceived world and that of** others.

- Sample OERs

    - *William H. Johnson's World*
      https://www.flickr.com/photos/smithsonian/albums/72157623263871511

    - *Maya Angelou's, Still I Rise* https://www.google.com/doodles/dr-maya-angelous-90th-birthday

    - *Showcasing African Americans in Dance*
      https://artsandculture.google.com/exhibit/yQIyRBPoxQ0mKg

Exemplar 2: Leadership for Climate Change

- Descriptive Text: The focus of this exemplar is on leadership and diversity of perspectives. Images of climate change can prompt deeper thinking and analysis on the part of students. For example, an immersive mixed reality video was created by The Weather Channel and The Future Group to explain climate change. In another example, The Pulitzer Center produced an OER based upon an article, Losing Earth: The Decade We Almost Stopped Climate Change, written by Nathaniel Rich and George Steinmetz (2018). Pulitzer Center hosts lesson content on visualizing climate change wherein students are asked to think about indicators of climate change in their own communities and what they may have seen in the media.

- Sample Prompts: What is the impact of climate change on your local community and everyday life? What effects might it have on the appearance of cities by the year 2100? How might leaders support action to address climate change?

- Scaffold Learning: Images of climate change can prompt deeper thinking and analysis on the part of students. Several examples of OER can be found on the web that support this line of thinking. Provide students with design tools (pens, whiteboards, paint, etc.) to create their own graphic illustrations or use existing online media to create their own visual representations. Then provide opportunities for students to discuss observations and provide feedback.
- Sample OERs
  - *The Science Behind Vanishing Ice* https://www.youtube.com/watch?v=3297Doifr7c
  - *Losing Earth: The Decade We Almost Stopped Climate Change* https://pulitzercenter.org/reporting/losing-earth-decade-we-almost-stopped-climate-change

Exemplar 3: Narratives to Organize Complex Facts

- Descriptive Text: The focus of this exemplar is leadership for diversity through narratives or stories. Stories as patterns are helpful for understanding complexity. Human stories are a way to organize experience into meaningful patterns. The first OER resource in this unit shows stories as living things where facts and experiences are organized into a meaningful and coherent narrative. Additional resources from the Shell Energy Scenario (story) team detect and extend patterns in cities where challenges exist for the amount and kinds of energy. Shell stories of how cities might become a force for attentive energy use could be useful as leaders consider alternative futures.
- Sample Prompts: How did Shell Oil develop scenarios for the future? What kinds of questions are asked in these scenarios (or stories)? What skills are required for constructing stories? How might stories or scenarios inform and guide leaders decisions about a complex and rapidly changing environment? How might these stories be used to shape the future?
- Scaffold Learning: Students work in pairs (asynchronous or synchronous) to discuss known stories about energy and skills needed to construct new stories.
- Sample OERs
  - *The Biology of Story* https://www.youtube.com/watch?v=tP9MGeqT7NI
  - *Shell Scenarios—A tool for the future* https://www.youtube.com/watch?v=GoBvGOmO8KQ
  - *Shining a new light on future cities* https://www.youtube.com/watch?v=hKgcbucHqRY

Exemplar 4: The Power of Multiple Perspectives

- Descriptive Text: For this specific exemplar, the context of leadership using new and diverse perspectives to reimagine vast possibilities was explored. Mark Applebaum, the Mad Scientist of Music, is a musician and composer who demonstrated the power of creativity by taking the ordinary and making fantastic music, both auditory and visually. He changed our notions as to what music should or could be. The intent to escape the ordinary forced Mark to reexamine his role as a musician and composer and the field of music in general. The purpose of his work is to inspire individuals to envision beyond the "traditional" to explore new means of self-expression. From this new perspective, Mark was willing to take risks and move beyond traditional parameters to find what is interesting by purposely choosing creative approaches to leading students to explore beyond the expected (Fullan, 2021). The challenge for leaders during an unprecedented time, such as COVID-19, provides the platform for individuals to adapt to the needs of their students while allowing for flexibility in multiple approaches and perspectives to instill awaken leadership concepts previously considered unimaginable (Blankstein & Newsome, 2021; Tillinghast, 2020).
- Sample Prompts: How can leaders engage in innovative thinking about accepted practices? How does a change in perspective support innovation?

- Scaffold Learning: Students review the different roles that Applebaum pursued in his search for different forms of creative expression that are interesting (i.e., interpreter, improviser, inventor, composer, scavenger, visual artist, designer, etc.) They can then do online research of ideas associated with avant-garde music (or arts) and develop an essay describing ways that conventional music might be influenced through abstract approaches to its interpretation.

- Sample OER

  - *Mark Applebaum the Mad Scientist of Music*
    https://www.ted.com/talks/mark_applebaum_the_mad_scientist_of_music?language=en

Exemplar 5: Diversity of Knowledge

- Descriptive Text: For this specific OER, a focus on leadership for diversity and culture by finding new connections was explored. Scientists **were reminded of Van Gogh's** *Starry Night* when viewing actual eddy flows of interstellar dust and gas as captured by the Hubble telescope in 2004. Through further studies, scientists detected a direct correlation between the mathematics of Kolmogorov to explain **fluid turbulence and Van Gogh's paintings during his period of psychotic agitation. From Van Gogh's work, three distinct fields of art, mathematics, and sciences are harmoniously visualized in a** single composition. The short brush strokes used by Van Gogh gave movement to the paintings, similar to how light actually bounces off of an object. These same concepts have a direct correlation to mathematics and the Kolmogorov formulas that were derived to demonstrate how turbulent flow occurs. Although the focus of the exemplar is on culture, interpretation of how an art form translates to another field, in this case physics, is indicative of how diverse university leadership and cultures may translate the use and adoption of OER applications (Jung & Lee, 2020). Where OER adoption **may have a social context in one culture, another culture's focus could be on performance expectancy** (Jung & Lee, 2020). Student understanding of the roles, applications, and impacts based on the culture of their university may be the defining parameters for envisioning the potential connection of an art form to the world at large.

- Sample Prompts: **How did Van Gogh's turbulent mind depict one of the most complex concepts in** physics? What skill was required for Van Gogh to accurately depict light bouncing off an object? How did you know this? Why would that skill (observation) be of value in science and mathematics as well as art?

- Scaffold Learning: Students define and debate the posed question that integrates the concepts of art to the sciences and how the connections can be defined.

- Sample OERs

  - *The Unexpected Math Behind Van Gogh's "Starry Night"*
    https://www.ted.com/talks/natalya_st_clair_the_unexpected_math_behind_van_gogh_s_starry_night?language=en

  - *How Did Van Gogh's Turbulent Mind Depict One of the Most Complex Concepts in Physics?*
    https://medium.com/the-omnivore/how-did-van-goghs-turbulent-mind-depict-one-of-the-most-complex-concepts-in-physics-a10d0faacdbc

Exemplar 6: The Arts as a Source of Leadership Development

- Descriptive Text: For this specific OER assignment, the focus is on the diversity in creativity abilities that can be used to develop leadership skills. Students are challenged to reflect on experiences and creative talents to determine how those skillsets translate into a particular leadership style or behavior. Future leaders will require an entrepreneurial spirit that embodies several characteristics such as the ability to respond and effectively integrate feedback, solve problems, collaborate, display empathy, practice resourcefulness, and view each failure as one step closer to

understanding the tenets of personal leadership and professional growth (Peschl et al., 2020). Whether the student is a singer, dancer, actor, painter, chef, instrumentalist, or stylist, the exercise requires imagination, inductive and deductive reasoning to draw a connection between creativity, and leadership. The exercise can be individual or group-based; regardless, knowledge is shared so students can draw on peer perspectives and feedback. Students are instructed to reflect on personal definitions of leadership, also examine who would and would not be considered a leader. The reflection component is critical as students will increasingly have to address complex and network problems in their future careers (Peschl et al., 2020).

- Sample Prompts: **What can be learned about the idea of "leadership" an**d one's personal leadership philosophy through the influence and impression of the creative arts? What knowledge, skills and abilities learned through the practice of the creative arts are transferable to leadership development?

- Scaffold Learning: Students will watch the video and envision and reflect on their personal experiences and definition of leadership. Then, they will reflect on how the creative arts affect, influence, and develop those possible skills that are critical not only to the current state of leadership but also to the abilities needed to inspire innovation for a future society.

- Sample OER

  - *Aileycamp Newark Leadership Group* https://www.youtube.com/watch?v=KoLeP2povoE

The OERS illustrated different forms of presenting and experiencing leadership including defining evolving identities; serving as an agent of change; using narratives and stories; portraying different perspectives for innovation; discovering relevant connections; and as a creative skill. The suggested example visual essay assignment could be used for any of the OER experiences with minor adjustments or modifications.

Discussion

Six educators working in either online and/or face-to-face sectors of higher education collaborated on the present study with the goal of improving personal skills and sharing new insights with other professionals in extended communities of learning. The intent was to gain a greater awareness and understanding of educational practices in a new technology powered environment that included multimedia and visual OERs. The collaborators in this study comprise a diverse team able to learn through dialogue. Some specific conclusions and recommendations based on shared insights are developed in the following sections. Within the context of supporting threshold learning based on the blended pedagogical model, a deeper understanding of the applications of scholarship by both teaches and learners is needed regardless of the classroom environment. The areas of active learning, deep learning, the processes that were tested and refined in synchronous and asynchronous online environments, and new processes that were developed and applied are presented to provide a richer perspective of how OERs can impact the level of learning and engagement of all individuals in the higher education online classroom.

The Blended Pedagogical Model Expands Two Existing Theoretical Frameworks
Through reflection on experience, a blended model was envisioned to teach critical thinking skills using visual and multimedia OERs in contrast to traditional and widely used text-based pedagogies in higher education online classrooms as described by Tillinghast (2020). In addition to teaching critical thinking skills, a blended pedagogical model was applied to imagine skills suitable for teaching in a visual environment and how multimedia or visual materials can be used to achieve outcomes in the online classroom. These skills—observing and envisioning—are process skills that can be transferred to other personal and professional contexts. Many professions, including medicine and police work, depend on close observation skills. Other professions, including engineering and design, depend on the capacity to envision and to answer questions of what works, fits, and transfers, and then teach these in a visual environment. Teaching process skills was noted as a need in MOOC distance learning (Kasch et al., 2021) and the blended pedagogy could meet that need.

The Blended Pedagogical Model Supports Threshold Learning

The blended pedagogical model and systematic analysis developed in this research was transformational for understanding how OER multimedia and visual resources can be used for distributed learning. Threshold concepts make transformational learning possible that "focuses on the understanding of the subject and has the ability to transform learners' view of the content" (Zepke, 2013, p. 98). Therefore, the use of threshold concepts are portals to open a new range of possibilities of learning; however, they often threaten the status quo for individual teachers or higher educational organizations (Tur et al., 2020) who develop relevant course curriculum. Using the blended model allows identification of resources that could be aligned with traditional academic skills without accusations by faculty or administrators that students are "just watching videos." OER multimedia and visual resources could provide important alternatives to one-dimensional text-based learning and may be particularly helpful to learners with diverse needs. In addition, a new range of visual skills that could be taught in online environments incorporating multimedia and visual resources were identified. Process skills, such as the visually oriented skills considered here, might be more accessible in the multimedia OERs (Bali et al., 2020). The full potential of OER as teaching and learning tools has yet to be recognized in higher education (Tillinghast, 2020).

Two aspects in the online learning status quo could be troublesome: (a) An increasingly centralized curriculum development process in higher education (Ren, 2019); and (b) perceptions of OERs as fleeting or unstable resources that may not persist. Centrally developed curricula may actually provide a solution, as faculty many times lack time, energy, and experience in developing OER (Ren, 2019). Centrally located curricula may meet general standards for excellence but fail to capture a relatively new source of free visual and multimedia OERs.

Active Learning

Evaluating and repurposing an OER resource requires active learning of faculty as opposed to the technical knowledge required to integrate content into an existing curriculum. For example, the insider action research (IAR) team used an active process to observe, envision, and successfully reimagine how OERs might be used in online classroom contexts. Deciding which resources might be useful and purposeful to students within established curricula, how to use these resources, and why some OERs could be important contributions to classroom engagement are steps in the active learning processes of faculty. Identifying the various forms of knowledge contained in the OERs and envisioning knowledge transfer to meet learning requirements of students in higher education online learning settings required active envisioning of potential by faculty. Finding connections between conceptual or metacognitive knowledge for teaching leadership for diversity was an active learning process to assist in student acquisition of knowledge.

As teachers and learners, the IAR team remained grounded in learner needs and compared those needs to **learning opportunities in multimedia OERs. Based on this research team's experiences** with repurposing OERs, we conclude that educators must actively find, observe, understand, analyze, evaluate, and then envision a new purpose for the resource. Therefore, the team collectively gained valuable insights through active learning and accordingly, active learning was embedded in OER exemplars to support student scholarship.

Deep Learning

OER were assessed as aligning with requirements for deep learning when used with our blended model. Deep learning can be defined as learning that can be transferred or applied in different contexts and situations and may require specific character qualities including persistence and motivation. Dede et al. (2017) suggested that educators can foster deep learning by engaging students in multiple immersive and visually based experiences, collaborative learning, case based or project-based learning, and applying the power of technology to allow connections across spatial and temporal boundaries.

The blended pedagogical model developed and applied in the current study includes the acquisition of complex insights and ideas where visual context, reflection, and further development of metaformative and metacognitive skills are required. Thus, the learning and teaching examples presented in this study align with recommendations for deep learning (i.e., identification, recognition, and comprehension) of complex models, relationships, and procedures needed to assist in resolving emerging 21st-century challenges (Dede et al., 2017; National Research Council, 2012).

Processes Were Tested and Refined in Synchronous and Asynchronous Online Environments

The blended pedagogical model could be ideal for online environments at doctoral, graduate, undergraduate, high school, middle school, or elementary school levels. The OER and follow-up student assignment could be viewed by individuals or groups synchronously or asynchronously and still remain a shared experience. The OER serves as the demonstration in the SHoM model; the demonstration is then followed by discussion where students can connect the important points through dialogue. This is easily accomplished by using discussion threads available in many online classrooms where students and faculty members contribute.

New Processes Were Developed and Applied

Navigating the vast online resources required developing and applying original processes to find and use open educational resources. Criteria inherent in the blended model became the basis for more effective search techniques to explore OER online. The team searched for multimedia or immersive and shareable OER that were engaging, included multiple modalities of information, were brief, could be easily accessed, can be gathered from a trustworthy source, and could be shaped for use as a teaching aide for multiple curricular purposes. The most reliable sources found by the team include YouTube, PBS.org. Flicker, Creative Commons, open culture.com, Hippocampus.org, Khan Academy, Vimeo, Librivox, Google. Doodle, Chrome images, and Chrome Videos.

Implications for Theory and Practice

The present study has implications for educators, curriculum developers, leaders, and researchers involved at all levels of education. Multimedia and immersive OER are changing how teaching and learning is conducted and developed. No verbal description of diversity is as vibrant as Exemplars 1, 5 and 6. Verbal descriptions of leadership cannot convey innovation through changing perspectives as Exemplar 5 or show leaders using stories to organize and communicate complex information and ideas in Exemplar 3.

Learners will not gain maximum value though from watching the OERs alone. Teacher support could be helpful and sometimes critical to deconstruct the learning process through discussion after viewing the resources. Lecture and discussion are especially important to promote student and instructor collaboration to understand and apply the abstract knowledge presented in multimedia and immersive OERs. Educators might replicate the study or transfer findings for purposes of comparing and testing further the use of OERs in their online higher education classes to further engage student learning. Also, a formal assessment of the learning outcomes that might emerge from exemplars not part of this study should be considered. Applying new understanding in a project that is shared with the larger learning group is essential as students understand and begin to own new skills and insights. The blended pedagogical model presented in this paper could be helpful to educators to maximize the benefits from the integration of technology and OERs to support online higher education.

Limitations

The descriptive nature of this qualitative study is one limitation. The exemplars presented in this study were all used in online higher education classrooms, but additional data on student or teacher reactions was not

collected. The experiences described in this paper might not be replicated in other settings or contexts. However, care was applied to develop credible research in the hope of gaining a level of trustworthiness and transferability to other online higher education classroom learning experiences.

Specific principles were addressed during the study using specific exemplars that were selected for that purpose. The purposive OER exemplars were established with the goal of applying a blended pedagogical model to a defined teaching focus—leadership for diversity. One purpose of this action research project was to describe the actions intended to answer the research questions. Finally, readers might find resonance in their teaching practices supporting the integration of OERs in online classes as suggested by Tracy (2010) that may be reflective of the findings reported here and their own observations.

Conclusion

In contrast to traditional classroom formats (online or face-to-face) in which teaching occurs in a traditional text-based environment, educators need a new mindset to work with multimedia and visual resources originally developed for purposes that differ from meeting specific learning outcomes or objectives in online classrooms (Tillinghast, 2020). The blended pedagogical model incorporated two existing pedagogical **frameworks. Bloom's taxonomy provides a compendium and definition, which is useful for recognizing and** assessing various thinking strategies. SHoM emerged in visual environment contexts and is based on concrete outcomes and shows how to achieve specific habits of mind.

The blended pedagogical model provides scaffold teaching and learning opportunities that were not visible in **either Bloom's taxonomy or SHoM alone. This blended pedagogical model scaffolds the "how" when** using a visual approach to curriculum development that may enrich the learning experiences of students when presented in online higher education classrooms. The introduction of OERs that are specific to the class content would be incorporated into the weekly assignments to develop the visual skills of students in an online learning environment. Students, through reflection of the OER assignments presented in their classes, could then develop the visual skills of observe and envision that may be helpful in professions where visual acuity is essential.

Active learning was required for teaching and learning in the OER enriched online classroom. Educators are using the blended pedagogical model as a means of incorporating OER in online higher education classrooms. Students benefit from a learning experience that is more engaging where complex thinking skills can be acquired and applied. Educators, who are actively involved in shaping and reshaping curricular materials for teaching, are developing a practitioner perspective as an identity that goes beyond that of a technician managing and implementing a pre-developed curriculum (Tur et al., 2020).

More practice-based research is required to better understand what new faculty proficiencies may emerge in the OER enriched classroom that could engage a new population of online higher education learners. Additional research may be needed to fully understand how the selection of OERs actually benefits student online learning. Higher education classroom instructors and curriculum developers have an opportunity to review and incorporate the approaches and exemplars described within this article into their programs and course content. Experimenting with different OERs and forms of online media delivery can open new ways to teach and provide dynamic contexts for learning in the modern online classroom. For educators, the approaches presented in this article may allow for innovative teaching practices and assessing how well students have demonstrated acquired course content knowledge, diverse learning perspectives, and leadership skills through the skills learned in an OER enriched online classroom learning environment.

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Appendix A

OER Metasearch-Selected Examples

Category	Type	General URL	Specific Examples and URL	Observations
Search Engines				
	Creative Commons	https://creativecommons.org/	Leadership in the 21st century https://www.whitemarketpodcast.eu/ Modern Love from the New York Times https://vimeo.com/135288462	Meta site offering free media
	You Tube	https://www.youtube.com/	Bob Dylan and Danny Kalb recording in 1961. https://www.youtube.com/watch?v=cHDK-_Ss2Nk Art in the time of Black Power Brooklyn Museum https://www.youtube.com/watch?v=cHDK-_Ss2Nk	Search terms reveal unique resources
	PBS	https://www.pbs.org/video/	Sufism in Art: https://www.pbs.org/video/sundayarts-islamic-art-at-the-brooklyn-museum/	Light of the Sufis: The Mystical Arts of Islam
	Flickr	https://www.flickr.com/	https://www.flickr.com/search/?text=Bob%20Dylan	Images many in Creative Commons
	Open Sources	http://www.openculture.com	Phillip K.Dick short stories http://www.openculture.com/page/382	Similar to Creative Commons open access arts oriented
Multimedia Examples				Leadership and Cultural Studies
	Hippo Campus	www.hippocampus.org	Evolution of Behavior (https://www.hippocampus.org/HippoCampus/Biology;jsessionid=152E99B4418DEA12C84BA058D9FAF51F?view=Media	Monterey Institute of Technology and Education (MITE) project, resources for high school/college. LCS

	Khan Academy	https://www.khanacademy.org/about	Your Unique Perspective (https://www.khanacademy.org/partner-content/pixar/storytelling/we-are-all-storytellers/v/video1-final)	Short educational videos on many subjects; especially in science and math.
	Create Commons Search	https://search.creativecommons.org/	Google Image—Topic: Perspective (https://www.maxpixel.net/Empty-Umbrella-Perspective-Colourful-Street-Avenue-3517541)	Various media, including images, music, and videos
	Vimeo	https://vimeo.com/	Time-lapse of blooming flower (https://vimeo.com/stock/clip-275605249-4k-time-lapse-shot-of-white-lily-flower-blooming)	CC license filter for Vimeo in Google Advanced Search options
			Skyglow Mojave Desert-https://vimeo.com/153992994	Haunting images of Sky by Harun Mehmedinovic
Image & Artwork				
	Librivox	https://librivox.org/	The Story of the Calico **Clown: The Clown's Dance** https://ia801501.us.archive.org/22/items/calicoclown_1904_librivox/calicoclown_03_hope_128kb.mp3	Volunteers read public domain audiobooks.
	Prelinger Archives	https://archive.org/details/prelinger?&sort=-downloads&page=2	1960 Kennedy Debate-Nixon Debate (Part 1) https://archive.org/details/1960_kennedy-nixon_1	Thousands of short films in education, advertising, and industry.
	Google Doodles	https://newsmaven.io/indiancountrytoday/news/today-s-google-doodle-the-jingle-dress-AryRIziemEC5OiauJD52zg/	The Jingle Dance: Native American women dances, with excellent short videos onsite.	Celebrations of achievement by individuals who might be missing in some historical accounts.
Special Interest				

Marshall McLuhan Speaks	http://www.marshallmcluhanspeaks.com	Marshall McLuhan interviews, lectures, panels, sound-bites address new media impact.	Homepage example: Global village LCS
Virtual Reality for Education	http://virtualrealityforeducation.com/resources/	Multiple free or low-cost augmented lessons in history, archeology, science, other disciplines	High school or college
Inspiration Feed	https://inspirationfeed.com/15-thought-provoking-videos-that-will-change-your-life/	thought-provoking videos	A Message For All Of Humanity—Charlie Chaplin https://youtu.be/CsgaFKwUA6g LCS
The Justice Project	http://justiceproject.org/get-involved/videos/	Social Justice	Marlee Matlin, Actress Voices on Social Justice https://youtu.be/2OgBDkckAAI LCS
The It Gets Better Project	https://itgetsbetter.org/stories/	Great example: https://itgetsbetter.org/story/obama-it-gets-better/ The original It Gets Better Video on YouTube: https://youtu.be/7IcVyvg2Qlo	Reflections/ acceptance from the LGBTQ community LCS

Appendix B

Analysis of Exemplars

Exemplar	Application	Organization Context/Focus	A	B	C	D
1	**William H. Johnson's World on Paper** https://www.flickr.com/photos/smithsonian/albums/72157623263871511	Culture images only	X	X		
1	**How does culture manifest itself in Maya Angelou's** poem, *Still I Rise* https://www.google.com/doodles/dr-maya-angelous-90th-birthday	LCS animation	X	X		X*
1	How is culture reflected in dance https://artsandculture.google.com/exhibit/yQIyRBPoxQ0mKg?	LCS video	X	X	X	X*
2	The Weather Channel and The Future Group to explain climate change. https://www.youtube.com/watch?v=3297Doifr7c	L video animation	X	X		
2	*Losing Earth, The Decade We Almost Stopped Climate Change,* by Nathaniel Rich and George Steinmetz (2018). https://pulitzercenter.org/builder/lesson/visualizing-climate-change-24828	L: video	X	X		X
3	The Biology of Story: https://www.youtube.com/watch?v=tP9MGeqT7NI	LCS: animation	X	X		X
3	Modeling Scenarios https://www.youtube.com/watch?v=GoBvGOmO8KQ	LCS video animation	X	X	X	X*
3	The role of cities: https://www.youtube.com/watch?v=6zrhNzt2cCw	L video	X	X	X	X
3	Shining a light in the cities: https://www.youtube.com/watch?v=hKgcbucHqRY	L Video animation	X	X	X	X
#	Flotsam: David Weisner: https://www.youtube.com/watch?v=rxmSpQqKUU0	LCS animation	X	X		X*
4	The Mad Musician; https://www.ted.com/talks/mark_applebaum_the_mad_scientist_of_music?language=en	L video animation	X	X	X	X*
5	**The unexpected mathematics behind Van Gogh's** *Starry Night* https://www.ted.com/talks/natalya_st_clair_the_unexpected_math_behind_van_gogh_s_starry_night?language=en	CS animation	X	X		X*

			A	B	C	D
6	Alvin Ailey teaches leadership through Dance (Nehprii, 2014) https://www.youtube.com/watch?v=KoLeP2povoE	LCS: video	X	X	X	X*
#	Black Hole demonstration: https://www.nytimes.com/2018/10/30/science/black-hole-milky-way.html?action=click&module=MoreInSection&pgtype=Article&region=Footer&contentCollection=Science	Observe, Reflection, Connections of old and new knowledge	X	X	X	X*
#	The Art of the Metaphor: https://www.youtube.com/watch?v=A0edKgL9EgM	LCS Perspective, Reflection	X	X	X	X*
#	The Statue of Liberty https://www.nytimes.com/interactive/2018/11/13/nyregion/statue-of-liberty-torch-ar-ul.html?smid=nytcore-ios-share	LCS Perspective, Reflection	X	X		
#	Rescuing the boys in the Thai Cave. https://www.nytimes.com/interactive/2018/07/21/world/asia/thai-cave-rescue-ar-ul.html	LCS Perspective, Reflection	X	X		X
#	The Gift of Optimism https://vimeo.com/265585681	LCS Perspective, Reflection	X	X		X*
#	Outgrowing https://www.youtube.com/watch?v=FJJKm6WaGp4	LCS Perspective, Reflection	X	X	X	X*

Legend: Column A-Factual Knowledge; Column B-Conceptual Knowledge; Column C-Procedural Knowledge; Column D-Metacognition. * Needs teacher support during post demonstration discussions or lecture. # Exemplar was not included in final analysis

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