Scientific Inquiry through Plants

Sip³

You will make a difference!
Scientific Inquiry through Plants $Sip^3$

Over the next five years we will change the meaning of "Science Education" for many people.

We are pleased you've stopped by to see what is happening. We'd also like you to consider how you can participate and/or assist our efforts.
Scientific Inquiry through Plants $Sip^3$ - An Overview

- What is Scientific Inquiry through Plants $Sip^3$?
- Why are we developing $Sip^3$?
- What do we hope to accomplish?
- What has happened so far?
- How can YOU participate?
- When do YOU need to be involved?
Scientific Inquiry through Plants $Sip^3$ - what is it?

*Scientific Inquiry through Plants* is an innovative forum allowing students to discover biological core concepts through hands-on inquiry projects and online mentorship from plant scientists.
Welcome to our Preview

Welcome to Sip3, Scientific Inquiry through Plants!

Thank you for exploring our site. If you search deep enough to be touched by our vision and to see the potential we believe integrating scientific inquiry and scientific mentoring has to offer. We'd love to hear your comments and ideas for assisting the project.

Over the next five years we will change the meaning of "Science Education" for many people. While looking around the site, we'd also like you to consider how you can participate and/or assist our efforts.

In late August 2005, Sip3 will be a fully functional site. At present you are viewing a beta version. I didn't want you to miss anything.

The evolution from last year's pilots is dramatic. We have incorporated many of the options and safety features scientists, teachers, scientists and the development committee suggested. We will be reviewing these options/features at our next meeting at the Botany 2005 Educational Forum in Austin, Texas August 12-13. We will pilot the new site this fall and open it to full participation in January 2006. If your class is interested in participating in the fall pilots or the 2006 launch, please email us at sip3@botany.org.

To say we are excited about the possibilities in front of us, would be a vast understatement.

Remember, real science is a verb, not a noun! Get involved for real change.

If you are new to Sip3, welcome!! We look forward to your involvement. For those of you who have been a part of the program from the beginning, thanks for your continuing participation and support! Your thoughts, comments and hard work have made it all possible.

Sincerely,

Bill Dahl
Our research question is:
How do Monocots compare to Dicots, in terms of Germination time, sprout size, etc...?

Peer comment from Bush HS to Pershing CHS--teams both growing buckwheat seeds

Scientists feedback, w/ image to make personal connection
Why are we developing $Sip^3$?

- #10 The Bruce Alberts challenge
- #9 Plants are the best medium for scientific inquiry
- #8 Our mission and objectives
- #7 Our Common Vision for Change
- #6 We Can Take the Mountain to Mohammad!!
- #5 Our staff
- #4 Students
- #3 Teachers
- #2 Our members
- #1 By acting we will create positive change
Why are we developing $Sip^3$?

The Impact vs. Cost Equation

\[
\text{(greatest potential for change + impact on mission)} = \text{(minimal expenditure + low time commitment + ability to reach students)}
\]
What do we hope to accomplish with the development of $Sip^3$?

- Change the way young people perceive and engage in science
- Increase the potential for Student - Teacher - Scientist interactions
- Improve scientific literacy and increase interest in science
- Mentorship of K-16 students
- **Positively impact BSA mission**
Teaching and learning through inquiry

Apply the inquiry cycle:
- conducting research
- training graduate students

Inquiry = engaged learning
Engaged learning = deep learning
Memorization ≠ Learning
What has happened so far?

• Bruce Alberts challenge
• March 2005 meeting
• Pilot website
• Spring 2005 pilots
• Website developments
What has happened so far?

Dr. Beverly Brown and the Scientific Inquiry through Plants Research Topics

The Wonder of Seeds
What has happened so far?

Valdine McClean

and the Pershing County High School experience

Pershing County High School

Team 1:
Jessie G., Ryan S., Tisha C., Whitney H., Aja G.

Project Completed

Team 2:
Katrina H., Jessica P., Karlee F., Uli S., Holly R., Cassie B.

Project Completed

Team 3:
Dean H., Zack P., Kala B., Kim B., Becky J., Tony N.

Project Completed

Team 4:
Michael G., Thomas S., Jared S., Charlie D., Abrahaim K.

Project Completed
Demographics for District

• Enrollment: 797
• Ethnicity: 8% American Indian, 1% Asian/Pacific Islander, 25% Hispanic, 1% Black, 65% Caucasian
• Low Socio/Economic: 45%
• Special Education: 22%
Pilot Project Participant Stats

- Sophomore Biology Students
- Scores on Iowa Tests of Educational Development:

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What has happened so far?

Carol Packard and the Sisters Middle School experience

Team 1 - The Sweets: Haley, Emily, Hannah, Chelsea, Taryn

Team 2: Swedish Hotdogs
Drew, Randy, Eric

Team 3: The Sprouts
Haley, Ami, Janelle

Team 4: Red Hot Chili Peppers
Annie, Claire, Justine

Team 5: The Pyro Gardeners
Jake, Austin

Team 6: Pink Panthers
Chase, Zane, Holden, Beth

Team 7: The Nerds
Julia, Hillary, Ashley, Callie

Team 8: The Green Team
Bastian, Dallas, Billy

Team 9: 4 Kings of Science
Daniel, Kevin, Hayden, Will

Team 10: Seed Eaters
Josh, Race, Brennan, Drew

Team 11: Outlaw Gardeners
Parker, Sean, Zander

Team 12: Monkeys
Brandi, Kassandra, Sara, Michelle
Our research question is: Which corn seeds will grow faster if 1 container of corn seeds is put in sunlight while rinsed and the other container of corn seeds is put in the dark while rinsed?

Research Discussion
Thr 5/19/05 3:01 PM - T13 The first upload of our journal is complete. **Hypothesis:** We think the container of corn seeds in sunlight will grow the fastest because that container will be able to take in 2x as much nutrients.

Fri 5/27/2005 7:18 AM - **Dr. Beverly Brown:** It sounds as if you are off and running! I'm curious to know what you think the connection is between sunlight and the ability to obtain nutrients. Why do you think it will be 2X faster in the sunlight? I'll look forward to hearing from you.

Thr 5/19/05 3:01 PM - T13 Our first data upload is complete.

Research Information
Where are we going from here?

• Today’s developments
• Tomorrow’s workshop
• Website Changes
• Fall Pilots
• Assessment & alterations
  – Student assessment
  – System assessment
  – Standards assessment
• January 2006 launch
• Scientific Society Collaboration
Where are we going from here?

Participation Level, Specificity and Required Input

Class/Group Research Topics

80% of students will come away with a better understanding of science and scientific concepts

20% will go on to explore the wonders of science further through individual/team projects in areas such as science fairs. Actively pursuing science outside of the classroom!

Individual Research Topics

Highly Specific Higher Input

General Low Input
How YOU can participate?

• Three more sessions today
  – Scientist & Teacher Breakouts 2a. & 2b.
  – Pulling it all together session 3.
• Workshop tomorrow
• Fall 2005 pilots & January 2006 launch
  – Participating schools
  – Participating scientist
When do YOU need to get involved?

• NOW!
• Email sip3@botany.org
• Go to www.plantbiology.org
• See us now…..

• WE need YOUR expertise!
Scientific Inquiry through Plants $Sip^3$

- Involvement Opportunities
  - Research Project Development
  - Research Project Leadership
  - Service Leadership
  - ~1.5 service hours per month

- Impact
  - BSA Mission & Objectives
  - BSA Leadership in Science Education
  - ~400,000 students over the first five years
  - BSA Leading Society & Scientific Collaboration
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