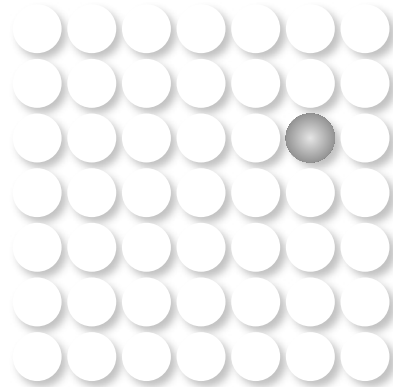


Dimensions of Learning

Teacher's **MANUAL**

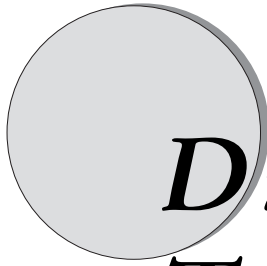


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Dimensions of Learning Teacher's Manual

Acknowledgments vi

Introduction

Overview 1
What Is Dimensions of Learning? 4

Chapter 1. Dimension 1: Attitudes and Perceptions

Introduction 13
Helping Students Develop Positive Attitudes and Perceptions
About Classroom Climate 15
 Feel Accepted by Teachers and Peers 16
 Experience a Sense of Comfort and Order 23
 Classroom Examples 27
Helping Students Develop Positive Attitudes and Perceptions
About Classroom Tasks 29
 Perceive Tasks as Valuable and Interesting 30
 Believe They Have the Ability and Resources to Complete Tasks 33
 Understand and Be Clear About Tasks 35
 Classroom Examples 37
Unit Planning: Dimension 1 39

Chapter 2. Dimension 2: Acquire and Integrate Knowledge

Introduction 43
 The Importance of Understanding the Nature of Knowledge 44
 The Relationship Between Declarative and Procedural Knowledge 45
 Levels of Generality and the Organization of Knowledge 46
 Acquiring and Integrating Declarative and Procedural Knowledge 49

Helping Students Acquire and Integrate Declarative Knowledge	51
Construct Meaning for Declarative Knowledge	51
Organize Declarative Knowledge	61
Store Declarative Knowledge	73
Classroom Examples	81
Unit Planning: Dimension 2, Declarative Knowledge	83
Helping Students Acquire and Integrate Procedural Knowledge	93
Construct Models for Procedural Knowledge	93
Shape Procedural Knowledge	97
Internalize Procedural Knowledge	101
Classroom Examples	104
Unit Planning: Dimension 2, Procedural Knowledge	106

Chapter 3. Dimension 3: Extend and Refine Knowledge

Introduction	113
Helping Students Develop Complex Reasoning Processes	114
Comparing	117
Classifying	123
Abstracting	130
Inductive Reasoning	138
Deductive Reasoning	146
Constructing Support	160
Analyzing Errors	168
Analyzing Perspectives	178
Unit Planning: Dimension 3	185

Chapter 4. Dimension 4: Use Knowledge Meaningfully

Introduction	189
Helping Students Develop Complex Reasoning Processes	191
Decision Making	195
Problem Solving	205
Invention	214
Experimental Inquiry	224
Investigation	234
Systems Analysis	246
Unit Planning: Dimension 4	255

Chapter 5. Dimension 5: Habits of Mind

Introduction	261
Helping Students Develop Productive Habits of Mind	264
Classroom Examples	270
The Dimensions of Learning Habits of Mind: A Resource for Teachers	274
Critical Thinking	
Be Accurate and Seek Accuracy	274
Be Clear and Seek Clarity	276
Maintain an Open Mind	277
Restrain Impulsivity	279
Take a Position When the Situation Warrants It	281
Respond Appropriately to Others' Feelings and Level of Knowledge	282
Creative Thinking	
Persevere	284
Push the Limits of Your Knowledge and Abilities	285
Generate, Trust, and Maintain Your Own Standards of Evaluation	287
Generate New Ways of Viewing a Situation That Are Outside the Boundaries of Standard Conventions	288
Self-Regulated Thinking	
Monitor Your Own Thinking	290
Plan Appropriately	291
Identify and Use Necessary Resources	293
Respond Appropriately to Feedback	295
Evaluate the Effectiveness of Your Actions	296
Unit Planning: Dimension 5	298

Chapter 6. Putting It All Together

Content	303
Assessment	309
Grading	317
Sequencing Instruction	322
Conferences	327
In Conclusion	328
Colorado Unit	329

References	341
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Index	347
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Introduction

Overview

Dimensions of Learning is an extension of the comprehensive research-based framework on cognition and learning described in *Dimensions of Thinking: A Framework for Curriculum and Instruction* (Marzano et al., 1988), published by the Association for Supervision and Curriculum Development (ASCD). Dimensions of Learning translates the research and theory explained in *Dimensions of Thinking* into a practical framework that K-12 teachers can use to improve the quality of teaching and learning in any content area. The Dimensions of Learning Research and Development Consortium, which worked on the model for two years, was made up of more than ninety educators, including the author team from the first edition of this manual. Under the leadership of Dr. Robert Marzano of the Mid-continent Regional Educational Laboratory (McREL), these educators helped to shape the basic program into a valuable tool for reorganizing curriculum, instruction, and assessment.

Implicit in the Dimensions of Learning model, or framework, are five basic assumptions:

1. Instruction must reflect the best of what we know about how learning occurs.
2. Learning involves a complex system of interactive processes that includes five types of thinking—represented by the five dimensions of learning.
3. The K-12 curriculum should include the explicit teaching of attitudes, perceptions, and mental habits that facilitate learning.
4. A comprehensive approach to instruction includes at least two distinct types of instruction: one that is more teacher directed, and another that is more student directed.

5. Assessment should focus on students' *use* of knowledge and complex reasoning processes rather than on their recall of information.

In addition to this teacher's manual, *Dimensions of Learning* is supported by a number of resources designed to help educators fully understand (1) how these five assumptions affect teachers' work in the classroom and, as a consequence, students' learning and (2) how the *Dimensions of Learning* framework can be used to restructure curriculum, instruction, and assessment:

- *A Different Kind of Classroom: Teaching with Dimensions of Learning* (Marzano, 1992) explores the theory and research underlying the framework through a variety of classroom-based examples. Although teachers need not read this book to use the model, they will have a better understanding of cognition and learning if they do. Staff developers also are encouraged to read this book to strengthen their delivery of the *Dimensions of Learning* training.
- *Observing Dimensions of Learning in Classrooms and Schools* (Brown, 1995) is designed to help administrators provide support and feedback to teachers who are using *Dimensions of Learning* in their classrooms.
- *Dimensions of Thinking* (Marzano et al., 1988) describes a framework that can be used to design curriculum and instruction with an emphasis on the types of thinking that students should use to enhance their learning.
- The *Dimensions of Learning Trainer's Manual* (Marzano et al., 1997) contains detailed training scripts, overhead transparencies, and practical guidelines for conducting comprehensive training and staff development in the *Dimensions of Learning* program.
- *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model* (Marzano, Pickering, & McTighe, 1993) provides recommendations for setting up an assessment system that focuses on using performance tasks constructed with the reasoning processes from Dimensions 3 and 4.

We recommend that those who plan to train others to use *Dimensions of Learning* first participate in the training offered by ASCD or McREL or by individuals recommended by these organizations. In some cases, experienced staff development trainers with an extensive background in the teaching of thinking may be able to learn about each dimension through self-study or, ideally, through study with peers. We strongly recommend, however, that

before conducting training for others, these individuals use the Dimensions of Learning framework to plan and teach units of instruction themselves. In short, Dimensions of Learning is best understood and internalized through practical experience with the model.

- *Implementing Dimensions of Learning* (Marzano et al., 1992) explains the different ways that the model can be used in a school or district and discusses the various factors that must be considered when deciding which approach to use. It contains guidelines that will help a school or district structure its implementation to best achieve its identified goals.
- Finally, the Dimensions of Learning Videotape Series (ASCD, 1992) introduces and illustrates some of the important concepts underlying the Dimensions of Learning framework. Videotaped classroom examples of each dimension in action can be used during training, in follow-up sessions for reinforcement, or during Dimensions of Learning study-group sessions.

Together, these resources guide educators through a structured, yet flexible, approach to improving curriculum, instruction, and assessment.

What Is Dimensions of Learning?

Dimensions of Learning is a comprehensive model that uses what researchers and theorists know about learning to define the learning process. Its premise is that five types of thinking—what we call the five dimensions of learning—are essential to successful learning. The Dimensions framework will help you to

- maintain a focus on learning;
- study the learning process; and
- plan curriculum, instruction, and assessment that takes into account the five critical aspects of learning.

Now let's take a look at the five dimensions of learning.

Dimension 1: Attitudes and Perceptions

Attitudes and perceptions affect students' abilities to learn. For example, if students view the classroom as an unsafe and disorderly place, they will likely learn little there. Similarly, if students have negative attitudes about classroom tasks, they will probably put little effort into those tasks. A key element of effective instruction, then, is helping students to establish positive attitudes and perceptions about the classroom and about learning.

Dimension 2: Acquire and Integrate Knowledge

Helping students acquire and integrate new knowledge is another important aspect of learning. When students are learning new information, they must be guided in relating the new knowledge to what they already know, organizing that information, and then making it part of their long-term memory. When students are acquiring new skills and processes, they must learn a model (or set of steps), then shape the skill or process to make it efficient and effective for them, and, finally, internalize or practice the skill or process so they can perform it easily.

Dimension 3: Extend and Refine Knowledge

Learning does not stop with acquiring and integrating knowledge. Learners develop in-depth understanding through the process of extending and refining their knowledge (e.g., by making new distinctions, clearing up misconceptions, and reaching conclusions). They rigorously analyze what they have learned by applying reasoning processes that will help them

“Oh how fine it is to know
a thing or two.”

—Molière

extend and refine the information. Some of the common reasoning processes used by learners to extend and refine their knowledge are the following:

- Comparing
- Classifying
- Abstracting
- Inductive reasoning
- Deductive reasoning
- Constructing support
- Analyzing errors
- Analyzing perspectives

Dimension 4: Use Knowledge Meaningfully

The most effective learning occurs when we use knowledge to perform meaningful tasks. For example, we might initially learn about tennis rackets by talking to a friend or reading a magazine article about them. We really learn about them, however, when we are trying to decide what kind of tennis racket to buy. Making sure that students have the opportunity to use knowledge meaningfully is one of the most important parts of planning a unit of instruction. In the Dimensions of Learning model, there are six reasoning processes around which tasks can be constructed to encourage the meaningful use of knowledge:

- Decision making
- Problem solving
- Invention
- Experimental inquiry
- Investigation
- Systems analysis

“Knowledge changes knowledge.”

“Information isn’t knowledge until you can use it.”

Dimension 5: Habits of Mind

The most effective learners have developed powerful habits of mind that enable them to think critically, think creatively, and regulate their behavior. These mental habits are listed below:

Critical thinking:

- Be accurate and seek accuracy
- Be clear and seek clarity
- Maintain an open mind
- Restrain impulsivity
- Take a position when the situation warrants it
- Respond appropriately to others' feelings and level of knowledge

Creative thinking:

- Persevere
- Push the limits of your knowledge and abilities
- Generate, trust, and maintain your own standards of evaluation
- Generate new ways of viewing a situation that are outside the boundaries of standard conventions

Self-regulated thinking:

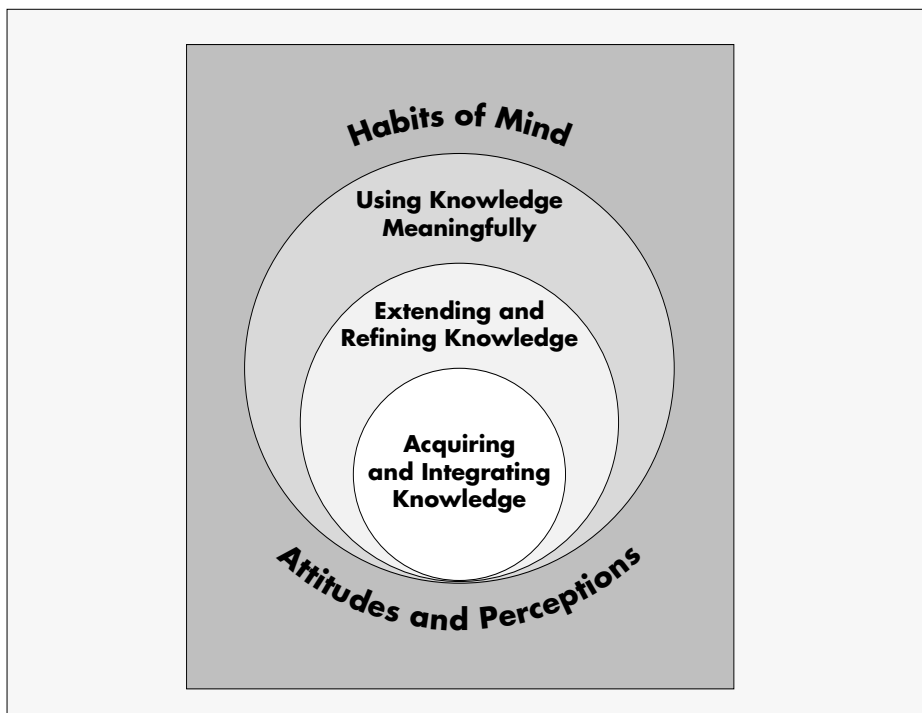
- Monitor your own thinking
- Plan appropriately
- Identify and use necessary resources
- Respond appropriately to feedback
- Evaluate the effectiveness of your actions

The Relationship Among the Dimensions of Learning

It is important to realize that the five dimensions of learning do not operate in isolation but work together in the manner depicted in Figure A.1.

FIGURE A.1

HOW THE DIMENSIONS OF LEARNING INTERACT



Briefly, as the graphic in Figure A.1 illustrates, all learning takes place against the backdrop of learners' attitudes and perceptions (Dimension 1) and their use (or lack of use) of productive habits of mind (Dimension 5). If students have negative attitudes and perceptions about learning, then they will likely learn little. If they have positive attitudes and perceptions, they will learn more and learning will be easier. Similarly, when students use productive habits of mind these habits facilitate their learning. Dimensions 1 and 5, then, are always factors in the learning process. This is why they are part of the background of the graphic shown in Figure A.1.

When positive attitudes and perceptions are in place and productive habits of mind are being used, learners can more effectively do the thinking required in the other three dimensions, that is, acquiring and integrating

knowledge (Dimension 2), extending and refining knowledge (Dimension 3), and using knowledge meaningfully (Dimension 4). Notice the relative positions of the three circles of Dimensions 2, 3, and 4. (See Figure A.1.) The circle representing meaningful use of knowledge subsumes the other two, and the circle representing extending and refining knowledge subsumes the circle representing acquiring and integrating knowledge. This communicates that when learners extend and refine knowledge, they continue to acquire knowledge, and when they use knowledge meaningfully, they are still acquiring and extending knowledge. In other words, the relationships among these circles represent types of thinking that are neither discrete nor sequential. They represent types of thinking that interact and that, in fact, may be occurring simultaneously during learning.

It might be useful to consider the Dimensions of Learning model as providing a metaphor for the learning process. Dimensions of Learning offers a way of thinking about the extremely complex process of learning so that we can attend to each aspect and gain insights into how they interact. If it serves this purpose, it will be a useful tool as we attempt to help students learn.

“We were thrilled to discover that Dimensions of Learning is not an ‘add-on’ but, instead, a framework that enhances teaching and learning across the curricula within our classrooms.”

—First-grade teacher
in Connecticut

Uses of Dimensions of Learning

As a comprehensive model of learning, Dimensions can have an impact on virtually every aspect of education. Because the major goal of education is to enhance learning, it follows that our system of education must focus on a model that represents criteria for effective learning, criteria that we must use to make decisions and evaluate programs. Although Dimensions is certainly not the only model of learning, it is a powerful tool for ensuring that *learning* is the focus of what we do as educators. It should validate current efforts in schools and classrooms to enhance learning, but should also suggest ways of continuing to improve. Although individuals, schools, and districts should use the model to meet their own needs, it might be helpful to understand a number of possible ways in which the Dimensions of Learning model might be used.

A Resource for Instructional Strategies

At the most basic level, this manual has been used as a resource for research-based instructional strategies. Although there are many effective strategies included in the manual, it is important to remember that the manual is not the model. As the strategies are used, they should be selected and their effectiveness measured in terms of the desired effect on learning. The implication is that even at this basic level of use, it is important for teachers to understand each dimension as they select and use strategies.

A Framework for Planning Staff Development

Some schools and districts see Dimensions as offering an important focus during their planning of staff development and as a way of organizing the diverse inservice experiences offered in the district. The matrix in Figure A.2 (see next page) graphically represents this organization. Down the left-hand side is an outline of the components of the Dimensions model. Planning for professional development begins here, whether for individuals or an entire staff. The first question staff developers would ask is, “What part of the learning process needs to be improved?” After answering that question, resources for seeking the improvement are identified across the top of the matrix. These resources might include programs, strategies, individuals, or books that can be used to achieve the desired learning goal. There might be many resources available that complement and supplement each other and could, therefore, all be offered to those seeking the improvement in learning. When any resource is identified, the matrix allows for indicating clearly which aspects of the learning process might be enhanced if people were to select and use that resource. Notice that the focus is on the learning process rather than on the resource.

A Structure for Planning Curriculum and Assessment

One reason that the Dimensions of Learning model was created was to influence the planning of curriculum and assessment, both at the classroom and the district level. It is particularly suited to planning instructional units and creating assessments that are clearly aligned with curriculum, including both conventional and performance instruments.

Within each dimension there are planning questions that can help to structure the planning so that all aspects of the learning process are addressed: for example, “What will I do to help students maintain positive attitudes and perceptions?” or “What declarative knowledge are the students learning?” Although it is important for the planner to ask powerful questions, sometimes the answer may be that very little or nothing at all will be planned to address that part of the model. It is not important to plan something for every dimension; it is important to ask the questions for every dimension during the planning process. More detailed explanations and examples are included throughout this manual and in each planning section.

Those who use the Dimensions model to influence their assessment practices quickly realize instruction and assessment are closely integrated but that both conventional and performance-based methods of assessment have a role. Specific recommendations for assessment are included at the end of this manual.

“The Dimensions model validates so much of what we were already doing in our classrooms. It gives us a common structure and vocabulary with which to discuss and plan professional activities throughout the school.”

—An elementary
school principal

FIGURE A.2

MATRIX FOR PLANNING STAFF DEVELOPMENT

Resources for Improvement									
Dimensions of Learning Outline									
Attitudes & Perceptions									
I. Classroom Climate									
A. Acceptance by Teachers and Peers									
B. Comfort and Order									
II. Classroom Tasks									
A. Value and Interest									
B. Ability and Resources									
C. Clarity									
Acquire & Integrate Knowledge									
I. Declarative									
A. Construct Meaning									
B. Organize									
C. Store									
II. Procedural									
A. Construct Models									
B. Shape									
C. Internalize									
Extend & Refine Knowledge									
Comparing									
Classifying									
Abstracting									
Inductive Reasoning									
Deductive Reasoning									
Constructing Support									
Analyzing Errors									
Analyzing Perspectives									
Use Knowledge Meaningfully									
Decision Making									
Problem Solving									
Invention									
Experimental Inquiry									
Investigation									
Systems Analysis									
Habits of Mind									
Critical Thinking									
Creative Thinking									
Self-Regulated Thinking									

A Focus for Systemic Reform

The most comprehensive use of the Dimensions model is as an organizational tool to ensure that the entire school district is structured around and operating with a consistent attention to learning. The model provides a common perspective and a shared language. Just as curriculum planners ask questions in reference to each dimension during planning, people in every part of the school system ask similar questions as they create schedules, select textbooks, create job descriptions, and evaluate the effectiveness of programs.

These four uses of the model are offered only as examples. There is no reason to select only from among these four options; the purpose of the model is to help you define and achieve your goals for student learning. The model is a structure that should allow for and encourage a great deal of flexibility.

Using This Manual

Understanding the Dimensions of Learning model can greatly improve your ability to plan any aspect of education. This manual is designed to help teachers and administrators study learning through the Dimensions model and to provide guidance for those who are using the model to achieve their specific individual, school, and district goals. The sections of the manual, as well as the format used to organize the information and recommendations, are described below.

1. There is a chapter for each dimension that includes an introduction, suggestions for helping students to engage in the thinking involved in that dimension, classroom examples to stimulate reflection and suggest ways of applying the information, and a process for planning instruction in the particular dimension.
2. The margins throughout the manual contain information that should help you think about the ideas highlighted in each dimension and pursue further study. You will find
 - bibliographic references (shortened in some cases because of space), which provide suggestions for further reading;
 - quotes from documents that were used as references for the section;
 - interesting and relevant quotes or thoughts, offered as ideas for reflection;
 - descriptions of implementation activities that have been used in schools or districts;

- suggested materials that might be used in planning classroom activities or that contain other strategies related to the dimension; and
 - graphics that depict ideas addressed in the dimension.
3. The chapter “Putting It All Together” walks the reader through the entire planning process and offers suggestions, different planning sequences, and examples from units of study planned using the Dimensions of Learning framework. This chapter also discusses critical issues related to assessment techniques that can be used to collect data on students’ performance in each of the dimensions; rubrics to facilitate consistent, fair teacher judgment and to promote student learning; and ideas for assigning and recording grades.

The strategies and resources highlighted throughout this manual are only a small percentage of those that could have been included in support of each dimension. If cost had not been a consideration, this manual would have been published as a loose-leaf notebook so that users could add their own strategies and resources. Gathering additional ideas and suggestions should be a goal for every professional educator. Hopefully, what is offered here will contribute to the resources that master teachers already have gathered and provide a beginning for those new to the profession.