Scientific Literacy
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

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 BSHS

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, fannop.com, keywords-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."