

## Teaching Specific Types of Knowledge

Classroom Instruction that Works  
Research-Based Strategies for Increasing  
Student Achievement

## Subject-Matter Knowledge

- Vocabulary terms and phrases
- Details
- Organizing ideas
- Skills and tactics
- Processes

## Research and Theory on Vocabulary Terms and Phrases

- More than once
- Instruction
- Associate image
- Direct vocabulary
- Direct instruction

FIGURE 11.1  
Chances of Learning New Words in Context

Characteristic	Factor	Chances of Learning Word
Ability	Low	8 percent
	Medium	12 percent
	High	19 percent
Grade Level	Grade 4	8 percent
	Grade 11	33 percent
Text Density	1 new word for every 10 words	7 percent
	1 new word for every 74 words	14 percent
	1 new word for every 150 words	30 percent

Source: Data from Swanborn & de Glopper, 1999.

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FIGURE 11.2  
Imagery-Based Instructional Techniques

Methods Compared to Imagery-Based Elaboration	Number of Studies	Percentile Gain for Imagery-Based Elaboration
Students keep repeating or rehearsing the definition	6	37
Students generate their own examples of the new words used in a sentence	4	21

Source: Powell, G. (1980, December). A meta-analysis of the effects of "imposed" and "induced" imagery upon word recall. Paper presented at the annual meeting of the National Reading Conference, San Diego, CA. (ERIC Document Reproduction Service No. Ed 199 644)

## Research and Theory on Vocabulary Terms and Phrases

- More than once
- Instruction
- Associate image
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## Classroom Practice in Vocabulary Terms and Phrases

- Identifying critical terms and phrases
- Process for teaching new terms and phrases

## Process for Teaching New Terms and Phrases

- Brief explanation/description
- Nonlinguistic representation
- Generate own explanations/descriptions
- Generate own nonlinguistic representations
- Review their explanations/representations

## Research and Theory on Details

- Two generalizations
  - Students should have systematic, multiple exposures to details.
  - Details are highly amenable to “dramatic” instruction.
    - verbal
    - visual
    - dramatic

FIGURE 11.4

Types of Instruction and Effect on Learning

Instruction	Effect Size (ES) Immediately After Instruction	ES After 12 Months
Verbal Instruction	.74	.64
Visual Instruction	.90	.74
Dramatic Instruction	1.12	.80

Source: Data computed from Nuthall, 1999, and Nuthall & Alton-Lee, 1995.

## Classroom Practice in Details

- Multiple exposures
- Dramatic representations of key details

## Research and Theory on Organizing Ideas

- Two generalizations:
  - Initially, students commonly have misconceptions about organizing ideas.
  - Students should be provided opportunities to apply organizing ideas.

FIGURE 11.6  
Strategies for Correcting Misconceptions

Strategy	No. of Effect Sizes (ESs)	Ave. ES	Percentile Gain
Activate prior knowledge	14	.08	3
Discussion	11	.51	19
Argumentation	3	.80	79

## Research and Theory on Organizing Ideas

- Two generalizations:
  - Initially, students commonly have misconceptions about organizing ideas.
  - Students should be provided opportunities to apply organizing ideas.

## Classroom Practice in Organizing Ideas

- Making sure that students can clearly articulate statements of generalizations and principles and provide numerous examples.
- Helping students increase their understanding of generalizations and principles and clear up misconceptions about them.

## Research and Theory on Skills

- Three generalizations
  - The discovery approach is difficult to use effectively with skills.
  - When teachers use discovery learning, they should organize examples into categories that represent the different approaches to the skill.
  - Skills are most useful when learned to the level of automaticity.

## Classroom Practice in Skills

- Facilitate the discovery approach to skills
- Planning for distributed practice and emphasizing its importance

## Research and Theory on Processes

- Two generalizations
  - Students should practice the parts of a process in the context of the overall process.
  - Teachers should emphasize the metacognitive control of processes.

## Classroom Practice in Processes

- Providing a general model of the overall components and subcomponents of processes.
- Focusing on specific subcomponents within the context of the entire process.

## In Conclusion...

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- Specific strategies for teaching 5 types of knowledge.
- Planning instruction at this level of detail makes teaching more precise and learning more efficient.

