A Multi-Disciplinary Approach to Watershed Water Quality Education

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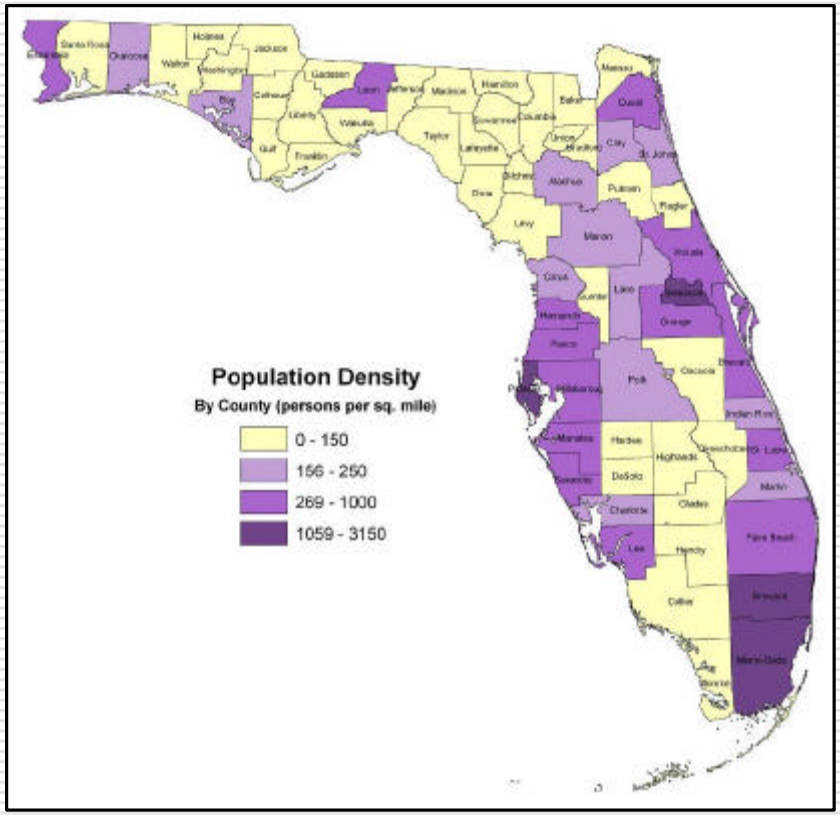
CSREES Southern Regional Water Quality Program
Applying knowledge to improve water quality

Topics

1. Situation
2. Rationale
3. Action
4. Outcomes
5. Impacts

Situation: Florida's expanding population

- 700 new residents arrive each day.
- Rural-to-urban land conversion - 130,000 ac/yr in the next 20 years.
- Agricultural production will remain strong.
- Need to protect water supply and quality, including natural systems and wetlands.



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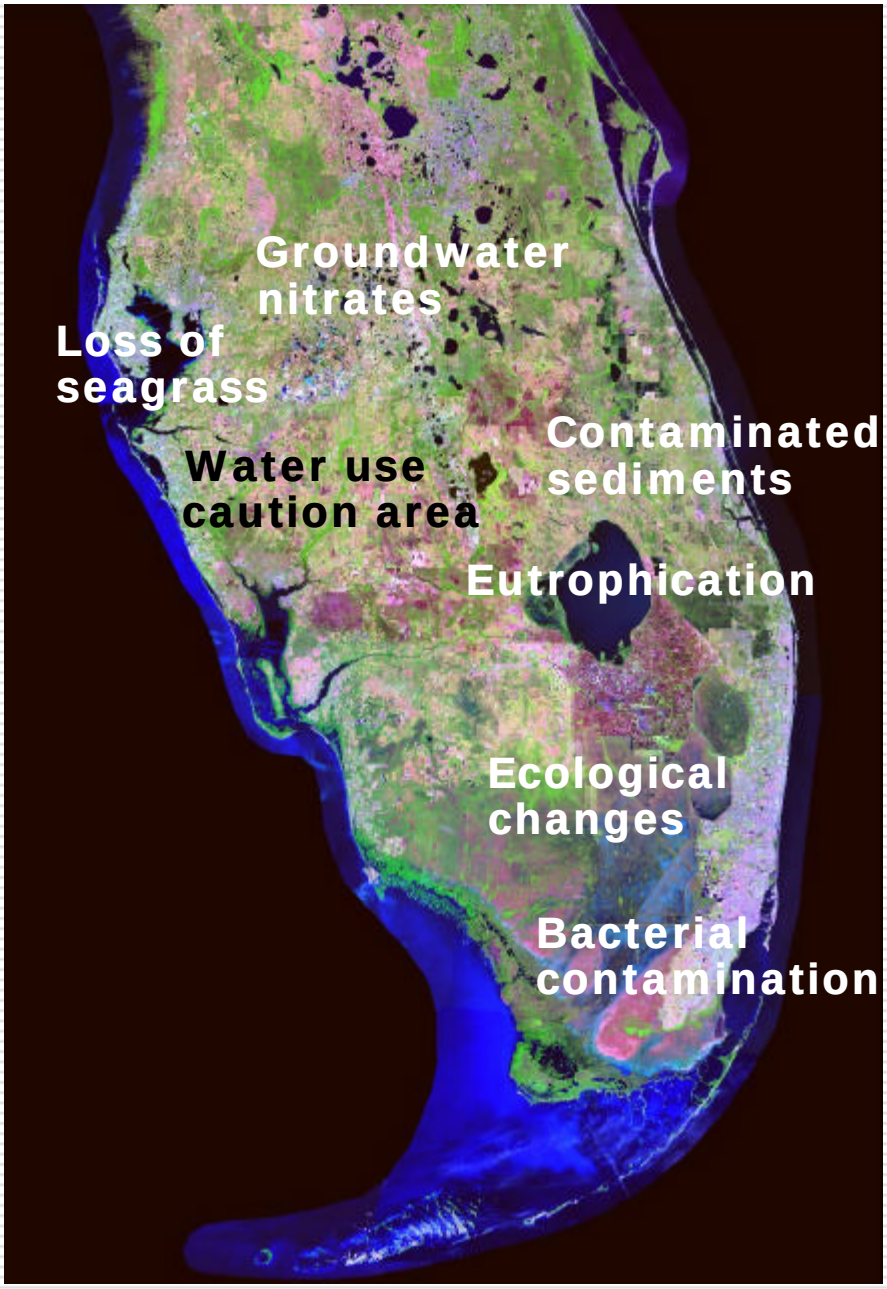
Situation:
Water resources

- Water quality
  - Sandy soils
  - High water tables
  - Nutrient/agrichemical use
  - Sensitive ecosystems (e.g. Everglades)
- Water supply
  - 25% projected shortage by 2020 (South FL)
  - Finite groundwater aquifers
  - Limited capacity to store rainfall



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Rationale: The need for multi-disciplinary education

- Although upland activities impact the coastal environment, extension programming has not traditionally been integrated.

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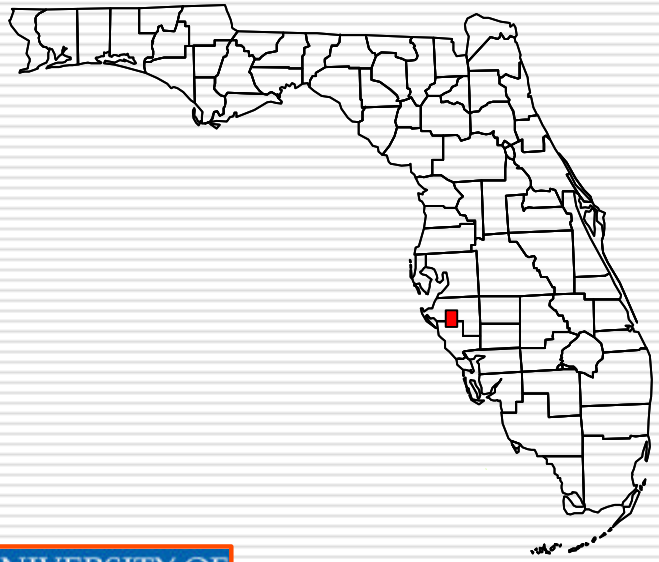
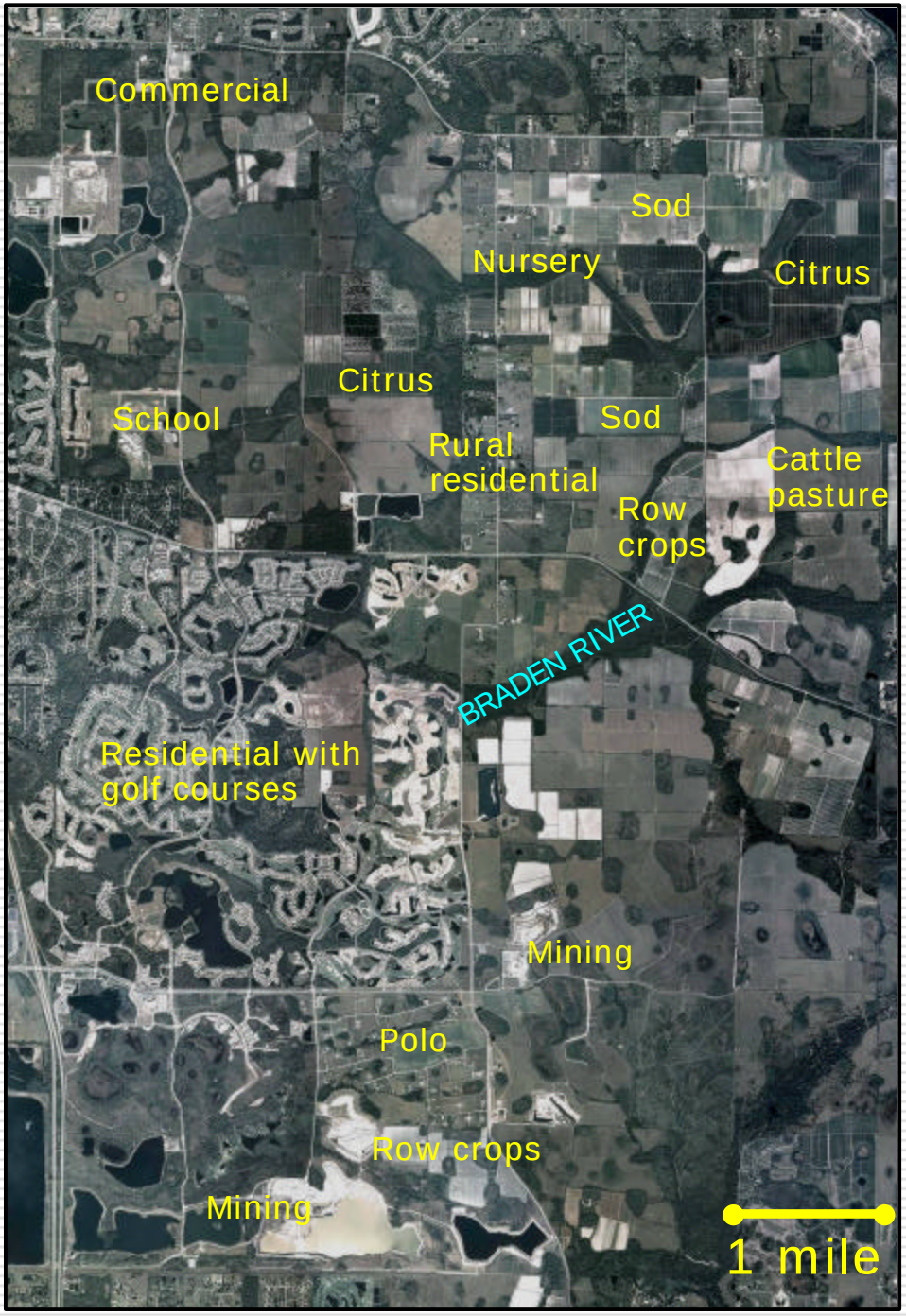
Rationale

- Changes at the urban/ag interface present new challenges to water resource management and water quality protection.
- Each land use has its own characteristic effect on surface and groundwater quality.





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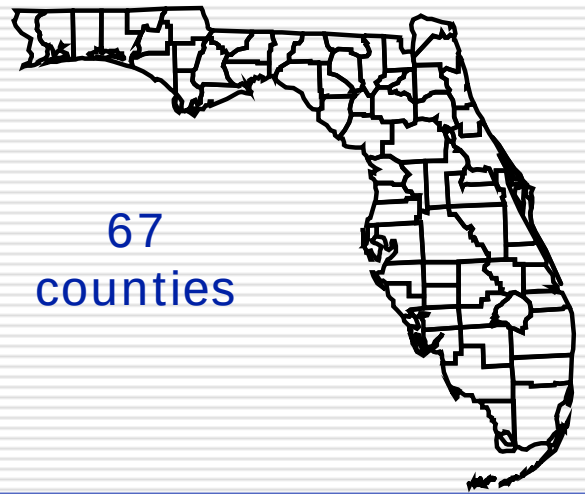
The watershed concept

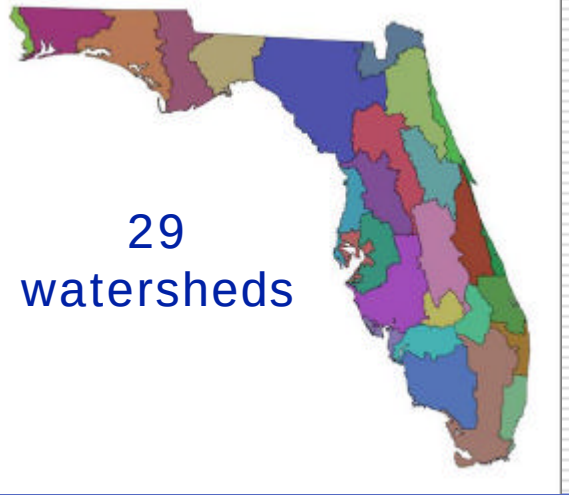
- What is a watershed?

  The specific land area that drains water into a river system or other body of water.

Political boundaries ⇗ ⇗ ⇗ Natural boundaries



67
counties



29
watersheds

Everglades Restoration Program: > 10 counties

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Why do we need to talk about watersheds?

- Human activities and natural processes affect water quantity and quality within natural boundaries.
- Quality of life can be measured by watershed health, which in turn reflects land use activities.

✳ *The watershed concept is important when planning for growth.*✳

Action: 2001 Brainstorming session
The “Watershed Education Team” conducts multi-disciplinary watershed in-service training for a wide variety of Florida’s county agents.

Sanjay Shukla	Ag & Biological Engineering	Water Resources
Tom Obreza	Soil & Water Science	Nutrient Management
Mark Clark	Soil & Water Science	Wetlands & Aquatic Systems
Chuck Jacoby	Fisheries & Aquatic Sciences	Coastal Ecosystems
Chris Wilson	Soil & Water Science	Environmental Toxicology

Action: Annual watershed in-service training

- 2002: Managing water quality at the agriculture-urban interface.
- 2003: Watershed management: Reducing non-point source pollution.
- 2004: TMDLs and Florida LAKEWATCH volunteer monitoring.

Format: Full day indoors, half day outdoors

2004
Gainesville

2002
Vero Beach

2003
Bradenton

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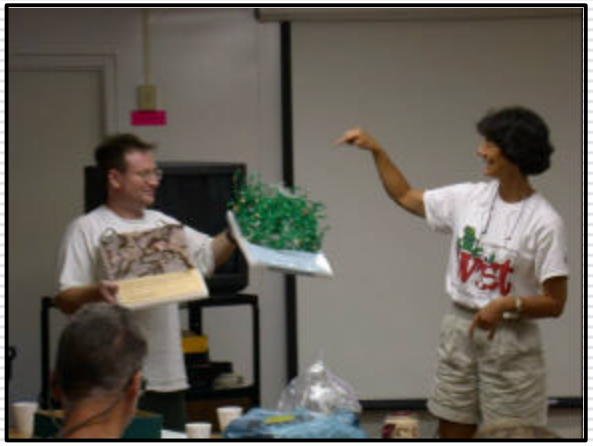
Indoor topics

- Watershed terminology
- Hydrology
- Chemical transport
- Impacts of land use on runoff and leaching
- Basic water chemistry
- Impacts of chemicals on aquatic environments
- Non-point source pollution
- Water quality monitoring
- Total Maximum Daily Loads



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Water Quality Regulations, Management, & Control

Guest presenters

AN INTRODUCTION TO FLORIDA'S WATERSHED MANAGEMENT AND TMDL PROGRAM

Eric H. Livingston
Bureau of Watershed Management
Florida Dept. of Env. Protection
Tallahassee, Florida
850/245-8430
eric.livingston@dep.state.fl.us
http://www.dep.state.fl.us/water

FL Dept. of Environmental Protection

FL Dept. of Agriculture

Agriculture's Role in TMDLs and Best Management Practices

Edward M. Craig IV, CPSS
Environmental Specialist
Office of Agricultural Water Policy
Phone (941) 377-3722 ext. 6556
Email –edward.craig@swfwmd.state.fl.us
www.floridaagwaterpolicy.com

Florida Department of Agriculture & Consumer Services 4/10/03

The Tampa Bay Nitrogen Management Strategy

Presentation to the
Watershed IST 2003: Non-Point Source Pollution
August 20, 2003

Holly Greening
Tampa Bay Estuary Program

Multi-group partnerships

Other UF-IFAS experts

Florida LAKEWATCH

Overview of Function and Available Resources

Mark Hoyer
Fisheries & Aquatic Sciences

Outdoor field tours

Journey from uplands to coast

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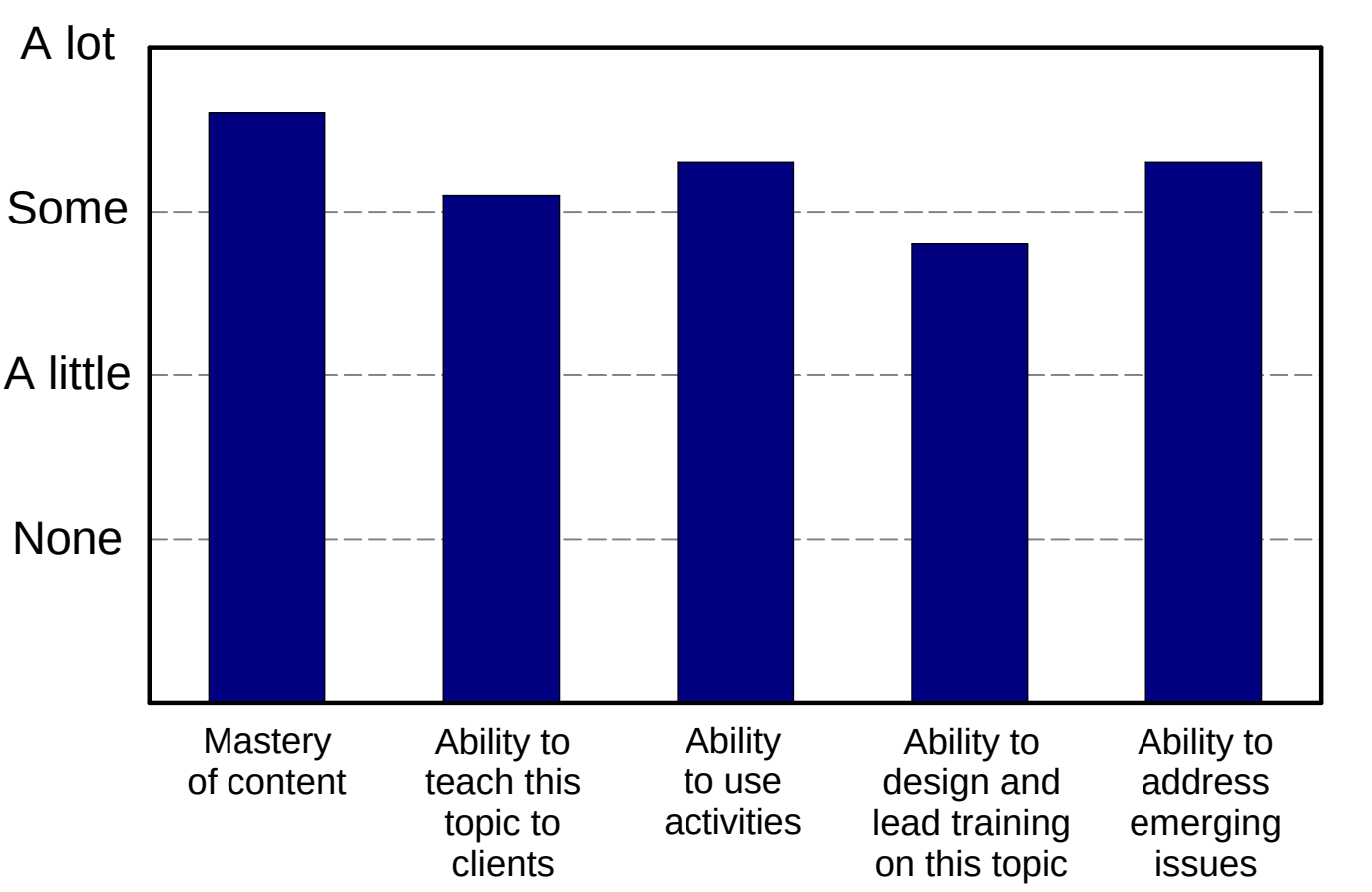
What kind of agents attended?

Program area	2002 (17 agents)	2003 (16 agents)	2004 (15 agents)
	------ % of attendees ------		
Agriculture	24	31	7
Sea Grant	29	6	20
Urban	23	44	53
Natural Resources	18	19	20
4-H	6	0	0

Outcomes: Reasons for attending

- Application to county programs (40%)
- Watershed issues in county (25%)
- Regulatory issues (TMDL) (20%)

Outcomes:
Estimates of knowledge gain by participants



Outcomes: Pre/Post tests

2003

Self Evaluation (1-5)
Some (2-4) 75%
A lot (5) 25%

Subject test
30% increase in correct answers

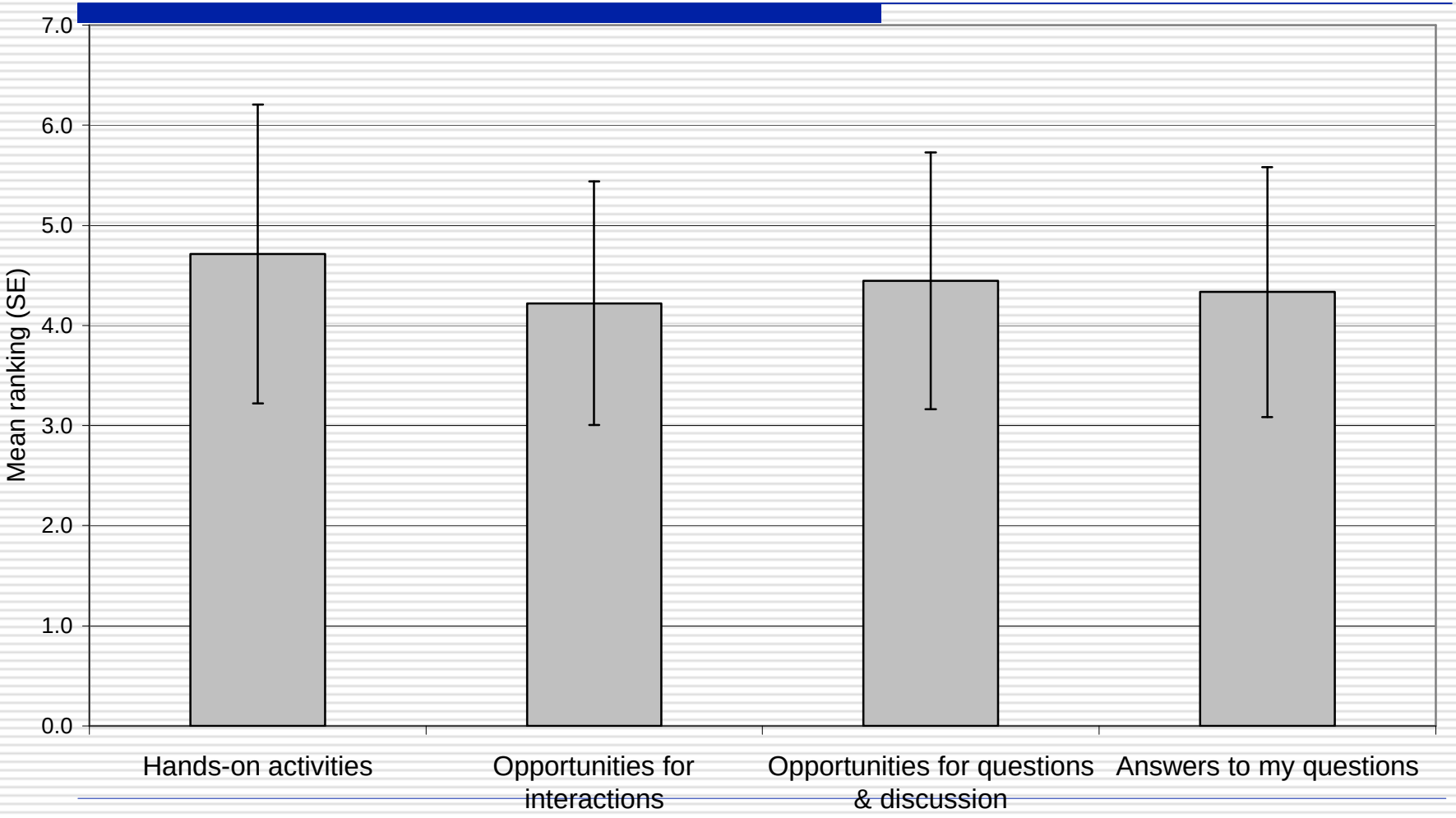
2004

Subject test

Pre-test
45% correct

Post-test
64% correct

Outcomes: learning environment



Impacts: Local use of training

- Increase understanding of:
  - Water quality
  - Runoff effects on surface water quality
  - Non-point source pollution
  - Nitrogen and phosphorus loads
- Explain:
  - Best Management Practices
  - Value of aquatic plants in nutrient removal
  - Pond management
- Establish lake management plans
- Enhance citizen stewardship
- Increase volunteer monitoring at the county level
- Encourage residents to sample neighborhood stormwater ponds
- Present workshops on water quality and Total Maximum Daily Loads
- Train volunteers
- Train citizens interested in water quality protection

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IFAS EXTENSION

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Regional Water Quality Program

Applying knowledge to improve water quality