NRC CTE

National Research Center for Career and Technical Education

SREB

Seven Essential Teaching Skills for CTE Instruction in the 21ˢᵗ Century

ACTE

November 17, 2011

St. Louis

CTE Teacher Preparation Project

Professional Development Needs of Teachers in Instructional Planning

Topic/Need	% Expressing Need	Number of Hours in Past 3 Years		
		None	Less Than 40 Hours	More Than 40 Hours
Align course standards to national academic and skill standards	52	34	59	7
Use methods to integrate reading, writing, and communication skills	54	24	68	8
Do collaborative planning with other teachers	60	33	60	7
Prepare a syllabus for teaching to challenging standards	49	41	55	4

*CTE teachers with less than 5 years of experience.
Source: *HSTW* Teacher Survey—2006.

Professional Development Needs of Teachers in Embedding Academics

Topic/Need	% Expressing Need	Number of Hours in Past 3 Years		
		None	Less Than 40 Hours	More Than 40 Hours
Use reading and writing for learning in the content area and across the curriculum	46	19	72	9
Use teaching methods to integrate high-level mathematics into my class	50	59	37	4
Get students to elaborate on their understanding of content through extended writing	56	48	49	3
Use applied learning strategies to teach higher-level academic content	57	36	58	5
Have students design and conduct research investigation	53	45	51	4

*CTE teachers with less than 5 years of experience. Source: *HSTW* Teacher Survey, 2006.

Professional Development Needs of Teachers in Research-Based Teaching Strategies

Topic/Need	% Expressing Need	Number of Hours in Past 3 Years		
		None	Less Than 40 Hours	More Than 40 Hours
Use student-centered instruction to motivate and deepen student learning	60	42	53	5
Use project-based learning to deepen understanding of content	51	30	63	8
Teach students through cooperative learning	54	35	59	6
Establish a classroom environment that actively involves students	51	18	74	8
Help students make connections between classroom and the real world	58	40	53	7
Use research-based teaching practices to improve student learning	54	31	63	6

*CTE teachers with less than 5 years of experience.
Source: *HSTW* Teacher Survey, 2006.

Professional Development Needs of Teachers in Classroom Assessment

Topic/Need	% Expressing Need	Number of Hours in Past 3 Years		
		None	**Less Than 40 Hours**	**More Than 40 Hours**
Develop rubrics in academic content areas	50	31	63	6
Use performance assessments	47	26	66	8
Use multiple forms of assessment to determine student progress	55	39	55	6
Use student portfolios across the curriculum	54	43	53	5
Have students assess and revise their own work to meet standards	56	51	45	4

*CTE teachers with less than 5 years of experience.
Source: *HSTW* Teacher Survey, 2006.

Professional Development Needs of Teachers in Classroom Management and Motivation

Topic/Need	% Expressing Need	Number of Hours in Past 3 Years		
		None	Less Than 40 Hours	More Than 40 Hours
Get at-risk students to master complex content	68	39	57	4
Raise expectations for student achievement	55	26	68	6
Use teaching methods that motivate students to do a variety of demanding tasks	64	34	59	7
Have a system of extra help to improve student achievement	56	39	57	5
Know how to work with students as a mentor and advisor	55	42	51	7

*CTE teachers with less than 5 years of experience.
Source: *HSTW* Teacher Survey, 2006.

CTE Teacher Preparation Project

The Route to Becoming a CTE Teacher

12,000 CTE teachers at *HSTW* schools in 30 states

- 25% entered through a university-based teacher preparation program
- 75% entered the field through alternative routes

The Project

- Develop and pilot a model for teachers seeking an alternative route to certification
- Improve competence, self-efficacy, and commitment to the profession
- Field test the model and refine it based on data

Instructional Skills for the 21ˢᵗ Century

Instructional Planning:
Create short-term and long-term standards-based instructional plans based on the varying learning needs of students.

Instructional Strategies:
Use instructional strategies that actively engage students in learning and encourage the development of problem-solving, critical thinking, and teamwork skills.

Teacher Competence

Classroom Assessment:
Use formal and informal assessment strategies to evaluate student progress toward learning goals and provide feedback to improve student learning.

Classroom Management:
Create a learning environment that encourages student motivation, positive behavior, and collaborative social interaction.

Teacher Reflection: Reflect, both individually and collaboratively, on the effects of instruction and use the reflective process to continually improve instructional practice.

Seven Essential Teaching Skills

- Planning standards-based instruction
- Designing standards-based assessment
- Facilitating project-based learning
- Using cooperative learning
- Embedding literacy
- Embedding numeracy
- Managing the classroom to create a climate of personalization and support

Planning Standards-Based Instruction

- Curriculum Map
- Course Syllabus
- Unit Plan
- Lesson Plan

Handout, page 3

The Content of CTE Courses

Technical Knowledge and Skills

Academic Knowledge and Skills

21st Century Skills

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Unit Planning Template

- Content
- Scenario or Problem
- Assessment
- Resources
- Support, Modifications and Extensions
- Calendar of Major Learning Activities

Handouts, pages 6-8

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Rubric for Assessing Unit Plans

Criteria

- Standards-focus
- Scenario or problem
- Instructional activities
- Assessment
- Cohesiveness

Handouts, pages 4-5

Designing Standards-Based Assessment

Formative
- Interactive, to "form" learning
- Provides feedback
- Begins immediately and continues throughout learning
- Formal or informal

Summative
- At the end of a learning episode

Assessment Improves Achievement and Motivation When. . .

- Clarifies quality
- Provides feedback to the students on their progress
- Provides information on the degree to which students have met learning goals
- Encourages effort with specific suggestions
- Rewards progress

Assessment Tools

Summative
- Test
- Performance
- Product

Formative
- Journals
- Plans
- Checklists
- Homework
- Questions and Checks for Understanding
- Peer Review and Feedback

Handouts, page 9

Facilitating Project-Based Learning

- What is PBL?
- What are the characteristics of effective PBL projects?

Handouts, page 10

Projects in CTE Classrooms

- Engage students in learning knowledge and skills through extended inquiry process
- Structured around complex, authentic questions and carefully designed products and tasks

- Support deep, meaningful learning
- Increases transfer of learning
- More flexible, useful kind of knowledge
- Positive changes in motivation, attitude toward learning, thinking skills and problem solving abilities
- Better match to learning style, particularly for students who have struggled in school

What is a CTE project?

What role do projects play in CTE?

Activities vs. Projects

- Learning experiences that enable students to learn knowledge, procedures and/or skills
- Designed with a predictable outcome
- Means to an end, not an end in themselves
- Designed to last from 1 to 3 class periods

- Designed around authentic problems or tasks
- Structured so that students are involved in extended inquiry
- Of one or more weeks in duration

Activities are:

Projects are:

Source: Preparation for Tomorrow Project, SREB

Using Cooperative Learning

Definition:

▸ The instructional use of small groups so that students work together to maximize their own and each other's learning

Research Benefits:

▸ Learn more and enjoy students more

▸ Develop social and interpersonal skills

▸ High-level reasoning

▸ More frequent generation of ideas

▸ Better transfer of learning

Different Types of Learning

Cooperative	Competitive	Individualistic
Positive interdependence

"I reach my goals when other students also reach their goals." | Negative interdependence

" I obtain my goals when others fail to obtain theirs." | No interdependence

"Whether I achieve my goals is determined by a performance standard and is unrelated to what other students are doing." |

Types of Cooperative Groups

Type	Purpose	Examples
Informal—For a few minutes or a class period	Engage students by focusing, processing, or providing closure.	Elbow partners Table groups during a lesson
Formal—From one class period to several class periods	For the completion of an assignment or project.	Project group
Base—Long-term groups with stable membership	To provide support, help, and encouragement	Study buddies Lab groups CTSO committees Work teams

Handouts, page 11

Embedding Literacy

Assignments that Promote Literacy

- Read career-related articles
- Write weekly
- Prepare a written report

Activities That Use Content-Area Literacy Strategies

Examples:

- Two-Column Notes
- Frayer Model
- Word Sort

Building an Assessment Task for Writing in CTE

- Make an Argument
- Provide Information or Make an Explanation
- Tell a Narrative or Story

- Identify something the student is to read or do prior to the writing
- Describe what the students are to write
- Add instructions to increase the level of thinking
- Put all the sections of the assessment task together

Three Types of Writing

Steps in Developing an Assessment Task

Handouts, page s12-13

Embedding Numeracy— Math Problems

- Is this problem authentic to the field?
- What mathematics process standards are evident?
- What mathematics content is evident?

Embedding Numeracy Sample Lesson

▸ Using Technology Effectively: CBRs

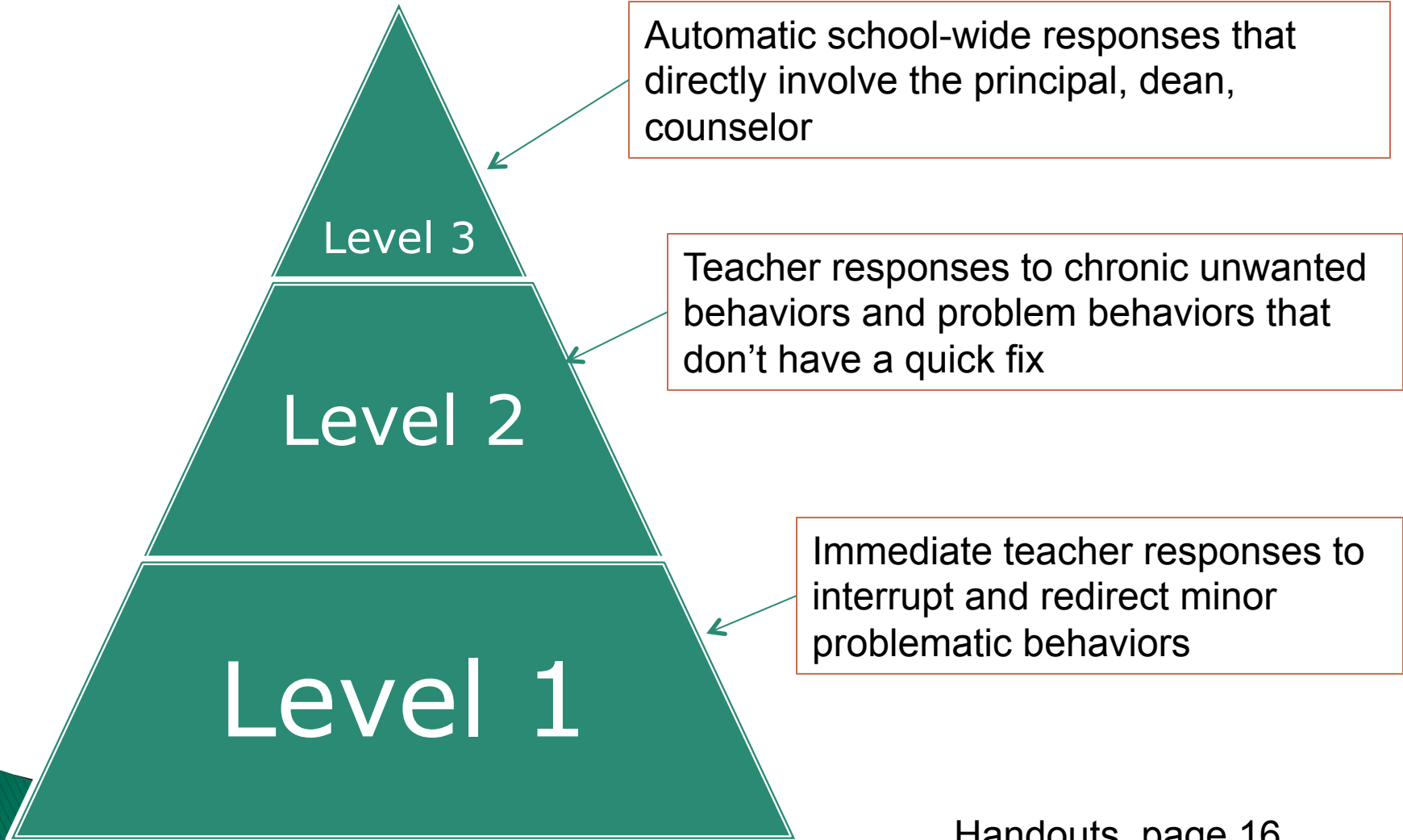▸ Interpret the meaning of slope and y-intercepts in situations using data or graphs.

Topic	Objective

Handouts, page 14

Strategies for Solving Mathematics Problems

- Alphabet math
- Chunking
- Good, better, best
- K-W-C
- Mathematically speaking

- Pictorial representations
- Think-solve-pair-share

Handouts, page 15

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Managing the Classroom--Three Levels of Interventions

Automatic school-wide responses that directly involve the principal, dean, counselor

Level 3

Teacher responses to chronic unwanted behaviors and problem behaviors that don't have a quick fix

Level 2

Immediate teacher responses to interrupt and redirect minor problematic behaviors

Level 1

Handouts, page 16

Levels of Intervention—Level 1

- Personalization
- Rules and Procedures
- Guiding Behaviors
  ◦ Proximity
  ◦ Prompts
  ◦ Invitations
  ◦ Logical consequences

Level 3

Level 2

Level 1

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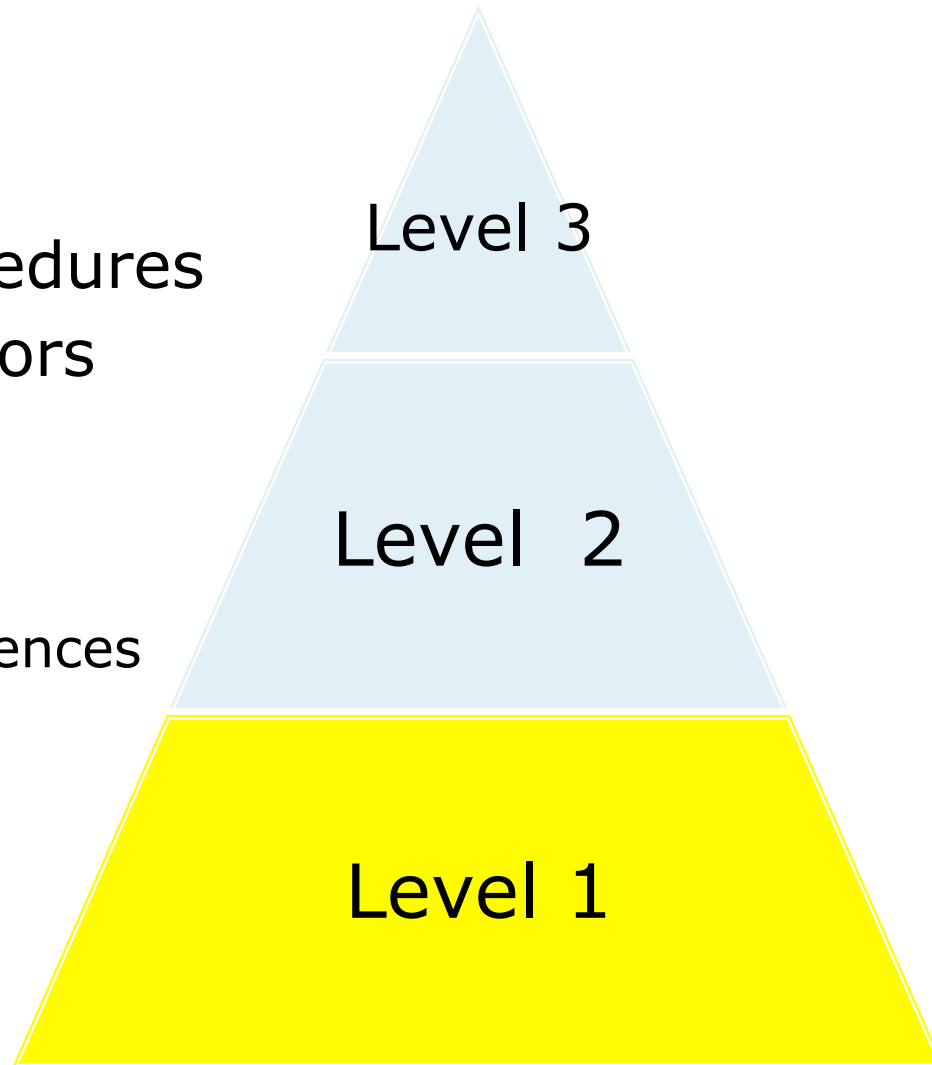
Personalization

Definition

- The teacher strives to know students well, respect them, and support them.

Characteristics

◦ Being aware of students' needs, interests, learning styles, hopes and dreams

◦ Relating to students by listening to them and giving them complete attention

◦ Being culturally aware and responsive

Build Positive Relationships—Ways to Get to Know Your Students

- Introduce Yourself
- Learn Names
- Seek Information About Each Student
- Use Ice Breakers and Get-to-Know-You Games
- Encourage Positive Working Relationships
- Make Contact with Parents
- Connect with Students on a Regular Basis

Involve Students in the Development of Classroom Rules

- Brainstorm rules for the class, compare, and reach consensus
- Workplace rules comparison
- Small group poster contest
- Respect carousel

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Levels of Intervention—Level 2

- Accountable consequences
- Parent phone calls
- One-to-one conferences resulting in contract to correct behavior
- "Owed" time before or after school
- Conferences with other school staff
- Office referral

Level 3

Level 2

Level 1

CTE Teacher Preparation Project
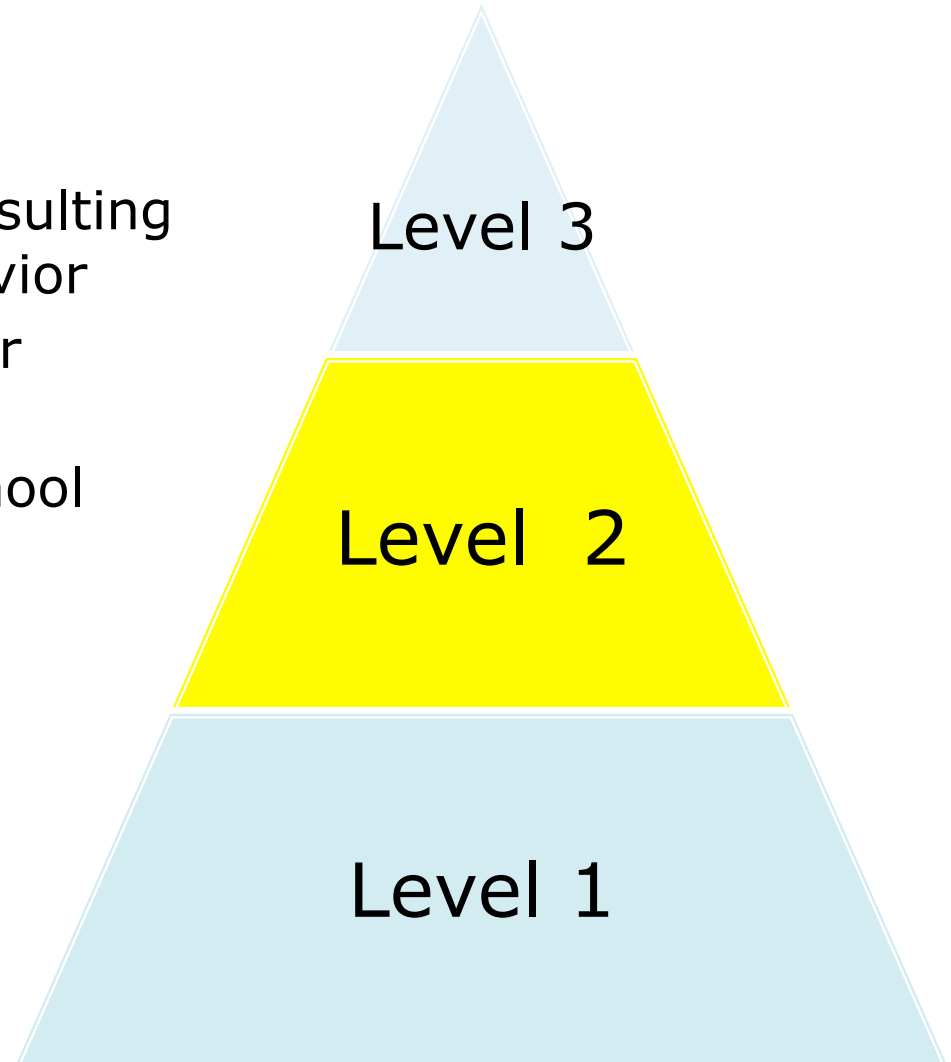
Level 3 Interventions

- Automatic referral to administrators, counselors, and student support staff
- School-wide consequences

- Fighting
- Harassing
- Threatening
- Swearing to intimidate
- Assault on an adult
- Verbal threats or aggression toward an adult

Intervention

Situations

Think About It...

▸ What one or two actions will you take to improve instructional skills as a result of this session?