



JOURNAL OF
ONLINE LEARNING
RESEARCH AND PRACTICE

Journal of Online Learning Research and Practice

Volume 7, Number 2 • 2019

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Editor's Preface

Kathleen J. Tate, Ph.D.

I am pleased to present the first issue of *Journal of Online Learning Research and Practice*. The title change from *Internet Learning* reflects the journal's scope and purpose with more clarity. The goals are to attract more readers and potential authors and to increase the journal's visibility.

Within this issue, you will find book and media reviews, perspectives from the field, and practice-based articles. Pieces feature descriptions of an online university converting course materials to Open Educational Resources (OERs) on a large scale, the process of a traditional university creating animated scenarios to support teacher education majors in learning classroom management more interactively, and considerations for effective faculty practices in online forum discussions.

Drs. Rodriguez and Lotze write about their university's wide restructuring of its undergraduate course materials to OERs discussing the processes, interdepartmental collaborations, and preliminary results of course conversions. Brannum and Drumhiller (2017/2018) cited the United Nations Educational, Scientific, and Cultural Organization's (UNESCO's) definition of OERs as including "any type of educational materials that are in the public domain or introduced with an open license" (p. 41). Research on OERs' impact on student learning outcomes is increasing, but the body of literature continues to be somewhat sparse. In a recent study, Springer (2019) concluded, "data seem to suggest that student learning is significantly improved when the course is taught with a customized OER" and that "results suggest that student learning outcomes were not negatively affected by the use of OER." Considering the impact of moving from physical to electronic texts, Cramer and Douglas (2018/2019) found "that students assigned electronic or physical course materials were equally likely to be successful on different types of assessments, as well as with overall completion of the course" (p. 10). Rodriguez and Lotze add depth to the conversation by sharing detailed considerations that may help other institutions successfully transition to OER environments for the benefit of constituents, including students.

Like OERs, another timely topic in the area of learning objects is the use of animation for active learning exercises. Various studies examine the use of animation in higher education (Chan, 2015; Taylor, Pountney, & Malabar, 2007; Vernon & Peckham, 2002; Wishart, 2017). Drs. Tripp and Seals and doctoral student Robertson Bassy delineate their project to create animated scenarios and shift away from paper-based scenarios to support preservice teachers in applying classroom management methods to solve and prevent K-12 behavioral incidents. Their Spectrum education tool is interactive, cross-platform independent, and supported on

almost all devices. They conclude that their usability testing shows the application is easy to use and effectively supports preservice teachers in classroom management development and decision-making.

As more institutions shift to offering online courses and trainings, focusing on effective instructor discussion methods is important. Zhou (2015) conducted a comprehensive review of empirical studies from 2000-2014, and found a range of approaches, variables of focus, and types of studies. Drs. Bogar and Spencer present their four specific elements and related strategies for faculty members, or online facilitators, to implement for effective student engagement and interactions in online settings.

In the From the Field section, Dr. Vernon Smith, Senior Vice President and Provost at American Public University System, is featured in *3 Questions for an Online Learning Leader*. Dr. Smith adds insights to incorporating OERs by adding considerations from a leadership/administrative perspective. He discusses aspects of competency-based learning and shares views on future trends in online education.

Dr. Heidi Lockwood's book review provides an overview of eLearning Industry's (2017) e-book *The Ultimate Guide to eLearning Infographics*. Dr. Lockwood gives an overview of the book's seven articles, which focus on simple steps, tips, and guidelines for creating and using infographics in learning contexts to enhance course design. The goal is to balance text and visuals and points draw from cognitive science and other fields.

In this issue's media review, Andrea Dunn responds to questions about her oversight of electronic course materials. She explains challenges with technology integration of OERs and other online materials, related analytics, and general database management. Andrea answers questions about changes and trends in curating and managing electronic course materials.

This issue provides a range of practices and tools for university constituents to consider with a larger emphasis on OERs. Articles capture examples, theory, and experience from the field. As always, I hope you extract discussion points that you can share with your own students, colleagues, or supervisors to prompt new directions in discourse, research, and practice.

Enjoy!

Dr. Kathleen J. Tate,

Editor-in-Chief of *Journal of Online Learning Research and Practice*

Prefacio de la editora

Kathleen J. Tate, Ph.D.

Me complace presentar el primer número de *Journal of Online Learning Research and Practice*. El cambio de título de *Internet Learning* refleja el alcance y el propósito de la revista con más claridad. Los objetivos son atraer a más lectores y autores potenciales y aumentar la visibilidad de la revista.

Dentro de este número, encontrará reseñas de libros y medios, perspectivas del campo y artículos basados en la práctica. Las piezas presentan descripciones de una universidad en línea que convierte los materiales del curso en Recursos Educativos Abiertos (REA) a gran escala, el proceso de una universidad tradicional que crea escenarios animados para apoyar a los mayores de educación docente en el aprendizaje de la gestión del aula de manera más interactiva y consideraciones para prácticas efectivas de la facultad en discusiones en el foro en línea.

Los Dres. Rodríguez y Lotze escriben sobre la reestructuración amplia de su universidad de sus materiales de cursos de pregrado a los REA que discuten los procesos, las colaboraciones interdepartamentales y los resultados preliminares de las conversiones de cursos. Brannum y Drumhiller (2017/2018) citaron la definición de REA de la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO) que incluye "cualquier tipo de material educativo de dominio público o introducido con una licencia abierta" (p. 41) La investigación sobre el impacto de los REA en los resultados de aprendizaje de los estudiantes está aumentando, pero el cuerpo de literatura sigue siendo algo escaso. En un estudio reciente, Springer (2019) concluyó que "los datos parecen sugerir que el aprendizaje de los estudiantes mejora significativamente cuando el curso se imparte con un REA personalizado" y que "los resultados sugieren que los resultados del aprendizaje de los estudiantes no se vieron afectados negativamente por el uso de REA "Considerando el impacto de pasar de textos físicos a electrónicos, Cramer y Douglas (2018/2019) descubrieron que" los estudiantes asignados a materiales de curso electrónicos o físicos tenían la misma probabilidad de tener éxito en diferentes tipos de evaluaciones, así como con la finalización general de el curso "(p. 10). Rodríguez y Lotze agregan profundidad a la conversación al compartir consideraciones detalladas que pueden ayudar a otras instituciones a realizar una transición exitosa a entornos REA en beneficio de los constituyentes, incluidos los estudiantes.

Al igual que los REA, otro tema oportuno en el área de los objetos de aprendizaje es el uso de animación para ejercicios de aprendizaje activo. Varios estudios examinan el uso de la animación en la educación superior (Chan, 2015; Taylor, Pountney y Malabar, 2007; Vernon y Peckham, 2002; Wishart, 2017). Los Dres. Tripp and Seals y el estudiante de doctorado Robertson Bassy delinearon su pro-

yecto para crear escenarios animados y alejarse de los escenarios basados en papel para apoyar a los maestros en servicio en la aplicación de métodos de gestión de aula para resolver y prevenir incidentes de comportamiento K-12. Su herramienta educativa Spectrum es interactiva, multiplataforma independiente y compatible con casi todos los dispositivos. Llegan a la conclusión de que sus pruebas de usabilidad muestran que la aplicación es fácil de usar y que efectivamente apoya a los maestros en servicio en el desarrollo de la gestión del aula y la toma de decisiones.

A medida que más instituciones cambian a ofrecer cursos y capacitaciones en línea, es importante centrarse en métodos efectivos de discusión de instructores. Zhou (2015) realizó una revisión exhaustiva de estudios empíricos entre 2000 y 2014, y encontró una variedad de enfoques, variables de enfoque y tipos de estudios. Los Dres. Bogart y Spencer presentan sus cuatro elementos específicos y estrategias relacionadas para que los miembros de la facultad, o facilitadores en línea, implementen para la participación e interacción efectiva de los estudiantes en entornos en línea.

En la sección Desde el campo, el Dr. Vernon Smith, Vicepresidente Senior y Rector del Sistema de la Universidad Pública Americana, aparece en 3 preguntas para un líder de aprendizaje en línea. El Dr. Smith agrega ideas para incorporar REA al agregar consideraciones desde una perspectiva administrativa / de liderazgo. Analiza aspectos del aprendizaje basado en competencias y comparte puntos de vista sobre las tendencias futuras de la educación en línea.

La reseña del libro de la Dra. Heidi Lockwood proporciona una visión general del libro electrónico de la industria del aprendizaje electrónico (2017) La guía definitiva para la infografía del aprendizaje electrónico. El Dr. Lockwood ofrece una descripción general de los siete artículos del libro, que se centran en pasos simples, consejos y pautas para crear y usar infografías en contextos de aprendizaje para mejorar el diseño del curso. El objetivo es equilibrar el texto y las imágenes y los puntos extraídos de la ciencia cognitiva y otros campos.

En la revisión de los medios de este número, Andrea Dunn responde a preguntas sobre su supervisión de los materiales electrónicos del curso. Explica los desafíos con la integración de tecnología de REA y otros materiales en línea, análisis relacionados y administración general de bases de datos. Andrea responde preguntas sobre cambios y tendencias en el comisariado y la gestión de materiales de cursos electrónicos.

Este tema proporciona una gama de prácticas y herramientas para que los constituyentes universitarios lo consideren con un mayor énfasis en los REA. Los artículos capturan ejemplos, teoría y experiencia del campo. Como siempre, espero que extraiga puntos de discusión que pueda compartir con sus propios estudiantes, colegas o supervisores para impulsar nuevas direcciones en el discurso, la investigación y la práctica.

¡Disfrute!

Dra. Kathleen J. Tate,

Editora Principal de *Journal of Online Learning Research and Practice*

编者序

Kathleen J. Tate博士

我很高兴介绍《网络学习研究与实践期刊》第一期。从“网络学习”到“网络学习研究与实践”，期刊名称的变更更清晰地反映了本刊的范围和目的。变更名称的目的是吸引更多读者和潜在作者，并提高本刊的可见性。

本期内容中，你将发现书评和媒体评论、领域视角、和基于实践的文章。文章着重描述了一所将课程资料大规模转变为开放教育资源（OERs）的网络大学；强调了一所传统大学为支持师范教育专业更具互动性地学习课堂管理而创造动画场景的过程；衡量了网络论坛讨论中的有效教师实践。

作者Drs. Rodriguez 和Lotze描述了其所在大学将本科课程材料转换为OERs的大范围重组工作，探讨了过程、部门间协作和课程转换的初期结果。作者Brannum和Drumhiller(2017/2018)引用了联合国教科文组织（UNESCO）对OERs的定义，即包括“公共领域中的或是通过开放式许可证引入的任何类型的教育资料”（p. 41）。有关OERs对学生学习成果的影响的研究正在增加，但文献资料依然有些匮乏。在一项近期研究中，Springer (2019)的结论认为，“数据似乎暗示，当使用定制化的OER进行授课时，学生的学习情况会显著提升”，并且“研究结果暗示，学生的学习成果并没有因OER的使用而受到消极影响”。考虑到从实体文本到电子文本所产生的影响，作者Cramer 和Douglas (2018/2019) 发现，“那些被分配使用电子或实体课程材料的学生不论在面对不同类型的评估、或是在课程的整体完成度上，都具备同等程度的成功可能性”（p. 10）。作者Rodriguez 和Lotze通过分享细致的思考过程，为沟通增添了深度，思考过程有可能帮助其他机构成功完成转向OER的过渡，为包括学生在内的大学成员谋福利。

和OERs一样，在学习领域中另一个及时的主题是使用动画进行积极学习训练。不同研究检验了动画在高等教育中的使用（Chan, 2015; Taylor, Pountney, & Malabar, 2007; Vernon & Peckham, 2002; Wishart, 2017）。作者Drs. Tripp、Seals 和博士生Robertson Bassy详细描述了他们为创造动画场景并从基于纸张的场景中转移的课题，以期支持职前教师应用课堂管理方法解决和防止K12基础教育行为事件。他们的Spectrum教育工具具有互动性、跨

平台独立性，同时支持在几乎所有设备上的使用。他们的结论认为，根据其实施的可用性测试，该应用程序易于使用，并且有效支持职前教师进行课堂管理开发和决策。

鉴于更多的机构转向提供网络课程和培训，聚焦于有效的教师讨论方法则尤为重要。作者Zhou (2015) 对2000年至2014年间的实证研究进行了全面综述，发现了一系列方法、焦点变量、和研究类型。作者Drs. Bogart 和 Spencer 为教师成员或网络协助者介绍了四个特定的研究要素和相关策略，以期在网络背景下实施有效的学生参与和互动。

在领域之声 (From the Field) 版块，美国公立大学系统的高级副董事兼教务长Vernon Smith博士，是“为网络学习领袖准备的三个问题”的专访人物。Smith博士通过从一个领导者/管理者的视角加入思考，为整合OERs提供了见解。他探讨了基于能力的学习，并分享了有关网络教育未来趋势的观点。

Heidi Lockwood 博士撰写的书评对电子学习产业 (2017) 的电子书《电子学习信息图终极指南》进行了概述。Lockwood博士概述了这部著作中的七篇文章，后者聚焦于在学习背景中创造和使用信息图的简易步骤、建议和指南，以期提升课程设计。目标是均衡从认知科学和其它领域中获取的文本、视觉画面和要点。

在本期的媒体评论版块，作者Andrea Dunn回应了有关其负责电子课程资料的疑问。她解释了与将OERs和其他网络资料、相关分析学、以及一般数据库管理进行技术整合的相关挑战。Andrea回答了有关电子课程资料管理中的变化和趋势的疑问。

本期为大学教师和学生提供了可供衡量的一系列实践和工具，着重强调了OERs。文章研究了该领域中的实例，提供了理论和经验。一如既往，我希望你从中提炼出探讨要点，与你的学生、同事或教师进行分享，以期在话语、研究和实践中激发出新方向。

祝阅读愉快！

Kathleen J. Tate博士

《网络学习研究与实践期刊》主编

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The APUS Open Educational Resources (OER) Conversion Project

Jose A Rodriguez and Conrad Lotze

American Public University System (APUS), USA

ABSTRACT

By providing free and open access to learning, the Internet continues to be a driving force in changing the educational landscape. In the area of higher education, open educational resources (OERs) provide students with access to no- and low-cost learning. OERs give higher education leaders the opportunity to restructure delivery methods of learning resources and ensure more efficient and targeted practices. In 2017, the American Public University System (APUS) embarked on a major university-wide initiative to restructure all of its undergraduate courses with OERs. Much has been written on the efficacy of OERs in a variety of educational models throughout higher education. Although the research is replete with studies on changing faculty perceptions of OERs, research on the financial efficacy of OERs is still emerging. This paper, focused on APUS' efforts to adopt OERs, includes discussion of how such conversions relate to APUS's mission and vision in higher education and the work done by others in this space. Highlighted are the workflow aspects, various processes, involved departments, and preliminary results.

Keywords: open educational resources (OERs), undergraduate, higher education

El Proyecto de conversión de Recursos Educativos Abiertos (REA) de APUS

RESUMEN

Al proporcionar acceso gratuito y abierto al aprendizaje, Internet continúa siendo una fuerza impulsora para cambiar el panorama educativo. En el área de la educación superior, los recursos educativos abiertos (REA) brindan a los estudiantes acceso a aprendizaje sin costo o de bajo costo. Los REA brindan a los líderes de la

educación superior la oportunidad de reestructurar los métodos de entrega de recursos de aprendizaje y garantizar prácticas más eficientes y focalizadas. En 2017, el American Public University System (APUS) se embarcó en una importante iniciativa a nivel universitario para reestructurar todos sus cursos de pregrado con REA. Existen muchos textos sobre la eficacia de los REA en una variedad de modelos educativos a lo largo de la educación superior. Aunque la investigación está repleta de estudios sobre las percepciones cambiantes de la facultad de los REA, la investigación sobre la eficacia financiera de los REA todavía está emergiendo. Este documento, centrado en los esfuerzos de APUS para adoptar REA, incluye una discusión sobre cómo esas conversiones se relacionan con la misión y visión de APUS en la educación superior y el trabajo realizado por otros en este espacio. Se destacan los aspectos del flujo de trabajo, diversos procesos, departamentos involucrados y resultados preliminares.

Palabras clave: recursos educativos abiertos (REA), pregrado, educación superior

APUS开放教育资源（OER）转换计划

摘要

通过提供免费开放存取学习，互联网继续充当改变教育前景的驱动力。在高等教育领域，开放教育资源（OERs）为学生提供无成本或低成本学习机会。OERs为高等教育领导人提供机遇，以重组学习资源的交付方式，确保更高效、目标更明确的实践。2017年，美国公立大学系统（APUS）启动一项覆盖全校的大型倡议计划，用OERs重组所有大学生课程。许多文献研究了OERs在一系列高等教育模式中展现的效能。虽然已有许多研究聚焦于改变教师对OER的感知，但有关OERs的财务效能研究还在不断增加。本文聚焦于APUS在采用OERs一事上所付出的努力，对“这类教育模式转换如何关乎于APUS在高等教育中的使命和愿景、以及其他人在该领域所做的贡献”进行了探讨。重点强调的有工作流程、各项过程、所涉部门和初期结果。

关键词：开放教育资源（OERs），大学生，高等教育

The American Public University System (APUS) originated with the establishment of American Military University (AMU), founded in 1991, by a former Marine officer. The institution's purpose was to "provide career-relevant, distant education for a mobile population of military learners" (APUS, 2016, para. 1). As it grew, AMU was reorganized into APUS; in 2002, American Public University (APU) was added to "provide the same quality, affordable, and flexible education to a broader audience of motivated working adults" (APUS, 2016, para. 2). From its inception and through its rapid growth, currently at approximately 80,000 students, APUS continues to meet its commitment to provide access to higher education, even as the costs of tuition and learning resources across the country have continued to strain university and student budgets.

In order to fulfill its mission in higher education and manage the extent of student expenses beyond tuition, APUS includes the cost of undergraduate textbooks and other learning resources associated with each course as part of a student's base tuition. APUS has raised tuition only once in the past 15 years. This allows the university to keep student debt low. The current average tuition-per-credit-hour rate is \$270—\$250 with a military grant—at the undergraduate level and \$350—\$325 with a military grant—at the graduate level (APUS, 2016). This means that active-duty military members using GI Bill benefits may complete their education with the University without incurring out-of-pocket expenses.

However, the institution is not immune to budget challenges, and many graduate students still face the high cost of textbooks. APUS traditionally spent many millions of dollars annually on Electronic Course Materials (ECMs) for undergraduate students through its book grant policy. The rising cost of textbooks is well documented (Lindshield and Adhikari, 2013). Faced with the major challenge of increasing costs for textbooks and accompanying learning resources, APUS enthusiastically entered the Open Educational Resource (OER) space as a way to continue meeting its mission of expanding online access to affordable, relevant, high-quality higher-education offerings. APUS is completely online; students access and use Sakai as their Learning Management System (LMS), which holds the ECMs referenced herein.

What Are Open Educational Resources?

OERs are free or low-cost openly licensed educational materials for use in teaching, learning, and research. [The William and Flora Hewlett Foundation](#) (2016) defined OERs 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. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests,

software, and any other tools, materials, or techniques used to support access to knowledge.

Another definition from the [OER Commons](#) (2018) stated:

Open Educational Resources are teaching and learning materials that you may freely use and reuse, without charge. OER often have a Creative Commons or GNU license that state specifically how the material may be used, reused, adapted, and shared.

As long as there is proper attribution assigned, one may revise, edit, and republish OERs to meet various educational needs.

Trends in the Literature

The literature on OERs is sparse and relatively new (Aremellini & Nie, 2013), yet reveals that the movement toward OERs is not without resistance. Mazoue (2012) highlighted a higher-education system still clinging to an educational platform of the past, and outlined four university realities that are forcing institutions to make this change: “the emergence of the learning sciences, the wikification of knowledge, the unbundling of faculty roles, and the migration of learning online” (p. 75). Institutions of higher learning should no longer ignore evolving societal educational trends and need to reflect those structural changes in their practices.

Bonk (2012) focused on the learning sciences and outlined three major trends to which universities must

pay special attention: learner engagement, pervasive access, and customization. Overall, he argued that the learning sciences are redefining how people pursue education in the face of technological changes. In Education 3.0, instructors attempt to foster learning autonomy and self-directed learning (Keats & Schmidt, 2007). Learning in the 21st century transitions the role of instructor from imparting knowledge to facilitating and mentoring the learning process. One might describe this evolution as a movement away from educators as *sages on the stage* to *guides on the side*. Technological and social trends are rapidly changing the higher education panorama, and universities must adapt to remain relevant.

Financial Efficacy

OERs provide institutions with a viable option for addressing emerging trends. The research on reducing costs for students is well documented (Colvard, Watson, & Park, 2018). APUS spends large sums annually on ECMs for undergraduate students via its book grant policy, which supplies all undergraduate students with e-texts. APUS continues to seek ways to reduce these costs while also maintaining a high-quality student experience and avoiding increasing the rates at which students withdraw, earn incompletes, or earn grades of D or F. (i.e., Drop/Fail/Withdraw/Incomplete [DFWI] rates). In 2017, the goal set for the APUS Academics Department was to reduce e-text costs by at least \$2 million dollars for the year. APUS strives to continue to reduce ECM costs when appropriate and viable, while remaining

focused on maintaining a high-quality student experience.

Competitor OER Conversion Data

Specific data on how much money APUS's competitors have spent to convert courses to OERs are difficult to acquire. With a few exceptions, competitors tend not to share their course-conversion figures. However, a search of available online articles yielded some interesting indicators of the scale of actions taken by others, primarily state university systems. Many of these initiatives supported by states are through grant funding made available to faculties for this purpose.

Recent articles have claimed that University of Maryland University College, the University of Minnesota, Oregon State University, and the Washington State Community College systems have started converting course materials to OERs, resulting in substantial savings for students (American Council on Education, 2015; Millard, 2014). Several relatively large expenditures mentioned in the articles are both interesting and important to note, especially due to APUS relying largely on full-time faculty (FTF) to accomplish these tasks as part of their annual work agreements. By involving faculty members from the outset of the project, APUS maintains low costs and increases faculty buy-in and curricular ownership.

The University of Connecticut (n.d.) has engaged faculty members in an OER conversion project, as has Tidewater Community College (n.d.) in Virginia. The preliminary results were very positive, as a majority of

students reported satisfaction with the free materials provided (Adams, 2017). An OER fellowship program based in the University of Hawaii Community College system also resulted in savings for students via conversion of existing course materials to OERs (Oshiro & Risely, 2016). Similar, the State of Michigan's OER Textbook Initiative was successful at reducing costs to students; the University of British Columbia system in Canada achieved similar results (Rodriguez & Pieri, 2017). The Ohio government's efforts to convert courses to OERs include grant funding for faculties in its state university system (Vogt, 2014). An OER initiative at the University of Massachusetts-Amherst was successful, as was one based in the University of California-Los Angeles library system, which pays faculty members small stipends to convert courses to OERs (Salem, 2017).

The New York and California state university systems are investing millions in OER conversion. When such states adopt an initiative, the rest of the nation typically follows. More states are beginning to fund efforts to convert courses to OERs, and the federal government recently announced \$5 million dollars in grants for institutions seeking to begin this work (SPARC, 2018; Dimeo, 2017).

Notably, major publishers have started to enter the OER movement. Among others, Lumen and VitalSource recently began wrapping their existing OER offerings with additional proprietary materials to create relatively low-cost courses of their own. It is likely that such publishers are observing the

trends related to the global institutional move to OERs and adjusting their business models accordingly.

In a highly competitive higher education learning environment that seeks to increase student enrollment and against a backdrop of financial constraints, competition might force institutions to join the OER movement. Trends are driving changes in higher education. For example, the decision to move forward with OER conversions in 2017 provided APUS with a great opportunity to evolve and continue to fulfill its mission. As previously referenced, those who chronicle the higher education space noted the high costs that texts add to already skyrocketing college tuition. Such researchers have published articles illuminating the fact that some students face painful economic decisions as a result. Other articles have pointed to the disruptive power of OERs in radically transforming the traditional textbook publishing space—with major publishing houses potentially losing significantly, while students benefit.

Overview of the APUS OER Project

The ongoing OER Conversion Project at APUS involves collaboration across multiple departments and includes faculty members, program directors, and deans, in addition to the teams from Academic Instructional Technology (AIT), the Library, and BookList, Copyright, and Classroom Support departments. It is a university-wide effort. In 2017, APUS converted 222 course materials to OERs. In 2018, 192 additional OER-enabled courses were converted and launched. These course conversions have resulted in additional savings for the ECM budget. Table 1 reflects the number of courses slated for conversion in 2018 by each of the six APUS Schools: (1) School of Arts and Humanities (SoAH), School of Business (BUSN), School of Education (SoE), School of Health Sciences (SoHS), School of Security and Global Studies (SSGS), and School of STEM (STEM). Table 1’s shaded highlights indicate relative course-launch volume by month.

Table 1: 2018 American Public University System Course Conversions by Month and School

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
SoAH	9	2	2	5	9	2	3	3	4	2		2	43
BUSN	2	1		4	3	2	5	6	7	5	4	4	43
SoE				2		2		2	3		1	2	12
SoHS						6	8	1	4	2	3	1	25
SSGS	4	7	1	5	5	2	1	3	5	2	3	1	39
STEM	5	1	4	2	1	8			1	1		7	30
Total	20	11	7	18	18	22	17	15	24	12	11	17	192

APUS actively tracks the savings realized from the 2017 course conversions, which continue to accrue, along with the additional savings due to the 2018 conversions to-date. These amounts are calculated by summing the product of the difference between pre- and post-conversion costs times the actual net registrations in each course since conversion. Notably, undergraduate conversions save the *University* money, and graduate conversions save the *students* money. The more course materials that are converted to OERs, the more money the institution and students save.

Reduced expenditures due to the undergraduate book grant and e-text costs benefit graduate students directly. Undergraduate e-text costs typically range from \$35 to \$50 per student. With a few exceptions, \$100 is the cap for graduate course materials, and few students even have to pay that amount anymore. As a direct result of this project, the University has saved close to \$5 million dollars in undergraduate ECM costs, while saving graduate students more than \$1 million dollars to date. Those amounts continue to increase monthly.

Institutional Commitment for OERs

The cost savings to the institution and its students would not have been possible without an effective institutional strategy and commitment from leadership, faculty, and staff at APUS. The first strategic step was to identify ways to accomplish the work efficiently. After an extensive search, APUS developed

a partnership with Intellus Learning (<http://www.intelluslearning.com/>)—a company whose software helps faculty members quickly identify potential OERs that align with their courses' learning objectives. Intellus provides APUS with the ability to integrate OERs from its own library database offerings, online videos and podcasts, and an array of other educational websites. Intellus allows tagging of identified resources to assist APUS with gathering analytic data on their usage. In addition, Intellus generates automated email alerts when OER links in the LMS fail and suggests potential replacements.

With the right partnership in place, the next step of the OER strategy was to leverage the vast amount of subject-matter expertise among APUS faculty members, librarians, copyright team members, and other support staff. All APUS librarians hold Master's of Library Sciences or Master's of Library and Information Sciences degrees and work closely with assigned Schools within the University based on their familiarity with particular content areas. These experts assist faculty members who may struggle to identify potential resources. The librarians collaborate with the copyright and course materials teams to ensure that Schools have not only the proper permissions, but also sufficient licenses for any database resources to which they might already subscribe. An ECM cost analysis helped with prioritizing revisions in 2017 based on course material costs in conjunction with course enrollment data.

APUS Faculty and Staff Involvement

The APUS OER strategy included a *train the trainer* approach in which deans and program directors first learned to use the Intellus database and then trained their faculty members in one-on-one or small group clusters. This allowed for quick training dissemination for the skills needed to begin the process. Prior to this, the dean and director training included a daylong seminar aimed at learning how to use Intellus to choose from a variety of recommended OER options.

Careful expert analyses of the subject matter are required to ensure that OER replacement options align well with the learning objectives they address, are at the appropriate reading level, and engage students in the learning process. An OER replaces an existing learning resource only after the faculty member responsible for it verifies those features. In addition, a course's forum discussion prompts, lesson content, syllabus, announcements, and assignments may require revisions following a change in course materials. Directors and faculty members collaborate on those aspects and then typically work with the AIT team to create eLearning Format (eLF) versions of the new *enhanced* lessons that ultimately replace existing e-texts in a particular course. However, the eLF process is primarily for higher enrollment courses.

Once the training for the deans and directors was complete, taking the program to the full university-wide faculty required coordination; this is an on-

going process. Each School's dean and program directors lead the effort. With director support and review, faculty members are responsible for reviewing and vetting OER recommendations and identifying alternatives on their own or with aid from librarians. Together they ensure alignment to learning objectives and appropriate reading levels for the target courses. After identifying and vetting suitable OERs, faculty members revise forum prompts, assignments, lessons, announcements, and assignments as needed to ensure cohesive, integrated, flowing courses that foster positive student experiences and outcomes.

Faculty members regularly collaborate with the Assessment Department to create iRubrics for any assessments that lack them and revise existing rubrics for assessments altered as a result of the OER conversion process. The Classroom Support Department loads new course materials into model course shells within the Sakai to prepare for cloning into monthly course-start sections as needed.

Additional institutional support includes teaching-load reductions for faculty members who prove to be adept at this type of curricular curation and creation and who are willing to take on additional OER course conversions. APUS is committed to converting both undergraduate and graduate courses to OERs to the greatest extent possible. It requires FTF to handle many of the OER conversions as part of their annual work plan agreements. Part-time faculty (PTF) complete additional conversions for a modest stipend, which

increases the overall cost of instruction. However, these costs shift from the ECM budget to payroll. When updated courses use library-subscribed materials, the costs shift to the library budget in the form of additional licenses as required. Eliminated publisher-produced e-text expenses offset the stipends paid to PTF members to convert undergraduate course materials to OERs.

To-date, the OER Conversion Project has leveraged the subject matter expertise of no fewer than 250 APUS faculty members and directors who have collectively revised more than 350 courses. The project is well on its way to converting approximately 500 course materials to OERs in less than two years. Coordinated efforts involving every department at the University have led to these results.

The OER conversion process requires faculty members to connect deeply to and feel ownership of the entire contents of a particular course. One criminal justice professor shared:

As a full-time faculty member, I manage the content and quality of four courses. I strive to provide a valuable learning experience for students by ensuring that the course content is relevant and timely to the criminal justice field. I also create a rigorous curriculum that provides opportunities for student growth and real-world experience. For example, in the Criminalistics (CMRJ341) course I incorporated lab assignments requiring students to apply their new

knowledge while conducting hands-on crime scene investigations. I immerse myself into each course and develop a plan of action to improve the quality of the content and delivery. Last year, the university began to transition from using textbooks in the classroom to the Open Educational Resources (OERs). This presented a unique challenge and an opportunity to conduct research and locate timely and relevant resources for each of my courses. Customization of the course materials allowed me to create contemporary, flexible, and quality content. The assessments and assignments were also adapted to ensure that they aligned with the OER As an educator and a researcher, I attempt to locate the most pertinent information on the course topics, emerging trends in the criminal justice field, and current events to incorporate in the classroom. (APUS Criminal Justice Instructor Nicole Cain, ABD, personal communication, August 2018)

In this way, as an institution, APUS has become less dependent on publishers' choices and more reliant on its faculty for students' curricular experiences. Graduate course material conversions to OERs result in immediate cost savings to students. Complete course conversions by program at the graduate level permit APUS to create and advertise "Z-degrees," or "zero-costs-for-

textbooks degrees.” This is a market differentiator that should help make APUS graduate degrees not only more appealing but also more affordable. With many Z-degree graduate-level programs in place, several additional programs are nearing completion. For example, the master’s programs in Management, Political Science, Environmental Management & Policy, International Relations, and Public Policy are now Z-degrees.

Preliminary Results

Regarding DFWI rates, the initial limited data indicate that courses with materials converted to OERs have somewhat mixed results in terms of student satisfaction. Some students do not like the change from the single-download e-texts to which they may have grown accustomed. To address this, APUS is currently investigating various e-publication platforms that may permit students’ note-taking and highlighting capabilities. However, other feedback is positive, and many students express approval for changes to OER course materials.

The research on student learning is growing. Colvard et al. (2018) documented studies showing that OER conversions lead to higher final grades. However, Colvard et al. (2018) also reviewed studies suggesting resulting lower grades, and other studies showed

no significant difference. Brannum and Drumhiller (2017/2018) described the social justice perspective and equity issues at stake in an institution’s commitment to OER course conversion. Brannum and Drumhiller (2017/2018) wrote that they viewed moving to OER materials as an opportunity “to help lower-income students receive the same access to educational materials as wealthier classmates” (p. 43). APUS continues to collect data and monitor the efficacy of the project, and is currently conducting a research study on student performance and attitudes in courses recently converted to OERs.

In addition, APUS closely monitors DFWI rates and has yet to detect any significant increases in converted courses. The APUS Institutional Research department stated:

As a whole, we have seen an overall decrease in DFWI rates across the university, and at a high level, it doesn’t appear that changing course materials to OER materials has had a negative impact on these rates. The [table below] shows the 6-month period prior to the material changes to OERs, and then the launch month and following 5 starts. (Personal communication, September 5, 2018)

Table 2: Average Course DFWI Rate

6 months before launch	6 months after launch
10.5%	9.4%

APUS does not typically publish registration data, but note that the n for each of the above are substantial and similar both pre- and post- OER launch. Thus while the use of OERs may not be definitively attributed to changes, it does not appear to affect student performance adversely.

The AIT team works with faculty members and directors to address related student, logistical, and other identified problems quickly. APUS's innovative OER Conversion Project allows it to increase students' access to high-quality educational resources while lowering costs. The program aligns well with the University's mission to provide an exemplary education through respected, relevant, accessible, *affordable*, and focused online programs that prepare students for service and leadership in a diverse global society.

Conclusion

Technology continues to evolve and change higher education. Although APUS should continue experiencing decreasing ECM costs, the rate at which those costs decline has begun to decelerate because the institution has converted most of the highest-registration, highest-cost course materials to OERs. For example, the majority of the *general education* course material changes have been completed. In addition, feedback from students with poor experiences and data indicating poor student performance may lead the University to reverse these practices and revert to e-texts. Such changes would undo prior savings re-

alized by conversions to OERs that adversely affected the student experience. So far, however, this has occurred just once. Additional non-free—albeit low-cost—OERs may be adopted in larger numbers. For example, Lumen Learning (<https://lumenlearning.com/>) has \$5, \$10, and \$25 math course options available, with prices depending on the courses' features. Other publishers have similar relatively low-cost offerings.

The APUS OER Conversion Project has been a great success to-date—one involving the concerted, sustained efforts, and intense focus of multiple departments across the University for just over a year and a half. The results are extremely promising, with neither student performance nor student experience having been adversely affected. There is substantial and growing impact on the amount of savings to the institution. APUS will continue to convert courses to OERs, as it is able. The participants in this project look forward to continuing to give content to the OER Commons as part of their corporate civic duty so that others may benefit.

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Spectrum Educational Tool: Animated Scenarios for Teacher Preparation

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ABSTRACT

With the ubiquitous nature of information supported by the growth of the Internet, eLearning has become an effective learning mechanism, promoted as a method to reduce difficulties for learners. We developed the Spectrum educational tool as an online instrument to support preservice teachers in practicing classroom management techniques. This blended learning approach with the tool aims to incorporate animation-based case studies in the place of existing text-based case studies to help preservice teachers grasp concepts more effectively. Interactive case studies provide more support for content reinforcement, critical thinking, and reflection skills than text-based case studies. This work focuses on the behavioral problems teachers may face in the classroom, helping them overcome difficult situations by showing them effective ways of teaching and classroom management. The previous version of this project, developed using web development and Flash animation, is in the new web development standard for animation support HTML5 and JavaScript for the updated version. With this type of development, our application is supported on almost all devices and is cross-platform independent. The proposed design for the Spectrum educational tool was a low cost alternative and an interface that targets both web and mobile platforms. Preservice teachers may gain access to the application by registering, and our hope is that they find it interesting and helpful to access classroom management content and examples online. The goal of the Spectrum educational tool is to design and develop preservice teachers through interactive case studies.

Keywords: preservice teacher, teacher training, online learning, human computer interaction, eLearning platforms, classroom management, behavior management, animation

Herramienta educativa Spectrum: escenarios animados para la preparación de profesores

RESUMEN

Con la naturaleza ubicua de la información respaldada por el crecimiento de Internet, eLearning se ha convertido en un mecanismo de aprendizaje efectivo, promovido como un método para reducir las dificultades de los alumnos. Desarrollamos la herramienta educativa Spectrum como un instrumento en línea para apoyar a los maestros en servicio en la práctica de las técnicas de gestión del aula. Este enfoque de aprendizaje combinado con la herramienta tiene como objetivo incorporar estudios de casos basados en animación en lugar de estudios de casos existentes basados en texto para ayudar a los maestros en servicio a comprender los conceptos de manera más efectiva. Los estudios de casos interactivos brindan más apoyo para el refuerzo de contenido, el pensamiento crítico y las habilidades de reflexión que los estudios de casos basados en texto. Este trabajo se centra en los problemas de comportamiento que los maestros pueden enfrentar en el aula, ayudándoles a superar situaciones difíciles mostrándoles formas efectivas de enseñanza y gestión del aula. La versión anterior de este proyecto, desarrollada usando desarrollo web y animación Flash, está en el nuevo estándar de desarrollo web para soporte de animación HTML5 y JavaScript para la versión actualizada. Con este tipo de desarrollo, nuestra aplicación es compatible con casi todos los dispositivos y es independiente de la plataforma cruzada. El diseño propuesto para la herramienta educativa Spectrum era una alternativa de bajo costo y una interfaz que apunta a plataformas web y móviles. Los maestros en servicio pueden obtener acceso a la aplicación registrándose, y esperamos que les resulte interesante y útil acceder al contenido y ejemplos de gestión del aula en línea. El objetivo de la herramienta educativa Spectrum es diseñar y desarrollar maestros en servicio a través de estudios de casos interactivos.

Palabras clave: formación docente previa al servicio, aprendizaje en línea, interacción humano-computadora, plataformas de aprendizaje electrónico, gestión del aula, gestión del comportamiento

Spectrum教育工具：用于教师培训的动画场景

摘要

鉴于互联网发展为信息的普及性提供支持，电子学习已成为一项有效的学习机制，并作为一种为学习者减少学习困难的方法而受到推崇。我们提出一个在线工具—Spectrum教育工具，帮助职前教师练习课堂管理技术。这种用工具进行的混合学习方法旨在将基于动画的案例研究融入现有的基于文本的案例研究，以期帮助职前教师更有效地抓住概念。相较于基于文本的案例研究，这种将动画与文本结合的互动型案例研究为内容强化、批判性思维和反思技能提供了更多支持。这项工作聚焦于教师在课堂上可能面临的行为问题，并通过为教师展现教学和课堂管理的有效方法，帮助他们克服困难场景。为了准备更新版，这项计划的之前版本（通过使用网站开发和Flash动画完成）现在是提供动画支持的HTML5 和JavaScript的新网站开发标准之一。有了这种开发后，我们的应用程序几乎在所有设备上都能使用，并且具有跨平台独立性。为Spectrum教育工具提出的设计是一个低成本的替代措施，它还是一个以网站和手机平台为目标的界面。职前教师可能通过注册的方式获取该应用程序，同时我们希望教师能通过从在线获取课堂管理内容和案例中发现有趣性和有用性。Spectrum教育工具的目标是通过互动型案例研究，进而设计并开发职前教师。

关键词：职前教师培训，在线学习，人机互动，电子学习平台，课堂管理，行为管理

Many of the present applications available for instructing preservice teachers are not as engaging and effective as they should be. Various data show that applications developed using multimedia-based case studies improve the effectiveness of training. These applications make even the most challenging concepts easier to comprehend. The Spectrum education-

al tool, created to support teachers in practicing their classroom management techniques, derives its name from the light spectrum, as many colors may emanate from a prism based on the type of *input*. Like a beam of light *output* from a prism (e.g., a spectrum), in the same way, students need multiple types of learning opportunities (e.g., output) to support their various learning needs.

In order to support their individualized learning, we planned to create a spectrum of tools.

Specifically, we developed animation-based case studies to replace existing text-based case studies so that emerging teachers will grasp classroom management concepts more effectively (e.g., how to handle a classroom situation with a defiant student, how to attend to a student who makes inappropriate comments, etc.). The primary objectives of this project were to investigate preservice teachers' understanding of classroom management situations and application of learning to solve them. We developed an online educational application that supports preservice teachers, is easy to use, meets design requirements, and is engaging.

The use of animation-based case studies, which are more helpful for preservice teachers to understand classroom management skills, was the primary focus of this project. Teachers may access the information anywhere and at any time and be more engaged when content is delivered through user-friendly, interactive eLearning environments. Unlike traditional text-based case studies, this form of content aides preservice teachers with effectively understanding authentic situations that arise in classrooms. User interactivity plays a major role in online learning environments. Thus focusing on involving users in the learning process by providing them control over the flow is crucial.

Literature Review

Significant interest in and development efforts to support communication and online learning are widespread. Computers are ubiquitous, and information is accessible at any time and in any place on a variety of devices. There is a greater focus on developing resources to support applications in a platform-independent way and provide greater access to information. With the prevalence of computer and mobile technology, eLearning is a method used to enhance the quality of teaching. ELearning integrates technologies and allows learners to gain knowledge with no time, location, or space constraints. The main goals of eLearning, according to Francis (2018), include:

- Enhancing the quality of learning and teaching;
- Meeting the learning style or needs of students;
- Improving the efficiency and effectiveness; and
- Improving user-accessibility and time flexibility to engage learners in the learning process.

ELearning helps with shifting the education paradigm from instructor-specific to learner-specific. Applications of eLearning are flexible and varied and include web-based learning, computer-based learning, and virtual education via the Internet, Intranet, CD-ROM, DVD, interactive TV, and other devices. With eLearning, many people around the world are study-

ing and completing their education (Cheng, Basu, & Goebel, 2009). In addition to students, eLearning plays an important role for professionals who need to stay abreast of the latest technologies or information. The successful implementation of eLearning applications ensures equal learning facilities in both rural and urban areas of any nation. Government and other private institutions are investing a significant amount of money in online education to spread education to all areas around the world; over \$107 billion was spent on self-paced eLearning in 2015 (Nemo, 2015). The literacy rate should increase in many areas of world with the support of eLearning applications (Kazmer & Haythornwaite, 2004).

During the early stages of online programs, the primary concern of educators was whether the results were equivalent to traditional classroom learning. Studies confirm that there is no major difference between online and traditional classroom learning (Kazmer & Haythornwaite, 2004; Stack, 2015). Further, researchers predicted that adding a blended learning approach would be widely used in K-12 schools and universities (Porter, Graham, Spring, & Welch, 2014). Many multinational companies, such as BBC and Discovery Education, in collaboration with some institutions and universities, are offering online curriculum for diplomas and undergraduate and graduate programs. There is abundant material to explore in online education (Chen, Huang, & Shih, 2002; MindShift, 2014).

In many conventional web-based eLearning environments, students

browse and consume static information. To make eLearning environments more effective, students need to interact with dynamic content. Many researchers are investigating user interaction aspects in eLearning settings. Studies show positive outcomes for students in interactive eLearning environments (Buchanan & Palmer, 2017; Fiorella & Mayer, 2016; Gao, Liu, & Paas, 2016; Jenö, Grytnes, & Vandvik, 2017). ELearning design increasingly focuses on how to make environments more interactive than before. Today, there are many eLearning web and mobile applications. The Spectrum educational tool is an online eLearning application that is accessed using web browsers, such as Firefox, Chrome, Opera, Safari, etc., and via mobile devices, such as an iPhone or iPad. It supports interactive simulations by enabling preservice teachers to interact with the multimedia component.

***E*Learning and Teacher-based Training**

With the advent of the Internet, preservice and inservice teachers may be trained using online learning environments without limitation of time, space, or location. One strategy for learning is *blended learning*, which integrates technology with traditional teacher-based training. Blended learning increases the effectiveness, efficiency, and satisfaction of learners (Kupetz & Ziegenmeyer, 2005; Porter et al., 2014).

Developers and designers should not assume that preservice teachers are aware of the latest technologies. Some online teacher professional development programs make it possible

for educators to communicate, share knowledge and resources, and reflect via asynchronous interactions. Many companies are developing more online learning applications for students and ignoring teachers' expertise. According to Berry (2009), 15% of teachers are involved in a professional online community and 28% have read or written a blog about teaching. A learning community of teachers, in an online environment, is designed to provide guidance to novice teachers through learning and sharing ideas online (MacKnight, 2008). We reviewed these and other online systems to reflect on their design before we redesigned the Spectrum educational tool to support teachers and preservice teachers in learning and refining their classroom management skills.

Spectrum Development

Text-based case studies for preservice teachers are textual descriptions of an author who narrates the case study. For every case study, there are reflection questions based on the case study that allow teachers to think and analyze the scenarios. At the end of the case study, the narrator explains his or her analysis of the reflection questions and shares his or her thoughts. Dr. Tripp's idea and goal to provide more interactive content to support her classroom management courses prompted the creation of Spectrum. In our initial discussions (i.e., sessions about requirements), we identified compelling examples of situations where decisions in classroom management may improve the class or cause it to devolve into chaos.

***E*Learning and Case Studies**

With the advent of the Internet and applications to access information, learners have access to the content of their choice. Easy access to content has supported the concept of eLearning. Learning through the Internet offers many advantages, which include control over the content, learning sequence, and pace of learning. The main goal of eLearning is to provide content flexibly to learners without having to depend on time and location. According to data, 96% of Americans "now own a cell phone of some kind" (Pew Research Center, 2019, para. 2). Developing eLearning environments, which can also be accessible from mobiles, such as an iPhone, iPad, etc., is important because the growth of mobile technologies is substantial.

ELearning-based preservice teacher training reduces costs when compared to traditional classroom training. In traditional classroom training, case studies are mostly in textual form and are expensive company-based resources. In addition, text-based case studies do not create a quality impression of an authentic classroom for teachers. Transforming case studies from text-based to multimedia-based solves multiple problems.

Multimedia-based case studies allow teachers to grasp concepts more effectively, visualizing the classroom environment in a practical way. By incorporating the concept of multimedia in developing eLearning for preservice teacher training, participants may overcome various constraints of for-

mer methods of teacher training. Active learning helps students understand the content easily and remember it for a long time (Yengin, Karahoca, Karahoca, & Yücel, 2010). The style of the interaction utilized in developing case studies in the Spectrum educational tool supports novice teachers in classroom management and decision-making. This project sought to implement case studies for preservice teacher training to reduce time and place constraints, increase user interactivity, and

create a visual impression of classroom experiences.

First Spectrum Version

We proposed Flash-based animation for interactive case studies. At the time of initial design and development, Flash was the most popular method to animate webpages. The first version of the Spectrum educational tool involved developing animated simulations of case studies using Adobe Flash. Figure 1 shows a screenshot of this version.

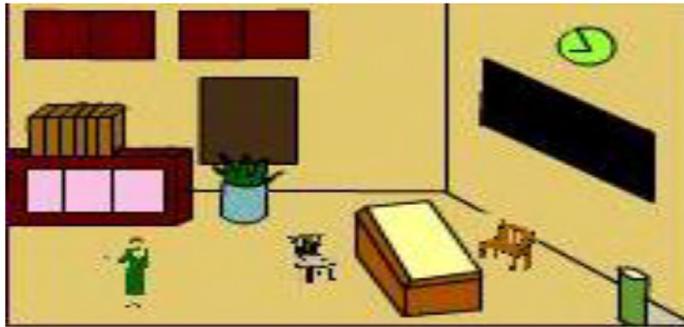


Figure 1. Screenshot of the first Spectrum application.

This initial version had various drawbacks. One was lack of user interactivity. Learners could not interact with the application. In addition, there was an issue with the aesthetic quality of the simulation: it did not look realistic because the character animations resembled a cartoon flipbook and were not continuous. The transition from scene to scene was not smooth.

Another drawback was the supportability of the application in all browsers. This application has no user interactivity associated with it. The user cannot control the flow of the applica-

tion. The current version of the Spectrum application uses HTML5 and JavaScript, which most devices support. Table 1 shows the compatibility of HTML video and Flash video in different browsers or devices. This does not require the user to install additional software.

The Spectrum educational tool consists of a learning environment for preservice teachers. It is poised to replace current environments, which are not portable to multiple browsers and platforms. This application supports user interactivity. Its new version over-

Table 1 Compatibility of HTML Video and Flash Video in Different Browsers/Devices (Allen, 1998).

Browser/Device	HTML5 Video	Flash Video
Chrome	yes	yes
Firefox	yes	yes
Internet Explorer 6/7/8	no	yes
Internet Explorer 9	yes	yes
Safari	yes	yes
IOS	yes	no
Android	yes	yes
Opera	yes	yes
Others (feature phones)	no	no

comes usability issues and converts text-based scenarios to multimedia scenarios. The text-based case studies make the visualization of class environments more challenging and clearly lack features, such as user interactivity and good usability.

In this environment, the user may control the flow of the application. Users interact with the application and share their opinions on the case study. This structure provides reflection questions for each case study, which allows preservice teachers to work through their ideas in a thoughtful manner. This gives them an opportunity to prepare for various classroom scenarios they may encounter when teaching.

The Spectrum Educational Tool Software Modeling and Software Life Cycle

This project employed evolutionary prototyping (EP), which is a process

that differs from throwaway prototyping/programming, where you build a prototype and possibly abandon it. Using EP, the design team plans to iteratively refine and improve the application until it meets a satisfactory level of performance as requested by the client (Crinnon 1991; Davis 1992). Our main goal was to build a robust and flexible prototype in a structured manner and constantly refine it based upon feedback. (See Figure 2.) This process allows a continuous refinement of the system and developers to tweak parts of the application that they better understand without needing to worry about those they understand less. The Spectrum educational tool is an application developed based on the improvements in the existing application and new requirements from the user. We made the new application more interactive and helpful to teachers by providing them control over the content.

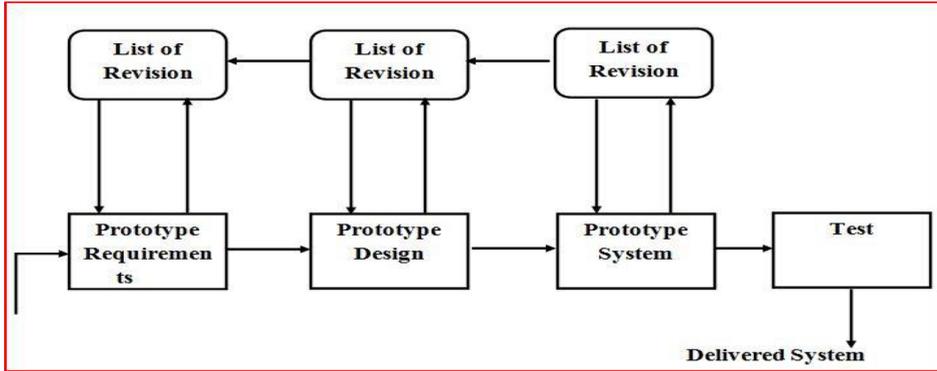


Figure 2. Prototyping model used in the Spectrum educational tool

In EP, functionalities are integrated on an interim basis until the final system is delivered. As discussed, we developed this application in HTML5 and JavaScript to work on mobile devices. We sent every case study to users for functionality testing.

We used a questionnaire in SurveyMonkey for the usability testing for this prototype version, where the teacher education specialists, Human Computer Interaction (HCI) specialist, and various students responded to questions. Based on an analysis of the results, we completed further improvements.

The Spectrum Educational Prototype Use-Case Scenarios

A use-case diagram in Unified Modeling Language (UML) is a behavioral diagram defined by and created from use-case analysis. It represents a graphical overview of functionalities provided by the system in terms of actors, their goals, and any dependencies between those use-cases.

Use case for user

Primary Actor: User

Secondary Actor: None

Description: This use case is for users who need to register for the first time to log into the application to access the case studies. The request sent by the user goes to the Database (DB) Administrator. The DB Administrator accepts the request and approves the login credentials.

Pre-Conditions: The user has a desktop/laptop/mobile device in working condition with Internet connectivity and installed browsers, such as Firefox, Chrome, or Safari, to open the application.

Post Conditions: The DB Administrator acknowledges and approves login credentials for the requested users.

Basic Flow:

- The user sends a registration request to the DB Administrator with his or her email, username, and password.
- The DB Admin can accept/reject

the request based on the availability of username.

- If the DB Admin accepts the request, the user is given access to the application.
- If the DB Admin rejects the request, the user must select a new

username.

- Once the user has the login credentials, he or she can access case studies related to the Spectrum application.

Figure 3 illustrates the Basic Flow use-case.

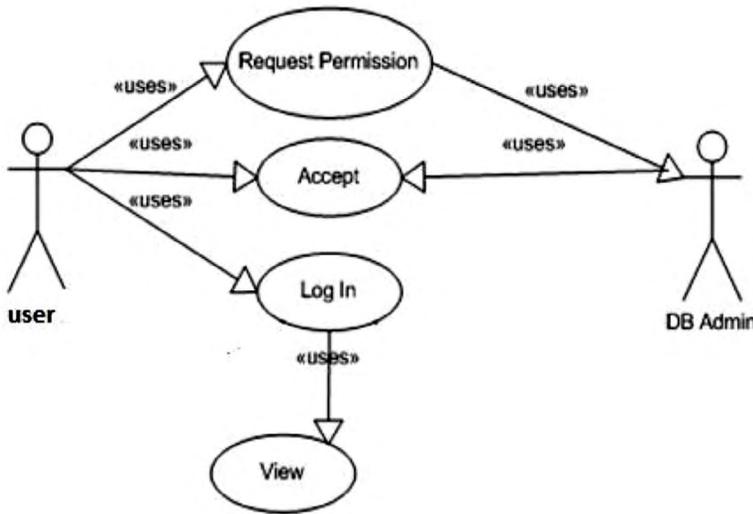


Figure 3. Use-case for user.

Testing the environment

Data collection included three sets of participants: Auburn University undergraduate and graduate students in the Department of Computer Science and Software Engineering who are doing their research in the HCI lab, HCI specialists, and teacher education specialists who teach different case studies to preservice teachers. Data collection took place via <https://www.surveymonkey.com/>, with data stored electronically within the SurveyMonkey website.

User Feedback

We purport that online learning environments with multimedia case studies are more effective than text-based case studies in providing understanding of various difficulties faced in classroom teaching. Teachers may access information without depending on time and location in online learning environments. Content is more engaging when delivered through easy, user-friendly, interactive applications in online settings.

We developed a questionnaire comprised of a set of questions, each having ratings for users to specify their level of agreement with how comfortable they feel with the application. We sought feedback about the prototype through questions related to *information quality* and *interaction quality*.

Implementation

We developed the Spectrum educational tool using the following scripting programming languages: HTML5, PHP, CSS3, JavaScript, and MySQL. We used Microsoft Expression Web 4 as a web development application tool. The Spectrum educational tool authenticates students, or preservice teachers, with the help of a username and password. Students register by giving their username, email address, and password to gain access to the application. The login and registration pages were developed using PHP and MySQL as a database to store students' information. We developed the animated case studies using HTML5, CSS3, and JavaScript. The following sections include details about these technologies.

Development

All of the features included in the existing versions of the Spectrum application were analyzed previously. New requirements were gathered in a participatory *requirements and design* exercise by Dr. Tripp; gathered requirements were then analyzed based on EP. EP allows a continuous refinement of the system and is based on the un-

derstanding of the requirements by the developers. A paper prototype was proposed based on these requirements. Paper prototyping is a widely used method in the user-centered design process. It helps developers build software that meets the expectations and needs of users. It is also used for usability testing of websites, web applications, and conventional software. It saves time and money since developers can test the interfaces of software before they begin development. Figure 4 shows an example scenario in initial paper prototype form.

Initially, we developed scenarios along with the descriptions in Microsoft Word as paper prototypes. The paper prototypes of case study scenarios were developed to illustrate decision points where making good classroom management decisions will be beneficial. We designed the terms in the scenario to be understandable to preservice teachers. The interface provides information so that the teachers may make some decisions at the end of the case studies. Each case study ends with a set of reflection questions prompting them to solve classroom management problems through their understanding of the scenarios. In the design, we consider the page layout and its size and platforms based on the final deployment to support presentation of the animated case. The following figure is a paper prototype that illustrates our vision of a classroom scene.

The research group from the HCI laboratory, in collaboration with Drs. Tripp and Seals, initially evaluated the paper prototypes. The paper prototypes were refined based on the feedback. Af-



Figure 4. Paper prototype.

ter finalizing the paper prototypes, we converted them into animations. We built webpages to embed the animated case studies. Using case studies from the textbooks *Learning from Cases: Unraveling the Complexities of Elementary Science Teaching* (Tippins, Koballa, & Payne, 2001) and *Teaching in Today's Classrooms: Cases from Middle and Secondary School* (Redman, 1998), we developed animated case studies in the application. We focused on general classroom management scenarios and solutions, such as how to deal with apathetic or defiant students.

Figures 5 and 6 illustrate the example from the *Learning from Cases* book's Chapter 3 and *Organizing Meaningful Science Learning Environments* webpages. It includes side links for different case studies in Chapter 3. The user can click on *Up to Chapter 3* link to go back and view all of the chapters.

Figure 7 shows the webpage for *Case Study 3.2: To Group or Not To Group*. The page consists of a description of the case study, video to view the animated scenario, and link for reflection and discussion questions. The user may click on the *Up to Chapter 3* link to go back and view all of the chapters. We developed all of the webpages using HTML5 and JavaScript.

For the development of animated simulations, all of the images required to develop the scenario were collected and edited using Microsoft Paint and GIMP. We used Microsoft Paint and GIMP to convert various images in different ways so that we could represent characters in the case study in different forms (see Table 2).

The reflection questions (see Figure 8) then enabled the preservice teachers to think about and understand different challenges they may face with-

in their own classrooms. We provided viewable explanations for the correct answers at the end of the reflection questions.

The application was interactive and allowed preservice teachers to participate in the flow of the learning process. The animated simulations

developed are more useful and make a deeper impact on participants than other forms of teacher training methods. The animated simulations allow preservice teachers to view the classroom environment and prepare for different types of problematic situations that they could encounter.



Figure 5. Learning from Cases page.



Figure 6. Organizing Meaningful Science Learning Environments page

AUBURN UNIVERSITY Spectrum Educational Tool
an online resource training for student teachers

Upto Chapter 3
Casestudy 3.1
Casestudy 3.2
Casestudy 3.3

Learning from cases > Chapter 3 > Case study 3.2

Case study 3.2: To Group or Not To Group

Maggie is an enthusiastic and highly motivated third grade teacher in an inner-city school and completing her first year. Her determination to make science personally meaningful for her third grade students spur her to commit considerable time and resources to setting up and using cooperative groups to carry out scientific investigations. The early success that she sees these groups achieve is later tempered by the knowledge that not all students in every group are benefiting from the shared experience. Maggie wonders how her decision, based on sound and professionally advocated classroom-based research, could have led to such undesirable and unexpected ends.

Reflection and discussion

Maggie's students have little or no school science experience. She was anxious to make science learning a priority in her classroom.

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Figure 7. Case study 3.2: To Group or Not To Group page.

Table 2 Video Formats Supported by Different Browsers/Devices (Allen, 1998).

Browser/Device	Video Formats
Chrome	MP4, WebM
Firefox	WebM
Internet Explorer 6/7/8	MP4
Safari	MP4
IOS	MP4
Android	MP4
Opera	WebM

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Figure 8. Webpage for reflection and discussion.

Results and Analysis

One of the objectives of this project was to investigate methods that facilitate preservice teachers' understanding of traditional classroom experiences. Another focus was to investigate the affordances and constraints involved in developing an interactive online application that was easy to use, meets all of the requirements, and was engaging for learners. We successfully developed this application to be accessible across different web and mobile platforms.

Participants responded that the system was comfortable to use and that they had no problems with navigating it. We found existing preservice teacher training tools to be very static, with very little user interaction. The Spectrum educational tool provides a system that is easy to navigate, provides case studies to support reinforcement of classroom management strategies, and includes great animations with interactive content.

Results of Usability Testing

Again, we tested the Spectrum application tool with three groups, including university students, teacher education specialists, and HCI experts, using a SurveyMonkey questionnaire. The results from the surveys provided information about the developed application and whether it was acceptable for preservice teacher training. Thirty-nine users participated and gave their opinions in the usability testing survey.

The usability testing consisted of three sections. The first section was a pre-survey to collect demographic data. The second section had non-trivial tasks to be performed by the participants. The third section was a post-survey consisting of questions regarding information quality and interaction quality. A Likert-type scale was used for the questionnaire and the results of the pre-survey are provided in Table 3.

Table 3 provides a summary of the pre-survey results reported by the participants. Of the participants, 68%

Table 3 *Pre-Survey Results.*

Question	Response
Do you have prior experience working in an online learning environment (i.e., Blackboard, Moodle etc.)?	Yes – 68.2% No – 31.8 %
Do you feel you and your peers can learn better through online learning environments than traditional classrooms?	Yes – 68.2% No – 31.8 %
Do you feel that online materials can enhance traditional classroom materials?	Yes – 91.1% No – 8.9 %
Do you believe teacher training should involve more online teaching tools as a method to supplement traditional classroom learning?	Yes – 83.3% No – 26.7 %

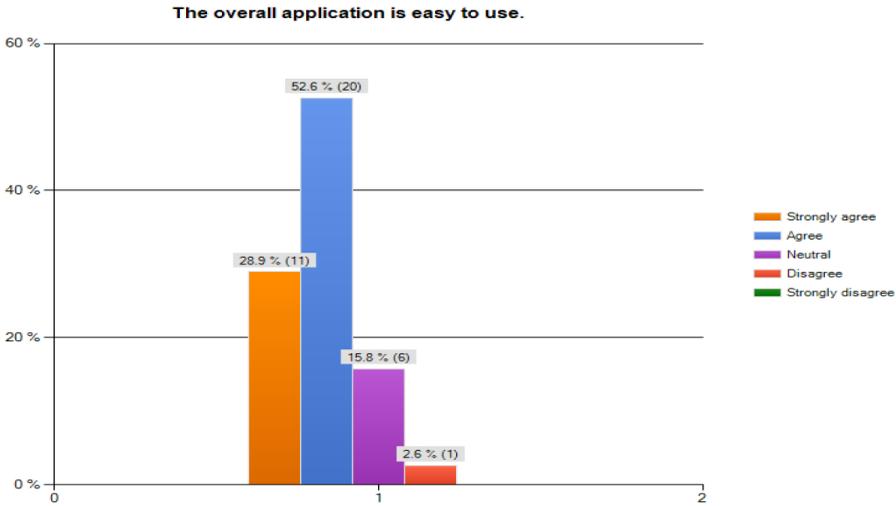


Figure 9. Bar chart showing the participants' response to *How easy it is to use the system?*

have prior experience working in an on-line learning environment and feel that they may learn better through online learning environments than traditional classrooms, 91% reported that online materials might enhance traditional classroom materials, and 83% believe that teacher training should involve more online teaching tools as a method to supplement traditional classroom learning.

The results of the post-survey presented the participants' perceptions of the Spectrum application tool from the usability point of view. Average responses to all of the usability questions indicated a positive response to the application. Data were collected on a five-point scale, with *strongly disagree* being the lowest and *strongly agree* being the highest. On a scale of 1-5, the average rating for each question in the survey was nearly 4. The response to the system was better than expected.

Figure 9 shows the participants' responses to the usability question *The overall application is easy to use* regarding the Spectrum educational tool. Of the participants, 52% *Agree* that the application was easy to use and 30% *Strongly agree* that the application was easy to use. However, 18% of the participants indicated that they did not find it easy to use the application. This indicates that we need to provide greater support and improved usability for novice users with less computing efficacy.

Table 4 provides a summary of the post-survey questionnaire reported by the three sets of participants regarding the usability of the application. Judging by how users rated the system, we conclude that most of them responded that the developed system had better usability features. This supports one of the goals of the project, which was to build a learning environment that was intuitive, user-friendly, and easy to use and learn.

The results in Table 4 indicate *Strongly agree* or *Agree* responses for all of the questions regarding the information and interaction quality of the application. The results indicate that videos for the case studies were helpful for teachers in preparing for varied classroom environments and scenarios. This shows that the developed system was useful for the preservice teachers to think about different problems that they might face when teaching. The responses also revealed that participants felt the reflection questions after the case study were helpful.

Another goal of the project was to allow teachers to visualize the traditional classroom environment. Of the participants, 79% reported they could visualize the classroom environment through animated simulations, 89% believed that the information would be helpful for preservice teachers to prepare for classes, and 89% believed that the application would provide reinforcement of material already taught in their classroom management course.

We tested the Spectrum application tool against the following range of usability factors: dull – stimulating, rigid – flexible, terrible – wonderful, frustrating – satisfying, and difficult – easy. The results indicated that most participants found the application flexible, wonderful, easy, stimulating, and satisfying. The Spectrum application received the following rating with bi-polar rating scales: 3.74 rating average in dull – stimulating, 3.85 in terrible – wonderful, 4.18 in difficult-easy, and 4.35 in frustrating – satisfying.

Participant Comments

Some participants made specific comments in regards to the application in the post-survey questionnaire and many comments were positive. The participants indicated that the application's flexibility was improved, easy to understand, and easy to navigate and that the design was good. The participants positively commented on the reflective questions provided at the end of the videos and were appreciative that the application is supported on mobile devices. The negative comments made by participants were that the website is very small on phones and that they did not care for the robotic voice.

Conclusion

The Spectrum educational tool is an application that aids teachers and preservice teachers by virtually presenting classroom management scenarios in an interactive and engaging manner. It exposed student teachers to more classroom management scenarios, techniques, and environments using this application. The Spectrum educational tool allows teachers to visualize classroom environments through animated simulations in a practical way. Conveniently, it can be accessed from both web and mobile platforms easily. Usability testing showed that the application is easy to use and supports teachers in their teacher training processes. The animated simulations support novice teachers in classroom management development and decision-making. Based on the results of our project we

Table 4 *Post-Survey Results.*

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Rating Average
The home page is attractive.	33.3*	51.3	12.8	2.6	0	1.85
The typography (lettering, headings etc.) is attractive.	28.2	51.3	17.9	2.6	0	1.95
It is easy to find my way around the site.	42.1	55.3	2.6	0	0	1.61
It is easy to remember where to find things.	38.5	56.4	5.1	0	0	1.67
It is straightforward to perform tasks.	43.6	41	15.4	0	0	1.72
The video of the scenario within the Spectrum application is better reading the scenario from a textbook.	25.6	48.7	20.5	5.1	0	2.05
It is easy to navigate back and forth through different case studies.	28.2	64.1	7.7	0	0	1.79
The overall application is easy to use.	28.9	52.6	15.8	2.6	0	1.92
The application is appropriate for a mobile device.	18.9	48.6	21.6	8.1	2.7	2.27
People with limited computer experience can use the Spectrum application.	28.9	68.4	2.6	0	0	1.74
The information provided in the system is easy to understand	28.9	60.5	10.5	0	0	1.82
The organization of information in the scenarios is clear.	34.2	55.3	10.5	0	0	1.76
The videos developed for presenting scenarios are interesting.	21.1	63.2	13.2	2.6	0	1.97

I could practically visualize the classroom environment through animated simulations.	18.4	60.5	18.4	2.6	0	2.05
The information will be helpful for pre-service teachers to prepare for classes.	25	63.9	8.3	2.8	0	1.89
Reflection questions allowed me to think about different problems that can be faced while teaching classes	23.7	65.8	10.5	0	0	1.87
Feedback to the reflection questions was helpful.	23.7	60.5	13.2	2.6	0	1.95
The application will provide reinforcement of material already taught in the classroom.	18.4	71.1	10.5	0	0	1.92
Based on this experience, I would use an application like Spectrum to review materials to support classes.	23.7	60.5	13.2	2.6	0	1.95
Overall, I am satisfied with the system.	34.2	57.9	5.3	2.6	0	1.76

*All values are percentages

conclude that this application provides reinforcement activities for preservice teachers to gain strategies to teach with a better understanding of classroom management techniques and potentially reduce classroom challenges.

Acknowledgements

The authors would like to acknowledge Sree Vishal Chapalamadugu and Ab-

dulaziz Sulaiman Almohaimeed, graduate students at Auburn University, for their contributions to this applied software project.

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Effective Practices in Online Forum Discussions

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ABSTRACT

Four key engagement elements call for clarification and maximized use in the teaching practice of instructors in online forum discussions: being present, asking questions, using first names, and recycling posts. The literature emphasizes the importance of establishing effective connections between instructors and their students. Accordingly, there are critical components for the instructor role, as seen in the contribution to student-instructor engagement in online education. We present the four elements and related ideas for how to implement strategies that produce greater engagement and student success.

Keywords: forum teaching practices, presence, questioning, online education

Prácticas efectivas en foros de discusión en línea

RESUMEN

Cuatro elementos clave de la atención hacen un llamado a clarificar y un uso más extenso en la enseñanza en foros de discusión en línea: estar presente, hacer preguntas, utilizar el primer nombre y la utilización repetitiva de publicaciones. La literatura pone énfasis en la importancia de establecer conexiones entre los instructores y sus estudiantes. En consecuencia, hay componentes críticos para el papel del instructor, como puede ser observado en las contribuciones a la atención de estudiantes a docente en la educación en línea. Presentamos cuatro elementos e ideas relacionadas de cómo se implementan estrategias que produzcan más atención y éxito estudiantil.

Palabras clave: foro de prácticas de docentes, presencia, cuestionamiento, educación en línea

网络论坛讨论中的有效实践

摘要

大学讲师在网络论坛讨论中的教学实践需要阐明四个关键参与要素，并对其进行最大化的使用，这四个要素则是：不缺席、提问题、用名称、信息再利用。文献强调了在讲师与学生之间建立有效联系的重要性。相应地，讲师发挥的作用也存在关键组成部分，即在网络教育中促进师生互动。我们提出这四个要素，并针对“如何实施能催生更高层次的参与和学生成功的策略”提出相关看法。

关键词：论坛教学实践，在场，提问，线上教育

One of the most notable restaurant mottos adorns the lobbies of a famous Southern California hamburger restaurant chain: “Quality you can Taste” (motto of In-N-Out Burger®). The underlying point is that a quality product is no accident. Consistently applying a certain set of practices consistently ensures success.

That same phrase—“Quality you can Taste”—with some slight adjustments for context, could be applied to numerous areas of life and work, particularly in those areas where anticipated results are the by-product of specific actions, and where measured practices produce expected outcomes. We contend that an online discussion forum is such an area where specific actions by the instructor are most likely to have a positive impact on the quality of student participation. Similar to noticing at the first bite whether a burger rep-

resents taste-able quality, within a few moments in an online discussion forum it becomes obvious whether a professor embraces the types of proven practices that result in a quality educational environment that creates effective learners.

Identifying the Most Essential Practices

There may be some disagreement regarding *which* specific practices within the spectrum of possible practices are *most* essential to contributing to a healthy learning environment in an online forum, and it may be reasonable to assert that no specific set of practices are the *only* or best ones for every online forum discussion context. However, we have found a core of activities that typify the greatest likelihood for an effective online forum discussion environment that spans numerous online contexts

and contributes most effectively to communicating an exemplary standard for online instruction.

Demonstrate Presence—Be There

First, demonstrating presence implies practicing the most effective means of being there for students. Online forum discussions are typically one of the key areas in which course-focused interaction between students and instructors takes place. Although the actual number of student or instructor posts may not alone determine the level of student success (Murphy & Fortner, 2014; Song & McNary, 2011), the *kind* and *quality* of instructor/student interactions certainly does (Garbrick, 2018). Garrison, Anderson, and Archer's (2000) foundational study concluded that the online environment has "considerable potential for creating an educational community of inquiry and mediating critical reflection and discourse" (p. 103). The discussion forum area of a course provides an important opportunity for an instructor to establish presence and community.

One guide for instructional design and discussion is the Community of Inquiry (CoI) framework. Richardson et al. (2012) explained:

In the CoI model, the presences are viewed more as functions which [sic] are shared among the instructor, students, and course materials. Social presence refers to the development of an online environment in which participants feel socially and emotionally connected with each other;

cognitive presence describes the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse; and teaching presence is defined as the design, facilitation, and direction of cognitive and social processes for the realization of meaningful learning. (p. 98)

Garrison (2018) wrote that the "CoI framework provided a dynamic model for an institutional approach to move away from a passive lecture that fundamentally reshaped the educational experience based on thinking and learning collaboratively." According to Garrison & Arbaugh, 2007; Arbaugh, 2008; Tekiner Tolu, 2010 (as cited in Tolu, 2012), "research has proven the validity and effectiveness of the CoI framework in both asynchronous and synchronous learning environments" (p. 1051). Greater cognitive presence (e.g., depth of meaning), teaching presence (e.g., active facilitation/instruction), and social presence (e.g., personal exchange) mark superior forum engagement practices that contribute to the learning community becoming more robust and student success becoming more likely. According to Lehman and Conceição (2010), "a sense of presence is 'being there' and 'being together' with online learners throughout the learning experience looks and feels as if the instructor has placed the learner at the center of the course development and created the course for that learner" (p. 3). Consequently, the level of these forms of presence in the forums is typically the

earliest indicator that suggests whether a course will realize positive outcomes.

What constitutes effective *presence* in an online discussion forum should be measured by more than a mere accomplishment of the minimum number of weekly instructor posts required by a given institution. Rather, effective presence by instructors in the forums has to do with focusing on the needs of the learner through sufficient, substantive, and meaningful exchanges that result in a positive attitude of the student toward a given course (Croxtton, 2014; Tello, 2007). Both quality and quantity of posts contribute to making instructor presence an effective ally of a robust learning environment (Dixson, 2010; Nandi, Hamilton, & Harland, 2012).

We recommend the adoption of a forum engagement philosophy/practice that sets the standard of quality (with quantity) purposely above the minimum expectations for a given institution. For example, instructors who exude presence may approach each forum discussion week by being the first person to post in the forum as a way to stimulate students' thinking about the topic (e.g., social presence). During most days of the week, they make posts to various numbers of students to show that they are there and seeking interaction that furthers the depth of consideration of the topic(s) (e.g., cognitive presence). Circling back at the end of the week and replying to the students who responded to their posts allows for continued dialogue and conveying the reading, confirming, and/or clari-

fying of posts (e.g., teaching presence). As the week closes, instructors should post a summary posting that captures the main ideas of the substantive elements of the discussion.

The bottom line for *presence* means adopting a philosophy that considers ways to engage students in the manner that benefits them the most in their learning. This type of online forum discussion philosophy contributes to greater likelihood for the formation of "learning opportunities for students that are satisfying, promote deep and meaningful learning, and create environments in which students choose to persist" (Croxtton, 2014, p. 320). Since each group of students taking a course exudes a unique sense of personality and potential, the kinds and level of presence of the instructor must be appropriate to the situation. In this way, learning engagement is at the center, while allowing for greater expression of critical thought and synthesis of concepts.

Ask Engaging Questions— Be Socratic

The next focus is to extend student learning through appropriate questioning. Online instructors may promote engagement with students and enhance critical thinking by asking open-ended questions in discussion forums. Instead of asking questions that may result in one-word answers, increased engagement and critical thinking may be better accomplished by asking questions that pursue evidence and begin with words such as *why*, *how*, *what*, etc.

The Socratic method involves asking open-ended questions that foster critical thinking. This form of teaching is one of the oldest approaches, yet considered by many as still the most powerful teaching tactic. Greek philosopher Socrates established the Socratic method over 2,400 years ago. He apparently believed that lecture was not an effective method of teaching all students (Hlinak, 2014).

In using the Socratic method, the answers to questions are not a stopping point for thought, but are instead a beginning for further analysis and research. Instructors may use the Socratic method to challenge students, which might require further discussion. In modeling the practice of Socrates, the instructor questions students in a manner that requires them to consider how they rationalize and respond to topics. In the online classroom, the instructor may pose a question to which not just one student may respond but to which numerous students may respond. In addition, the perceived intimidation that may occur in face-to-face classrooms arguably disappears in the online classroom (Hlinak, 2014), helping create a more inviting environment for risk-taking and contributing.

By using Socratic questioning, instructors guide students through critical thinking processes by providing thoughtful questions that generate more questions from students. Effectively deploying the Socratic method yields questions that help students produce a deeper and broader understanding of the content and learning

objectives (Toledo, 2015). The Socratic instructor is neither the *sage on the stage* nor the *guide on the side* (Stanford University CTL, 2016). Examples of Socratic questions include *How do we know the truth about this?* and *Why is there a need for this today?*

The Socratic experience is a shared dialogue between the instructor and students in which both are responsible for pushing the dialogue forward through questioning. The instructor asks probing questions in an effort to expose the values and beliefs that frame and support the thoughts and statements of the participants in the inquiry (Stanford University CTL, 2016). One of the essential components of the Socratic method is to demonstrate complexity, difficulty, and uncertainty rather than eliciting facts (Stanford University CTL). In using the Socratic method, instructors should focus on giving students questions, not answers. In other words, instructors should model an inquiring, investigating mind by continually probing into the subject with questions. Chapman (2016) believed what constitutes the Socratic method is when a dialogue is established between the instructor and students and is instigated by continual probing questions in a concerted effort to explore the underlying beliefs that shape the students' views and opinions. By responding to students' posts with probing questions, the instructor has the opportunity to encourage students to think more deeply in a disciplined, intellectually responsible manner.

Use Students' Names—Be Personal

It is crucial to increase social engagement through building relationships; using students' names helps accomplish that. Dale Carnegie (1936) stated, "a person's name is to that person the sweetest and most important sound in any language." In the delivery of online education, instructors may apply this perspective and achieve this "sound" by using a student's name in every possible occasion. Starting with the very first introduction, the instructor may set the tone for the course and facilitate social presence by addressing students by their name. In the welcome announcement for the course, the instructor may state the importance of students referring to each other by name. Also in the welcome announcement, the instructor may ask students to send a private message if they desire to be referred by a particular pronoun. From that point forward, it is important to continue that tone to create and maintain a welcoming online classroom environment. If students introduce themselves with a nickname, the instructor should note and use it throughout the course to enhance the relationship. As the course proceeds into forum discussions, assignments, and responses to emails or messages, it behooves instructors to take advantage of these opportunities to address students by name, in all formats or communication, which may also include audio or video posts.

In his 1993 book, *What Matters in College*, Alexander Austin reviewed the literature on college teaching. Austin found that the most impactful as-

pect of getting students involved in the undergraduate experience was greater faculty-student and student-student interaction. While learning student names may seem to be a trivial matter in higher education, it is a powerful means to foster both of these types of interactions (Middendorf & Osborne, n.d).

Scientific research has shown that there is unique brain activation specific to one's own name in relation to the names of others. In addition, the patterns of activation when hearing one's own name relative to hearing the names of others is similar to the patterns reported when individuals make judgments about themselves and their personal qualities (Carmody & Lewis, 2006).

Further, an instructor who does not know or use students' names may be perceived as remote and unapproachable (Middendorf & Osborne, n.d). Especially since the online medium is remote by nature, the more instructors do to personalize their interactions and address students by name, the more likely they will successfully facilitate communication and engagement with students. When an instructor engages students in an online conversation, recognizes them individually by name, and appears to include them in the domain of attention, the subject matter may even seem more accessible (Willemssen, 1995). According to Nelson (2008), "One of the biggest challenges of any learning method is engaging the learner ... and the best way to do this is through personalization" (p. 11). It is up to online instructors to maximize and

leverage this opportunity to personalize to enhance further their instructional delivery and quality of online teaching.

Overcome Self-Plagiarism— Be Authentic

Another key element to successful interactions online is to express original ideas in context. The unmodified reuse of forum responses by instructors to students from course section to course section in online education is essentially a form of professor self-plagiarism. Although a certain amount of references to one's own previous work—textual recycling—may be appropriate and/or warranted at times (Bruton, 2016; Moscovitz, 2016), the over-use of previous lines of expression may compromise the pursuit of establishing effective connections with students. Acknowledging and respecting the present forum discussion are actions required for authentic interactions. If the professor ignores students' unique words in favor of copying and pasting standard, unmodified answers, there may be a violation of the boundaries of forum authenticity and believability.

Instructors may save time in communicating certain topics by storing up a reservoir of typical responses to frequent assertions by students. However, the adoption of pre-set responses to current dialogue may also violate instructor-student relational integrity. Any practice of drawing from a reservoir of prewritten material should be integrated with freshly crafted wording that lends evidence to the student that the instructor actually read what the

student wrote. Instructors should direct responses to the student in the present, even if integrated with pre-written material. One method to ensure a response with updated content is to repeat a portion of what the student wrote as a preface to a Socratic question. For example:

Thank you for these excellent points, Morgan. While I am not totally opposed to paying student-athletes something, I am intrigued by your inclusion of Emmert's comment, "... they more than likely would not be living in the dorms or eating at the cafeteria with other students ..."

Having been a former student-athlete, how important do you think the above is with respect to the student-athlete experience?

Establishing a relevant connection with students by addressing them in the present context typically results in higher student engagement in the course. As Dixson (2010) asserted, effective student engagement involves the creation of "meaningful communication between students and with their instructor—it's all about connections" (p. 8). Instructor-student relationships that are authentic and demonstrate meaningful interactions are more likely to create and advance an effective learning environment (Croxtton, 2014).

Conclusion

Online forum discussions are a place where vital interactions between students and instruc-

tors may solidify student persistence (Tello, 2007) and meaningful engagement (Bernstein & Isaac, 2018; Nandi et al., 2012). The quality of forum discussion may make all of the difference for student success. The essential elements that support those vital interactions are clear: Demonstrate Presence—*Be There*; Ask Engaging Questions—*Be Socratic*; Use Students' Names—*Be Personal*; and Overcome Self-Plagiarism—*Be Authentic*. As the first bite of an In-N-Out Burger® verifies the “Quality you can Taste,” these foregoing practices verify the critical quality that is necessary in an online discussion forum.

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Three Questions for an Online Learning Leader

Featuring Vernon Smith, Ph.D.

Senior Vice President and Provost, American Public University System, USA

Dr. Vernon Smith has been Provost at American Public University System (APUS) since 2016, with a background in effective quality, assessment, and retention strategies. Prior, Dr. Smith served as the Vice Provost of Distributed Learning and Associate Professor at the University of the Pacific, where he led digital and adult learning initiatives. Previously, Vernon oversaw the successful launch of a new online college: Portmont College at Mount St. Mary's, Los Angeles (now MSMU Online) through MyCollege Foundation, a Bill and Melinda Gates-funded initiative where he served as the founding Chief Academic Officer and Provost. He served as the Vice President of Academic Affairs at Rio Salado College. Vernon was elected to the Executive Council of WCET (WICHE Cooperative for Educational Technologies), a division of the Western Interstate Commission for Higher Education. He currently serves on the Advisory Board for EDUCAUSE Learning Initiative (ELI). Dr. Smith received Bachelor of Arts degrees in Latin American Studies and Spanish at Brigham Young University, a Master of Organizational Behavior from the Marriott School of Management at Brigham Young University, and a Doctor of Philosophy in Organization and Administration of Higher Education at The University of Arizona.

Tres preguntas para un líder del aprendizaje en línea

El Dr. Vernon Smith ha sido Rector en el American Public University System (APUS) desde 2016, con experiencia en estrategias efectivas de calidad, evaluación y retención. Anteriormente, el Dr. Smith se desempeñó como Vice Rector de Aprendizaje Distribuido y Profesor Asociado en la University of the Pacific, donde dirigió iniciativas de aprendizaje digital y para adultos. Anteriormente, Vernon supervisó el exitoso lanzamiento de una nueva universidad en línea: Portmont College en Mount St. Mary's, Los Ángeles (ahora MSMU Online) a través de MyCollege Foundation, una iniciativa financiada por Bill y Melinda Gates donde se desempeñó como Director Académico fundador y Rector. Se desempeñó como Vicepresidente de Asuntos Académicos en Rio Salado College.

Vernon fue elegido para el Consejo Ejecutivo de WCET (WICHE Cooperative for Educational Technologies), una división de la Comisión Interestatal del Oeste para la Educación Superior. Actualmente es miembro del Consejo Asesor de EDUCAUSE Learning Initiative (ELI). El Dr. Smith recibió una licenciatura en Estudios Latinoamericanos y Español en la Universidad Brigham Young, una Maestría en Comportamiento Organizacional de la Escuela de Administración Marriott de la Universidad Brigham Young y un Doctor en Filosofía en Organización y Administración de Educación Superior en la Universidad de Arizona.

就三个问题向在线学习领导人提问

弗农·史密斯（Vernon Smith）博士自2016年以来担任美国公立大学系统（APUS）副校长，他的学历背景包括有效质量、评估、和保留策略。史密斯博士此前在太平洋大学担任“分布式学习”副教务长兼副教授，他在太平洋大学领导了有关数字学习与成人学习的各项倡议。此前，他曾在My-College基金会赞助下成功建立一所新的在线学习学院：圣玛丽山Portmont学院（位于洛杉矶，现更名为MSMU Online），该基金会是比尔及梅琳达·盖茨基金会下的一项倡议计划，弗农曾担任这项计划的学术主任兼教务长。他曾任里奥萨拉多社区大学教务部副主任。弗农曾入选WCET（WICHE教育技术合作组织）执行委员会，该委员会是西部州际高等教育委员会（WICHE）下的一个部门。弗农现供职于EDUCAUSE学习倡议（ELI）咨询委员会。史密斯博士在杨百翰大学取得了拉美研究与西班牙语文学学士学位，并从该校的万豪管理学院处取得组织行为硕士学位，之后在亚利桑那大学取得高等教育组织与管理博士学位。

1 From your perspective as a university leader, what are the most important considerations for institutions when planning to incorporate Open Educational Resources (OERs) into courses and programs?

The first priority should always be student success when considering an Open Educational Resources (OERs) strategy for a university or college. We know that across U.S. higher education institutions, over 60% of students do not have all of their textbooks by the first week of class. We also know that those textbooks cost students upwards of \$1,200 annually. Students cannot succeed unless they engage with the subject matter and the earlier the engagement starts, the better the outcome for the student. OERs reduce the financial and access barriers to students.

Next, leaders need to assure that resources and technologies maximize that access through digital means. Having OERs easily accessible in a mobile-friendly learning management system (LMS) is key. An important resource often overlooked is the library, and taking the step to link students to its already acquired and existing materials is important. We all invest a great deal of funds to have the most up-to-date library databases available, and then hope that students actually use them. By pointing students to content sources through persistent links, the knowledge becomes more reliable and relevant. My recommendations are to ensure that the technology works properly so that students do not have to re-login to systems and to work with

internal technology teams to ensure that there are seamless and single sign-on capabilities. Curated OERs may deliver an entire library of resources available to students without out-of-pocket costs, thus increasing the learning and likelihood of success.

The real *secret sauce* for an OER strategy beyond a philosophy of student success and reducing financial and technology access—is a willing and committed faculty. The faculty makes all the difference in an OER strategy, and without deep buy-in from faculty leadership, OER conversions will go nowhere fast. Involve the deans and faculty leadership. Something very special happens when faculty engage deeply with OER content and library resources. Faculty refresh their knowledge and passion for the subject matter, and students benefit. Faculty must be given the tools that they need to curate content as well as time to experiment. Ongoing training and sharing among faculty leaders facilitate building the community and commitment. Find the early adopters and the most vocal critics and involve all of them in the process. Be careful to listen to them about the barriers and challenges they encounter. Provide deadlines to try something, test it for effectiveness, and try it again in a continuous improvement process. Use empirical methods to test out the effectiveness and results on learning outcomes. At a minimum, there should be equal or better impact on students. In some cases, there will not be an OER option that is viable; but in most cases, the greater the faculty members' skillsets become, the more innovative they will be with

the curation and re-creation of content fitted for learning and the students.

Finally, I highly recommend rewarding and recognizing faculty and leaders who do this extraordinary work with OERs—especially those who convert whole degree programs to *zero cost degrees* as well as whole schools, or colleges. When faculties own the OER process, the transformation becomes sustainable and innovative.

2 How do you view progress with the use and acceptance of competency-based learning?

We continue to see pockets of innovation in this area at select institutions in the United States and abroad. Competency-based models have the capacity to provide direct links to workforce needs. If institutions work with employers to create certain competencies, they could strengthen the connections between education and employment. To create a full competency-based education (CBE) program, it often takes a different type of system functionality or system; so implementation requires planning and a large investment. CBE programs are extremely self-directed

and must allow students to move with agility through course modules and courses in the LMS. Internationally, there are pockets of CBE program use where institutions may build from the ground-up.

3 What are emerging and future trends in online education?

I think we will continue to see the growth and expansion of digital courseware, as well as adaptive and personalized learning models. Any opportunity to increase access, decrease cost, and positively impact student success should see an increase in online and digital learning modalities. Of course, scalability is always a plus too! To scale many of these models, it takes an institution to look for areas in which they may replicate models in similar environments. Tackling the big issues in higher education, such as scale, access, and affordability, often happens best when like-minded institutions come together in a consortium, at conferences, or through professional development. In regard to digital learning, I recommend the Online Learning Consortium, Educause, and ShapingEDU.

A Review of *The Ultimate Guide to eLearning Infographics*

eLearning Industry. (2017). *The ultimate guide to eLearning infographics*. Retrieved from https://ec.europa.eu/epale/sites/epale/files/theultimateguidetoelarninginfographics_0.pdf

By Heidi Lockwood

American Public University System, USA

ABSTRACT

A review of *The Ultimate Guide to eLearning Infographics*, a 24-page PDF eBook by eLearning Industry, features an examination of the impact eLearning infographics have on student learning, including tips on how to effectively create and use infographics in online course design.

Keywords: eLearning, infographics, visual communication

Una reseña de: *La guía definitiva para infografías de eLearning*

RESUMEN

Una revisión de *La guía definitiva para infografías de eLearning*, un libro electrónico en PDF de 24 páginas de eLearning Industry, presenta un examen del impacto que las infografías de eLearning tienen en el aprendizaje de los estudiantes, incluidos consejos sobre cómo crear y usar efectivamente infografías en el diseño de cursos en línea.

Palabras clave: eLearning, infografías, comunicación visual

《eLearning在线学习信息图终极指南》书评

摘要

《eLearning在线学习信息图终极指南》（*The ultimate guide to eLearning infographics*，一本由eLearning Industry出版的24页PDF电子书）书评研究了在线学习信息图对学生学习产生的影响，提供了有关如何在在线课程设计中有效创建并应用信息图的建议。

关键词：在线学习（eLearning），信息图，视觉传播

Introduction

The *Ultimate Guide to eLearning Infographics* is a compilation of seven articles that share best practices on how to effectively create and use infographics in online course design. The information is relevant, simple, and useful, addressing topics ranging from the goals, aesthetics, and marketing of infographics in course design. Many of the key tips are common knowledge but are good reminders about how to balance text and visuals in the online learning environment. The main points of the guide book are supported with references to cognitive science, human behaviors, and basic marketing strategies.

Article 1

The first article covers the basic goals of infographics specific to online learning by defining them as a visual way to show logical paths and connect ideas through the visual representation of them. There

is an emphasis on the appropriate balance of visuals to text that aim to grab learners' attention before they click away. There is a familiar theme of *less is more*, using creativity and aesthetic sense to simplify learning and improve knowledge retention with the goal of allowing pictures to do the majority of the talking.

Cognitive science states that humans are visual beings and that 90 percent of the information we receive is communicated visually (eLearning Industry, 2017), which justifies the importance of quality infographics. This article features useful tips on color selection, font choice and size, and the importance of creating infographics that are readable on every device.

Creating strong infographics involves a combination of creativity, design sense, and imagination. Yet, this book appeals to those who may lack experience in graphic design by providing suggestions for using free clip art and icons as well as adapting previously cre-

ated templates to meet course needs. In other words, anybody can become proficient at creating quality infographics for their online courses.

Article 2

The second article addresses creatively using eLearning infographics and attends to marketing tips such as title control and choosing monochromatic color schemes. These tips assist with visual choices that help improve the aesthetic characteristics of the infographics.

Article 3

The third article provides reasons for using eLearning infographics in course design. The information is familiar rhetoric for designing online courses, highlighting the importance of visually representing data (which improves memory retention), minimizing course clutter, and increasing engagement (eLearning Industry, 2017). The infographics help learners make connections while guiding them through a learning process that is useful, simple, and easily digestible.

The science behind the idea that infographics improve retention and learning is due to the simplification and minimization of content, delivering a concise and visual representation of ideas that is easy to remember. With lengthy online reading comes the potential for confusion and boredom, and causes one to question whether we are truly taking advantage of innovation if we are simply using it to post textbooks online. The online classroom is not effective when instructors and designers

try to simply re-create the traditional classroom in the online platform. Online learners are accustomed to online activity that has movement, color, images, and choice. The very worst thing we can do to this generation of learners is require them to read extensively online.

Article 4

The fourth article offers seven steps for creating effective infographics for eLearning courses. As with any course, the first tip is to know the students. The second is to create a storyboard, which to professionals in the field of education could possibly equate to a curriculum map or lesson plan. The marketing element in this article emphasizes the importance of a *winning headline* and having good focus and flow. The authors emphasize that infographics are to teach rather than entertain; though there is a heavy focus on creatively grabbing and maintaining users' attention by conveying information in ways that keeps them interested.

Article 5

The fifth article includes descriptions of seven must-have features of exceptional eLearning infographics. There is information overlap from article to article which, in and of itself, is a helpful teaching tool. The must-have features include *relevant content*, *contextualized analytics*, *aesthetic appeal*, *responsive design*, *branding information*, *supplemental resources links*, and *user testing*. ELearning (2017) suggests testing viewability and comprehensiveness with a small internal group prior to implementation.

Article 6

The tips in the sixth article highlight the importance of choosing user-friendly templates or those that are easily customizable. Suggestions for developing new templates include making use of the authoring tools available, using techniques to simplify the process, and creating reusable templates for future efficiency. These seven tips again address the need to focus on objectives and consider the needs of the learners for which the infographics are being developed.

Article 7

Finally, the seventh article summarizes the top seven tips for using infographics to improve knowledge retention, reiterating the need to avoid cognitive overload, utilize repetition, and create content that is relevant and thought-provoking, both cognitively and visually. An additional tip to improve knowledge retention is to include follow-up assessments. Many of these tips are familiar best practices in any learning environment, yet the key to ef-

fective infographics is to limit data and information to what students are expected to remember.

Conclusion

The guide, written with a knowledge of adult learner needs, echoes Malcolm Knowles' concepts of andragogy. Familiar elements of adult learning theories that surface in the final article include addressing the need for manageable doses of relevant information that may be immediately applied to life and work, creating decision paths that allow learners to make choices in their learning, pushing learners to reach their own conclusions and analyze their choices, and using existing knowledge to contribute real-life scenarios to the learning experience. In conclusion, the tips and tools of this guidebook will facilitate course design by providing the essential elements that address online learner needs and make infographics a successful part of online education.

Dr. Heidi Lockwood resides in California and, since 2018, teaches part-time undergraduate and graduate courses for the School of Education Teaching program at American Public University System (APUS). Since 2004, she has worked full and part-time for the School of Arts and Humanities, teaching and developing courses for the Spanish program and teaching a communication course. She received a B.A. in Spanish and M.A. in Education at the University of Oregon, and completed an Ed.D. in Curriculum and Instruction through Capella University.

Dr. Lockwood spent a year abroad in Spain, and later worked in Costa Rica for an Eco-tours project, interpreting with indigenous people to teach rain forest preservation to tourist groups. She later taught at a K-8 charter school in Missouri, created a hybrid Spanish program for the continuing education program at Johnson County Community College, and taught Spanish at the University of Kansas.

Her past research focused on psychological challenges of online teaching and learning and strategies for achieving emotional well-being in the digital world. Her current research involves exploring stress and alcohol use among online college learners.

Media Insight: An Interview about Electronic Course Materials

Featuring Andrea Dunn

Associate Vice President of Course Materials at American Public University System, USA

Desde el punto de vista de los medios: una entrevista acerca de los materiales de clase electrónicos

Con Andrea Dunn

Vicepresidenta Asociada de Materiales de Clase en American Public University System, EE. UU.

媒体见解：一次与电子课程材料相关的访谈

专题人物Andrea Dunn

课程材料副董事，美国公立大学系统

1 What are the most significant changes to electronic course materials in recent years?

EBooks have become more interactive over the last several years. Some products have self-checks along the way and adaptive learning technologies built in to help the learner focus on new material. Videos and other multimedia, embedded in the reading material, help bring the subject matter to life while recognizing different learning styles.

2 What are the challenges with technology integration ... e.g., merging and managing quality open education resources (OERs), other openly licensed content, and academic library materials for online classrooms?

OER and other online materials come with the perpetual threat of scheduled maintenance, unplanned outages, website updates, and thus link/content changes. Changes in license ownership resulting in articles and/or eBooks removed from library subscriptions and publisher restrictions pertaining to dig-

ital rights management (DRM) create challenges when leveraging academic library resources. Creating and saving back-up copies helps to minimize these challenges, but unless the university owns and manages the content, there is always the possibility of unplanned interruptions to access.

3 When using various platforms, databases, and learning management systems, are there challenges with collecting analytics on students' engagement with course materials in online classrooms?

Student engagement data and analytics generally provide the amount of time a student viewed a resource (e.g., how long that browser was open); how many times the resource link was clicked; and—if a search bar is in the platform— which terms were entered by the student. While it may be good to have this information, simply viewing a resource does not equal engagement or understanding of the material by the student. Unless the product's integration can pass back and forth information that is useful and relevant to faculty members in an actionable way, the information may not be leveraged to engage students more effectively.

4 For institutions, what considerations are most important for managing course materials for online classrooms?

Course materials used in an online setting must adhere to stricter copyright compliance. Materials that may have been fine to display in a physical

classroom may not be provided to online students without proper licensing or permission. Addressing the Americans with Disabilities Act (ADA)/508 compliance to support students with disabilities is critical to ensure a quality experience for all users.

5 What future trends do you foresee for curating and managing course materials?

Platforms that allow for search, selection and display for students are a good start, but they must also be intuitive, require minimal training, and come at a reasonable price point. Resources must also meet the educational standards of the curriculum while providing information on copyright, ADA compliance, and web addresses to help faculties make informed decisions for course adoption. There are platforms that allow users to download a browser extension to incorporate and compile websites in their reading lists, but there are no native compliance checks and the platforms may be confusing to those who are not web-savvy. An affordable solution that incorporates the various curricular and compliance needs of online faculties in an intuitive manner, while smoothly integrating in the online classroom with customizable analytics, is the natural next phase for course material curation and management.

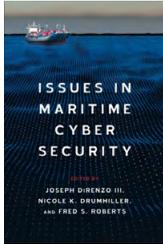
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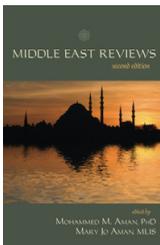
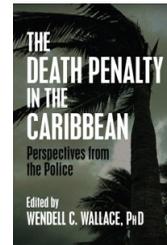


Issues in Maritime Cyber Security Edited by Nicole K. Drumhiller, Fred S. Roberts, Joseph DiRenzo III and Fred S. Roberts

While there is literature about the maritime transportation system, and about cyber security, to date there is very little literature on this converging area. This pioneering book is beneficial to a variety of audiences looking at risk analysis, national security, cyber threats, or maritime policy.

The Death Penalty in the Caribbean: Perspectives from the Police Edited by Wendell C. Wallace PhD

Two controversial topics, policing and the death penalty, are skillfully interwoven into one book in order to respond to this lacuna in the region. The book carries you through a disparate range of emotions, thoughts, frustrations, successes and views as espoused by police leaders throughout the Caribbean



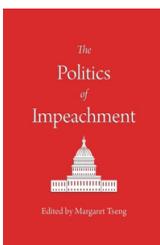
Middle East Reviews: Second Edition

Edited by Mohammed M. Aman PhD and Mary Jo Aman MLIS

The book brings together reviews of books published on the Middle East and North Africa. It is a valuable addition to Middle East literature, and will provide an informative read for experts and non-experts on the MENA countries.

Unworkable Conservatism: Small Government, Freemarkets, and Impracticality by Max J. Skidmore

Unworkable Conservatism looks at what passes these days for “conservative” principles—small government, low taxes, minimal regulation—and demonstrates that they are not feasible under modern conditions.

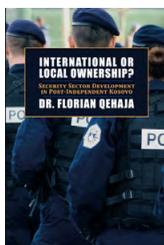
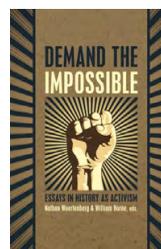


The Politics of Impeachment Edited by Margaret Tseng

This edited volume addresses the increased political nature of impeachment. It is meant to be a wide overview of impeachment on the federal and state level, including: the politics of bringing impeachment articles forward, the politicized impeachment proceedings, the political nature of how one conducts oneself during the proceedings and the political fallout afterwards.

Demand the Impossible: Essays in History as Activism Edited by Nathan Wuertemberg and William Horne

Demand the Impossible asks scholars what they can do to help solve present-day crises. The twelve essays in this volume draw inspiration from present-day activists. They examine the role of history in shaping ongoing debates over monuments, racism, clean energy, health care, poverty, and the Democratic Party.

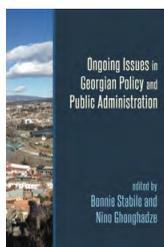
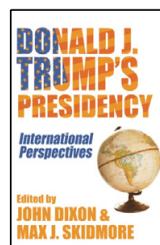


International or Local Ownership?: Security Sector Development in Post-Independent Kosovo by Dr. Florian Qehaja

International or Local Ownership? contributes to the debate on the concept of local ownership in post-conflict settings, and discussions on international relations, peacebuilding, security and development studies.

Donald J. Trump's Presidency: International Perspectives Edited by John Dixon and Max J. Skidmore

President Donald J. Trump's foreign policy rhetoric and actions become more understandable by reference to his personality traits, his worldview, and his view of the world. As such, his foreign policy emphasis was on American isolationism and economic nationalism.



Ongoing Issues in Georgian Policy and Public Administration Edited by Bonnie Stabile and Nino Ghonghadze

Thriving democracy and representative government depend upon a well functioning civil service, rich civic life and economic success. Georgia has been considered a top performer among countries in South Eastern Europe seeking to establish themselves in the post-Soviet era.

Poverty in America: Urban and Rural Inequality and Deprivation in the 21st Century Edited by Max J. Skidmore

Poverty in America too often goes unnoticed, and disregarded. This perhaps results from America's general level of prosperity along with a fairly widespread notion that conditions inevitably are better in the USA than elsewhere. Political rhetoric frequently enforces such an erroneous notion.

