Computational Thinking:
Using Whiteboard Magnets to Teach Children

Students: Marlon Cobos, Grant Frederick, Daniel Kim
GPS: Ignorance is NOT Bliss
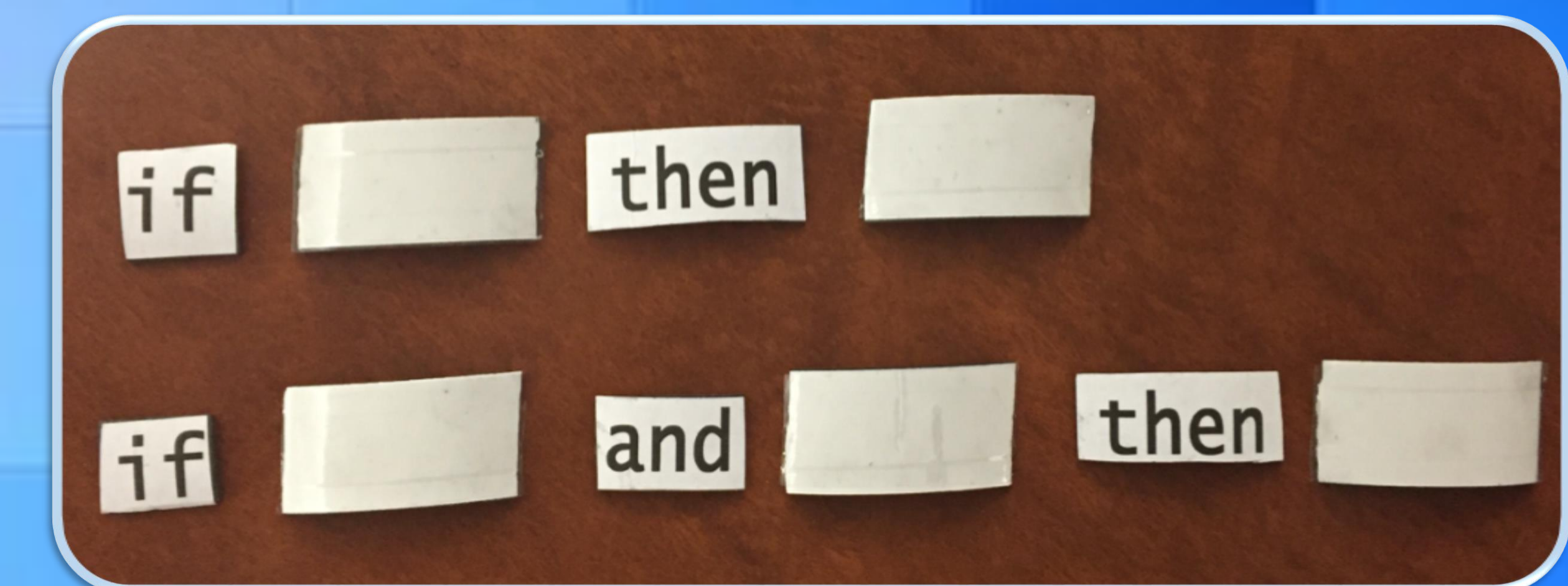**Advisors:** Prof Robert Traver, Prof Paul Kirby, Carolyn Detora (PLA)
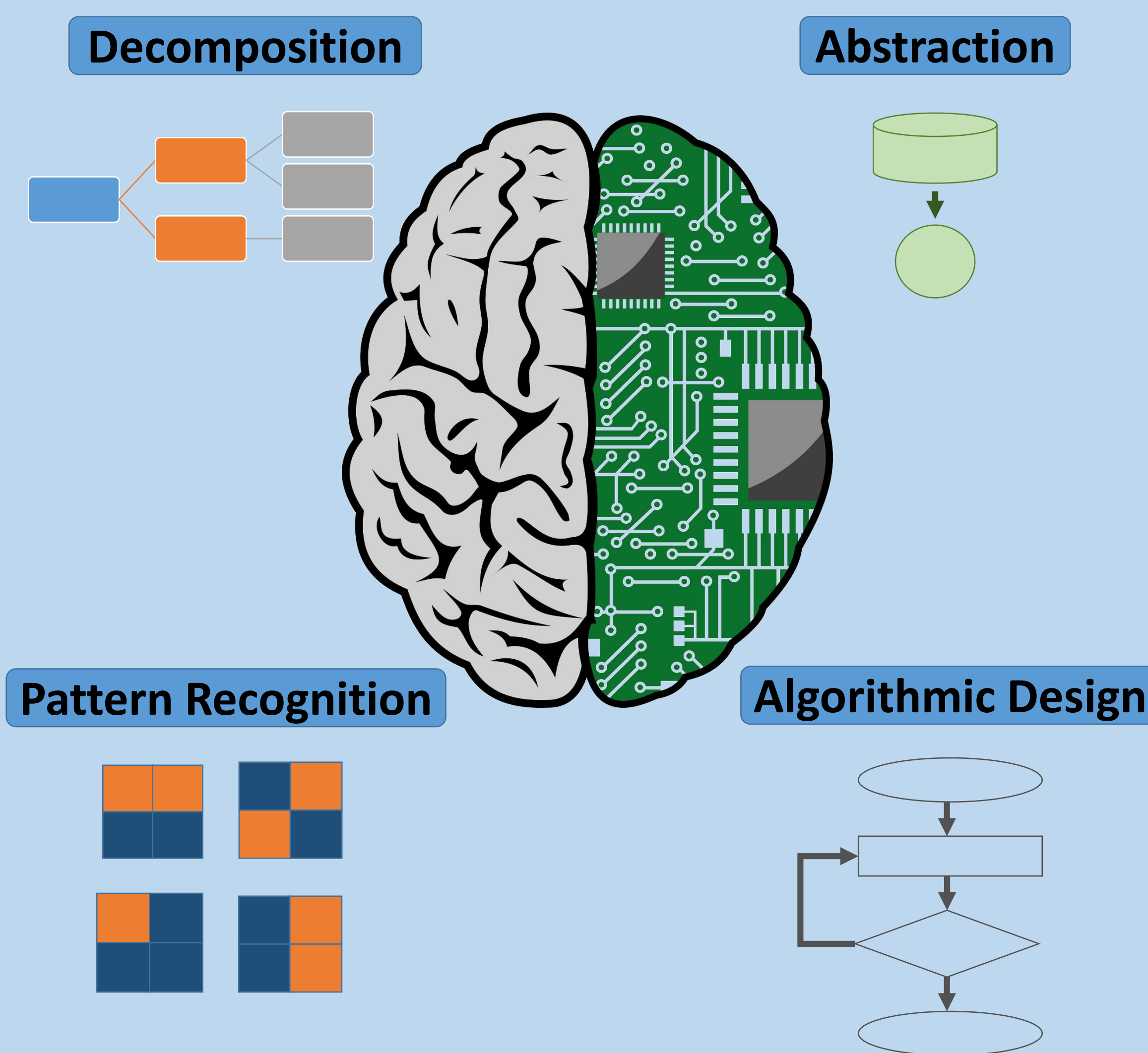
Problem

- Students are not learning about computer science in school
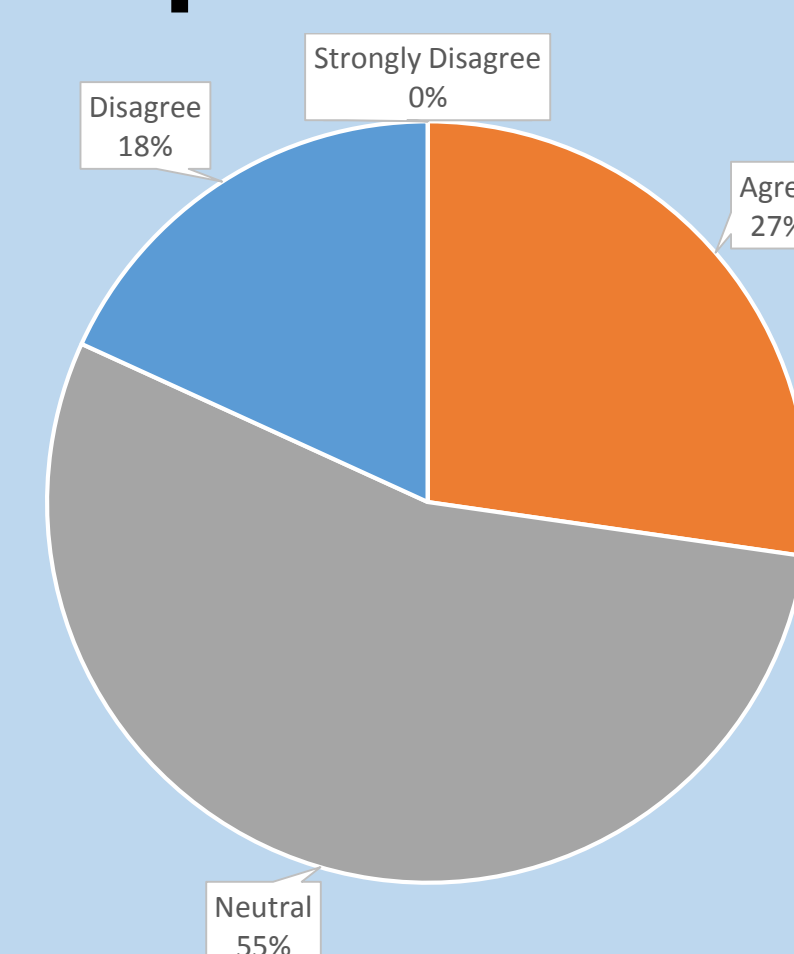- Tools that teach basic computational thinking are not easy to find

Assessment

- Students were asked to solve a problem with the help of the magnets
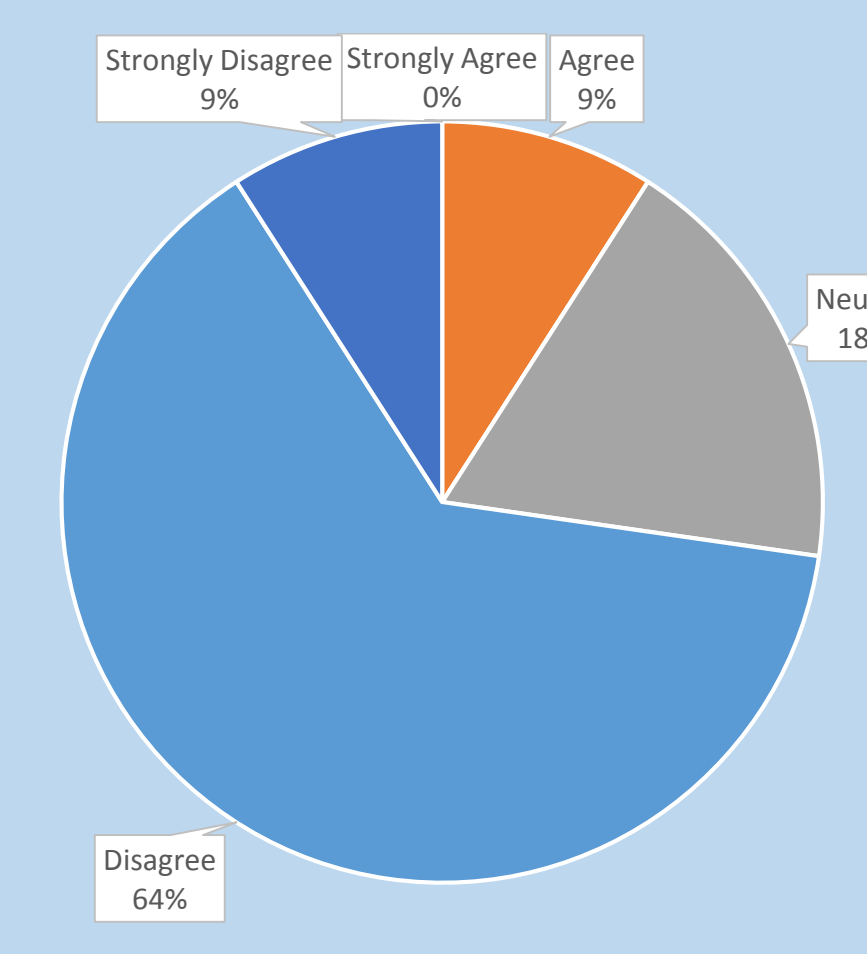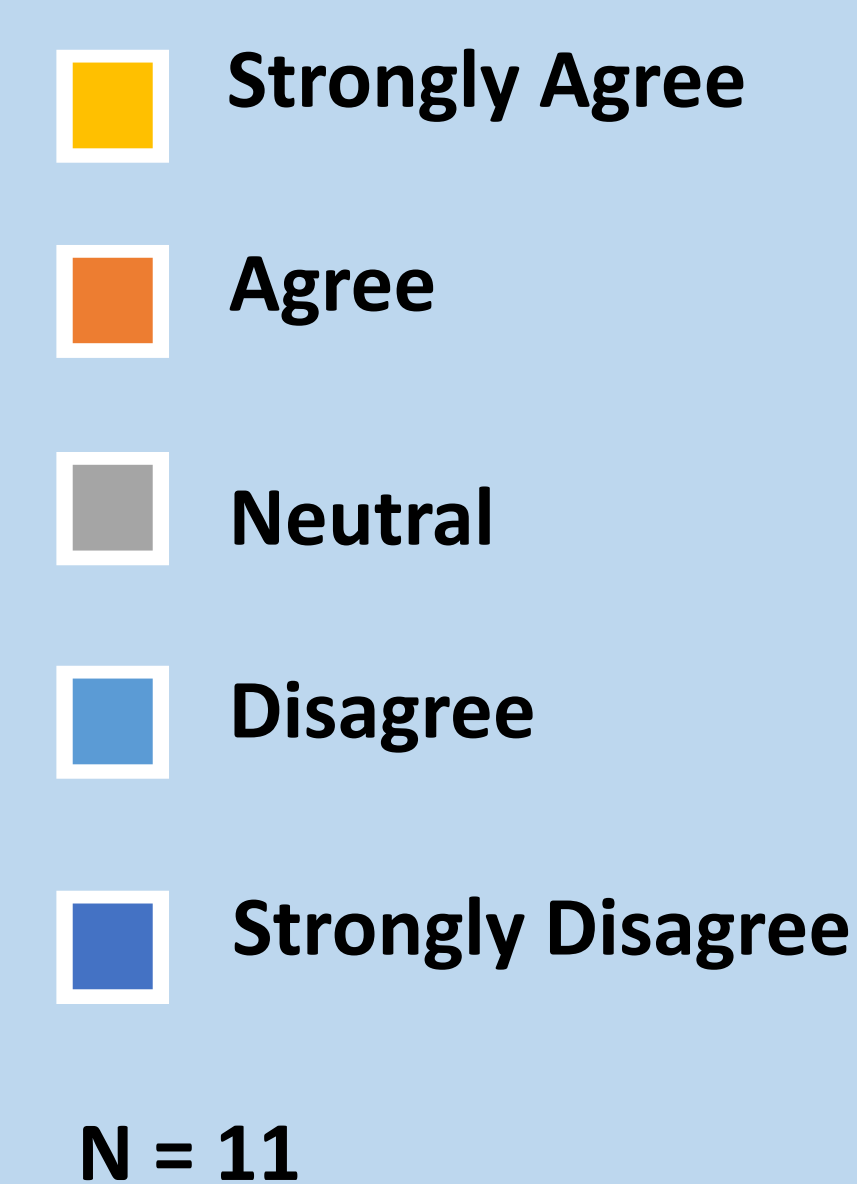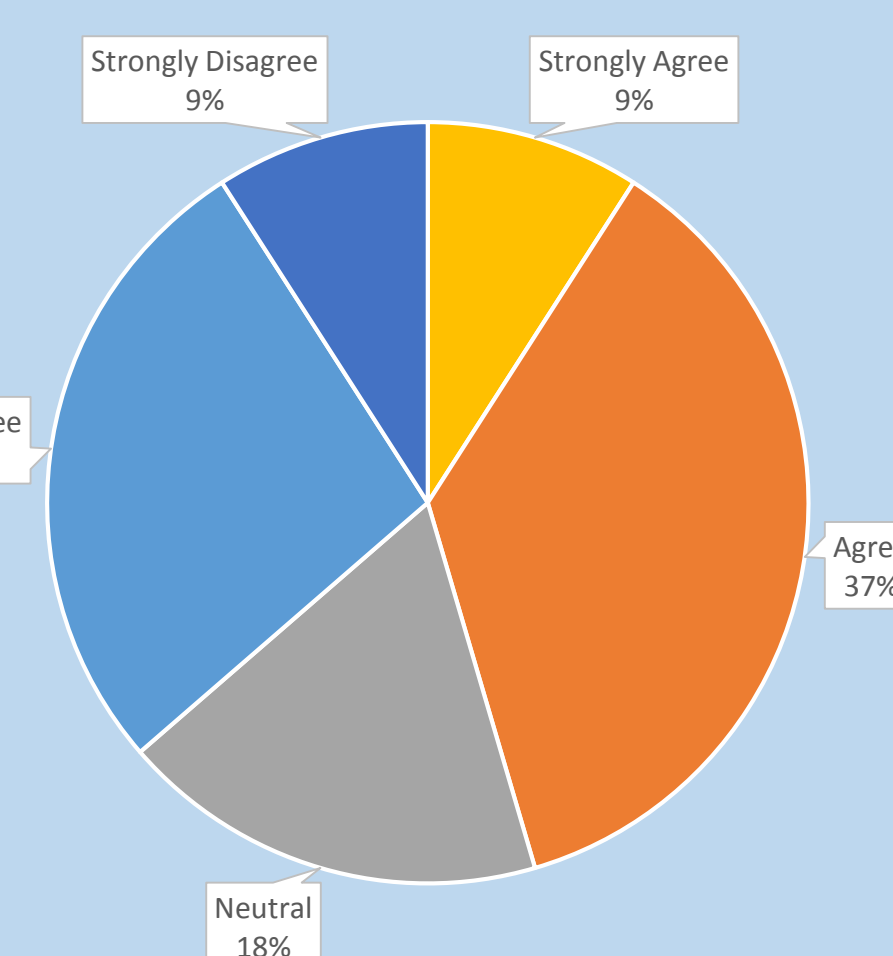- Both the students and the teacher were surveyed

Computational Thinking

Decomposition

Abstraction

Pattern Recognition

Algorithmic Design

Did you enjoy the problem?

Strongly Disagree 0%
Agree 27%
Disagree 18%
Neutral 55%

Did you find the magnets helpful?

Strongly Disagree 9%
Strongly Agree 0%
Agree 9%
Neutral 18%
Disagree 64%

Did the problems make you think differently?

Strongly Disagree 9%
Strongly Agree 9%
Disagree 27%
Agree 37%
Neutral 18%

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

N = 11

Conclusions

- Magnets on their own are not sufficient
- The pilot problem was too hard
- One part of the pilot problem was unclear
- Students need more practice to think computationally

Acknowledgements

- John Jay High School
- Thaddius Herman

Solution

- A set of magnets with pseudocode (These promote a programming mindset)

Further Developments

- Magnets with different shapes, words, and symbols
- Adaptable for any kind of problem
- Could be made into tiles

References

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Introduction to computational thinking. (n.d.). Retrieved December 9, 2015.
Prisoners' Dilemma. (2008). Retrieved December 9, 2015.
Wing, J. (2008). Computational Thinking and Thinking About Computing. Retrieved December 9, 2015.