Question

1. What online problem-based learning curricula are currently available for adults?

Background

REL Midwest received a request for information on problem-based learning approaches for adults. The initial request was to identify problem-based learning curricula currently available for adults. Our search yielded limited results. The requestor was contacted for additional information about the request. After clarifying the research question, we focused our search on technical reports that described how to design and implement PBL curricula for adults. The search was restricted to articles and reports published within the last 10 years. One of the works identified was published before the period; however, it was included because it is well referenced and relevant to the topic.

Following an established Regional Educational Laboratory (REL) Midwest research protocol, we conducted a search for research reports as well as descriptive and policy-oriented briefs and articles on problem-based learning approaches for adults. The sources included the Institute of Education Sciences and its affiliated centers and programs, the Education Resources Information Center, additional research institutions, several educational research databases, and a general Internet search using Google and Google Scholar.

We also searched for appropriate organizations that may act as resources on this issue. We have not done an evaluation of these organizations or the resources themselves but offer this list to you for your information only.

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From the abstract: “The development of inquiry and project-based materials is challenging in many ways, not the least of which is the design of supports for teachers implementing such materials. We report on the design of educative and just-in-time teacher supports for an online project-based unit in ocean science. The teacher supports were visible as tabs on
the student interface and the information provided was divided into four complementary categories: in-class notes, student difficulties, related activities, and resources. These categories reflect the recommendations of Ball and Cohen (1996) and heuristics of Davis and Krajcik (2005) for designing educative curriculum materials. We examined teachers’ perception and use of these supports in a pilot study with 18 middle and high school teachers. Our findings suggest that overall teachers found the supports useful although they did not seem to use them in a just-in-time fashion. There were many instances in which teachers’ interpretation of the guidance provided and their resulting implementation varied from the designers’ intent. Our analysis revealed several themes that account for these variations: differences in the segmentation of the unit activities, underdeveloped or underspecified supports, pedagogical disagreements regarding the implementation strategies, and logistical difficulties.”

Note: REL Midwest is unable to locate a link to the full-text version of this resource. Although REL Midwest tries to provide publicly available resources whenever possible, it was determined that this resource may be of interest. It may be found through university or public library systems.


From the abstract: “Innovative methods in teaching should be used in every college classroom to enhance student engagement, support any teaching environment and encourage inquiry among learners. Adults learn best by participation in relevant experiences and utilization of practical information. When adult students are active in their learning they are able to develop critical thinking skills, receive social support systems for the learning, and gain knowledge in an efficient way. The authors highlight several exemplary strategies for adult learners including, Think-Pair-Share, Tell-Help-Check, Give One, Get One, and the Immediate Feedback Assessment Test.”


From the abstract: “Designing Problem-Driven Instruction with Online Social Media has the capacity to transform an educator’s teaching style by presenting innovative ways to empower problem-based instruction with online social media. Knowing that not all instructors are comfortable in this area, this book provides clear, systematic design approaches for instructors who may be hesitant to explore unchartered waters and offers practical examples of how successful implementations can happen. Furthermore, it is a reference for instructors who need to solve issues that occur when developing a class utilizing problem-driven instruction with online social media. With the recent exponential growth of Twitter and Facebook, the potential for social media as an educational venue brings an urgent call for researchers to increase their concentration in this area to investigate further the educational possibilities of this format. These factors combined illustrate the mission of this book that is to enable instructors in the areas of instructional design, multimedia, information science, technology, and distance learning to have an evidence-based resource for this underexplored niche in instruction.”

Note: REL Midwest is unable to confirm whether this resource has been peer reviewed. In
addition, REL Midwest is unable to locate a link to the full-text version of this resource. Although REL Midwest tries to provide publicly available resources whenever possible, it was determined that this resource may be of interest. It may be found through university or public library systems.


*From the abstract:* “Problem Based Learning (PBL) has been adopted in educational programs in a variety of disciplines, including veterinary medicine. There is a voluminous literature on the subject, but it often remains unclear just what is being done in the name of PBL, and different accounts highlight different, often contradictory, positions on the key features of the approach. Similarly, despite the many claims made for the advantages of PBL, the evidentiary basis of such claims is often questionable. This article provides an introductory overview of what appear to be the key features of the approach and a brief summary of empirical evidence on its effectiveness.”

Note: REL Midwest is unable to confirm whether this resource has been peer reviewed. However, it has been included based on its relevance to this request.


*From the abstract:* “It is said that there’s nothing so practical as good theory. It may also be said that there’s nothing so theoretically interesting as good practice. This is particularly true of efforts to relate constructivism as a theory of learning to the practice of instruction. Our goal in this paper is to provide a clear link between the theoretical principles of constructivism, the practice of instructional design, and the practice of teaching. We will begin with a basic characterization of constructivism identifying what we believe to be the central principles in learning and understanding. We will then identify and elaborate on eight instructional principles for the design of a constructivist learning environment. Finally, we will examine what we consider to be one of the best exemplars of a constructivist learning environment.”


*From the abstract:* “Problem based learning (PBL) in its most current form originated in Medical Education but has since been used in a variety of disciplines (Savery & Duffy, 1995) at a variety of educational levels (Savery, 2006). Although recent meta-analyses have been conducted (Dochy, Segers, Van den Bossche, & Gijbels, 2003; Gijbels, Dochy, Van den Bossche, & Segers, 2005) that attempted to go beyond medical education, they found only one study in economics and were unable to explain large portions of the variance across results. This work builds upon their efforts as a meta-analysis that crosses disciplines as well as categorizes the types of problems used (Jonassen, 2000), the PBL approach employed (Barrows, 1986), and the level of assessment (Gijbels et al., 2005;
Sugrue, 1993, 1995). Across 82 studies and 201 outcomes the findings favor PBL (dw =0.13, +1- .025) with a lack of homogeneity (Q=954.27) that warrants a closer examination of moderating factors.”


From the abstract: “Enthusiasm for problem-based learning (PBL) is widespread, yet there exists little rigorous experimental evidence of its effectiveness, especially in K–12 populations. Reported here is a highly controlled experimental study of PBL in a middle school population. Between- and within-subject comparisons are made of students learning the same material under three instructional conditions: lecture/discussion, characteristic small-group PBL, and solitary PBL. Assessments of comprehension and application of concepts in a new context 9 weeks after instruction showed superior mastery in both PBL conditions, relative to the lecture condition, and equivalent performance in the two PBL conditions, the latter indicating that the social component of PBL is not a critical feature of its effectiveness.”

Additional Resources


From the background: “This paper presents findings drawn from a mixed-methods research study that examines how a professional development workshop on PBL was sustained by school, district, and higher education support structures, and how these structures affected teacher perceptions of the PBL implementation process in their classrooms, at their schools, and across their district. The findings illustrate that PBL implementation is a complex process requiring educators, students and their families, policy makers, and community members to redefine beliefs and expectations about teaching and learning.”

Note: REL Midwest is unable to locate a link to the full-text version of this resource. Although REL Midwest tries to provide publicly available resources whenever possible, it was determined that this resource may be of interest. It may be found through university or public library systems.


From the abstract: “A well-designed online course can provide opportunities for active learning, creative thinking, and knowledge construction with high levels of student satisfaction. The latest Babson/Sloan survey on online education, however, shows that approximately one-third of the chief academic officer participants still consider online education inferior to face-to-face education. The author visited some of the early learning theories and some of the recent research to discover what people know about connections, student engagement, and the sense of presence in online education. In this article, she
presents conclusions that can be drawn from this journey through the literature. Electronic connections are widespread and varied providing students with mixed-media opportunities to connect with course content, teachers, and one another.”


*From the introduction:* “The goal of this chapter is to describe a “pervasive” management approach that continually supports student learning from project planning to post-project reflection. We first define and describe the key features of Project Based Learning as an instructional model. We then identify four project implementation stages and discuss the pervasive management activities associated with each stage. Finally, we suggest several aspects of project based learning that need further theoretical and empirical exploration.”

**Additional Organizations to Consult**

- Buck Institute for Education  
  [http://www.bie.org](http://www.bie.org)

  *From the website:* “The Buck Institute for Education (BIE) is dedicated to improving 21st Century teaching and learning throughout the world by creating and disseminating products, practices and knowledge for effective Project Based Learning (PBL). BIE contributes to Project Based Learning through product development, services, research, and online learning.”

- Center for Research on Learning and Teaching University of Michigan  
  [http://www.crlt.umich.edu/](http://www.crlt.umich.edu/)

  *From the website:* “Founded in 1962 at the University of Michigan (U-M), the Center for Research on Learning and Teaching (CRLT) was the first teaching center in the country. CRLT is part of the Provost’s Office and works with faculty, graduate student instructors (GSIs) and academic administrators in all nineteen schools and colleges to support and enhance learning and teaching at U-M. CRLT offers a comprehensive array of curricular and instructional development activities. CRLT’s professional staff, with Ph.D.s in a variety of academic disciplines, provide both cross-disciplinary campus-wide programs and discipline-specific programs customized to the individual needs of departments, schools and colleges. CRLT strives to promote a University culture that values and rewards teaching, respects and supports individual differences among learners, and encourages the creation of learning environments in which diverse students can learn and excel.”

- Edutopia [http://www.edutopia.org](http://www.edutopia.org)

  *From the website:* “Edutopia is managed by the George Lucas Educational Foundation. The George Lucas Educational Foundation is dedicated to improving the K–12 learning process by documenting, disseminating, and advocating innovative, replicable, and evidence-based strategies that prepare students to thrive in their future education, careers, and adult lives.”

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Problem-Based Learning—5
Illinois Mathematics and Science Academy
http://pbln.imsa.edu/

*From the website:* “Established by the Illinois Mathematics and Science Academy in 1992, the PBLNetwork engages in PBL professional development, research, information exchange, curriculum development and networking in K–16 educational settings. The goals of IMSA’s PBLNetwork are:

*To mentor* educators in all disciplines as they design and develop effective problem-based learning (PBL) materials and become skillful coaches in K–16 classrooms and other educational settings.

*To explore* problem-based learning (PBL) strategies as the context in which knowledge is acquired, ethical decision-making is nurtured, and problem-solving skills are developed with learners of all abilities.

*To connect* problem-based learning (PBL) educators through numerous networking options designed to meet a variety of needs.”

Institute for Transforming Undergraduate Education, Problem-Based Learning at University of Delaware
http://www.udel.edu/inst/resources/index.html

*From the website:* “For more than ten years, the Leaders and Fellows of the Institute for Transforming Undergraduate Education (ITUE) have encouraged the adoption of student-centered and active classroom pedagogies—and in particular—the use of PBL in the undergraduate classroom. On- and off-campus workshops are held for faculty and students to enhance their understanding of PBL. The Institute for Transforming Undergraduate Education also houses the Problem-Based Learning Clearinghouse, a collection of problems and articles to assist educators in using problem-based learning. The problems and articles are peer reviewed by PBL experts in the disciplinary content areas.”

PBL Lab at Stanford University
http://pbl.stanford.edu

*From the website:* “Our Mission (PBL Lab) is to engage graduate and undergraduate students, faculty, and industry practitioners in multi-disciplinary, collaborative, geographically distributed PBL activities. PBL is a process of teaching and learning that focuses on problem based, project centered activities that produce a product for a client. PBL will be based on re-engineering processes that bring people from multiple disciplines together.”

**Keywords and Search Strings Used in the Search**

“Problem-based Learning” OR “problem-driven instruction” AND adults OR “adult learners”

**Search of Databases and Websites**

**Institute of Education Sciences (IES) Sources:** National Center for Education Research, National Center for Education Evaluation and Regional Assistance, Regional Educational
Laboratory Program, What Works Clearinghouse, Doing What Works, National Center for Education Statistics

Additional Data Resources: ERIC and EBSCO databases, JSTOR database, ProQuest database, Google Scholar, Google

Criteria for Inclusion

When REL Reference Desk researchers review resources, they consider—among other things—the following four factors:

- **Date of the Publication**: The most current information is included, except in the case of nationally known seminal resources.

- **Source and Funder of the Report/Study/Brief/Article**: Priority is given to IES, nationally funded, and certain other vetted sources known for strict attention to research protocols.

- **Methodology**: The source may include randomized controlled trial (RCT) studies, surveys, self-assessments, literature reviews, and policy briefs. Priority for inclusion generally is given to RCT study findings, but the reader should note at least the following factors when basing decisions on these resources: numbers of participants (Just a few? Thousands?); selection (Did the participants volunteer for the study or were they chosen?); and representation (Were findings generalized from a homogeneous or a diverse pool of participants? Was the study sample representative of the population as a whole?).

- **Existing Knowledge Base**: Although we strive to include vetted resources, there are times when the research base is limited or nonexistent. In these cases, we include the best resources we can find, which may include newspaper articles, interviews with content specialists, organization websites, and so on.

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