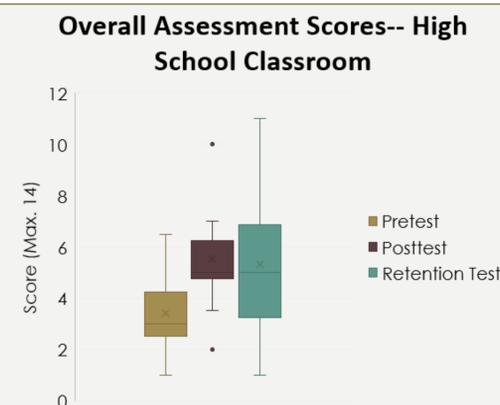
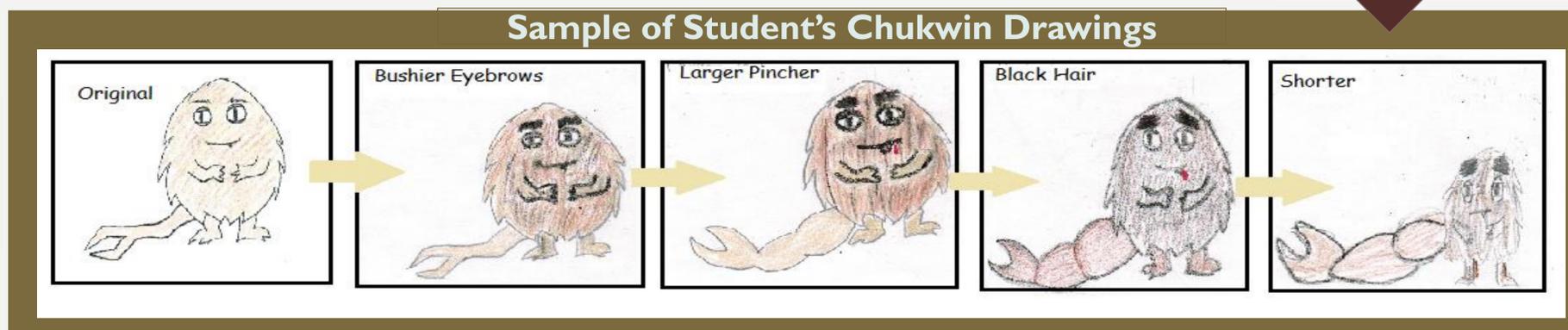


# Impact of “Chukwin Mini-Unit” on Students’ Understanding of Natural Selection

Background and Research Questions	Sample and Treatment	Methodology
<p><b>BACKGROUND:</b> Teaching about evolution can be controversial and emotionally difficult for some students. For this reason, I developed the Chukwin Mini-Unit which uses a series of competitive games to simulate natural selection acting on a population of imaginary creatures (Chukwins), allowing students to learn about evolution in a fun and engaging way while also constructing the concept of natural selection.</p> <p><b>PRIMARY QUESTION:</b> What is the impact of the Chukwin mini-unit on student understanding of natural selection?</p> <p><b>SECONDARY QUESTIONS:</b></p> <ul style="list-style-type: none"> <li>• How does it impact student attitude and engagement?</li> <li>• What is the effect on students’ attitudes toward evolution?</li> <li>• How is the classroom teacher affected?</li> </ul>	<p><b>SAMPLE:</b> The mini-unit was tested, by me or the regular teacher, in three locations:</p> <ul style="list-style-type: none"> <li>• Eastmont High School, East Wenatchee, WA – Resource biology class (N=17)</li> <li>• Manhattan Junior High School, Manhattan, MT – three 8<sup>th</sup> grade classes (N=60)</li> <li>• Garden Heights Elementary, Moses Lake, WA – 5<sup>th</sup> grade class (N=30)</li> </ul> <p><b>TREATMENT:</b></p> <ul style="list-style-type: none"> <li>• Mini-unit took six to seven days in each classroom.</li> <li>• Four of the five Chukwin Activities were performed with each class.</li> <li>• Students played the Chukwin games, completed analysis worksheets, and participated in class discussions.</li> </ul>	<p><b>Before</b></p> <ul style="list-style-type: none"> <li>• Pretest and survey</li> <li>• Teacher Interviews</li> </ul> <p><b>During</b></p> <ul style="list-style-type: none"> <li>• Mini-Unit (6-7 days)</li> <li>• Observations</li> </ul> <p><b>After</b></p> <ul style="list-style-type: none"> <li>• Posttest and survey</li> <li>• Student and teacher interviews</li> </ul> <p><b>Month Later</b></p> <ul style="list-style-type: none"> <li>• Retention test</li> </ul>

“I liked the games. They were fun and made my day better. They helped me visualize how it [natural selection] goes down.”  
~Student Quote



## Results and Conclusions

### POSITIVELY IMPACTED STUDENTS’ UNDERSTANDING

- Small but statistically significant increase in assessment scores
- Retention scores similar or higher than posttest scores
- Decrease in misconceptions by at least 13% overall

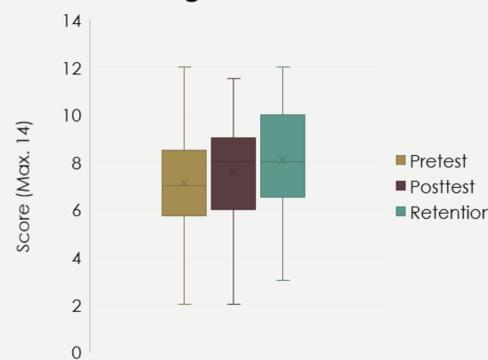
### POSITIVELY IMPACTED ENGAGEMENT AND PARTICIPATION

- 75% of students in all classes enjoyed unit and felt they learned from it
- Students describe game as fun and valuable learning experience
- All classroom teachers would or plan to use the mini-unit in the future

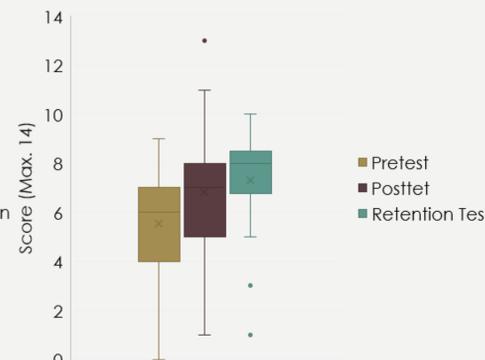
### IMPACT ON ATTITUDE TOWARD EVOLUTION IS UNCLEAR

- Some minor changes in attitudes toward evolution reported
- Students with strong opposition to evolution still enjoy game and made gains

Overall Assessment Scores-- Junior High Classroom



Overall Assessment Scores -- 5th Grade Classroom



## Implications for Teacher

### I WILL DEFINITELY USE THE CHUKWIN MINI-UNIT IN THE FUTURE.

- Improves students’ understanding and retention
- Makes controversial topic more enjoyable

### CHANGES I WOULD MAKE

- Shorten number of games to save time
- Incorporate Chukwins further into the follow-up unit
- Share results of assessment with students and use it to further tackle retained misconceptions

### RELATED QUESTIONS

- How would results have compared to other modes of instruction?
- How might the mini-unit impact students’ in the future?

