



What is scientific literacy ?

Scientific Literacy

Are you scientifically literate?



The effects of incorporating literacy into a high school environmental science classroom

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Background

- To encourage students to read the textbook
- To encourage reading from multiple sources for reinforcement of content material
- To combine pedagogy and science background to encourage/inspire students to become scientifically literate
- To help facilitate students' future roles as citizen scientists
- To teach to reach all students

Student Population

- Class, N=26
- Varying academic abilities
- Majority- no interest in pursuing science

Focus Questions

Main Focus Question

- What are the effects of teaching scientific literacy in an environmental science high school classroom?

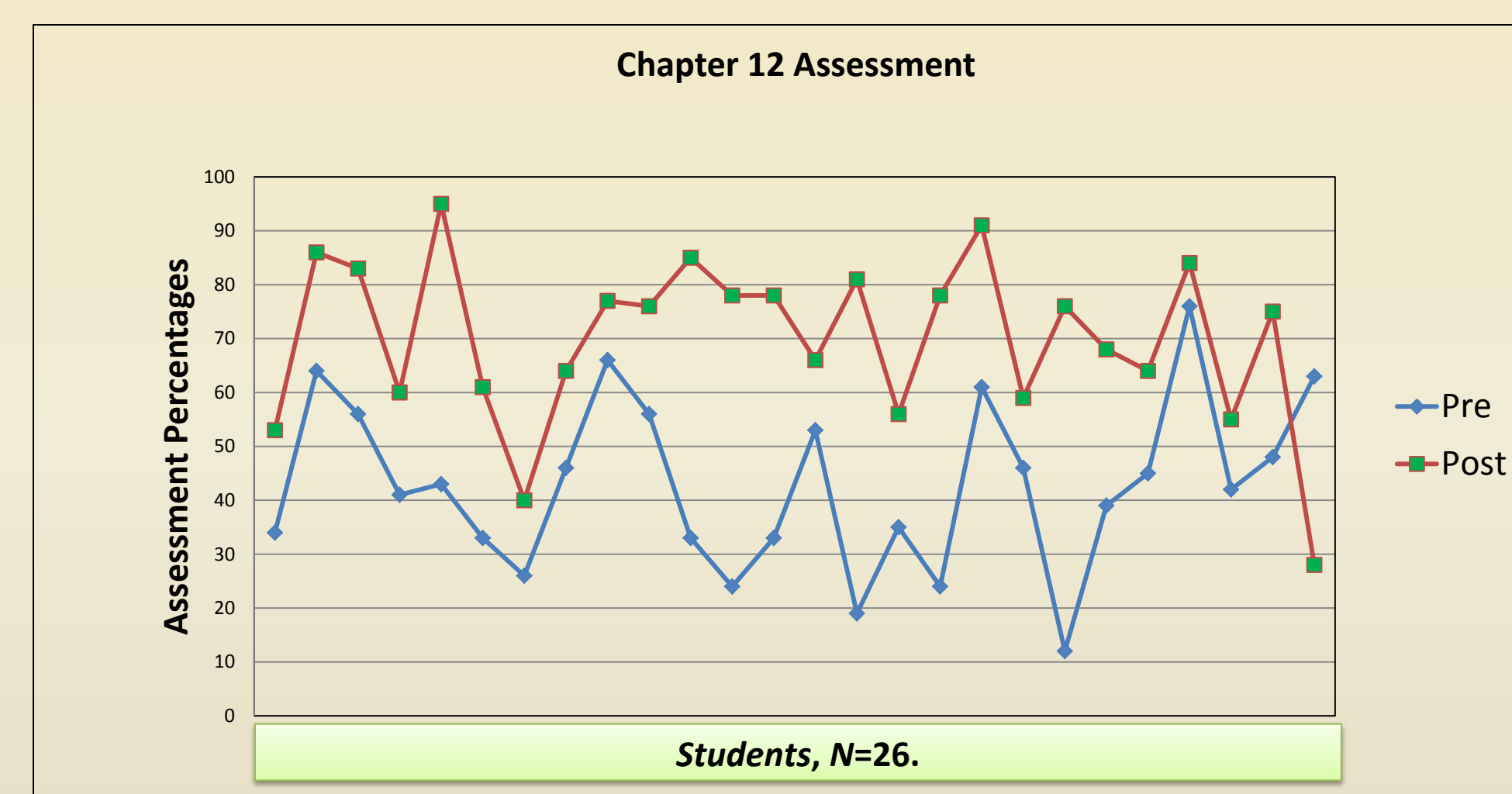
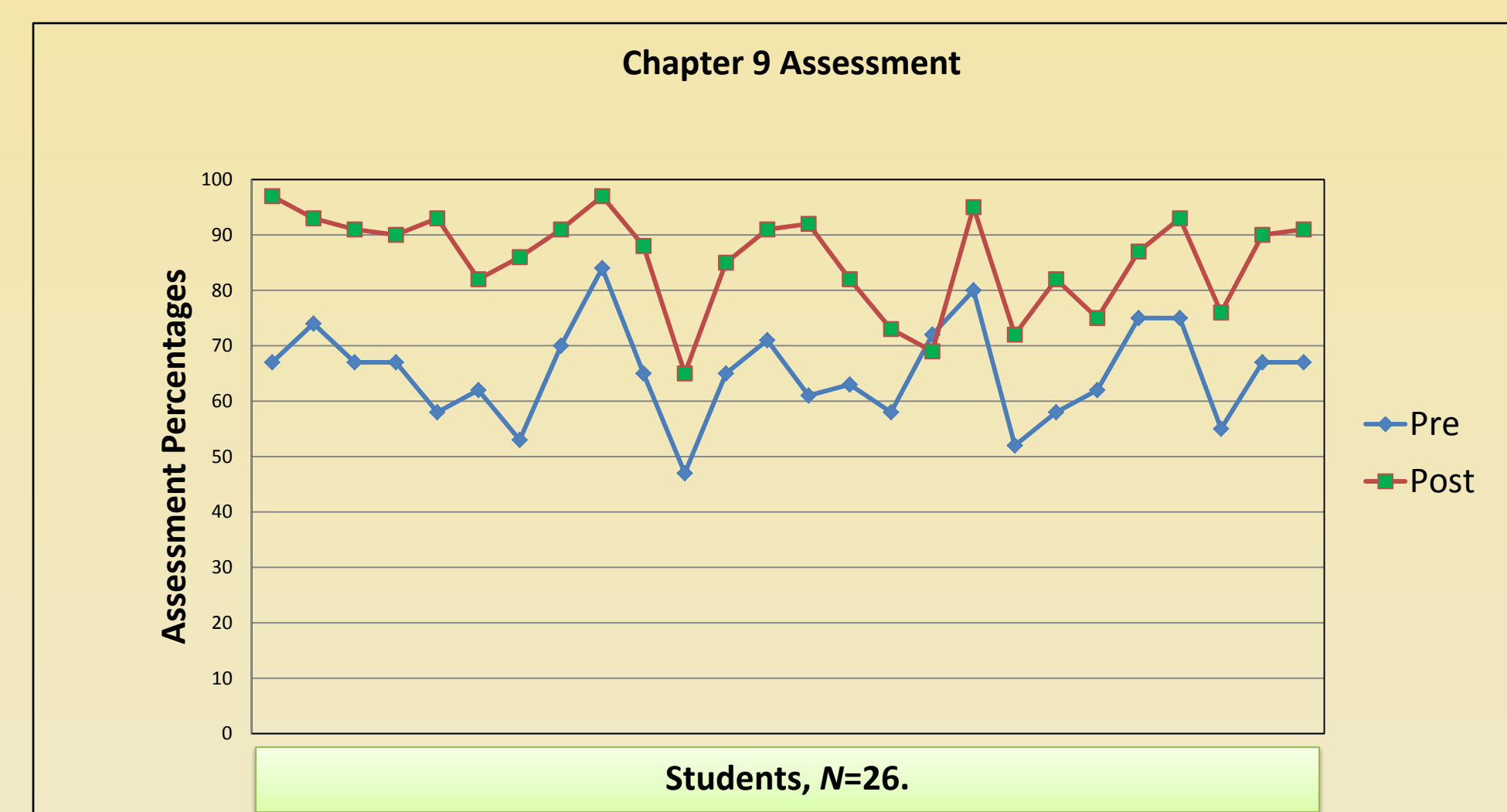
Subsequent Focus Questions

- Effects on students' content knowledge?
- Effects on students' attitudes?
- Effects on students' confidence?
- Effects of increasing scientific literacy to help facilitate students' roles of becoming citizen scientists?

Methodology

- Three Units of study
 - Human Population**- non-treatment
 - text, terms, questions
 - Environmental Health**- modified treatment
 - text, terms, questions, text ancillaries
 - Soil /Agriculture**- treatment
 - text, terms, questions, text ancillaries, case study, documentary, current event
- Units chosen to increase students' awareness of environment/sustainability
- Research occurred during a three month period
- Surveys – TOSRA, Scientific Literacy , Confidence, Confidence/Attitude
- Unit assessments
- Student interviews- representative of varying educational abilities
- Five colleague classroom observations
- Students accommodations, recommendations

Data



Results

- Normalized gain- students preferred less ancillaries . Students indicated they liked the additional activities, but they learned better by concentrating on textbook materials
- TOSRA Survey - 3% overall decrease in students' attitudes
- Scientific Literacy Survey - 170% overall increase in content knowledge
- Confidence Survey - a 0% increase in students' confidence
- Confidence and Attitude Survey- overall 6% decrease in students' confidence and attitudes

Conclusion/Value

- Results of researching scientific literacy were overall positive
- Majority of students understood importance of being scientifically literate
- Majority of students preferred basic pedagogy practices for learning
- Probably due to additional ancillaries and surveys
- Importance of incorporation of scientific literacy in teaching to reach all students

Remediation

- To listen and learn from students about individual learning needs
- To design scientific literacy survey all for classes pre/postunit
- To employ concept outline
- To become an active committee Member for literacy across curriculums at BSBS

Data Analysis

- Chapter 9 results indicated a 31% increase in grade averages pre and post assessment with a normalized gain of 59%
- Chapter 12 results indicated a 63% increase in grade averages pre and post assessment with a normalized gain of 47%

References

www.shanahan.org, www.montana.edu/fanpop.com, keyword-suggestions.com

Student Quotes

"Being scientifically literate can help you become a responsible citizen and an informed consumer."

"I am not going into a science career, but I still have to have enough knowledge to understand what is going on in the world."

"Being scientifically literate is important because it helps you apply science to real world situations."