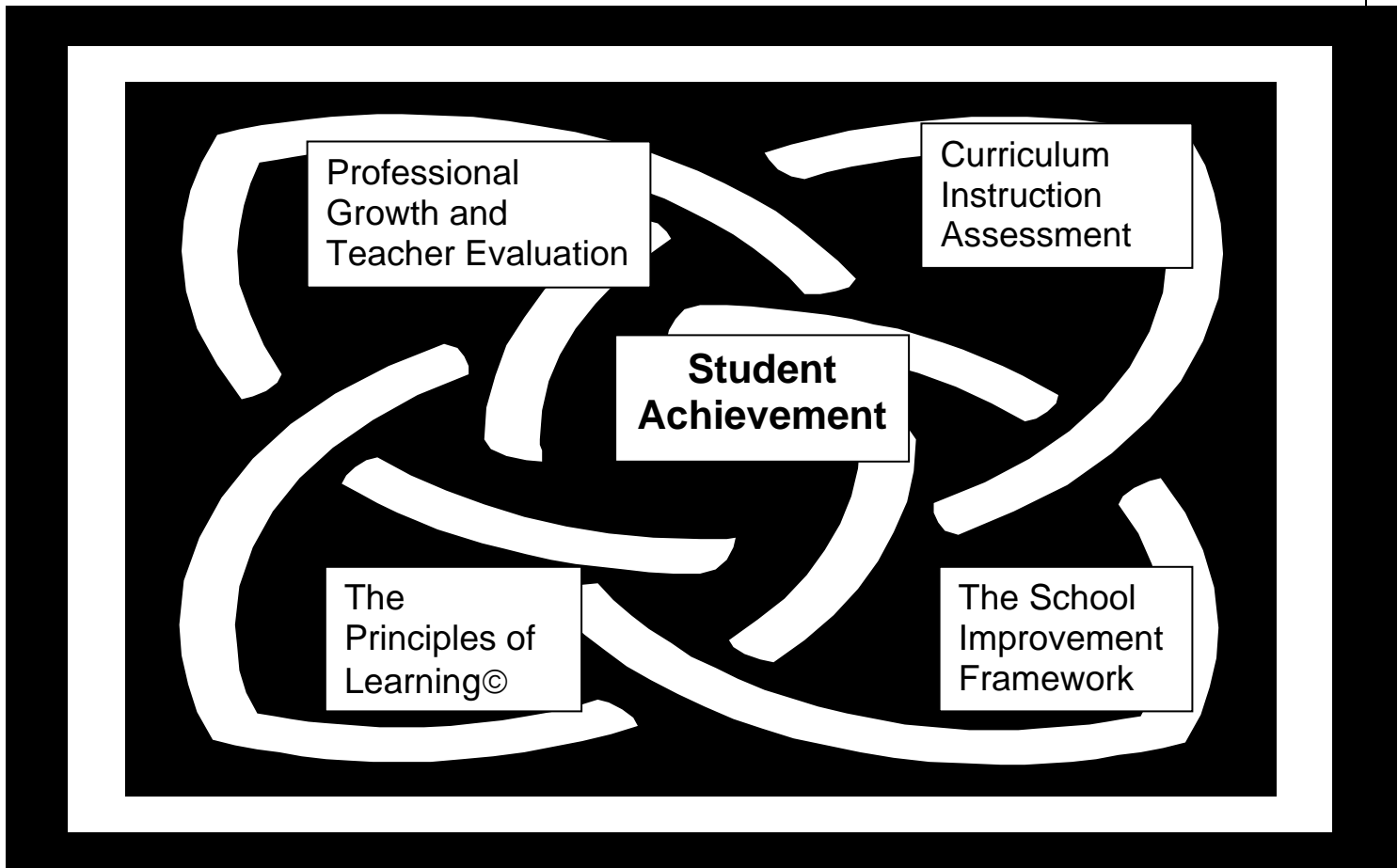


Manchester Public Schools

Curriculum Development Procedures Conceptual Resources for Instruction and Program Assessment Toolkit



2002

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Table of Contents

Foreword and Acknowledgements	Page 3
Mission of the Manchester Public Schools	Page 4
Introduction	Page 5
Standards	Page 6
Enduring Understandings and Essential Questions	Page 7
Integrated Technology	Page 8
Process for Curriculum Development	Page 10
Instructional Materials Adoption	Page 14
Professional Development	Page 16
Academic Rigor	Page 17
Five Foundational Thinking Skills Correlated with the CCL and CCT	Page 19
Thought Rubric for Curriculum, Instruction, Assessment	Page 22
Authenticity and Learning As Apprenticeship	Page 23
Diversity and Differentiation in Instruction	Page 24
Diversity in Curricular Experiences	Page 25
Multiple Intelligences	Page 26
Learning Styles and Culture	Page 27
Fair and Credible Evaluations and Rubric Construction	Page 31
Assessing Curricular Program Success	Page 34
References	Last page

FOREWORD

The Manchester *Curriculum Development Procedures, Conceptual Resources for Instruction, and Program Assessment Toolkit* is designed to help curriculum developers, administrators, and classroom teachers as they conceptualize, implement, and evaluate curricular experiences. Some components might be useful for students and parents, to help them understand the expectations of a course.

This document outlines the process for curriculum revision and informs Manchester educators about what every curriculum must contain. It contains rubrics educators can use to assess critical aspects of the curricular experience that they have designed and implemented.

The Manchester *Curriculum Development Procedures, Conceptual Resources for Instruction and Program Assessment Toolkit* is founded on the teaching and learning principles articulated through The Connecticut Common Core of Learning, The Connecticut Common Core of Teaching, and The Principles of Learning©. Cross-references to relevant Manchester policies and plans have been cited.

Strong philosophical underpinnings, honored in *The Mission of the Manchester Public Schools*, drive this document. The district's *Strategic Plan* mandates "Accountability for Success," with the following Strategic Results:

- Establish performance standards that communicate high expectations for learning.
 - Align district curriculum goals, content standards, and performance assessments with The Common Core of Learning and Connecticut Curriculum Frameworks K-12 Curricular Goals and Standards.
 - Define criteria for student success with emphasis on standards for promotion, placement, and graduation.
- Implement and continuously improve the district's curriculum.
 - Revise district's Guide to Curriculum Development and Evaluation.
 - Evaluate curriculum implementation to assure that students acquire foundational skills. . . learning activities involve students in real world problems, career preparation, issues important to humanity, and essential questions. . . make appropriate use of technology. . . learn about and practice sound decisions for living in a democracy that respects other languages and cultures.
 - Design new curriculum and/or learning activities that respond to the results of the evaluations noted above.

As stated in the district's *Technology Plan IV*: "The fundamental mission of the Manchester Public Schools is to ensure that all students continually strive for academic excellence and are given the opportunity to develop intellectually, emotionally, socially, and physically in a safe and supportive environment that is conducive to learning. All students, therefore, can become active, lifelong learners who demonstrate respect for self and others. Students must build skills for the 21st century. These skills include a solid academic foundation, a global perspective, and technological literacy. A challenging and comprehensive curriculum encourages students to become critical, creative, and reflective thinkers. Our students are expected to become responsible, contributing participants in our democratic society and global communities."

Many staff collaborated to design this document: Diane Kearney (main collaborator) Don Sierakowski, Margaret Coan, Tony Gasper, Linda Gejda, Dr. Peter Tognalli and the entire Curriculum Council. This resource would not exist without their effort.

MISSION OF MANCHESTER SCHOOLS

The mission of the Manchester Public Schools is to assure that students become responsible citizens who will be successful in a rapidly changing world.

Through an active partnership of students, school personnel, families and the community, the Manchester Public Schools encourage learning from birth through graduation and beyond.

As partners, we strive to create safe and inclusive schools defined by support for individual needs, respect for differences, integrity, and pride.

We are committed to excellence in teaching and learning.

We strongly value each student's capacity for high educational achievements.

We empower students by helping them to attain the knowledge, skills, and values needed for success.

Introduction

Student achievement is our mission. More than ever before in the history of American education, it is imperative that we structure a “public” education—an environment in which ALL students can succeed in a “thinking curriculum.” Never before has the pool of developed skills and capabilities mattered as much in the economic prospects for individuals. There is no longer a welcoming place in low-skill, high wage jobs for individuals who have not cultivated talents appropriate to an information economy. The country, indeed, each state and region, must press for an overall higher level of such cultivated talents. Otherwise, we can expect a continuation of the pattern of falling personal incomes and declining public services that has characterized the past twenty years.” (Resnick, “From Aptitude to Effort: A New Foundation for Our Schools,” 1995.)*

To ensure that we build curricula to empower all students to attain the knowledge, skills and values needed for success, all curricula MUST contain the following:

- ❖ Academic Rigor in Thinking**
- ❖ Foundational Thinking Skills**
- ❖ Diversity/Differentiation in Content, Instruction Strategies and Assessment**
- ❖ Clear Expectations with Fair and Credible Evaluations**
- ❖ Learning as Apprenticeship**

***This statement is the lead sentence in The Manchester Professional Growth and Teacher Evaluation Program (April 2001).**

STANDARDS

All curricula will demonstrate alignment with standards.

Because our instructional materials are increasingly generated digitally, it is imperative that educators understand the standards toward which they and their students strive.

Standards have been articulated by recognized national professional organizations for each discipline. Content standards speak of:

What a student should know and be able to do.

Standards' content and skills are designed broadly to create large concepts for transfer and application of skills, as opposed to minute and isolated facts or discrete and disconnected skills. **Standards-based teaching and learning require performance standards and assessments** (demonstrations, portfolios, exhibitions) that demonstrate the degree to which students integrate basic knowledge/skills and higher-order thinking across disciplines. A performance standard tells us “how good is good enough,” and they indicate the quality of student skill attainment and the nature of evidence that demonstrates the student’s attainment of the content standard.

Standards compiled by the various national organizations have been used by the Connecticut State Department of Education to inform them for the *Connecticut Common Core of Learning and the K-12 Curriculum Frameworks* for each subject area. When writing formal curriculum or curricular units for your subject area, refer to these state documents to ensure alignment. The curricular framework for your area can be accessed at the Connecticut State Department of Education on their website:

www.state.ct.us/sde/

The Connecticut Common Core of Learning interfaces with the Connecticut Common Core of Teaching and the Connecticut Testing Program: Connecticut Mastery Tests and Connecticut Academic Performance Test.

The Manchester curriculum developer will find these connections throughout this procedures booklet.

Alignment with standards infuses “Academic Rigor” into curriculum. Curriculum developers will quickly recognize that curricular tasks must be designed to cross standards. This collapses the standards and allows teachers and students to accomplish the standards. It also ensures complexity of thinking tasks and problem solving.

Notice that the standards are not stratified for students who previously had been grouped by learning ability based on aptitude. The standards are meant to be a goal to be achieved. Standards can be likened to the imaginary line that is yards beyond the goal line, encouraged by coaches and envisioned by field athletes. It is a goal for which we expect **ALL** teachers and students to strive.

Standards Citations: The Connecticut Common Core of Learning is comprised of the standards for each K-12 curricular (subject discipline). Each subject discipline can be found in the K-12 Curricular Goals and Standards in the “Frameworks,” where the standards are also listed and articulated in the following segments: Grades K-4; Grades 5-8; Grades 9-12. The following example demonstrates how to cite a correlation with the standard used:

Curriculum Discipline: Health and Safety

Content Standard 1: Healthy and Active Life
“Students will establish and maintain healthy eating patterns and a physically active life.”

Performance Standard Plan, select and prepare a nutritious meal based on
(Grades K-4) U.S.dietary guidelines (This is the first listed.)

Proper Citation: 1.1 a

(Please see Appendix A for further citation examples.)

ENDURING UNDERSTANDINGS AND ESSENTIAL QUESTIONS

Each curricular unit must contain experiences that allow students to build an “Enduring Understanding.” Curriculum builders must decide what information they want students to know with a superficial familiarity. They also must determine what knowledge is truly worth understanding. Knowledge worth understanding requires a teaching and learning experience through which teachers and students “dig into” issues and problems in an in-depth fashion. This experience has the potential to engage students, involves application of ideas, and leads students toward a “big idea” with value beyond the classroom. (Wiggins and McTighe, 1998). *An Enduring Understanding is a principle or generalization.* (Erickson, 2002)

Knowledge that is worth being familiar with is typically assessed through traditional quizzes and tests. Assessment of Enduring Understandings can be accomplished only through performance tasks and projects that are open-ended, complex, and authentic.

“Questioning is the heart of teaching.” (Socrates)

Essential Questions help teachers to guide students through knowledge to an enduring understanding. Essential questions cut to the core of any issue or problem.

- Whose story is “history?”
- Why do we have money?
- How does persuasion work? Do you gain power by being persuasive?
- Can fiction reveal truths?
- Why do some themes recur in art?
- Do athletes have responsibilities to their audiences and fans?

Here are examples of an Enduring Understanding with Essential Questions.

Mathematics is a language consisting of symbols and rules. How is mathematics a universal language? What is a symbol? What is a rule? How do they help us?

Letters combine in specific ways to form words. What sounds are in this letter? What sounds are in this word?

Different types of texts (e.g. narrative, mystery, biography, expository, persuasive) have different structures. Understanding a text's structure helps one understand its meaning. How do texts differ? How should I read different types of texts? What is a "beginning?" An "ending?" Must a story have a beginning, middle, and end?

Available natural resources, tools, and technologies influence the ways in which artists express their ideas. How do artists choose tools, techniques, and materials to express their ideas? Are some media better than others for communicating particular ideas?

INTEGRATED TECHNOLOGY

Technology is a tool. Technology use, as an isolated student learning outcome, holds little promise for our students, who will work in a technology-driven, technology-supported, and technology-dependent world. Integrated with curriculum that is rich with knowledge sets, skill theory, and social development, technology can enhance student learning results. Literacy in the 21st century includes technology skills.

A technology-supported instructional model integrates innovative concepts about teaching, learning, school culture, as well as adult, student, parent, and community roles. Technology, used appropriately and poised at the site of teaching and learning, is a powerful tool. With it, we can transform our educational environment to be one that is both student-centered and knowledge-centered. A knowledge-centered environment includes important bodies of knowledge which will be helpful to students as they move through a course of study sequences toward their graduation into a knowledge-based workforce. Some of the critical components and information of a knowledge-centered environment are skills sets that will help students to access information and to create knowledge.

Through inquiry-based teaching and learning, students become workers, organizing information not only to solve problems but also to formulate problems in order to prepare as productive citizens. In a problem-based environment, where higher order thinking is expected, students must be fluent in basic skills, such as interpreting, conclusion drawing, questioning, and working with complex ideas. A technology-enriched environment can assist educators in planning the needs of individual students. With the assistance of technology, we can create a model for intellectual curiosity and inquiry in which students learn to recognize problems and create alternative solutions that are situated in meaningful social context.

The Manchester Strategic Plan mandates that every curriculum will “assure that learning activities make appropriate use of technology.” State law and district expectation dictate that Manchester teachers will train and use current and emerging technologies to plan, to instruct, and to assess students. The number one goal in The Manchester Technology Plan IV is: “To utilize technology to improve students’ ability to process information, acquire knowledge, and be motivated to learn.”

Please refer to the current Manchester Technology Plan for further information while writing your curriculum and for citation methods of technology competencies. Also, please refer to Manchester Board of Education Policy 6141.321 for the district’s “Acceptable Use” procedures for technology.

Technology Citations:

1. Basic operations and concepts
 - a. Students demonstrate a sound understanding of the nature and operation of technology systems.
 - b. Students are proficient in the use of technology.
2. Social, ethical, and human issues
 - a. Students understand the ethical, cultural, and societal issues related to technology.
 - b. Students practice responsible use of technology systems, information, and software.
 - c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. Technology productivity tools
 - a. Students use technology tools to enhance learning, increase productivity, and promote creativity.
 - b. Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.
4. Technology communications tools
 - a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
 - b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
5. Technology research tools
 - a. Students use technology to locate, evaluate, and collect information from a variety of sources.
 - b. Students use technology tools to process data and report results.
 - c. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.
6. Technology problem-solving and decision-making tools
 - a. Students use technology resources for solving problems and making informed decisions.
 - b. Students employ technology in the development of strategies for solving problems in the real world.

PROCESS FOR CURRICULUM DEVELOPMENT

The Manchester School District continually articulates a curriculum for learning experiences PreK-12 and beyond. The curriculum is designed to produce optimal student achievement; however, it is expected that all teachers will implement curriculum in a student-centered fashion. To accomplish this, teachers must consider a variety of instructional strategies that will optimize each student's achievement.

Because best practices emanate from a shared vision, several Manchester Board of Education policies articulate an expectation that teaching staff will participate in curriculum development and program evaluation (Policy 6180: Evaluation of Instructional Program and Policy 6161 Selection of Instructional Materials). This shared visioning and goals focusing experience is largely accomplished through Subject Area Committees. Subject Area Committees meet to discuss current thinking regarding instruction and assessment in that discipline.

Data are reviewed and evaluated. Various data sets might be applicable. Among them are:

- ❖ Student performance on the Connecticut Tests
- ❖ International, national, state trends and legislation, and local standards
- ❖ Criterion-referenced tests that provide data measured and monitored over time
- ❖ Student exhibition, portfolio, or other performance results measured and monitored over time
- ❖ Teacher, student, and parent observations and anecdotal information
- ❖ Student performance rate within various courses
- ❖ Student drop out rate, attendance, tardiness

It is imperative that the district examines data of the same students over time rather than merely taking our measure each year with testing of non-cohort groups of students.

Action Research:



The "Feedback Spiral Model" recommends that teachers and school districts clarify goals and purpose during a planning stage. Action is taken in an experimental stage, after which data about the experience are gathered and analyzed. After modification, based upon that data, the spiral continues to a point where a curriculum or other educational plan is implemented in a "formal" fashion.

Following this model, for the last five years, Manchester teachers have designed instructional units, complete with assessments. (Use Instructional Unit Template.) They implemented these units and gathered action research data about student performance.

With information gathered from various data sets and the action research experience, teachers began to design a formal curriculum. It is expected that this "Feedback Spiral" will be utilized in the preliminary phases of curriculum development, and then throughout the entire implementation of a curriculum. Formal curriculum is recorded on the Formal Curriculum Grid. It includes the **Goals** (broad purposes of the subject's curriculum at all grade levels); **Learner Objectives or Outcomes** (statements that describe what a student will be able to do after completing a prescribed unit of instruction, linked to curriculum goals), **Instructional techniques or strategies;** and **Methods of Assessment.**

For more information on action research, please refer to the "Professional Growth" section of The Manchester Teacher Professional Growth and Evaluation Program (pages 51-60).

Template for Instructional Units:

TITLE:	GRADE:
One Sentence Summary:	DISCIPLINE:
STANDARD (CT/STATE):	TIME:

ESSENTIAL QUESTION(S)

OUTCOMES / UNDERSTANDINGS

CONTENT:
PROCESS:
PRODUCT:

DETAILED TASK / PERFORMANCE DESCRIPTION: (K-2 / DLC MODEL) (3-5 / 5E MODEL)

PRODUCT:	PURPOSE:	AUDIENCE:
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ASSESSMENT CRITERIA

GENERAL:	SPECIFIC:
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ATTACH SCORING RUBRIC

AUTHOR(S): _____ **SCHOOL:** _____

Adapted from Ten Sigma© (1996) by Dr. Marsha Bednarski (Central Connecticut State University) and Mr. Donald Sierakowski (Manchester Public Schools). It is also modeled on a template used by Connecticut Regional School District 15.

ALGEBRA I

Essential Question #3: How can functions be represented, interpreted, related and used to predict events that occur in the world around us?

UNIT	FOCUS QUESTION	STUDENT EXPECTATIONS	TEACHING STRATEGIES	ASSESSMENTS	RESOURCES
Functions And Relations	1. What is a function? 2. How can a function be displayed on the coordinate plane?	1. Students will define and use function notation. 2. Students will determine the domain and range of a function. 3. Students will represent a function using tables, symbols and words. 1. Students will graph a relation or function.	1. Connect the tabular and graphical forms for function. 1. Graphing calculators.	1. Notebook check on definitions, or; 2. Poster demonstrations meaning of function terms. 3. Test on unit.	Math CT 1B Graph Introduction Algebra Forster (Addison)
Linear Functions	1. How can a linear function help us model events that occur in the world around us?	1. Students will analyze a linear function and explain how a change in one quantity results in a change in another. 2. Students will interpret the meaning of zeros and intercepts. 3. Students will write a linear function given two ordered pairs. 4. Students will determine the line of best fit for a data set. 5. Students will solve a real world problem using proportional reasoning and direct variation.	1. Using graphing calculators, trace and calculation features for explorations. 2. Activity lab motion detector and linear graphs.	1. Test with graphing calculator availability. 2. Notebook or project that includes explanation of slope, zeros, and intercepts. 3. Beam Strength Lab (Regression Analysis)	<i>Math Connections 1A, 1B</i> Motion detector lab simulate linear mo
Systems of Linear Equations	1. How do we interpret the solution to a linear system of equation?	1. Students will solve a linear graphically. 2. Students will solve a linear system algebraically. 3. Students will solve and interpret the solution of a system of linear equations in a problem situation.	1. Introduce using tables, guess and check. 2. Linear combination and/or substitution.	1. Open-ended problem to determine a "break even point" (project). 2. Hoops Malone spreadsheet project.	CAPT release item <i>Connections</i>

**GRADE 8
SCIENCE CURRICULUM**

ESSENTIAL QUESTIONS for 8th grade Science:

How do scientists use the scientific method and accurately communicate results?

How does the interaction of forces and motion affect our everyday life?

How do the particles of matter and their interaction affect everyday life?

UNIT	FOCUS QUESTIONS	STUDENT EXPECTATIONS	TEACHING STRATEGIES	ASSESSMENTS	
SCIENTIFIC METHOD AND MEASUREMENT	How do scientists recognize and define problems?	The students will be able to identify and describe the problem with clear identification of independent and dependent variables as part of the scientific process.	Open-ended discussion and formation of question.	Students will formulate proper problem statements based on given scenarios.	Experi
	How do scientists design appropriate procedures to solve the problem?	The student will be able to create experimental designs describing materials used and procedures to be followed including variables, and constants.	Open-ended discussion and guided formation of experimental design.	Student-designed practical procedures for testing predictions/ hypothesize.	Experi
	How do scientists predict the results based on knowledge of problem-related context.	The student will be able to make predictions/hypothesizes based on research background information and observation.	Open-ended discussion and guided formation of predictions/hypothesi ze.	Student predictions and hypothesis are appropriate for the problem, and can be tested.	Experi
	How do scientists conduct investigations, collect data and record observations?	The student will be able to describe, identify, and use the proper methods and skills of the scientific process.	Open-ended discussion and guided data collection and presentation.	Student use of appropriate methods of data collection for specific investigations. *Independent Science Experiments and Presentations	Experi

INSTRUCTIONAL MATERIALS ADOPTION SCHEDULE

In the past, the district employed a “**Five Year Curriculum Revision Cycle.**” The process articulated above is a continuously recursive one. Curriculum review is ongoing. The “Five Year Curriculum Revision Cycle” has been replaced with an ***Instructional Materials Adoption Schedule.***

All instructional materials adoption must follow procedures as outlined in Manchester Board of Education Policy 6161, Selection of Instructional Materials, and its administrative guidelines.

Increasingly, our instructional materials will be digitally generated. It is imperative that administrators and teachers consult Board of Education Policy 6141.321 for the district’s “Acceptable Use” practices for technology.

INSTRUCTIONAL MATERIALS ADOPTION

2002-2003	Algebra Social Studies (Middle Level) World Language Phase-In
2003 – 2004	Elementary and Secondary Science Phase-In Algebra Continued
2004 – 2005	Other High School Math Intermediate Math Elementary and Secondary Science Completed World Language Completed Health K-12 (Continuously supplemented by Title IV) K-5 Social Studies Resources
2005-2006	Music K-12 Art K-12 Physical Education K-12
2006-2007	Language Arts K-5 (Until 2006, supplemented by Title I)

RE: Technology Education and Family and Consumer Sciences receive funding from the Perkins Grant. Board of Education funding will be allocated, as appropriate.

Secondary English will receive approximately \$5,000 each year for the purchase of literature for literature circles and independent reading.

This schedule is subject to modification based on special circumstances, such as State mandates, district needs, or budget considerations.

PROFESSIONAL DEVELOPMENT

The district maintains its commitment to professional development to support the development of a range of instructional and assessment to increase student achievement. Professional development is continuous in nature, through which the district communicates and reinforces the employment of teaching strategies that meet each student's needs as identified by data.

Manchester is a rapidly changing community. The district culture values instructional change to match the demographic change occurring in our community and classrooms. Innovation of instruction is encouraged when it is standards-based, supported by data, and continually reviewed for effectiveness.

At times, the adoption of new instructional materials in a particular subject area require that subject area teachers experience intensive training. Training agreements and arrangements will be made by the subject area curriculum leader in conjunction with the Office of Curriculum and Instruction.

The Constructivist principles listed below guide the district's professional development experiences. Manchester professional development experiences:

- Provide opportunities for teachers to build their knowledge and skills;
- Focus on student work;
- Foster coaching and modeling for teaching the strategies teachers will use with their students;
- Encourage thoughtful reflection on experience;
- Build a learning community in which staff collaborates to construct shared vision and knowledge;
- Support teachers for instructional change and for service in leadership roles;
- Link to the curriculum and school improvement plans;
- Are continuously assessed and improved.



Adapted from: Loucks-Horsely, S., Hewson, P., Love, N., Stiles, K.E. (1998). Designing Professional Development for Teachers of Science and Mathematics. Thousand Oaks, CA: Corwin Press, 36-39.

See also: Costa, A. & Garmston, R. (1994). Cognitive Coaching: A Foundation for Renaissance Schools. Norwood, MA: Christopher-Gordon.

Joyce, B., & Showers, B. (1995). Student Achievement Through Staff Development. Second edition. White Plains, NY: Longman.

Sparks, D. (Fall 1994). "A Paradigm Shift in Staff Development: Results Driven Education, Systems Thinking, and Constructivism." Journal of Staff Development 4:26-29.

Senge, P. (1990). The Fifth Discipline. NY: Doubleday.

WHAT IS ACADEMIC RIGOR IN A THINKING CURRICULUM?

RIGOR is the goal of helping students to develop the capacity to understand and manage difficult *content*, a fundamental skill all students need, in school and out. *(Please use this rubric and Academic Rigor Section in close connection with the section on Diversity/Differentiation in Curriculum, Instruction, and Assessment.)*

Rigorous content is:

- ❖ **Complex**
- ❖ **Ambiguous**
- ❖ **Provocative**
- ❖ **Personally or emotionally challenging**

Academic Rigor requires students to work regularly with difficult texts and ideas. All students need schools to provide both rigorous content and direct instruction in the skills needed to manage that content (e.g., note-taking, summarizing, glossing).

- ❖ **Academic Rigor is NOT about severity or hardship.**
- ❖ **Academic Rigor is neither a conservative nor a liberal agenda that privileges the ideas of one civilization over another.**
- ❖ **Finally-and most important-rigor is NOT a measure of the quantity of content to be covered. It is a measure of that content's quality.**

There are different ways content can become rigorous:

- | | |
|---|---|
| COMPLEXITY: | composed of interacting and overlapping ideas |
| PROVOCATIVE: | conceptually challenging, dealing with dilemmas, engaging students in identifying problems, conducting inquiry, taking positions |
| AMBIGUITY: | packed with multiple meanings that must be examined and sorted into patterns of significance |
| PERSONALLY OR EMOTIONALLY CHALLENGING: | challenging students and their sense of how the world works; therefore, the work is meaningful to the students |

The Academic Rigor In A Thinking Curriculum Rubric

This rubric should be used by the classroom teacher as a way to reflect upon the curriculum content, instructional strategies, and methods used to assess students learning.

Teachers should ask: “Am I challenging my students?”

	Level 3	Level 2	Level 1
Curriculum	My curriculum routinely challenges students with content that is complex, ambiguous, provocative and personally challenging.	My curriculum is challenging, though it may tend to favor two or three types of rigorous content.	My curriculum contains some challenging content, though I feel that there should be more; my curriculum favors one or two types of rigorous content and depends on the textbook.
Instruction	My instructional program is aimed at helping students develop the skills needed to manage rigorous content through regular use of teaching strategies.	I make regular use of instructional strategies to help students manage rigorous content.	I make use of instructional strategies at key points in my curriculum.
Assessment	My assessment system is committed to promoting literal skills, progress through repetition, and supported assessment. I use a wide range of tools to assess rigorous learning and to ensure that all students have an equal opportunity to demonstrate what they have learned.	My assessment system pays attention to literalness, repetition, and supported assessment; I try to use a range of tools to assess rigorous learning.	My assessment system sometimes separates assessment from instruction; I use a few tools to assess rigorous learning.

Please use this rubric and Academic Rigor Section in close connection with the section on Diversity/Differentiation in Curriculum, Instruction, and Assessment.

Adapted from: Strong, R., Silver, H., and Perini, M. (2001) Teaching What Matters Most. Standards and Strategies for Raising Student Achievement. Alexandria, VA: Association for Supervision and Curriculum Development.

Thinking Skill	Standard	CCL	CCT
Communication	Teachers and students view communication as a complex process of examining what they know and looking for ways to make it meet both their own needs (e.g., for accuracy and clarity) and the needs of the audience. They model and listen to interests and talents to expand their vision of content.	<p>*read a variety of literary, information, and persuasive texts with understanding and meaningfully analyze, interpret, evaluate, and enjoy them.</p> <p>*produce written materials which develop thoughts, share information, influence and persuade, and create and entertain, using the conventions of standard English to communicate clearly.</p> <p>*identify and apply a wide range of communicative skills/technologies to conduct research, communicate information and ideas, create original works, organize data and solve problems;</p> <p>*deliver oral and visual presentations using a coherent sequence of thought, clarity of presentation, suitable vocabulary and length, and nonverbal communication appropriate for the purpose and audience.</p>	Teachers are proficient in reading, writing and mathematics.
Reflection	Teachers and students hone the power of reflection and self assessment to expose weaknesses in their learning to illuminate problems, misunderstandings, confusions, and to determine directions for new growth.	Students work and learn independently (effectively allocating time, energy and resources) and collaboratively as part of a team (contributing to group efforts and understandings).	<p>*Teachers continually engage in self-evaluation of the effects of their choices and actions on students and the school community.</p> <p>*Teachers seek out opportunities to grow professionally.</p>

Adapted from: Strong, R., Silver, H., and Perini, M. (2001) Teaching What Matters Most. Standards and Strategies for Raising Student Achievement. Alexandria, VA: Association for Supervision and Curriculum Development.

The Connecticut Common Core of Learning. (1998). Hartford, CT: State Department of Education.

The Connecticut Common Core of Teaching. (1999). Hartford, CT: State Department of Education.

The Principles of Learning© (1999). Pittsburgh: The University of Pittsburgh Learning Development and Research Center, Institute for Learning.

Teacher and Student Foundational Thinking Skills Rubric

This rubric should be used by teacher and student to ensure that both have the necessary foundational thinking skills to ask questions, process information, solve problems, communicate, and reflect upon learning experiences.

Teacher: Am I prepared to teach the students who come into my classroom?

Student: Am I prepared to learn the subject matter? Can I identify what I already know versus what I need to learn?

	Expert	Practitioner	Apprentice
Inquiry	Can formulate questions and seek answers independently; generates, tests and refines hypotheses according to well-formulated criteria; uses evidence powerfully and persuasively, and foresees and responds to counter-arguments.	Looks for and uses questions to guide investigation; uses criteria to generate hypotheses; uses evidence effectively, but may fail to fully address counter-arguments.	Can use pre-drafted questions to direct investigation, but needs help formulating her own; may have trouble telling quality hypotheses apart from guesses; substantiates some claims, but leaves others unsupported; pays little attention to counterarguments.
Knowledge Acquisition	Uses strategies like questioning, grouping, and visually organizing to arrange new information according to principles and concepts that are central to the topic and subject area and that supports a variety of learning styles.	Uses strategies like questioning, grouping, and visually organizing to categorize new information.	Organizes new information into the most obvious categories
Problem Solving	Is constantly looking for and posing relevant questions; experiments with a variety of solutions and perspectives; determines how holes in understanding impede the problem-solving process.	Restates problems; understands there is more than one way to attack a problem; surveys own understanding to determine progress toward solution.	Accepts problems on their own terms (e.g., rarely restates them to make them more meaningful); often generates only one or two obvious solutions; questions own understanding only for obvious flaws.
Communication	Models communication as the exchange and refinement of learning; effectively balances clarity, interest, and insight; constantly checks and refines communication to meet the audience's needs.	Views communication as interaction; usually balances clarity, interest, and insight; is aware of audience's needs.	Views communication as a mostly one-way process; communication is usually clear, but rarely insightful or interesting; shows little awareness of audience's needs.
Reflection	Actively seeks out and eliminates misunderstandings and confusion; charts directions for further growth.	Regularly reflects on own thinking; is able to eliminate misunderstandings and sources of confusion.	Periodically reflects on own thinking; needs direction in finding and eliminating misunderstandings and sources of confusion.

Adapted from: Strong, R., Silver, H., and Perini, M. (2001) Teaching What Matters most. Standards and Strategies for Raising Student Achievement. Alexandria, VA: Association for Supervision and Curriculum Development.

The Connecticut Common Core of Learning. (1998). Hartford, CT: State Department of Education.

The Connecticut Common Core of Teaching. (1999). Hartford, CT: State Department of Education.

The Thought Rubric For Teacher Organization Of Curriculum, Instruction, and Assessment

This rubric should be used by the classroom teacher to think about the methods of instruction used to meet the needs of each student. The teacher should continually revise his or her methods so that all students can demonstrate what they have learned.

Are my instructional strategies helping all students to learn?

	Level 2	Level 1
C u r r i c u l u m	My curriculum is built upon the five foundational thinking skills (knowledge, acquisition, inquiry, problem solving, communication, and reflection) and stresses the connections among them.	My curriculum usually incorporates at least three or four foundational thinking skills.
I n s t r u c t i o n	My instructional program routinely engages students in the five thinking skills and encourages them to develop directions for growth.	I engage students in thinking practices and talk about their growth as thinkers. I sometimes favor three or four thinking skills over the others.
A s s e s s m e n t	I assess student thought by bringing it out into the open and then continually revise my plans to encourage its development. I use a variety of assessments to ensure that all students have an equal opportunity to demonstrate what they have learned.	I use assessment to bring student thought into the open and look for opportunities to develop it.

The Authenticity Rubric For Learning As Apprenticeship

This rubric should be used by the classroom teacher to provide students with the authentic experiences that prepare them for the world beyond the classroom. This includes real-life contexts such as interaction with mentors and experts.

Is what I am doing relevant to what my students will experience in the work world?

	3	2	1
Kinds of Work Context	Student products and performances are designed to be applied to the world outside the classroom and are created in collaboration with work mentors, experts, or “clients.” Students’ motivation and cognitive achievements are improved by including real-life contexts in the curriculum.	Student products & performances resemble the work of adults in the real world and build students’ capacities to play real-world roles as problem-solvers, mentors & collaborators. Students’ motivation and cognitive achievements are improved by including real-life contexts in the curriculum.	The roles students’ play and the products they create have little applicability beyond the classroom and cannot be used in the world beyond the classroom.
Sources	Students use current real-world sources of information that incorporate a rich and representative mix of contents and cultural contribution (e.g., interviews, correspondence, actual databases, spreadsheets, and field trips).	Students use sources similar to or based on real-world sources (e.g., teacher-designed instead of actual databases) that have been adapted to their abilities.	Students use academic and classroom sources of information only.
Communication (Implies an audience)	Students use real-world genres to communicate with and receive feedback from real-world stakeholders (employers, community groups, clients).	Students communicate in real-world genres (e.g., reports, interviews, letters, recommendations, databases, and spreadsheets); the audience is primarily other students but is interactive throughout the production process.	Students’ speaking, reading, and writing are strictly academic; the primary audience is the teacher who provides feedback after completion.
Problem-Based Learning	Students work to identify problems and to create and implement solutions to problems in the work around them (e.g., social, scientific, technological, international, and cultural issues).	Students work on messy or complex problems that are based on real-world problems.	Student work involves well-defined and predictable problems.

Adapted from: Strong, R., Silver, H., and Perini, M. (2001) Teaching What Matters Most. Standards and Strategies for Raising Student Achievement. Alexandria, VA: Association for Supervision and Curriculum Development.

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DIVERSITY AND DIFFERENTIATION IN INSTRUCTION

There are nearly 8,000 students enrolled in Manchester Public Schools. Each student comes to us with a specific set of learning strengths, learning needs, and learning interests. To paint a picture of our student body, an artist needs a varied colored palette and a broad canvas. Manchester students have differences that are cognitive, academic, and behavioral. Throughout their educational experience, our students vary with respect to their readiness to learn and learning rate, their prior experiences, their reading level, their thinking skills, learning styles, interests, and motivation. As of October 2002, thirty percent of Manchester's students are economically disadvantaged, and thirty-eight percent of our students are students of color. There are over 50 languages spoken by the students in Manchester Public Schools. More than 10% of our students do not speak English within their homes. To effectively meet the needs of all students, it is important to know students and *Differentiate Instruction*.

Differentiation can be infused in many stages of the instructional design:

- Course unit content
- Assessment opportunities against the same standard/correlative student work products
- Grouping practices (Teachers regularly reorganize flexible groups within class/across classes, based on student skill need. Teachers use support personnel – special education, tutors, reading consultants, curriculum/instructional leaders and specialists.)
- Instructional Techniques (Teachers use multiple intelligences and learning styles.)
- Resources (Every student should be able to “see” his/her identity in the materials used; alternative materials sometimes are used to target specific learning needs.)
- Extensions (Curriculum compacting; enrichment; reinforcement)
- Time (Collapsed curriculum; Revision for mastery; Extended day; Extended year)

The following pages provide curriculum developers and teachers a few tools to use while designing instruction for every student.



Diversity In Curriculum Content and Experiences

Curriculum developers and classroom teachers can use this matrix to help them determine at what level their curricular content lies. Can all students see themselves in the curricular content in my classroom? Am I leading students to expand their perspectives? Do I incorporate diversity into my instruction as an “add on?” Or is diversity the essence of my instructional content and structured at a problem-solving/performance-based level?

	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Contributions	Students are taught and know facts about cultural artifacts, events, groups, and other cultural elements.	Students show an understanding of information about cultural artifacts, groups, etc.	Students are asked to and can apply information about cultural artifacts, events, etc.	Students are taught to and can analyze (compare and contrast, etc.) information about cultural artifacts, groups, etc.	Students are required to and can create a new product from the information about cultural artifacts, groups, etc.	Students are taught to and can evaluate facts and information based on cultural artifacts, groups, etc.
Additive	Students are taught and know concepts and themes about cultural groups.	Students are taught and can understand cultural concepts and themes.	Students are required to and can apply information learned about cultural concepts and themes.	Students are taught to and can analyze important cultural concepts and themes.	Students are asked to and can synthesize important information on cultural concepts and themes.	Students are taught to and can critique cultural concepts and themes.
Transformation	Students are given information on important cultural elements, groups, etc., and can understand this information from different perspectives.	Students are taught to understand and can demonstrate an understanding of important cultural concepts and themes from different perspectives.	Students are asked to and can apply their understanding of important concepts and themes from different perspectives.	Students are taught to and can examine important cultural concepts and themes from more than one perspective.	Students are required to and can create product based on their new perspective or perspective of another group.	Students are taught to and can evaluate or judge important cultural concepts and themes from different cultural and social class viewpoints
Social Action (Problem-solving)	Based on information about cultural artifacts, etc., students can make recommendations for social action.	Based on their understanding of important concepts and themes, students make recommendations for social action.	Students are asked to and can apply their understanding of important social and cultural issues, they make recommendations for and take action on these issues.	Students are required to and can analyze social and cultural issues from different perspectives. They take action on these issues.	Students create a plan of action to address a social and cultural issue(s). They seek important social change.	Students critique important social and cultural issues, and seek to make national and/or international change.

Ford-Harris Matrix of Multicultural/Bloom’s Taxonomy of Thinking Skills

Based on the models of Banks (multicultural) and Bloom (thinking skills). Actions taken on the social action level can range from immediate and small-scale (e.g., classroom and school level) to moderate (e.g., community or regional level) to large-scale (state, national and international levels). Likewise, students can make recommendations for action or actually take social action.

Learning Styles and Cultural Differences

Each of us possesses a particular learning style or strength. It is important to note that many adults have adopted a learning style that was inculcated into them through their learning experience. Originally, as students, adults had a range of learning styles that are similar to the range that we see in our classrooms today.

Research about learning styles has been conducted for several decades, some of it having been done by former University of Connecticut professor Dr. Tony Gregorc. Much of the learning styles research that had been done through behavioral studies has been medically proven through research on the brain.

Rita and Kenneth Dunn tell us that there are five major stimuli that effect learning styles.

Stimuli	Elements
Environmental	Sound, light, temperature, classroom design
Emotional	Motivation, persistence, responsibility, structure
Sociological	Collegial learners, self-learners, paired learners, team learners, teacher directed-learners, varied arrangement learners
Physical	Perceptual (senses), food/snack intake, time, mobility
Psychological	Analytic, global, cerebral preference, reflective, impulsive

Source: Dunn, R. & Dunn, K. (1985) Diagnosing Learning Styles. New York: Center for Study of Learning and Teaching Styles at St. John's University.



The key to success for improved student performance lies with the teacher knowing and understanding each student. This includes knowing a student's individual academic background and knowing each culture. Culture is an essential aspect of all people and consists of specific behavior patterns, symbols, institutions, values, and other components of society. Culture does affect how a student learns. Once an educator knows each student in class and the student's culture, the learning styles of students can be considered for optimal achievement.

The relationship between culture and learning styles is controversial because it brings us face to face with philosophical issues that involve deeply held beliefs. Nonetheless, giving every child an opportunity to succeed in school depends upon a full understanding of culture and learning styles.

Most teachers are best at teaching children who match their own styles of thinking and learning. Students do, in fact, receive higher grades and more favorable evaluations when their styles more closely match those of their teachers. However, when a teacher uses instructional

strategies that employ a variety of thinking and learning styles, all students can succeed at the assigned task. Traditional methods and innovative methods must be used to accommodate the diverse styles of students.

“If classroom expectations are limited by our own cultural orientations, we impede successful learners guided by another cultural orientation. If we only teach according to the ways we ourselves learn best, we are also likely to thwart successful learners who may share our cultural background but whose learning styles deviate from our own.” *Educational Leadership, May 1994*

Curriculum revision, materials selection, and instructional decision-making improves when students’ learning strengths are prominent in our thinking. The charts below consist of generalizations of each culture represented in Manchester. This will give background information on each group by ethnicity. There are always exceptions to the rule, and one may see himself among a group to which he does not belong. The characteristics, therefore, can be cross-cultural.

TRADITIONS AND VALUES AND LEARNING

American Indian Culture and Values

Collective identity (tribal identity), anonymity
Cooperation, both social and familial; tend to be humble
Non-aggressive
Non-materialistic; values nature
Spiritual – religion is a way of life; respect persons with spiritual powers
Maternalistic
Nonverbal and verbal expressiveness
Bilingual
Seeks harmony, maintains traditions, present-time oriented
Honor their elders
Learn through legends
Share – everything belongs to others

Ford & Harris III 1999

American Indians are trained to be self-sufficient early on. The immediate and extended families contribute to the child’s cultural identity and play a significant role in overall development. Schooling should establish a context for new information, provide quiet times for thinking and emphasize visual stimuli. Shade, More, Bert and Bert (November 1994) Educational Leadership

African American Culture and Values

Seek support from larger families/ "kinship networks"
Reared by parents and extended family
Cooperation, social-oriented, mutual interdependence, Collectiveness
"Worthy" dialect at home; "unworthy" at school
Situation oriented
High context communication, verbal and non-verbal
Obedience to elders
Exhibit cultural pride
Spiritual
Accept others' views of their culture
Do not always maintain eye contact in communicating

Ford & Harris III 1999

African American culture shows that students often value oral experiences, physical activity, and loyalty in interpersonal relationships. These traits call for classroom activities that include approaches like discussion, active projects, and collaborative work. Shade, Hilliard (November 1994) Educational Leadership: November 1994, Shade, Hilliard

Latino American Culture and Values

Interdependence cooperation; emphasis on social relations
Concrete thinking and learning experiences
Active learning
Social learning (pairs, small groups)
Present-time orientation
Bilingual; value Spanish as their native language
Value elders; family bonds
Do not want to be singled out for being different or excelling
Tend to distrust Anglo-American professionals
Value machismo; clearly distinct sex roles
Stand close; touch; avoid eye contact



Latino Americans regard family and personal relationships as important and are comfortable with cognitive generalities and patterns. Such traits explain why these students seek a personal relationship with a teacher and are more comfortable with broad concepts than component facts and specifics. Cox, Ramires, Vasquez (November 1994) Educational Leadership.

European/White American Culture and Values

Nuclear family
Religious; religion is one more institution; respects people with status
Materialistic; things and possessions highly valued
Paternalistic
Verbal expressiveness; low context communication
Seeks progress, change, future-oriented
Exhibit individual pride
Time oriented
Abstract thinking
Authoritative child-rearing practices
Challenge, questions adult authority
Protestant work ethic – Strong work ethic centered on ability and personal characteristics
Monolingual
Aggressive; competitive

Traditional American culture values independence, analytic thinking, objectivity, and accuracy. These values translate into learning experiences that focus on competition, information, tests and grades, and linear logic. These patterns are prevalent in most American schools.

Asian American Culture and Values

Confucian ethic – strong work ethic centered on effort and persistence
Academic orientation – status by effort
Family honor and tradition; place family welfare over Individual desires
Past, tradition
Show respect and reverence toward elders
Multilingual
Mutual interdependence; collectiveness; group welfare; public conscience
Harmony with nature
Conformity, correctness, obedience to adult authority and elders
Controlled by strong family structure
Bring shame on the family by not conforming to expectations

Ford & Harris III 1999

Asian American students tend to need reinforcement from teachers and seldom reveal their opinions or their abilities voluntarily or dare to challenge their teachers. They work efficiently in a well-established, quiet learning environment in which definite goals have been established. Asian students may perform well in rote memorization and mathematics operations but may do poorly on creative writing or analytical commentary.

These are not exclusive. There are exceptions to the rule



Fair and Credible Evaluations

Assessments determine success of the following:

- Individual student success
- Teacher instructional strategy success
- Curricular program success
- School system self-measurement and comparison to the state and ERG

Individual Student Success and Instructional Strategy Assessment

All curricula contain assessment practices that will be used to assess student work. Assessments correlate with the standards that are assessed in that they provide the criteria through which a teacher judges a student's achievement of the standard.

The purpose of all assessments is to improve teaching and learning and to communicate that learning to students and parents. Teachers use assessments to determine adjustment in instruction and to re-teach when a student has not learned an important skill or information.

Types of student assessments vary:

Continuum of Assessment Methods

Informal Checks For Understanding	Observation/Dialogue	Quiz/Test	Academic Prompt	Performance Task/Project
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Continuum Source: Wiggins, G. and McTighe, J. (1998). Understanding By Design. Alexandria, Virginia: Association for Supervision and Curriculum Development.

Teacher Observation and Other Informal Checks for Understanding: Teacher uses a checklist with criteria to note student understanding of a concept as the student works through a curricular task. Preferred for student mastery of process. For example: Can a student use the scientific process? Does the student understand place value and borrowing?

Short Answer Objective Tests and Quizzes: Teacher uses a multiple choice, true or false, or fill-in the blank. This type of assessment is appropriate when the teacher wishes to determine a student's mastery of the factual aspects of a curriculum. For example: historical events and years; authors of books; mathematical axioms; scientific formulae. Please note that this type of assessment merely tells if the student can recall information or comprehend the information. It does not inform the teacher, the student, or the parent if the student **UNDERSTANDS** the

information. Understanding requires that the teacher implement a performance assessment that is designed to determine the student's ability to apply information, synthesize knowledge, analyze the information, or evaluate the information.

Performance Assessments: These assessments include any student "performance." Performance assessments include: performances, projects, essays, creative writing, dance, art, responses to readings, displayed work to show thinking in mathematical problem-solving, hypothesis generation and scientific experimentation. In short, a performance assessment captures the student's ability to apply, analyze, and evaluate information to solve a problem or to produce a product.

Performance assessments require a scoring rubric.

When rubrics are designed to clearly articulate expectations, rubric use assists both teachers and students. Through **Analytic Score Point Rubrics**, teachers assess in a fair and credible fashion, and students understand those expectations more thoroughly and are often more highly motivated toward task accomplishment.

Teachers use both holistic rubrics and analytic score point rubrics. **Holistic rubrics** provide a score that reflects overall quality. The best examples of holistic rubrics are those used in the assessment protocols of the Connecticut Testing Program.

Analytic score point rubrics provide more depth and rigor to the assessment experience. Manchester has been designing these rubrics with three to five levels of description of task accomplishment. The design display matrix always lists the criteria indicators, or key attributes of the performance or project, along the left margin of the page. Immediately to the right of the criteria indicators, we place the description of the best performance. To the right of the best, we display other levels of performance. It is important to note that we never display any levels of performance that are not acceptable to us. In other words, we can turn back a project to a student and state that it does not meet any level of acceptability as stated on the rubric.

Manchester rubrics also frequently contain a "Student Work Ethic" criteria that detail expectations for student work habits throughout the work experience.

Analytic score point rubrics contain more depth and rigor than holistic rubrics. Rubric depth and rigor are important to:

- Address differences in students' zone of proximal development (Vygotsky: instructional zone)
- Attend to varying levels of prior knowledge
- Foster continuous progress on a continuum from novice to expert
- Reduce student frustration (and teacher exhaustion in analyzing work)
- Increase the level of challenge
- Teaching efficiency

Adapted from A CREC Curriculum Council Presentation conducted by Jeanne Purcell, entitled, "Curriculum Differentiation: An Overview and Conversations with Leaders in Three School Districts."

Analytic score point rubrics can be used diagnostically by both teachers and students to improve work quality. Assessment, and ultimately, teaching becomes more efficient through the use of these rubrics.

Assessing Curricular Program Success

Perhaps the best method to use while assessing curricular programs is to ask Essential Questions:

- What do the various standardized tests and criterion-referenced tests tell us about our curricular experience in general and this course in particular?
- Is the instruction aligned with standards?
- Are student assessment practices aligned with the standards?
- Do supervision practices indicate that teachers use the various types of assessments proscribed?
- Does the use of instructional strategies and assessment practices in this course attend to student's individual learning needs, based upon the assessment data gathered?
- Are the experiences designed so that students can be active participants?
- Can students apply skills and higher order thinking experiences to a level of connecting big ideas?
- What does students' long-term progress tell us about this course?
- Were these curricular experiences designed and were materials selected through a shared wisdom process, a process that includes multiple teachers and parental input?
- How does this course (if applicable) advance a student toward college education?
- Can students envision through this course a meaning for their lives beyond school?

Data are reviewed and evaluated. Various data sets might be applicable. Among them are:

- ❖ Student performance on the Connecticut Tests
- ❖ International, national, state trends and legislation, and local standards
- ❖ Criterion-referenced tests that provide data measured and monitored over time
- ❖ Student exhibition, portfolio, or other performance results measured and monitored over time
- ❖ Teacher, student, and parent observations and anecdotal information
- ❖ Student performance rate within various courses
- ❖ Student drop out rate, attendance, tardiness

***It is imperative that the district examines
data of the same students over time
rather than merely taking our measure each year
with testing of non-cohort groups of students.***

Board of Education Request for Program Assessment:

There are times that the Board of Education will request program assessment. If the Board requests information regarding a program, the Board expects the following outline to be submitted and/or presented. (Policy 6180).

MANCHESTER PUBLIC SCHOOLS

PROGRAM REVIEW FOR BOARD/BUDGETARY PURPOSES

Program Name:

Students Served:

Student Need/Program Description and Purpose

Number of Students served

Program Cost:

Personnel (Provide Total Salaries and Classification, such as Teacher FTE, # Tutors, etc.)

Resources

Standards/Assessments/Mandates on which the program is built:

Results of assessments:

Can we meet the defined student need should this program be eliminated? (Please explain.)

School System Self-Measurement and Comparison to the State and the ERG:

The State of Connecticut Testing Program assesses, through the Connecticut Mastery Test, student mastery of mathematics, reading, and writing at grades 4, 6, and 8. Through the Connecticut Academic Performance Test, the State measures student performance in grade 10 on science, reading across the disciplines, mathematics, and writing across the disciplines. Beginning in 2005, the state will be in compliance with newly adopted federal legislation, “No Child Left Behind,” the 2001 Elementary and Secondary Education reauthorization. At that point students will be assessed annually from grades 3 through 8. A science test will be added to grade 5 and grade 8.

Until that point, the Manchester Public Schools will continue to use the Connecticut Mastery Test (off-year) testing at grades 3, 5, and 7.

Manchester uses the student results from the Connecticut Testing Program for the following purposes:

- To determine student achievement and student needs to inform instruction in the classroom
- To alert students and parents about student achievement and needs
- To determine the effectiveness of the district’s core programs
- To analyze our growth in comparison to that of the district’s ERG (Educational Reference Group) and the state.

These analyses are conducted through data retrieval through the system’s data warehouse (Pentamation) and data mining software (EdSmart/EdExplorer). *The Manchester Board of Education* will receive annually an analysis of student data that includes: Manchester’s results, Manchester’s results in comparison to the ERG and the state, Manchester’s results as disaggregated by cohort groupings, Manchester’s results as disaggregated by board-funded programs, such as summer school, tutorials, special programming. The Board uses these data to determine program effectiveness and funding allocation.

Principals receive the results specified above along with the results of their students’ performance. Principals use these data to develop their *School Improvement Plans*, which include the professional development needed to improve instruction. Principals also examine program effectiveness and work in conjunction with the Office of Curriculum and Instruction to review and perhaps revise program staffing or resources.

Curriculum and Instructional Supervisors/Leaders and Chairpersons use assessment data to revise program staffing and resources, plan professional development, and determine program effectiveness.

Individual classroom teachers administer assessments and review results to:

- ❖ Revise teaching to address student needs
- ❖ Implement flexible grouping and differentiated instruction
- ❖ Provide rubrics to assess and monitor student outcomes
- ❖ Communicate student achievement to students and to parents

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