CIÊNCIAS SOCIALMENTE APLICÁVEIS:

INTEGRANDO SABERES E ABRINDO CAMINHOS

JORGE JOSÉ MARTINS RODRIGUES
MARIA AMÉLIA MARQUES

(Organizadores)

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APRESENTAÇÃO

O oitavo volume desta coleção segue a lógica dos livros anteriores. Procura apresentar ao leitor uma coletânea de artigos sobre problemáticas que são transversais ao campo das ciências sociais aplicadas.

Sendo discutível, na metodologia seguida na organização dos vários volumes procurou-se privilegiar artigos que abordassem novas tendências e/ou problemáticas transversais relevantes, adotassem metodologias mais holísticas e/ou modelos de investigação aplicada, apresentassem estudos de caso nacionais e/ou internacionais e procurassem ser reflexivos. Nesse contexto, o presente volume está organizado em três grandes eixos – Programação, Sustentabilidade, Educação e redes sociais.

Na construção da estrutura de cada eixo procurou-se seguir uma lógica em que cada artigo possa contribuir para uma melhor compreensão do artigo seguinte, gerando-se um fluxo de conhecimento acumulado que se pretende fluido e em espiral crescente.

Assim, o eixo Programação é constituído por um conjunto de oito artigos. A programação pode ser entendida como um conjunto de actividades que visam transformar tarefas repetitivas e monótonas em rotinas cooperativas e colaborativas. Estas rotinas são algoritmos e modelos matemáticos geradores de informação estruturada e eficiente que, apesar da sua racionalidade limitada, é útil para a tomada de decisões, sejam individuais ou de grupo.

O eixo Sustentabilidade junta um conjunto de sete artigos que, em comum, contribuem para a construção da responsabilidade social. As mudanças climáticas estão a perturbar a vida de milhões de pessoas no planeta, com especial ênfase nas regiões rurais mais pobres e com impacto negativo na economia. Assim, exigem-se políticas públicas inclusivas que incentivem o uso de materiais multiusos, amigos do ambiente. Os resíduos sólidos urbanos necessitam de ser melhor geridos e as empresas deverão ser incentivadas a incorporar aquelas políticas nas suas estratégias, para reforço dos seus valores, conforto e bem-estar dos seus constituintes.

O eixo Educação e redes sociais tem seis artigos. As principais teorias de liderança parecem apontar para que esta seja contingencial, podendo ser ensinada e as respectivas competências treinadas e melhoradas. Todo o ensino, presencial ou a distância, tem os seus pontos fortes e pontos fracos. Exigem-se comportamentos éticos, nomeadamente em ambiente de redes sociais, para evitar fraudes quer com os conteúdos quer com a respectiva avaliação, com eventuais traumas psicológicos em quem é visado.

Com a disponibilização deste livro e seus artigos esperamos que os mesmos gerem inquietude intelectual e curiosidade científica, procurando a satisfação de novas necessidades e descobertas, motor de todas as fontes de inovação.

Jorge Rodrigues, ISCAL/IPL, Portugal
Maria Amélia Marques, IPS/ESCE, Portugal

SUMÁRIO

PROGRAMAÇÃO

CAPÍTULO 18

TRANSFORMING TRADITIONAL PROFESSIONAL DEVELOPMENT INTO BLENDED LEARNING COMMUNITIES

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ABSTRACT: The New Jersey Department of Education sought to develop an online professional learning community for 150,000 educators in nearly 600 school districts. The authors present a post-project analysis of the project developed in support of Face-to-Face, Blended, and fully online learning situations. This project created an "Online Professional Learning Exchange" with blended online learning modules and was funded with over two million dollars. The greatest strength of the OPLE tool is to aid the state of NJ to shift their training from expert delivery of knowledge in a face-to-face format towards the Community of Practice. The paper presents a Systematic Review of the Literature, an analysis of Professional Learning and Training Methods, and a description of the methods to create Blended Learning Modules focused on video, written materials, polls, and discussions. Through this integrated approach, the OPLE allows for user mastery of concepts that enhance their ability to provide more efficient and effective instruction to their students. Finally, the paper concludes with the results and implications in light of the current world developments and their impact on education.

KEYWORDS: Professional development. Online learning. Blended learning. Education. K-12. Communities of Practice (CoP). Online professional learning community. Professional learning and training methods. Effective instruction.

1 INTRODUCTION

Across the United States, Professional Development (PD) for K-12 educators has traditionally consisted of lecturing and hands-on workshops augmented with PowerPoint presentations. In some cases, PD providers develop their presentations into Webinars. The projects featured in the paper however, leverage current technologies, relevant research (Adinda & Mohib, 2020; Blitz, 2013, pp. 2013-003; Koller et al., 2005), and experience

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in Blended Learning in order to deliver content in an engaging manner and allow teachers greater control over their PD experience. This innovative approach sought to transform traditional PD into Professional Learning Communities (PLC). This paper presents a post-project evaluation of the creation of an online training system in the state of New Jersey USA for its nearly 600 school districts. The New Jersey Institute of Technology (NJIT) was awarded a series of grants to Dr. James Lipuma from the New Jersey Department of Education (NJDOE) Document ID # 324-201-50025[3], to gather a team and manage the creation of digital materials and videos to create an online professional development repository and tool for educators. Cristo Leon M.A.E assisted with Project and Strategic Planning Design. This project created blended online learning modules and was funded with over two million dollars from September 2014 to November 2015 with its intellectual property rights ending in 2020.

2 THEORY LITERATURE REVIEW

The authors agree with the definition of a literature review from the SAGE encyclopedia: "The term literature review can be viewed as both what is read and the process that has been undertaken to produce the work in question" (Frey, 2018, p. 983). The review for the present study was performed in two steps. First, a "systematic review of the literature (SRL) was utilized as the strategy for identifying the most relevant studies" (Ramírez-Montoya & García-Peñalvo, 2018) on the field of Pedagogical Content Knowledge. The SRL was used to identify, select, evaluate, and interpret the available resources and data within a period from three specific fields of research: Education, Administration, and Information and Communication Technology (ICT). The process for the analysis is based on the "Cochrane Handbook for Systematic Reviews of Interventions" (Higgins et al., 2019) as well as the ideas discussed on "Lessons from applying the systematic literature review process within the software engineering domain" (Brereton et al., 2007) as well as, "Systematic Reviews in Educational Research: Methodology, Perspectives and Application" (Newman & Gough, 2020). The SLR followed the three phases for the review: Planning, Management, and Reporting the results. Here the authors present a resume of their findings.

3 RESULTS OF THE SYSTEMATIC REVIEW OF THE LITERATURE

Following a planning process consisting in identifying the context: "Pedagogical Content Knowledge (PCK)" and the general dimensions: Educators, Administration,

[3] Acknowledgements: The authors acknowledge significant funding from the New Jersey Department of Education and seed funding from Roche for our efforts.

and Information and Communication Technology (ICT) to direct the dataset search. It is important to address the major challenge of the review in educational research: "The perhaps major challenge of conducting systematic reviews in educational research is the 'messiness', which is inherent in domains that use inconsistent terminology and multifaceted concepts like 'student engagement' or 'educational technology'" (Zawacki-Richter et al., 2020).

3.1 PLANNING PHASE

The first step was to identify general domains and then, define the particular areas of focus, followed by the specific domains to approach the research questions around professional development, training, and online adult learners Table 1. The review was performed on Business (ProQuest, 2020; Scopus, 2020) and Education (ERIC, 2020; JSTOR, 2020) databases.

Table 1. GPS from PCK to O-PLC. Personal elaboration.

	Pedagogical Content Knowledge		
	General	Particular	Specific
General	Educators	Administration / HR	Information and Communication Technology (ICT)
Particular	Teaching	Strategic Planning / PD	Instructional Delivery
Specific	In-service training/ learning	Training Transfer Knowledge	Communities of Online Adult Learners
	Online Professional Learning Community (O-PLC)		

3.2 MANAGEMENT PHASE

The SLR informed the research and created a database to be used as reference materials for the "Online Professional Learning Exchange (OPLE)", Table 2:

Table 2.- SLR Categories and keywords. Personal elaboration.

	2010 to 2020	2018 to 2020		
Categories and Keywords	All Documents	All Documents	Books	Peer review articles
Professional Development	147,088	40,410	122	22,893
Continuing education	65,704	16,504	396	8,917
Communities of practice	49,572	14,702	35	10,239
Professional learning	18,198	5,543	28	3,316
Professional learning communities	4,764	1,186	9	729
Knowledge Transfer	41,016	13,978	131	8,882

In-service training	26,322	7,512	56	4,479
Adult learners	12,054	3,255	6	1,872
Curriculum planning	4,538	1,037	8	675
Curriculum and instructional design	165	46	0	32

3.3 REPORT PHASE

The results of the SLR served as a referential mapping tool to identify the most important sources Table 3:

Table 3.- GPS of the SRL from PCK to O-PLC. Personal elaboration.

	Pedagogical Content Knowledge: "The Wisdom of Practice: Essays on Teaching, Learning, and Learning to Teach" (Shulman, 2004).		
	General	Particular	Specific
General	Enhancing teaching through constructive alignment (Biggs, 1996)	Can Online Learning Communities Achieve the Goals of Traditional Professional Learning Communities? What the Literature Says. REL 2013-003 (Blitz, 2013, pp. 2013-003)	Professional Learning Communities, Leadership, and Student Learning (Thompson et al., 2004)
Particular	Teaching and Instructional Design Approaches to Enhance Students' Self-Directed Learning in Blended Learning Environments (Adinda & Mohib, 2020)	Professional Development at a Distance (Holmes et al., 2011)	Using instructional design principles to develop effective information literacy instruction: The ADDIE model (Davis, 2013)
Specific	Synchronous Online Collaborative Professional Development for Elementary Mathematics Teachers (Francis & Jacobsen, 2013)	Factors Driving Learner Success in Online Professional Development (Vu et al., 2014)	Thinking together: What makes Communities of Practice work? (Pyrko et al., 2017) Reflexions on Communication, Collaboration, and Convergence: Strategic models for STEM education and research (Lipuma et al., 2023)
	Online Professional Learning Community (O-PLC)		

4 PROFESSIONAL DEVELOPMENT AND TRAINING METHODS

Traditional PD activities involve professionals sitting in a room in which the presenter discusses a set of prepared PowerPoint slides. Sometimes, hands-on activities or group discussions are structured into these presentations. In the best of cases,

participants go home excited about what they have learned. The following day, however, they may have questions regarding how to incorporate what they have learned into the context of their classes. In this model, there are not usually any means for participants to review what they have learned other than going through dense handouts or the notes they rushed to write down during the PD session.

Blended learning, on the other hand, involves utilizing digital technology in concert with face-to-face experiences to affect student learning. Beyond just Blended learning educators should be encouraged to establish online communities of practice (Gray & Smyth, 2012; Holmes et al., 2011; Riveros et al., 2012). There are various forms that this model can take (Alammary et al., 2014). Depending on how the process is implemented, students can attain control over the time and place of learning, as well as the pace and review of the material. In the simplest sense, blended learning adds technology tools to augment face-to-face instruction. However, at more advanced levels, these tools for digital learning allow the instructor to expand contact time beyond the synchronous classroom in order to provide the students the opportunity to work through activities (Chen, 2012), access resources, have a forum for discussion and/or engage with class materials, peers, or professors and other professionals at their own time and in ways that best fit the style and pace of learning of the individual student.

> "Independent of the degree of penetration that the technology has in a learning environment, blended learning: is defined as a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace" (Ferriman, 2013).

Though broad, the key to this definition is that technology facilitates the learner's control over the educational experience in some way. Current students live their lives in a way that adds educational content to the digital universe in which they live making perfect sense. For educators, however, the integration of digital learning may not be as accepted or seamless. Many educational training providers offer live webinars that allow for questions, answers, and feedback. Videos of these events may be made available for review after the event. One significant drawback to these videos is that it is difficult to easily locate specific materials for convenient and efficient review. This issue can be solved with videos that are pre-sourced by the PD provider, or when those are not available, learning objects that are tailor-made for the PD session by the provider directly.

Outside of the PD sessions themselves, interested educators can browse and search online for relevant materials, but this requires a large investment of time. When relevant content is found, it is often not focused, nor is it in the correct context. These issues

are sometimes compounded when content that is found online contains inaccuracies or errors, which is a common problem in a medium that is not generally subject to rigorous peer review. The OPLE model was designed to overcome these issues.

A key aspect of allowing materials to be made available online is the use of video. This project developed a range of video types that effectively allow educators to learn content, see demonstrations, access examples, and share their ideas and questions with the group. “Videos play a vital part in the enhancement of education. They can explain the content in a wide variety of ways for different learning styles and be accessed at any time and in any place with the ability to stream or play digital media. Video allows students to review content as many times as needed, stop to take notes, or see material for the first time if they missed class. “Video allows educators access to demonstrations and explanations that might not be available otherwise due to limits on time, resources, access, or even safety issues” (Lipuma & Reich, 2016). “In conjunction with video and other materials to create knowledge objects, the activities and assessments combine to create persistent learning objects aligned for effective education” (Biggs, 1996; Kirby & Lawson, 2012) .

5 METHODS TO CREATE BLENDED LEARNING MODULES

This section describes the OPLE model utilizing persistent learning objects housed in the Moodle Learning Management System (LMS) that are applicable across disciplines and grounded in authoritative research and good practice, as well as vetted by subject matter experts and government agencies. The objective is to create simple-to-use, accessible tools that help teachers meet educational standards. Implement best practices, and provide students with improved instruction and learning. The authors have applied this concept specifically in the context of the standards for English Language Arts & Literacy, Mathematics, and Science. The OPLE model aims to improve educational efficiency and effectiveness through the use of current tools of Information Technology and Web-based learning (Rock, 2020; Vu et al., 2014).

In order to accomplish the goals of the OPLE projects, the ADDIE model is followed (Davis, 2013). ADDIE is used by instructional designers and trainers to build effective training materials. The five phases of ADDIE’s are Analysis, Design, Development, Implementation, and Evaluation. In the analysis phase, the instructional goals and objectives are established, the learning environment is constructed, and the target users’ existing knowledge and skills are identified. During this phase, the development team considers such questions as: What are the desired outcomes? What types of learning constraints exist? What content is already available?, and What additional content is needed?

For the OPLEs thus far produced and featured in this paper, a wide variety of individuals were surveyed including subject matter experts, K-12 education professionals, and members of the NJ Department of Education (NJDOE, 2020). The design phase identifies the need for and builds learning objectives, exercises, content, subject matter analysis, planning, and the media needed for an effective OPLE. In the development phase, the design team assembles the materials from the design phase and incorporates them into the OPLE. During these phases, the content and tools are vetted and tested by numerous subject matter experts, educational professionals, decision-makers, and test users before a module is considered complete. Next, in the implementation phase, modules are shown to focus groups of potential users. Through an iterative process of procuring feedback from these focus groups, revisions are made and new components are found or produced to further improve upon the usability and thus optimize the OPLE. Finally, the evaluation phase includes the assessment, testing, and refinement of the OPLE based on feedback and data received during the previous phase of production. The key building block of the OPLE is a learning object which consists of knowledge objects, activities, and assessments. These three items are constructively aligned and work together to demonstrate good practice in learning design as well as conveying the needed knowledge and expertise.

Modules are developed to be engaging, clear, and focused, and to have a logical and consistent flow. Based on feedback and experience, modules preferably incorporate a collapsible folder style with pages that are limited in length and do not have the distraction of sidebars. In some cases, an effective alternative is to create digital 'books' to help condense the page and achieve a comparable product. Each module begins with a brief description of the content and purpose that includes a "hook" – a short video that engages the user and draws them into the content of the module. The hook is followed by an in-depth exploration of misconceptions related to the content. Next, key concepts are presented. Following these are classroom examples, a discussion and/or forum facility, and links to outside resources that allow users to explore supporting content not determined as vital for the module itself. Resources are categorized by specific topics, more general topics, as well as relevant standards and practices for the discipline.

6 RATIONALE AND RESULTS

Through this integrated approach of combining focused video, written materials, polls, and discussion, the OPLE allows for user mastery of concepts that enhance their ability to provide more efficient and effective instruction to their students. Do the Blended

online learning modules were intended to foster a community of practice in the various domains and across disciplines, no explicit evaluation of the long-term efficacy or value was conducted (Office of Educational Technology, 2014). This work is persistent in that educators using these materials can access learning modules on demand and as desired. Users that are progressing faster will be able to access the next sets of learning objects and move on to the next section, while other users may choose to review portions of the material several times until they are comfortable with the content. Some users may choose to make use of the various available resources that extend or delve deeper into the material, while others may skip this extra content. Using this technology enables the learner to be more self-directed and informed instructors for the given content.

An important aspect of an OPLE is the continued development of more modules and content. OPLE content can be disciplinary in nature to deepen educator knowledge of content, aid their pedagogy, and/or assist in curriculum planning. Moreover, OPLE can be more than just a tool for training. It can facilitate the effective engagement of educators in communities of practice. These efforts can assist Professional Learning Communities (PLCs) in working together to unpack standards and develop curriculum, breaking it into units, and working their way down to lessons that better align instruction with desired student learning outcomes.

7 DISCUSSION OF RESULTS

There are numerous benefits to the approach taken by the OPLE project over many traditional forms of PD. The OPLE model enhances traditional PD by allowing the individual learner (in this case an education professional) to take charge of the PD experience. In addition, it both enhances small-group PLCs by adding a blended learning component and integrates isolated PLCs into the larger online community. The goals and content of each module are contextualized and vetted so that the educator does not need to search the Web and filter out a large amount of irrelevant information to find information that they need. Users may choose to view the material as often as they like.

The project materials have been provided openly to the public via the “Blended Online Learning Modules” NJ DOE website (Department of Education, 2020) as well as the “Curriculum Learning and Assessment Studies (CLAS) Network YouTube Channel” (Lipuma, 2015): they are grouped on the following modules: Connected Action Roadmap, PLC Basics, Climate and Culture, PLC Conversations, Tools for School Improvement and Tools for Leaders.

Videos are brief and content-focused so users need not wade through a plethora of content to find what is appropriate and needed. The articles provided are relevant and

the user can choose how much time to focus on any given video or section of an article. This is different from traditional PD in which the presenter controls how long is spent on any given concept or activity. Groups of educators may use modules at the same time and place to guide the discussion of concepts and topics.

The NJDOE utilized the OPLE to conduct live and virtual PD. All districts in NJ were provided access to the materials synchronously and asynchronously which reached 20,000 total users. These each represented groups of educators and administrators using the materials. Its users regularly access the OPLE for content and as a way to facilitate and manage conversations. However, in the end, it was found that without the key elements for an effective community of practice, pockets of users gained the content knowledge but did not continue the interactions once the oversight was removed and key concepts in the content were learned. The key factors in effective Community of Practice (CoP) according to the literature review (Pyrko et al., 2017; Tucker & Seavey, 2018; Wenger, 2000) are Mutual engagement, Joint enterprise, and Shared repertoire.

8 CONCLUSION

The authors hope and expect that the OPLEs that have been developed will aid education professionals in their efforts to continuously enhance their skills and knowledge and assist them to be more effective at planning, implementing, and evaluating their teaching practice, in hopes that this will foster communities of practice. The OPLE also will be an effective medium for sharing best practices and seeking help from colleagues and experts. The greatest strength of the tool is to aid the state of NJ to shift its training from expert delivery of knowledge in a face-to-face format towards the community of practice model. In this way, the best practices and research around how to more effectively engage, and grow overall interest in the community can lead to sustainable and scalable results over time. The initial charge given for the creation of the OPLE was to include the community-building tools of online learning. This was supported with ongoing activities by the end of the five-year life cycle of the project, 20,000 users had engaged with the materials but once training succeeded in providing the needed learning, the learning objects became a resource rather than a springboard to a vibrant community of practice. Further discussions and research, have to be conducted to examine the idea that an OPLE can be a catalyst for a community of practice.

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