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# Foreword

*Will you, won't you, will you, won't you, will you join the dance?*

—Lewis Carroll,  
*Alice's Adventures in Wonderland*

This small, precious book is big and seminal. Small and precious because it modestly, pointedly, and succinctly enhances a slowly escalating revolution in how educators think about teaching and learning. Big and seminal because it contributes hundreds of original strategies to a quarter-century-old educational paradigm shift, a shift from behaviorism-inspired, omniscient teaching to engaged, intrinsically motivated student learning.

George Gagnon, a math teacher, and Michelle Collay, a music teacher, are teachers of teachers as well as seasoned school consultants, but they are much more than that. At home, they are a loving, married couple and the caring, conscientious parents of two young children; they are understandably concerned that their children, Von and Nina, reap the benefits of healthy and effective learning environments at school. As professionals with the creative flair of a mathematician and a musician, they are close and interdependent partners; one might say that they are metaphorical choreographers and dancers in the creative design and implementation of teaching for learning.

The content of this well-written ballet-of-a-book is not about the staged allocation of M&M candies or the lock-stepped use of stopwatches to render timely reinforcement as we might see in the theater of direct instruction, teacher control, and extrinsic student motivation. No, in their musical score, we do not hear the claps, clicks, murmurs, and barely audible yeses of B.F. Skinner's disciples. Nor do Gagnon and Collay ask us to imagine students as what Paulo Freire (1970) cynically called bank deposit vaults storing teacher-delivered knowledge. No, this book tells how to encourage all students to dance together to support one another's deep learning.

## x ● Constructivist Learning Design

This book should be read by neophyte and seasoned teachers, by teacher educators in colleges of education, and by trainees in preservice programs. It should also be read by school administrators for insights into how to improve teacher supervision and staff development, by open-minded behaviorists looking for alternatives to direct instruction, by liberal arts professors who want to learn how to teach so that their students want to keep on learning, and by parents with children in school or with children they are schooling at home. For that matter, everyone concerned with formal education should read this book unless, of course, they already have signed the Faustian pact to search only after the qualities and techniques of authoritarian, direct instruction.

This book's theme is constructivist learning design (CLD), which embodies Gagnon and Collay's foundational concepts. Constructivist refers specifically to the assumption that humans develop by engaging in the personal and social construction of knowledge. We humans make personal meanings for ourselves and we create shared meaning with others. Thus, humans construct knowledge; we do not receive and internalize predigested concepts without simultaneously reacting to them and engaging them within our own mental maps and previous experiences. Learning signifies that the primary goal of schooling is student development and improvement. Teaching should be but one means to that end and as such is secondary in importance to it. Gagnon and Collay point out that it is better to be a guide on the side than a sage on the stage. Design denotes the overall structure and outline, sequence of parts, and general forms through which educational activities flow. It is like the composer's or arranger's score for the dance of students and teachers learning together. In other words, Gagnon and Collay's CLD aims to present teachers with a constructivist perspective on how to arrange classroom events for student learning.

CLD is composed of six basic parts flowing back and forth into one another in the actual operation of classroom learning: situation, grouping, bridge, task, exhibit, and reflections.

1. The Situation frames the agenda for student engagement by delineating the goals, tasks and forms of what Gagnon and Collay call the learning episode.
2. Groups are the social structures that create opportunities for interactions that bring students together in their involvement with the tasks and forms of the learning episode.
3. Bridge refers to the surfacing of students' prior knowledge before introducing them to the new subject matter. The bridge is at the heart of the constructivist methodology; students are better able to refocus

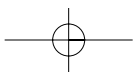
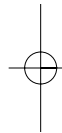
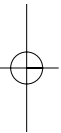
their energies on new content when they can place it within their own cognitive maps, values, attitudes, expectations, and motoric, skills.

4. Tasks are the “heart of the matter” and, flanked by a clear purpose and authentic assessments, are the centerpiece of CLD. Although powerful questions are used throughout CLD, they are absolutely critical in crafting challenging and interesting tasks to facilitate student learning.
5. An Exhibit asks students to present publicly what they have learned; this social setting provides a time and place for students to respond to queries raised by the teacher, by peers, or by visitors about what Gagnon and Collay call the “artifacts of learning.”
6. Reflections offer students and teachers opportunities to think and speak critically about their personal and collective learning. They encourage all participants to synthesize their learning, to apply learning artifacts to other parts of the curriculum, and to look ahead to future learning episodes.

Although the six features of CLD are vital to its effective implementation, Gagnon and Collay wisely caution us about the absolute necessity of establishing a positive, affective climate as an integral feature of it. A sense of trust, safety, and community in the class and school must be wrapped around and woven though CLD for deep student learning to take place. In classrooms, students and teachers must build a culture of social support and mutual helpfulness complemented by an appreciation of diversity as accompaniments of CLD. Trust between teachers and students and among the students is critical to CLD’s success. A collegial sense of support, mutual helpfulness, and an appreciation of diversity also should develop among staff members of a school if classes are to benefit from CLD. Gagnon and Collay help us understand that their creative work on learning circles supports the realization of these conditions.

I invite you now to do as I have done. Read this fine book three times. Read it first for a general understanding of its concepts. Read it again and reflect on your own practice. Read it a third time to engage its ideas as you would engage dance partners. Then keep the book at your side for reference to its many action ideas. Will you, won’t you join Michelle and George in the creative dance, so that you can use CLD in dancing with Nina and Von and other young students as they construct their own learning?

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*University of Oregon*



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# Preface

Classroom-based teaching is a profoundly demanding enterprise that challenges beginners and experienced teachers alike. Reform efforts add complexity to the landscape on which teachers walk, but the challenge of teaching for student learning existed long before current mandates appeared. Reforms include outcome-based education, charter schools, national and state standards, performance assessments, mandated national tests in reading and writing, national board certification of teachers, revised graduation requirements in several states, state testing of reading and mathematics, and small-school initiatives. Bold experiments to disrupt the most inequitable schooling are under way in several urban areas and may be sustained. But few educational reform efforts have succeeded in changing how schools are organized or how students are taught. Whatever level of reform surrounds teachers and schools, a learning-centered approach to classroom teaching is a necessity.

Constructivist Learning Design (CLD) is based on the assumptions and processes of constructivist learning theory, a naturally occurring and real-world way of thinking about learning and teaching. The teacher acts as choreographer: He or she teaches basic steps, shares cultural traditions, and organizes the production, but even the youngest dancers must bring themselves to the dance and give the art form life. Experienced dancers arrange their own choreography. Many teachers are aware of the pioneering work of Jean Piaget and Lev Vygotsky, psychologists who offered theories of constructivist learning. They maintained that students actively construct their own knowledge; teachers don't just transfer knowledge to students. Individual students connect what schools expect them to learn with their own experiences and consciously engage in the cultural construction of knowledge. They make personal meaning for themselves, discuss social meaning in peer groups, decide on shared meaning with other students in class, and then reflect on the standard meaning as they consider their thinking and learning with a teacher. This is a synopsis of what we mean by "designing for constructivist learning" and "teaching to support learners."

Piaget (1976) focused on the personal construction of knowledge in such works as *To Understand Is to Invent*, while Vygotsky (1934) emphasized the social construction of meaning in his work on *Thought and Language*. They both accepted the intimate relationship of individual and interpersonal learning and recognized the power of “reflective abstraction” and “shared reflection.” Reflection is a deliberate, self-conscious analysis of life experience. Reflection can be either individual or collective. In either case, reflection is key to constructing knowledge.

Some teachers deliberately design learning activities so their students can make personal and shared meaning, and they welcome the constructivist learning perspective. These teachers invite students to explain phenomena for themselves before examining textbook views or experts’ theories. Students work together to develop their own ideas rather than merely accept textbook summaries. When students encounter experts’ theories and explanations in original source material, they are better prepared to critically analyze those ideas.

One of the difficulties with constructivist learning theory is adapting it to classroom teaching. Teachers are making the transition from “expecting listening” to “supporting learners” by examining their practice and reframing their approach to teaching. Vito Perrone (1991a) wrote, “teachers will teach the way they are taught.” He explained why it is difficult for teachers to change perspectives from “planning for teaching” to “organizing for learning.” For most teachers, their images of teaching have been shaped by years of being students. They learned about teaching by being participant observers for six years in elementary school, six years in secondary school, and four or more years in college. The images they have of constructivist teaching are memories of teachers who explored what students knew, engaged students in learning, expected students to think for themselves, and supported students as they made meaning of their learning. These experiences are few and far between in school. Such teaching often occurs in performing arts, athletics, or shop class, and those experiences stand out powerfully in memory. Constructivist Learning Design offers teachers an image of how to organize for student learning and thinking that is consistent with this remembered experience.

## WHY WE WROTE THIS BOOK

Thoughtful, reform-minded educators expect students to solve problems, think critically, communicate effectively, and collaborate well with others. These processes require an approach to learning that is much more complex than memorizing facts. Our system of education has often confused

memorizing with learning. Being able to recall something does not mean that you understand it or know how to use it. Giving students information and testing their memory of facts does not offer opportunities for them to collaborate productively and undertake complex tasks. Receiving and remembering information does not engage students in learning. Often, we see students succeed in high school with grades and test scores high enough to get them into prestigious colleges, but they avoid mathematics and science courses when they get there. These students report that their conceptual understanding of math and science is much weaker than their ability to memorize formulas or remember algorithms as procedures they can complete but do not really comprehend.

Landmark research by John Goodlad reported in *A Place Called School* (1984, 2004) confirmed that classrooms are often boring places for students. His teams conducted in-depth interviews with students, parents, teachers, and administrators in 13 triads or clusters of a high school, a feeder middle school, and a feeder elementary school. He found that about 90% of the time, teachers told students about information found in textbooks and then tested them on memorized material. Students cited fine arts, physical education, and industrial technology courses as their favorites because they got to do something. Larry Cuban (1984), in *How Teachers Taught*, described few changes in classroom practice throughout the 20th century. He found some interesting experiments in elementary schools, but most involved no more than one teacher in five and lasted no more than a few years.

For most of the 20th century, educational practices were driven by behaviorist psychology. The essence of behaviorism is that only observable and measurable behavior can be considered evidence of learning. Behaviorists assume that the focus of teaching is a broad cultural transmission of knowledge rather than an individual and personal construction of knowledge. School learning is presented as a process of operant conditioning based on a stimulus-and-response model with reinforcement of desired behaviors.

As cognitive psychology emerged during the second half of the 20th century, research and writing about rarely observable or measurable mental processes occurred more frequently. Studies of learning now consider mental phenomena such as dreams, daydreams, images, emotions, values, beliefs, learning styles, and processes of thinking or reasoning. Acknowledgement of these mental processes is important if we are to make classrooms interesting places where students actively engage in learning and construct their own knowledge. Constructivists believe that knowledge is dynamic rather than static, a process rather than a thing, a pattern of action rather than an object. Seymour Papert (1993) encouraged this

movement toward “constructionism” and away from the “instructionism” of behaviorist psychology.

“Knowing” is a more appropriate term than “knowledge” to describe what a learner does. What we think of as a static body of knowledge has evolved during the centuries of recorded history. First, the oral tradition was very fluid, and stories changed with each retelling as they were passed on from one teller to another. Second, written language has changed enormously over time, and only a few scholars can translate early writing and thinking. Third, the paradigms of recent scientific thought are shifting radically. One example in the past century is the movement in physics from Isaac Newton’s laws to Albert Einstein’s theory of relativity, to Niels Bohr’s quantum mechanics, to Murray Gell-Mann’s quarks. The evolution of genetic biology during the same period demonstrates another paradigm shift as we move from Mendel’s identification of genes to microbiology, to genetic engineering, to cloning, and now to mapping the human genome. In the same hundred years, our communications technology has moved from telegraph wires to telephone lines, to transistors, to microwaves, to fiber optics, to wireless cells, to low-orbit satellites. Even our laws, taxes, and codes change regularly, with great political debate about the anticipated impact on society. Clearly, what is considered knowledge changes with each generation.

If knowing is a process of constructing meaning rather than memorizing a body of knowledge, then our whole approach to teaching must be rethought. For education to emphasize learning rather than teaching, our role as teachers must change. No longer are we a “sage on the stage,” but a “guide on the side.” Instead of planning to teach a lesson by telling or showing students what we know, we should organize for learning by actively engaging students in making meaning to construct their own knowledge. Teachers must have a clear image of knowing and learning from a constructivist perspective to appreciate our process of learning design.

By challenging some cherished beliefs about knowledge and learning inherent in our current system of schooling, teachers can move toward a new paradigm for education. Teachers must challenge outmoded beliefs of the greater society in which they teach. The most important things people still expect students to learn in school are processes of one sort or another. The three Rs—reading, ’riting, and ’rithmetic—are certainly important, but they offer only a basic foundation for real life. Perhaps the real-life Rs of the new millennium should be reasoning, relating, and re-creating, while recognizing that reading, writing, and mathematics are necessary to learn these three. There is just too much information to expect students to be filled with a body of cultural knowledge, as some have advocated



(Hirsch, 1987). Instead of teachers “covering” curricula and requiring students to memorize a huge collection of specific information, they need to design curricula that require students to “uncover” new learning and apply new understanding (Wiggins & McTighe, 2005).

Constructivist Learning Design is grounded in a formal system of philosophy: Knowledge is composed of patterns of action; learning is the process of creating these patterns; and teaching is supporting students to construct their own knowledge. Teachers as learners can embrace the belief that education means to draw out rather than to put in. A teacher’s role must then focus on organizing for student learning rather than planning for teacher telling. Because we believe that teaching is a process of supporting learners, we offer our CLD as a way for teachers to think about how they can design for constructivist learning to actively engage students.

In *Who Will Save Our Schools?* (1997), Linda Lambert and colleagues agreed that real reform in education will take place only because of grass-roots efforts by classroom teachers to change classroom practice. If they are right, the lasting reform of the past decade will be educators who focus on what students are learning, not what teachers are teaching. As classroom teachers, we found that designing for learning rather than planning for teaching demanded challenging the status quo at all levels of the profession. As teacher-educators, we have accepted the challenge and developed a way for teachers to use CLD to be intentional about designing for learning. This book explains the six elements of our learning-design process and the connections between these elements.

## THE HISTORY OF CONSTRUCTIVIST LEARNING DESIGN

Constructivist Learning Design is the product of extensive dialogue between the two of us and among dozens of teaching colleagues about ways teachers organize for learning in their classrooms. As teacher-educators working with prospective teachers, novice teachers, and veteran teachers seeking to improve their practice, we share a commitment to engaging students in learning. Thus, CLD is a guide to organizing for learning using six elements: Situation, Groups, Bridge, Task, Exhibit, and Reflection. Each of these six elements represents an important process in moving constructivist learning theory into classroom practice. We described the fourth element, Task, as “Questions” in previous versions. However, feedback from teachers and students encouraged us to describe it as a Task so the chronological nature of CLD is clear. The CLD outlines an agenda for engaging students in active learning throughout a classroom learning

event. We hope you enjoy the same process of learning by working through this book.

We use this approach to organizing for learning with prospective teachers to engage them in all dimensions of planning. Students in math and science and technology methods courses have used versions of our CLD format to describe the units they prepared for elementary and middle school students. Novice teachers have carried CLD into apprenticeships with cooperating teachers and then used CLD in their own classrooms. Experienced teachers have recognized their own values in how we organize adult learning experiences with CLD and have seen applications with students. Many were motivated to teach because they wanted to overcome their own limited experiences in school by engaging students in learning rather than telling them what they needed to know. In that respect, CLD provides a consistent framework for accomplishing that goal.

One focus group of teachers described how they modified the CLD to meet their own needs. Some teachers extended the timeline of one lesson as far as two weeks. Many teachers used CLD for new sessions once every week or two. Other teachers changed the order of the Elements to fit the way they preferred to teach or to meet a series of standards (Gagnon & Collay, 1996). These teachers were excited to have an alternative to the typical lesson-planning format most districts use for evaluation. Because their principals saw a positive effect on student learning, they were willing to accept the CLD in lieu of a more traditional lesson plan.

## **LINKING AUTHENTICALLY TO STUDENT INTEREST WHILE MEETING STANDARDS**

Many veteran teachers have taken risks with new approaches to learning and teaching, only to be criticized by parents or administrators or to see their innovations trampled by the next wave of reform. We believe CLD can be aligned easily with current thinking about standardized outcomes and goal-centered curriculum. The topic for each learning event is selected because our students want to learn it, because as teachers we feel it is appropriate to their development, or because we are required to teach it. As college teachers, we confront the same dilemma as our colleagues in elementary and secondary classrooms. How do we teach something that is developmentally appropriate or identified in a standard so that students are interested, are engaged in active learning, and can demonstrate what they have learned? How do we address school goals, district outcomes, state frameworks, graduation requirements, exit examinations, and national standards? How do we teach mandatory content so students find it interesting

rather than boring? How can students become engaged in learning about standards-based concepts, processes, or attitudes rather than just being told what to remember for the test? How do students “show what they know” rather than being tested and graded on what they don’t know? Constructivist Learning Design offers a way for teachers to describe the purpose for learning something; determine what specific topic should be learned; think about what students can do to learn this concept, process, or attitude; and decide how student learning will be assessed.

Some theorists argue that constructivist learning is appropriate only if students initiate and direct their own learning and decide what and how they want to learn. In our experience, few teachers are in classrooms where students can completely initiate or direct their own learning. Our work in urban schools over the last dozen years has been with classroom teachers who are most concerned about how students will be able to accomplish a district outcome, state framework, or national standard during a particular class. With the passage of the No Child Left Behind Act, we have seen teachers visited routinely by district “curriculum cops” who make sure they are on the exact page dictated by curriculum “pacing guides.” Many teachers question the value of keeping on pace when students are functioning at least two years below grade level. Teachers are not concerned with how students will initiate or direct their own learning, but with students who do not have the skills to meet each standard. As teachers consider their role in classroom learning, they need to focus on what the students are supposed to learn and what students can actually do to learn a particular topic.

We believe that our CLD can assist teachers who work in classrooms that are now based on teaching to standards. We reframe each standard as a concept, process, or attitude that becomes the topic for a Situation, so students think about and explain the topic before they encounter the “official” explanation from the teacher or textbook. We find that most students are interested in figuring things out for themselves, working together to think about an explanation, sharing their thinking with others, and reflecting on their thinking and learning. As students listen to different explanations by peers, they revisit their own thinking and confirm or reformulate their ideas about a topic. Constructivist Learning Design provides a way to address the teaching dilemmas of balancing the required learning of educational mandates with authentic learning.

An additional dilemma is presented by the use of educational jargon: Readers should question the accepted usage of certain terms in educational writing, research, and standards. We deliberately use the phrase “concepts, processes, and attitudes” to convey different dimensions of knowledge. The accepted educational language used in current National Council for Accreditation of Teacher Education (NCATE) standards is

“knowledge, skills, and dispositions.” This may imply that skills and dispositions are somehow separate from knowledge or something different than knowledge. Is knowledge merely a collection of facts or information unrelated to what you do with it or how you feel about it?

Perhaps some of the confusion derives from Bloom’s (1956) taxonomy of objectives in the cognitive domain that begins with knowledge and proceeds through a hierarchy of comprehension, application, analysis, synthesis, and evaluation. Again, this language is accepted as a standard by many educators. Bloom later classified objectives in the affective domain and the psychomotor domain as well. This left us with a legacy of knowledge as separate from how we feel about it or what we can do with it. Updated versions of this work retain a similar interpretation of knowledge (Marzano, 2000).

This separation of knowledge into distinct domains continued in the 2000 draft of the NCATE standards, which asks, “What should elementary teacher candidates know and be able to do to have positive effects on student learning?” A common phrase in these standards is “Candidates know, understand, and use . . .” This phrase implies that understanding and using knowledge is different than knowing something. We would argue that what NCATE and Bloom refer to as knowledge is really information and that the other levels are different ways that learners construct knowledge for themselves and may not be discreet and hierarchical as Bloom suggests. However, these classifications can serve as important guidelines for moving the goal of education beyond the recitation of information.

We contend that an understanding of education should begin with epistemology rather than relegate it to the province of philosophy as an academic pursuit. Constructivist learning implies an initial concern with what knowledge is and how learners actively construct knowledge. Advocates of constructivism agree that acquiring knowledge is an active process of constructing meaning rather than the passive receipt of information. For these reasons, we use the phrase “concepts, processes, and attitudes” throughout this book to represent different dimensions of knowledge or knowing.

## THE PURPOSE OF CONSTRUCTIVIST LEARNING DESIGN

The purpose of CLD is to offer teachers and students of teaching a way to think about organizing for learning in standards-based classrooms. If learning is a process of constructing knowledge, then teaching must involve supporting learners in ways that assist them in making

meaning to construct knowledge. The teacher's role is to guide, facilitate, or coordinate learning rather than dispense information. Our CLD offers a basic framework to help teachers think about organizing for learning and a way to enact the basic processes of constructivist learning in the course of a lesson. It also incorporates assessment into each design element rather than seeing assessment as an end product or closing activity. The most important consideration is what teachers believe about learning. If you see yourself primarily telling students about the wisdom of the ages, then you probably don't agree with us that students construct their own knowledge. Perhaps an example from teacher learning in real life will challenge your assumptions.

Think about your first year of teaching. Most first-year teachers report that they learned more about teaching during that year than they had learned during their entire preservice experience. They also cite student teaching as the most valuable part of their teacher education. Much of what they learned was through on-the-job training. They had to sink or swim in their own classroom using their own knowledge, interpersonal processes, humor, and mental agility. They constantly kept their wits about them to survive. There is so much to learn. How do you manage 20 to 40 different personalities, sometimes five or six periods a day? How do you "cover" the prescribed curriculum in a way that interests students and keeps them actively engaged in learning? How do you assess individual learning and interpersonal processes? How do you communicate with parents? How do you keep up with changes in the profession and your subject matter? How do you learn to remove yourself from the external world of adult interaction and community activity eight or nine hours a day? How do you learn to function in professional isolation without the benefit of working with colleagues or team feedback? The answers to all of these questions lie in doing your own learning, constructing your own knowledge, and making your own meaning about teaching.

## WHO IS OUR AUDIENCE?

This book is for students of teaching, teachers, administrators, and parents who want to know how to apply constructivist learning theory in classrooms. You can apply CLD to your work whether you are a veteran teacher or a novice teacher who is interested in organizing for learning by youth and adults. You might be thinking about another way of approaching teaching, applying the principles of constructivist learning theory in your classroom, or using a different format for lesson planning and evaluation. Some teachers already do many of these things

but have inconsistent results from lesson to lesson. Constructivist Learning Design offers a consistent framework for thinking strategically about engaging learners in their own meaning making. We see our CLD being used in any classroom at any grade level. Teachers from all disciplines use this process to organize for learning by their students: primary teachers in self-contained classrooms, intermediate social studies teachers in teams, middle school language arts teachers, high school physical education teachers, and specialists in art and music.

Staff development coordinators and school administrators have used this approach to organizing for learning. Constructivist Learning Design offers a framework for educators to engage adult students in learning and compels us to establish assessment procedures to document that learning. Teacher-educators can incorporate our CLD into a basic methods course in any elementary area or secondary subject. They also can use it with experienced teachers who are studying for advanced degrees and considering different ways of designing for learning. Parents who home school their children or who are active participants in their children's education will also be interested in CLD as a resource for thinking about the processes of learning.

## THE SCOPE OF THIS BOOK

Educators are moving beyond teaching to “objectives” with easily measured outcomes and toward accepting the multiple dimensions of “knowing” that occur in classrooms and in life. Constructivist learning theory emphasizes the processes of learning rather than the content or objectives of teaching. Theoretical assumptions about the processes of informal learning during life experiences guide how we organize for formal learning in educational settings. In the Introduction, we describe several theoretical assumptions about constructivist learning and map these assumptions directly to the six elements of our CLD: Situation, Groups, Bridge, Task, Exhibit, and Reflection. We describe each element separately in Chapters 1 through 6. The Introduction and Chapters 1–6 are organized using the six elements of our CLD as main headings. Under each heading are extended descriptions of how to organize for learning. We close the book with a discussion about the importance of questions in learning and a description of how a CLD unfolded for three of our colleagues. We hope you find your journey through designing for learning by your students, your colleagues, and yourself quite worthwhile.

—George W. Gagnon, Jr. and Michelle Collay



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