

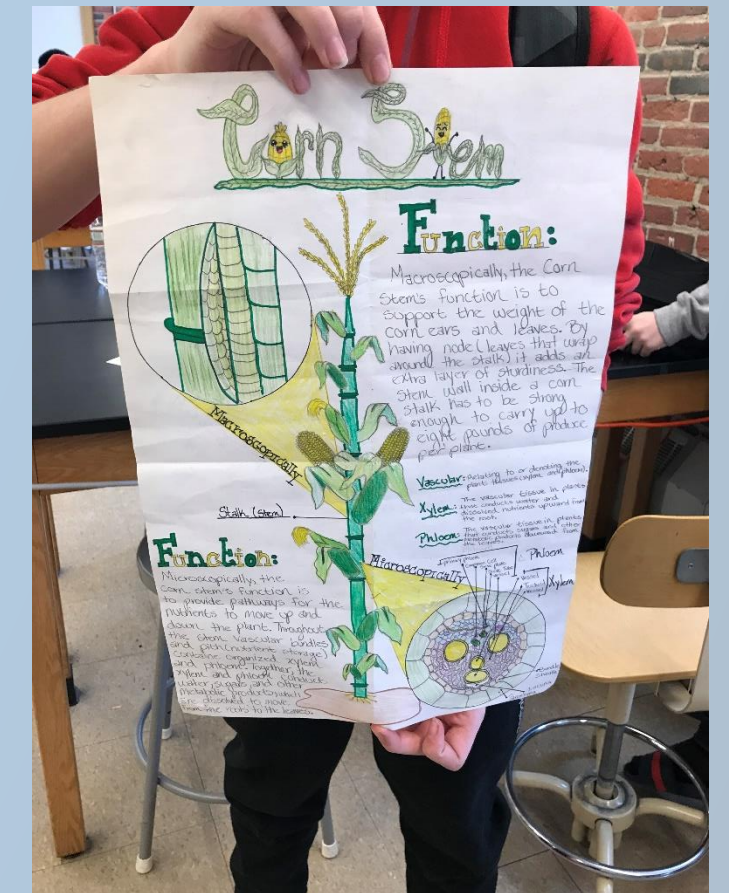
What are the effects of engaging “Bell Ringers” on student engagement?
What are the effects of engaging “Bell Ringers” on science content and knowledge?

BACKGROUND

- Engagement of your mind is active learning, yet how do we know that our students’ minds are in gear?
- How to foster a learning environment that engages learning and encourages critical thinking?
- Bell ringers are a mechanism to increase student engagement and learning.
- Making connections between what students are learning and the world around them.



Mental Engagement



Bell ringer seedlings and an example of student work.

Student quotes:

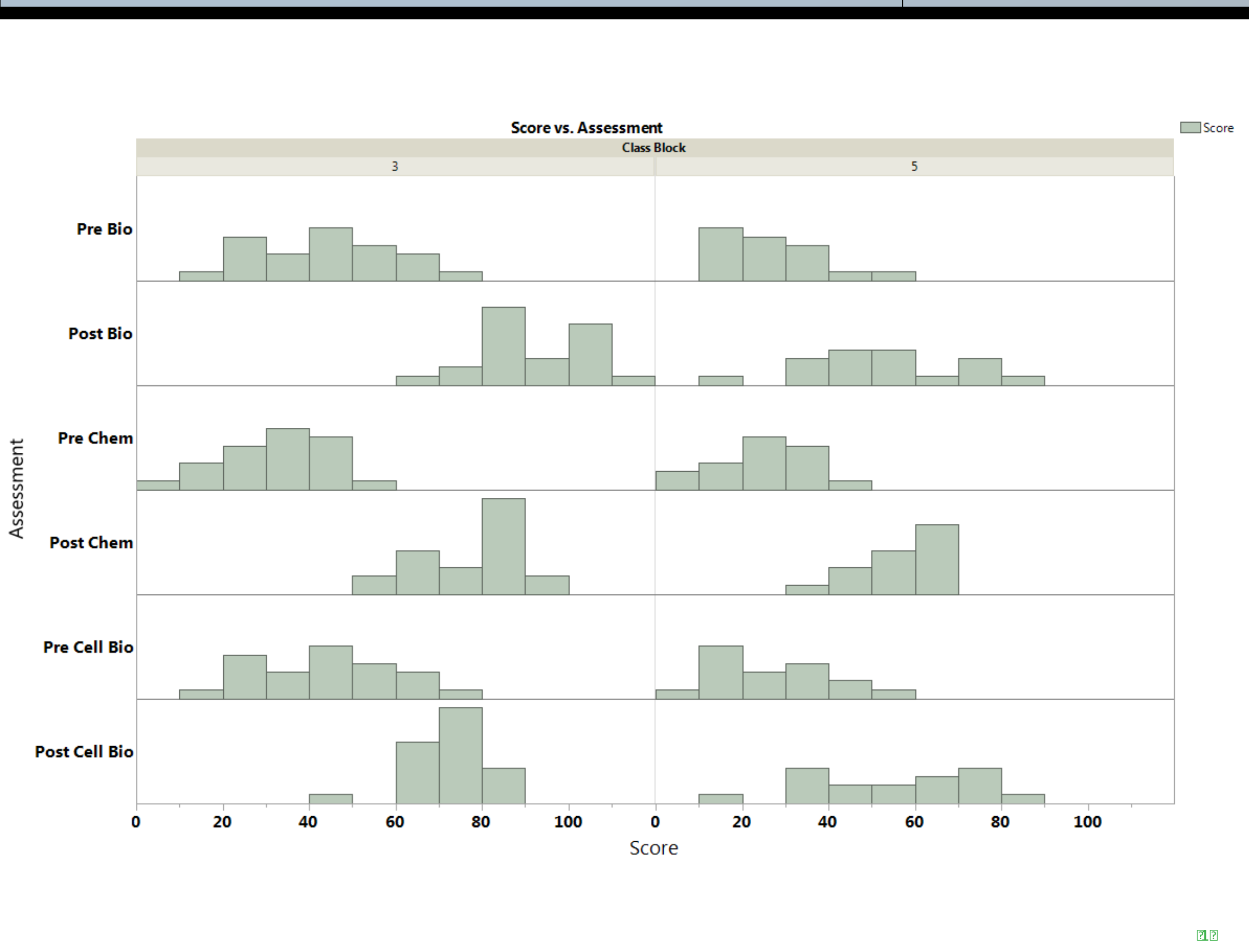
- “Open ended questions are intriguing”
- “Open discussions make class lively.”

METHODOLOGY

- Two science classes were chosen for the research project who appear to be engaged: a college level and a high honors level
- Two units of treatment groups were implemented with a unit of control.
- Daily bell ringers were administered during all groups.
- Treatment groups had cognitively engaging bell ringers (introduction to biology and cell biology).
- For example-
 - Misconception probes
 - You tube video about “how a fly flies” with an activity about form and function in biology from a microscopic view to a macroscopic view.
- Control group had bell ringers with simple

Triangulation Matrix

Focus Questions:	Likert survey	Bell ringers	Pre-post assessments	Teacher journal
What are the effects of engaging bell ringers on science content knowledge	X	X	X	X
What are the effects of engaging bell ringers on student engagement	X	X	X	X



Pre and post assessment scores
Block 3 N=23 Block 5 N=17

RESULTS

- Content gains occurred in both the control and treatment groups.
- Greater gains happened during the two treatment groups biology and cell biology than the control group chemistry.
- In student interviews, students repeatedly remarked how much they found the misconception probes challenging, yet how they liked the science discussions that we did with the probes.
- Students found the treatment group bell ringers challenging, but made “science more interesting.”
- Students liked starting the block “doing science” that was “hands and minds on.”

CONCLUSION

- Cognitively challenging bell ringers do increase student engagement and student participation.
- The academic research I did as well as my capstone research showed that providing mentally stimulating activities for students increased engagement for all science students both college and honors leveled classes