Better together: Teaching social studies with computational thinking & spatial reasoning

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What kind of social studies?

DECISION-FOCUSED social studies (working from Engle, 1960)

- "What does this data mean? What is the pattern? Does it generalize to other contexts?"
- "What policy should be followed?"

What kind of spatial reasoning & computational thinking?

SPATIAL REASONING (NRC, 2006)
- Understanding spatial data
- Place & location (data definition)
- Pathways (point-to-point)
- Distance vs. proximity
- Boundary & containment
- Regions (including nesting)
- Density vs. dispersion
- Outlier vs. trend

COMPUTATIONAL THINKING (Grover & Pea, 2013)
- Problem-solving that can use computers effectively
- Data definition
- Decomposition
- Abstraction
- Generalization
- Algorithms (rules)
- (Automation, recursion, de-bugging, etc.)

Examples

1. What’s in a Place Name?

2. Civil War battles – Eastern theater

Suggested Heuristic

Data, Patterns, Rules & Questions (DPR-Q)

DATA
- What are we looking at?
- In what way is this an abstraction?

PATTERNS
- What is the pattern, if any? If there is a pattern, what are the outliers?
- If we decompose the problem, does the pattern change?

RULES
- Does this pattern generalize – that is, does it repeat under other circumstances?
- What factors seem to be important?

REFERENCES

FURTHER READING