The NRCCTE Curriculum Integration Studies

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Disclaimer:

NRCCTE Partners

Four Main Activities

- Research (Scientifically-based)

- Dissemination

- Technical Assistance

- Professional Development

  www.nrccte.org

Three Foci

- *Engagement* – Completing high school, completing programs
- *Achievement* – technical and academic
- *Transition* – to continued formal learning without the need for remediation; and to the workplace

Curriculum Integration Research

- Math-in-CTE: study complete
  - Math-in-CTE Technical Assistance—five years
- Authentic Literacy: complete
- Science-in-CTE: underway

The Math-in-CTE Study

A study to test the possibility that enhancing the embedded mathematics in Technical Education coursework will build skills in this critical academic area without reducing technical skill development.

Math Study Questions

- Does enhancing the CTE curriculum with math increase math skills of CTE students?

- Can we infuse enough math into CTE curricula to meaningfully enhance the academic skills of CTE participants (Perkins III Core Indicator)

- . . . Without reducing technical skill development

- What works?

Math-in-CTE Findings

All CTEx vs. All CTEc
Post test % correct controlling for pre-test
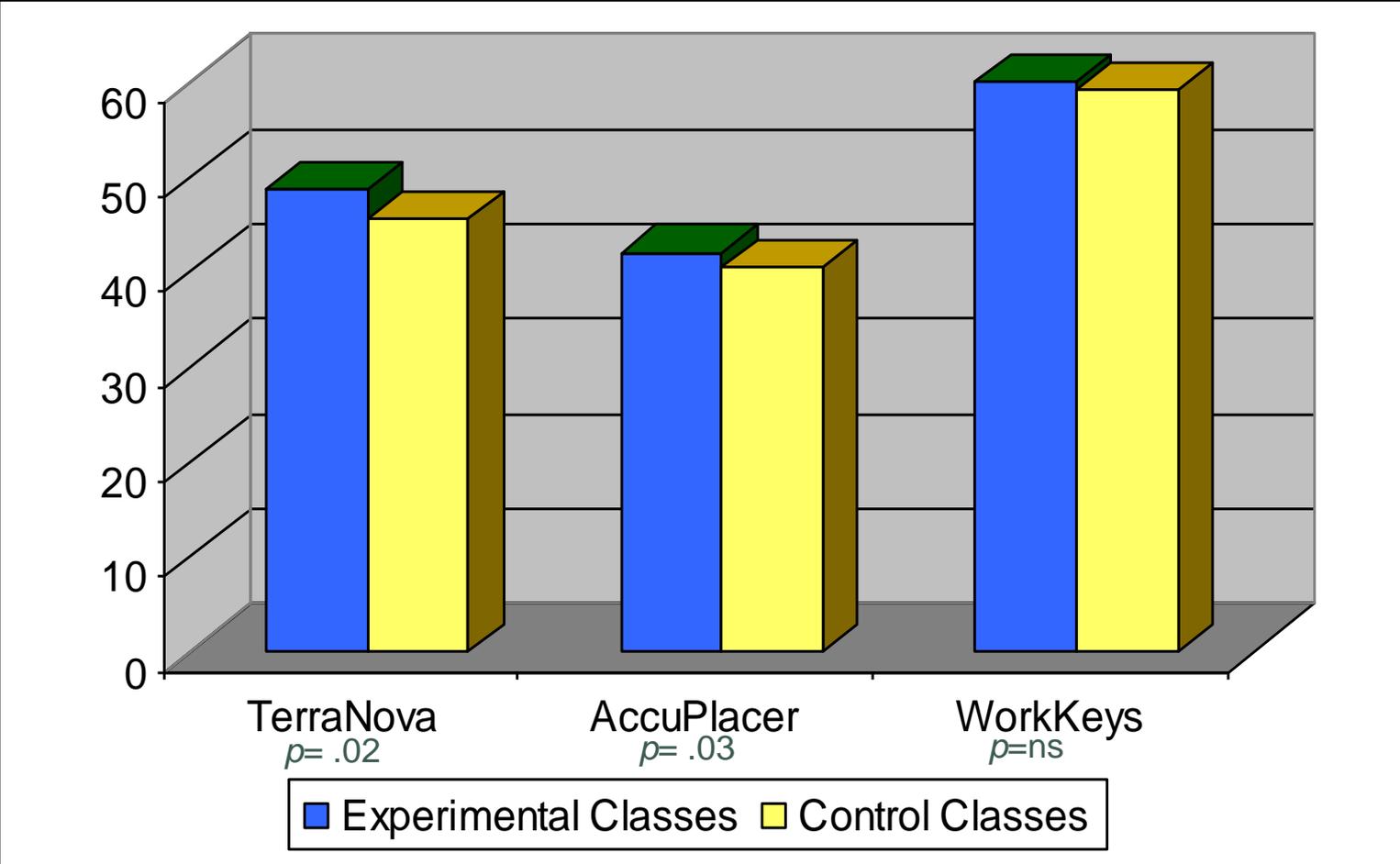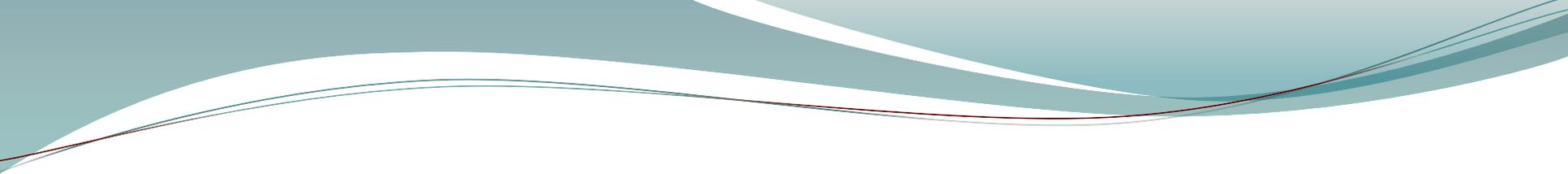
Math-in-CTE Information

www.nrccte.org

The Science-in-CTE Study

A replication of Math-in-CTE

A study to test the possibility that enhancing the embedded science in Technical Education coursework will build skills in this critical academic area.

Science-in-CTE
Pilot Study Questions

- Does enhancing the CTE curriculum with science increase science skills of CTE students?

- What works?

Science-in-CTE Pilot Study

- Brent Young, NDSU, State Project Director
- Support from ND Department of CTE
- Plant science teachers paired with science teachers
- RCT design: experimental and control classrooms
- Spring semester pilot concluded 2010
- Preliminary findings in late summer 2010
- Ahead: full year study 2010-2011
- Sites in health sicences and environmental studies

Emergent Core Principles

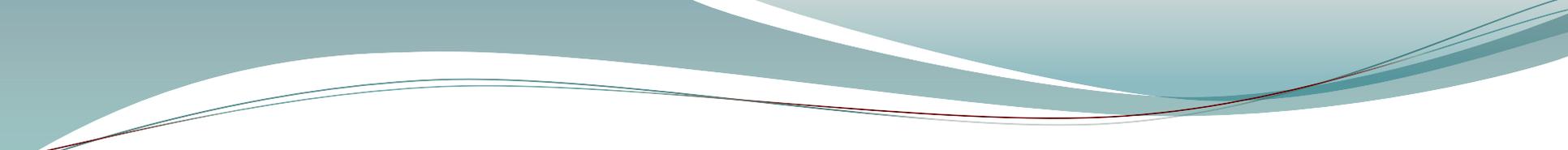- Develop and sustain a community of practice
- Begin with the CTE curriculum and not the math/science/reading curriculum
- Understand that m/s/r is an essential workplace skill
- Maximize m/s/r in the CTE curriculum
- Recognize that CTE teachers are teachers of m/s/r-in-CTE, and not m/s/r teachers
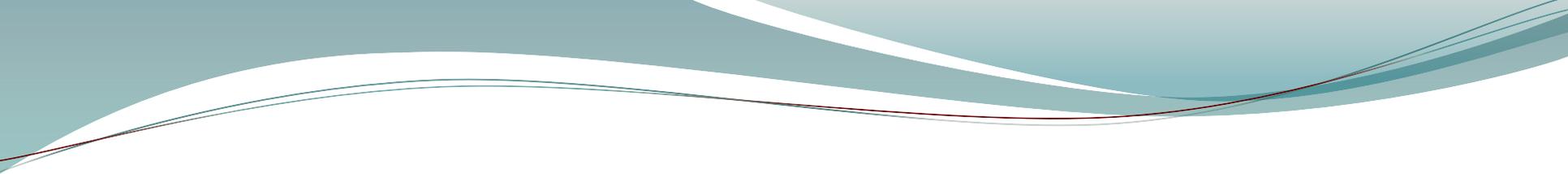
Literacy in CTE

Purpose: determine impact of reading strategies on comprehension and motivation to read for students enrolled in CTE

Objective: Compare the effects of reading strategy instruction under a control condition and two models of content-area reading interventions: a CTE Framework and MAX Teaching

Treatment Fidelity

- Teachers receive sample lesson plans

- Weekly journaling of teaching practices
- Interviews with teachers post-intervention

~2,677 students

- 35.3% Juniors and 29.7%Seniors
- 60.7% female
- 65.4% white, 23.5% black
- 51.8% FRPL
- 40.6% of mothers' education level $\geq$ HS
- 50.6% of fathers' education level $\geq$ HS
- Reading aloud, study guides, asking questions

Literacy-in-CTE

- 101 teachers in 3 groups
- 15 returning teachers funded out of another pool of funds
- Professional Development: July - August 2009
  - 2.5⁺ days
- Treatment period: September 17 – April 9
- Weekly teacher reports of reading activities

Teachers

State	CTRL	ALS/ASH	MAX	Total
NY	12	15	16	43
SC	19	21	18	58
Subtotal	31	36	34	101
Year 3			15	15
Grand Total			49	116

Experimental design

- Random Assignment
- Pretest only
  - Demographic survey
- Pretest and posttest
  - Gates-MacGinitie Reading Test (untimed ~50 min)
    - Grade level 7-9
    - Forms S & T
  - Motivations for Reading Questionnaire (15 min)

Micro-Periods of Reading

Pre-Reading → During Reading → Post-Reading
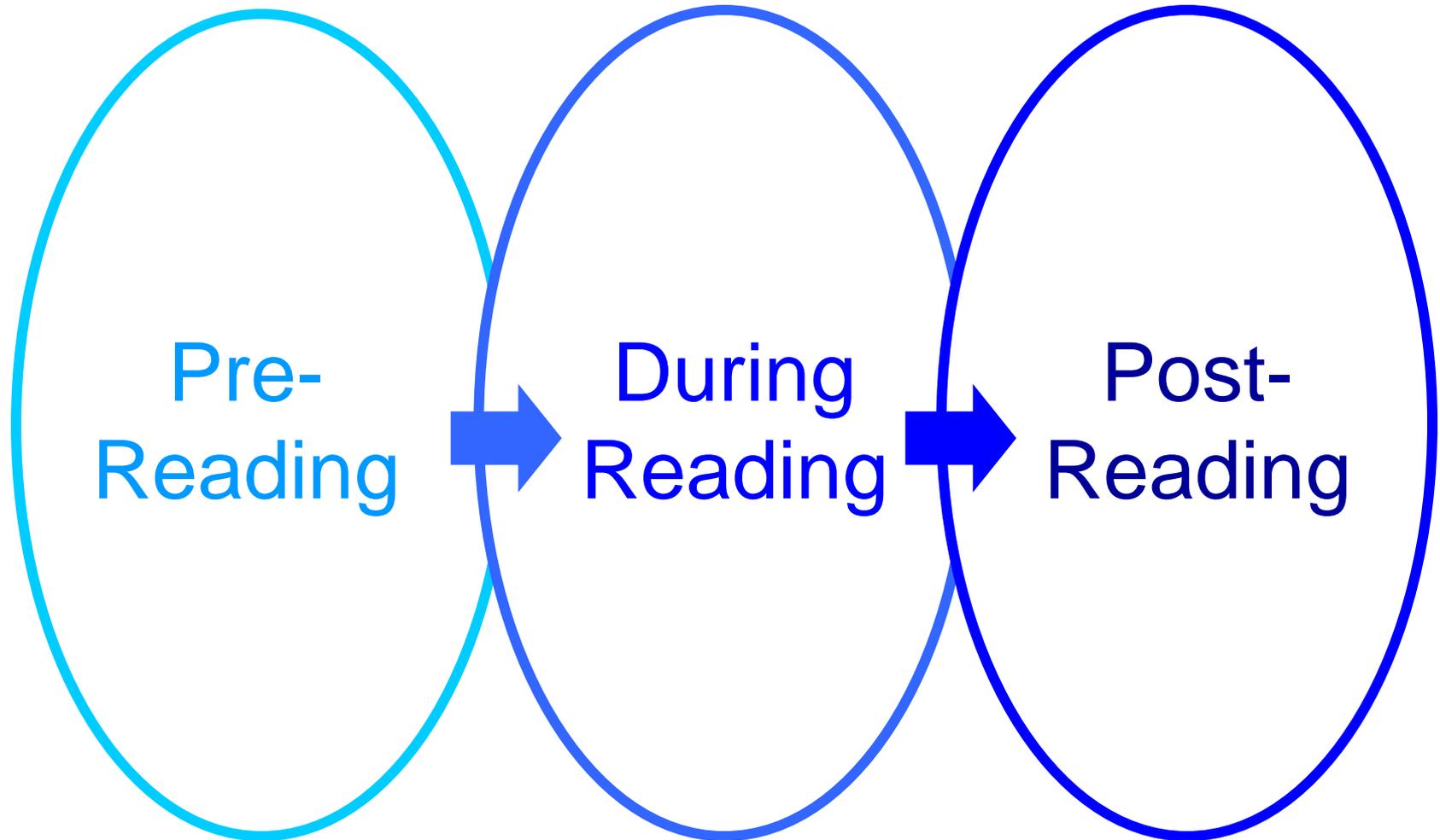
Coop Learning & Skills Acquisition

	MAX	SAM	Coop Learning
Before Reading	**M**otivation Reducing the anxiety and improving the probability of success in reading	Introduction and modeling of the skill	Written commitment and small-group discussion
During Reading	**A**cquisition Individual silent reading for personal interpretation	Guided practice in learning skill	Individual gathering of data for discussion
After Reading	E**X**tension Cooperative construction of meaning through discussion, writing, etc.	Reflection on how the skill worked	Attempt to achieve small group and class consensus

6 Essential Elements for Adolescent Literacy Instruction

1.) Guided Reading of Text

2.) Direct Instruction

3.) Peer-Led Discussion of Text

4.) Word Study

5.) Purposeful Oral Reading and Text Production

6.) Inquiry Learning

Pilot Test Analysis

Null Hypothesis	ANCOVA
H^o_{1a}: NSD **total GMRT gain score** of MAX v. CTRL	reject
H^o_{1b}: NSD **total GMRT gain score** of CTE v. CTRL	reject
H^o_{2a}: NSD **GMRT vocab gain score** of MAX v. CTRL	reject
H^o_{2b}: NSD **GMRT vocab gain score** of CTE v. CTRL	retain
H^o_{3a}: NSD **GMRT compr gain score** of MAX v. CTRL	reject
H^o_{3b}: NSD **GMRT compr gain score** of CTE v. CTRL	reject
H^o_{4a}: NSD **MRQ gain score** of MAX v. CTRL	retain
H^o_{4b}: NSD **MRQ gain score** of CTE v. CTRL	reject

Which strategies did teachers use?

MAX

1. Cornell notes
2. Hunt for main ideas
3. Previewing nonfiction text
4. Pre/Post learning concepts checks
5. Focused free writes
6. Paired reading
7. Guided reading procedure
8. Anticipation guide

ALS/Ash

1. Anticipation guide
2. Directed Reading-Thinking Activity
3. Inquiry Charts
4. Vocabulary from context
5. List-Group-Label
6. GIST

How/Why did teachers use strategies?

How?

- Used strategies more early in week
- Asked students for feedback about which strategies worked best
- ↑ assigned reading: ⬆ student engagement in reading
- Adult learning approach
  - Learner feedback
  - Utility value

Why?

- Selected strategies that were easy to implement
- Strategies helped students learn
- Transitioned learning to students
- Teachers actually "taught" less
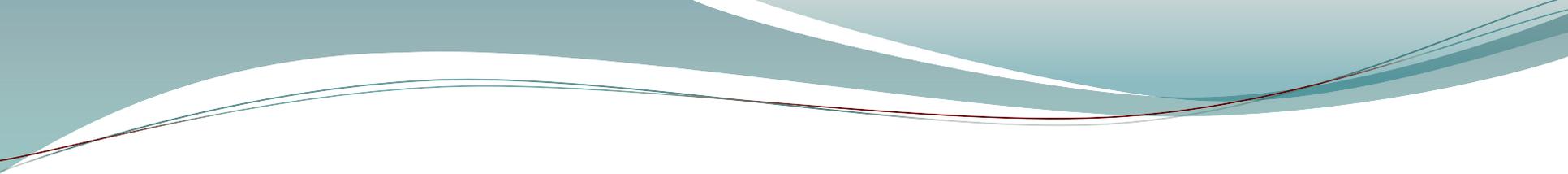
Teacher Reflections

Teacher interviews

1. Foster teacher confidence,
2. Develop communities of practice,
3. Utilize authentic texts,
4. Commit to professional development,
5. Adjust strategies for use in CTE,
6. Adopt the framework where texts are used,
7. Encourage student receptiveness.

Student focus groups

1. Students desired a utility value,
2. Understood importance of reading to their career,
3. Engaged if they could apply information,
4. Social aspect from reading to foster motivation.

Post-Research Teacher Meeting

- Teachers
  - did not ask students to read **more**: but students read **more productively**
  - Want additional support
  - Required additional preparation time
  - Used 4-7 strategies regularly
  - Text ≈ content ≈ strategy
  - Try strategies ~3 times before "comfortable"

Post-Research Teacher Meeting

- Students
  - Mix of strategies is important
  - Treat CTE learners more like adult learners – check w/ students to see how strategies are working, give choices
  - Know reading is important, they just don't want to read
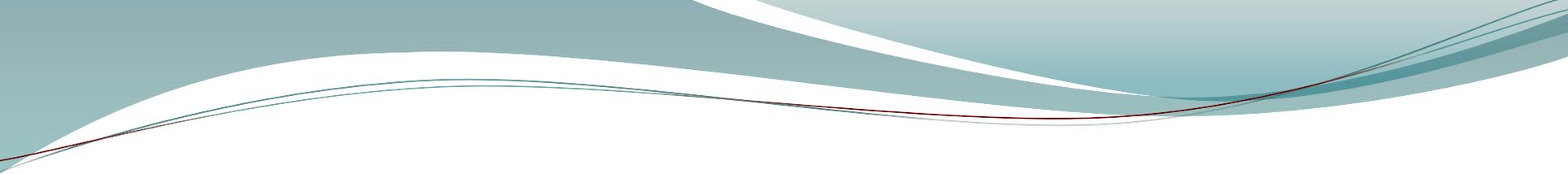
Challenges of Implementing Literacy

Thinking about integration on 3 levels

- Systems/ holistic
- Curricular/ programmatic
- Instructional/ pedagogic

What happens when the door closes, and the teacher begins to teach?

Common findings/themes

- CTE teacher fear of integration
    - feeling incompetent in front of students
    - lesson planning
- Challenge of changing teaching practice
- Time issues
- The "tipping point"

Common findings/themes

- Implementation → internalization
  - Space for innovation
- Concepts → Principles → Relevant ROI
- Repeat volunteers – what's next?
- Teachers have to think about "how" and "what" they're teaching
- Teacher-driven reform – value teacher's voice

Jump-Start Workshop: ACTE 2-day pre-session

- Choice of Math-in-CTE or Literacy-in-CTE
- In-depth intro to curriculum integration models
- Info on TA for on-site implementations
- For select leadership teams from states and districts
  - Teacher teams
  - Administrators (break-outs)
- Interested? Leave your card for info mailing

For more information

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