COPLS*: An Alternative to Traditional Online Course Management Tools  
(*Patent Pending)

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Abstract: Over the last two hundred years, a sophisticated, broadly applied conventional learning system (CLS) has evolved. The CLS has found its most common expression in face-to-face, formal classroom structures. However, with the advent of the Internet and a series of high technology possibilities, the CLS has been extended from the face-to-face classroom to virtual, online learning environments. Yet, most e-learning opportunities are designed to mimic the practices of the classroom. The educational community needs an alternative online learning system. The Community of Practice Learning System (COPLS) (U.S. Patent Application No. 10/286,784) offers an alternative to the CLS. This paper describes the COPLS system.

Introduction

The Internet is perhaps the most transformative technology in history, reshaping business, media, entertainment, and society in astonishing ways. But for all its power, it is just now being tapped to transform education. . . . The World Wide Web is a tool that empowers society to school the illiterate, bring job training to the unskilled, open a universe of wondrous images and knowledge to all students, and enrich the understanding of the lifelong learner. The opportunity is at hand. The power and the promise are here. . . . Web-based education is just beginning, with something of far greater promise emerging in the middle distance. Yet, technology, even in its current stage of development, can already allow us to realistically dream of achieving age-old goals in education

To center learning around the student instead of the classroom.
To focus on the strengths and needs of individual learners.
To make lifelong learning a reality (Web-Based Education Commission, 2001, pp. 3-4).

So proclaims the Congressionally-appointed Web-Based Education Commission (2001). Are claims such as these hype or reality? Only time will tell. What is certain about e-learning is its reality. Regardless of whether or not e-learning reflects sound educational practice, it is changing the landscape of education. E-learning has already captured the attention of the corporate sector and much of higher education, with 70 percent of colleges and universities in the United States now offering at least some courses online. Forty percent have created online degree programs, and in Fall, 2002, Arizona became the first state to formally recognize an online graduate degree in educational administration toward principal certification. The leader in the field, University of Maryland University College, had more than 62,000 online enrollments in 2001 and offers 20 complete degree programs online (Russo, 2001). Web-based training is the fastest growing segment of the $60 billion corporate training market (Baer, 1999). Yet, questions Charp (2001, p. 10):

E-learning requires significant investments of time and money, both to develop courses and for revision of courses. Potential for large-scale usage has been over-sold, and return on investment is over-stressed. Whether it shall result in better learning and higher efficiency still needs to be proven.

Those who seek “proof” in the research literature will likely be disappointed. While there is a great deal of research in the larger category of distance education, the field of online learning is still developing its literature base (Dabbagh, 2001). Thus, despite rapid proliferation of e-learning opportunities, there remains an urgent need to understand the pedagogical roles e-learning can play and how to get the most out of its use. When classrooms of the 21st century include some of the technology options available in the virtual classrooms of today, will the instruction...
be so very different? The answer appears to be a resounding no since experts say that most online curricula are simply traditional material copied to the Web (Editors, Education Week, 2002). In fact, most e-learning opportunities are designed to mimic the practices of the classroom (Sonwalkar, 2001) and reflect long-standing conceptualizations of educational practice – the conventional learning system (CLS).

E-learning Expressed as a Conventional Learning System

Over the last two hundred years, a sophisticated, broadly applied conventional learning system (CLS) has evolved. This CLS has found its most common expression in perceptions of learning that pivot on stimulus-response learning and on instructional practices that adopt programmed instruction, behavioral objectives, mastery learning, and an emphasis on the relationship between the conditions of learning and a sequence of external instructional events. Learning is assumed to depend on the instructor’s clear identification and articulation of a sequence of objectives that are then taught systematically, chained together over time, and reinforced through repeated practice. Further articulation of the CLS rests on a set of assumptions that includes: 1) a focus on individual learning, 2) a focus on learning small, isolated skills and facts, 3) a focus on books as the primary source of information, and 4) a focus on teaching as the process of analyzing, sequencing, and then presenting content to be learned.

The CLS has found its most common expression in face-to-face, formal classroom structures. The physical arrangements, the organization of content, the allocation of tasks and time, and the rules that govern student and adult behavior are primarily designed to support this view of teaching and learning and promote the system’s ability to get a batch of students compelled to attend classes to absorb certain knowledge and values while maintaining orderliness. Given this system, educators have developed and passed on strategies to maintain control, teach a prescribed content, capture student interest in that content, match levels of instruction to differences among students, and show tangible evidence that students are performing satisfactorily. Educators have learned to ration their time and energy to cope with these demands, and certain teaching practices have emerged as resilient, simple, and efficient solutions (Cuban, 1986).

When the CLS goes unchallenged, e-learning becomes nothing more than face-to-face classroom practice extended to virtual, online learning environments, losing the positive aspects of social interaction. Supported by Web-based course management tools, e-learning simply integrates features of the Internet and the World Wide Web into a single, template-based system that facilitates the design, development, delivery and management of Web-based courses and online learning environments. These course management tools provide a structure to manage the delivery of courses and facilitate the migration from face-to-face classroom instruction to Web-Based Instruction (WBI). Features frequently found in these systems include management of course information, assignments, grades, and student records, delivery of tests, posting web-based references, and communication capabilities – features that simply mirror traditional classroom pedagogies.

The primary purpose of these web based systems is to provide a central location for delivery of course content, related information or links, provision of models of assignments, and communication between instructors and students for teacher-to-student and student-to-student exchanges. These web-based learning systems include such applications as WebCT, Blackboard, Virtual-U, and TopClass. Whatever the course management tool, the assumptions of the CLS pertain. In fact, a review of three popular online courseware systems (Web Course In A Box, WebCT, TopClass) examined these courseware systems for their pedagogical bases concluded that all three have extensive capabilities for supporting “competency-based teaching of discrete information and processes” and that the tools included represent a behaviorist/empiricist model of pedagogy quite well (Firdyiwek, 1999). Yet, concluded Firdyiwek (1999), these systems do not support more flexible, open-ended, or qualitative pedagogies.

As long as designers and teachers leave the CLS unchallenged and create and/or depend on courseware management systems modeled after traditional pedagogical models, the potentials of e-learning will likely go unrealized. Failing to reconceptualize the e-learning environment limits the technology to little more than a system for the delivery and control of instruction. It fails to recognize the power of e-learning tools. Instead of a medium for delivery and control, the proper role for e-learning tools is as a tool, an intellectual partner, and as a learning context (Jonassen, 1995). As a tool, e-learning tools can and ought to be used for accessing information, for representing ideas and communicating with others, and for generating products. As an intellectual partner, e-learning tools can and ought to be used for articulating what learners know, for reflecting on what they have learned and how they came to know it, for supporting the internal negotiation of meaning making, and for supporting mindful thinking. As a context for learning, e-learning tools can and ought to be used for representing and simulating meaningful real-world problems, situations, and contexts, for representing beliefs, perspectives,
arguments, and stories of others, for defining a controllable problem space for student thinking, and for supporting
discourse among knowledge-building communities.

The American Distance Education Consortium offers six guiding principles for e-learning: 1.) The learning
experience must have a clear purpose with tightly focused outcomes and objectives; 2.) The learner is actively
engaged; 3.) The learning environment makes appropriate use of a variety of media; 4.) Learning environments must
include problem-based as well as knowledge-based learning; 5.) Learning experiences should support interaction
and the development of communities of interest; and 6.) The practice of distance learning contributes to the larger
social mission of education and training in a democratic society. The process of implementing these principles and
capturing the power of e-learning – as tool, intellectual partner, and context – means linking e-learning to alternative
models of learning and to revised or newly conceptualized pedagogical models.

Linking E-Learning to Models of Learning and Pedagogy

While the CLS, expressed in face-to-face classroom practice or through web-based course management
tools, has served the needs of an industrialized society well and continues to provide appropriate learning
opportunities in some venues, it has a number of limitations. These include: 1) A disconnection between the
learning process prescribed by the CLS and the learning process outside of formal, classroom situations (See, for
example, Resnick, 1987; Brown, Collins, and Duguid, 1989; Lave & Wenger, 1991; Wenger, 1998); 2) An
inconsistency with characteristics of learning evolving within a high technology society (See, for example, Tapscott,
1998); and 3) Learning outcomes that frequently result in “inert knowledge” – that is, knowledge that does not work
nor enter into people’s daily efforts to solve problems and interpret events, resulting in learners that “know that” but
do not “know how” and who have “learned about” but not “learned to” (Whitehead, 1929). Instead, e-learning, like
all learning opportunities, should represent opportunities to learn that are responsive to the world of learning in
natural, informal contexts, that reflect learning characteristics evolving in a high technology society, and that expect richer and deeper understandings or learning outcomes associated with situated, authentic opportunities for learning.
E-learning, like all learning opportunities, should situate learning in problems derived from the context to which the
content of learning pertains and build bridges between knowledge and action/learning and practice.

If e-learning is to rise to the level of its promise, it is necessary to create a pedagogical model or models
that enable educators to capitalize on the potentials afforded by e-learning technologies. Such a model must allow
for flexibility, interactivity, media-rich, and adaptive environments as well as be accessible to large numbers of
learners for collaborations and group discussions while simultaneously enabling individualized learning. Such a
learning environment must allow for multiple modes of cognition. “There is an acute need to define a framework
for the educational models that provide a basis for the implementation of online education” (Sonwalkar, 2001).

COPLS: An Alternative E-Learning Model

There is a need for an e-learning learning system that both presents an alternative to the conventional
learning system and that is responsive to the world of learning in natural, informal contexts, learning characteristics
evolving in a high technology society, and expected richer and deeper understandings or learning outcomes
associated with situated, authentic opportunities for learning. This learning system should situate learning in the
problems derived from the context to which the content of learning pertains, build bridges between knowledge and
action/learning and practice, and maximize the resources and expertise of both the instructional designer and the
expert practitioner.

hereafter referred to as COPLS, offers an alternative to the CLS. It provides a pedagogical framework for a learning
context apart from definitions of teacher, student, grades, tests, and classroom as defined by the CLS. In their place,
COPLS provides for a learning context where learning is not the goal as is typical in a traditional educational
environment. Instead, COPLS makes provisions for learning within a context where the focus is not learning but the
solution shared problems and participation in shared activities becomes the focus of learning. All members of a
community of practice (i.e. social studies teachers or elementary teachers or technology-integrating teachers)
including novitiates become learners and teachers simultaneously. Each member seeks to contribute to the “work” of
the community, collaborating with and assisting fellow members. Those with expertise serve as mentors and a
support system for novice learners who simultaneously contribute to the community in increasingly sophisticated
ways while learning. Solving shared problems is the goal; learning is an embedded activity and natural outcome of participation in the community of practice. Success is judged by increasing facility at developing solutions to shared problems and advances in meeting shared goals.

The COPLS model, diagrammed in Figure 1, is comprised of the instantiation and interaction of 6 major subsystems: a community of practice, a learner, instructional resources, representative problems, an expert mentor, and performances of understanding. Each subsystem of COPLS is enabled by interactions with other subsystems. Thus, the learner is guided by the representative problem and supported by the expert mentor. The representative problem is derived from and supported by the joint enterprises and shared repertoires of a community of practice. The instructional resources are structured by the instructional designer and the expert mentor and made available to the learner through learner access to distributed resources enabled by a range of delivery mediums. The expert mentor is supported by mentor training, mentoring guides and prompts, and access to instructional resources and the instructional designer. Performances of understanding are derived from the representative problem, shaped by the learner, and critiqued by the expert mentor.

A Community of Practice (1): To understand the COPLS model, abandon the notion of a classroom, instruction, and a specified body of knowledge. In their place, insert the notion of a community of practice. A community of practice (1) is defined as a domain of shared intentional activity – “doing” in a historical and social context that gives structure and meaning to action – dependent on mutual engagement, a joint enterprise, and a shared repertoire of routines, words, tools, ways of doing things, stories, symbols, actions and concepts (Wenger, 1998). A community of practice builds on the fact that knowledge and understandings are socially constructed through talk, activity, and interaction around meaningful problems and tools. A community of practice provides direct cognitive and social support for the efforts of the group’s individual members. Practitioners share responsibility for thinking and doing; they distribute intellectual activity so that the burden of managing the whole process does not fall to any one individual.

A community of practice may be defined as broadly as those who practice within a discipline – scientists, mathematicians, or anthropologists. Conversely, a community of practice may be defined as narrowly as a group performing a particular function with a larger organization – accounts receivable clerks or kindergarten teachers at a local school. Whatever its nature, a community of practice (not a class) defines the learning content and domain of understanding to be acquired, solving four central problems: 1.) By situating learning in problems derived from the context to which the content of learning pertains, the inert knowledge problem is solved; 2.) By organizing learning around representative problems, this learning system builds bridges between knowledge and action/learning and practice; 3.) By taking responsibility for learning and instruction from the role of instructor, this learning system maximizes instructional resources by decoupling them from linear, text-dependent resources and distributing the learner’s access to instructional resources across a range of varied, distributed, hyperlinked resources; and 4.) By shifting responsibility to the learner and an expert mentor, this system capitalizes on the expertise of both the instructional designer and the expert practitioner. Thus, within a community of practice, it is possible to conceptualize learning as the interactions of the learner (2), resources (formalized in COPLS as instructional resources (3)), and the expert mentor (4). In addition, Figure 1 identifies a learner.

Learner(s) (2): Learning is a feature of practice (Lave & Wenger, 1991). Within a community of practice, members co-participate, thereby gaining access to modes of behavior not otherwise available to them and, as a consequence, learn knowledge and skills. Whenever one member participates with another more skilled or expert, there is the potential for learning. Thus, for the individual, learning results from engaging in and contributing to the practices of a community in conjunction with other community members. For the community, learning results from the efforts of participants to refine their practice as well as efforts to ensure new generations of membership. In a community of practice, learning is defined as the ability to successfully solve increasingly complex problems identified and shared by a community of practitioners. A learner’s goal is to develop expertise in the shared processes that a community of practice uses to solve shared problems, thus supporting their entrance to and/or continual advancement within a community of practice.

Instructional Resources (3): A learner’s progress toward entrance to and/or continual advancement within a community of practice depends on access to resources representative of the community’s practice – representations of shared goals, knowledge, practice, tools, skills, and habits of mind. In the COPLS model, these representations are formalized as instructional resources (3). They are created, gathered, and/or organized to be used by the learner and the expert mentor and to provide structure and guidance for the interactions of learner and expert mentor.
Instructional resources are identified and designed by the instructional designer (8) in conjunction with expert practitioners (9).

Figure 1: A Diagram Representing the Community of Practice Learning System (COPLS)

![Diagram of Community of Practice Learning System (COPLS)](image)

Appropriate reference material and learning activities are organized and presented for the learner’s use. The learner accesses the instructional resources, completing assignments and producing appropriate products. At points designated within the instructional resources, the learner makes contact with the expert mentor, submits products, seeks advice, and/or engages in interactions with the expert mentor related to tasks/concepts/problems at hand. Instructional resources are available to the expert mentor so that the expert mentor may understand the context from which interactions with the learner derive.

Instructional materials are developed and implemented to accomplish at least the following purposes: a.) to scaffold learner(s)’ ability to solve the current representative problem, b.) to explain, clarify, and provide practice with related concepts, c.) to provide necessary background information/knowledge, d.) to guide the development of related skills, e.) to model processes necessary for appropriate problem solution, and f.) to establish and set criteria for assessment / to provide standards by which to judge success and excellence. Instructional resources use but are
not limited to the following instructional formats: tutorials, descriptions/explanations, presentations, simulations, guides for production of products, interpretive activities, and guided practice of concepts, skills, and/or processes. Instructional resources are made available to the learner and the expert mentor using but not limited to the following modes/means of presentation: web-based, printed materials (required texts, reference guides, books, etc), video-based (CD, streamed, VCR), performance support systems, and audio.

**Expert Mentor (4):** A learner’s progress toward entrance to and/or continual advancement within a community of practice depends on access to modeling and coaching provided by an expert mentor. Expert mentors are assigned to learners as models and coaches for appropriate instructional periods from a single representative problem through a set sequence of problems. Expert mentors are selected from among members of a community of practice who possess recognized expertise in content domains relevant to the learner’s needs. Expert mentors may be assigned full time mentoring responsibilities, but it is preferred that mentors fulfill mentoring responsibilities within the context of the work of a community of practice.

The expert mentor has full access to instructional resources in order to understand the context from which interactions with the learner derive. Expert mentors are not responsible for managing or monitoring the learner. Rather, expert mentors serve as models and coaches, offering assistance upon request, providing feedback on products submitted by the learner(s), asking prompting, extending, and application questions, and other assorted interactions to support learning.

**Representative Problems (5):** Representative problems provide a shared learning activity that structures the learner’s interactions with the instructional resources and provides a common focus for the interactions of the learner and the expert mentor. Problems serve as the guiding organizer of learning and instruction. These problems are selected because they are representative of the kinds of problems typically encountered by practitioners/experts within the community of practice which serves to define the domain of learning content. Consecutive problems are organized and presented to the learner in such a way as to guide the learner from novice practitioner to expert practitioner. All problems are clearly defined. Articulation/presentation of problems to the learner include: context of problem, relevance of the problem, a summary of related background information, related skills necessary, related processes necessary, proposed instructional resources to be utilized, a proposed series/sequence of activities to be completed, suggested interactions with expert mentor, criteria for determining success and excellence, and final performances of understanding to be published.

Problems are presented to the learner in a format appropriate for the medium, learner, and problem. Such presentation formats include but are not limited to web pages, video, and/or email. Interactions with instructional resources provide the learner with appropriate resources and activities to devise a solution to the problem. The learner is challenged with a series of problems representative of the kind of problems common to members of a community of practice. The learner begins by studying the problem, seeking to understand the advice given about how to proceed. Points of clarification are sought from the expert mentor. Depending on the needs of the expert mentor and the learner, all types of interactions may be structured by (but not limited to) one or more of the following: email, telephone, face-to-face meetings, video conferencing, and synchronous communications (instant messaging, chat room).

The learner interacts with the instructional resources using guidelines posed for progression through the resources, contacting the expert mentor as suggested by instructional resources or as the learner seeks assistance. Interactions with instructional resources and expert mentor are repeated until a problem solution begins to emerge. As the learner nears a problem solution, the solution is shared, critiqued, and modified in conjunction with the expert mentor’s advice and insight. The solution is tested within the community of practice. Results are shared with and reflected upon in conjunction with the expert mentor. Lessons for future practice are drawn.

**Performances of Understanding (6):** Performances of understanding (Gardner, 1990) are defined, in the COPLS model, as the visible outcome of the interaction of the learner with the instructional resources, the representative problem, and the expert mentor. Production of a performance of understanding requires the learner to prepare products that illustrate solutions to a range of problems related to situations encountered within a community of practice. These products require students to go beyond “knowing about” something to the creation of a product that reflects the learner’s ability to solve a problem by reshaping, expanding, extrapolating from, applying, and building on what they have come to know as a result of their interactions with instructional resources. These learning products serve to help learners both develop and demonstrate their ability to solve problems shared by a community of practice. In addition, performances of understanding give both the learners and the mentor the chance
to see understanding develop over time in new and challenging situations. Producing these products requires learners to demonstrate their understanding in an observable way. They make a learner’s thinking visible. What learners make, produce, build, or create should demonstrate what they are able to “do” with their knowledge. The act and art of embedding understanding in visible products helps a learner to structure, communicate, and judge the impacts of their understanding.

It is not enough for learners to reshape, expand, extrapolate from, and apply their knowledge in the privacy of their own thoughts. While it is conceivable that a learner could understand without producing a product, such an understanding would be untried, possibly fragile, and virtually impossible to assess. So, performances of understanding involve students in publicly demonstrating their understanding. The litmus test of a problem solution is its viability. Within any community of practice, shared ideas are accepted and agreed upon. That is, meaning is reflected in the social beliefs that exist at any point in time. If individual ideas are discrepant from community standards, they are not regarded as viable unless new evidence supporting their viability is provided. When students produce performances of understanding, they need to test their solutions in practice and share results with expert practitioners. In this way, learners receive feedback that supports their successes or are challenged with new evidence or missing evidence or faulty connections and applications. When the learner has devised problem solutions, tested those solutions within the context of the community of practice, and published related learning products, the expert mentor reviews published products and offers feedback and assessment using established and previously published criteria for assessment/standards for success and excellence.

**Mentor Support Systems (7):** Since the expert mentor is not an instructional designer nor “teacher” in the conventional sense but rather a practicing expert, a number of support resources must be made available to the expert mentor. Thus, this learning system provides for at least five categories of support for the expert mentor. One (7b), resources for defining the role of mentor, describing the role and responsibilities of a mentor, guidance with processes appropriate to mentoring, and interactive practice opportunities are provided. Two (7a), ready and easy access to a variety of appropriate technology resources for communicating with the learner as well as supporting materials for the use of these resources is provided. These technology resources include (but are not limited to) one or more of the following: email, telephone, face-to-face meetings, video conferencing, and synchronous communications (instant messaging, chat room). Three (7c), criteria for assessment – standards for success and excellence, and frameworks/checklists/rubrics for providing feedback to the learner about their level of accomplishment are abstracted from those provided to the learner (as part of the guidelines associated with the representative problem) and made easily accessible to the expert mentor. Four (7d), to assist the expert mentor with understanding the learning intent of activities associated with instructional resources, with initiating and prompting the learner toward mastery of content and successful solutions to representative problems, and with providing appropriate feedback and guidance during interactions with the learner(s), guides and discussion/questioning prompts related to learner-initiated interactions are provided for expert mentors to use to speed and direct learner/mentor interactions. Five (7e), the art and practice of educating is not always an easy road. Expert mentors must be provided with easy and speedy access to instructional designers to assist with learner/mentor interactions, with learner questions, and with appropriate interpretation of instructional resources.

**Instructional Designer (8):** The role of the instructional designer in the COPLS model is the role more closely in line with the notion of teacher as defined by the conventional learning system. An instructional designer is one who defines, designs, and develops generic, job-specific, and/or product-specific instructional and informational material. Instructional designers develop course and informational materials using print (hardcopy), audio-visual, computer-based instruction, multimedia, and interactive video techniques. The instructional designer identifies and develops representative problems and appropriate instructional resources in conjunction with expert practitioners within the community of practice who are associated with the domain of learning content, particularly expert mentors.

**Conclusion**

In George Mason University’s Graduate School of Education, we have used the COPLS model to design two teacher education systems. The Integrating Technology in Schools Online Certificate Program creates learning opportunities for inservice teachers (learners), connecting them with technology integration teacher experts (mentor), and the Prince William County Schools / George Mason University Collaborative connects teacher
learners and teacher experts within a single district to learn about, design, and implement technology integrated lessons. In addition, we have done preliminary work using the model in preservice teacher education.

If you would like information about these projects or about the COPLS patent, please contact the author.

References


