Conceptual Scaffolding: A Wizard based approach toward the use of statistics for Sense Making

Charles Naumer
University of Washington and CiviCore
naumer@u.washington.edu or cnaumer@civicore.com
Overview

- Concept centric approach to support people’s sensemaking ability of complex issues.

- Context of school choice and school quality

- Approach using wizard based tool set to support conceptual understanding
Colorado School Choice Partners

A private operating foundation established in 1976 focusing on providing opportunities for families and children to move from poverty and dependence to self-reliance.

A software development and consulting company based in Denver Colorado focusing on the use of information to support the social sector.

The most visited media website in the state and most visited local television site in the country averaging 2.5 million unique users a month.
School Choice as a Complex Issue

- Many different factors to consider
- Many different sources of relevant information and approaches
- Uncertainty – predicting future
- Dynamic not static
- No right answer
Our approach

- Data centric approach
  Focus on data leading to conceptual understanding

- Concept centric approach
  Focuses on concepts leading to use of data to decision making based on conceptual model
Data centric view

Colorado School Information

Parents in Colorado can send their children to any public school in Colorado, including Charter schools and non-magnet schools, as long as the school has space. While some admission preference may be given to parents who live closest to the school, or in the same district, Colorado has an “open enrollment” policy, which means parents no longer have to send their kids to the closest neighborhood school. This tool is designed help you to find the best school for your children.

Find and Compare Schools

Search

By ZIP Code: 

- or -

By Address: 
1510 Detroit Street

By City: 
DENVER

Miles (radius): 
2 Miles

(Optional) Limit Schools by:

- Academic Performance
- Academic Growth
- Grade:

Clear Form [Find Schools]

9 Search Results

1. I Swet High School
2. Luter Elementary School
3. Money Middle School
Data centric: Spatial View

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Search
By ZIP Code: 
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Clear Form Find Schools

9 Search Results

<table>
<thead>
<tr>
<th>School Name</th>
<th>dist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. East High School</td>
<td>0.12</td>
</tr>
<tr>
<td>2. Teller Elementary School</td>
<td>0.73</td>
</tr>
<tr>
<td>3. Morey Middle School</td>
<td>1.2</td>
</tr>
<tr>
<td>4. Moore K-8 School</td>
<td>1.24</td>
</tr>
<tr>
<td>5. Bromwell Elementary School</td>
<td>1.24</td>
</tr>
<tr>
<td>6. Park Hill K-8 School</td>
<td>1.39</td>
</tr>
<tr>
<td>7. Steck Elementary School</td>
<td>1.48</td>
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<tr>
<td>8. Polaris at Eybert Elementary School</td>
<td>1.59</td>
</tr>
<tr>
<td>9. Palmer Elementary School</td>
<td>1.71</td>
</tr>
</tbody>
</table>

Map View

Chart View

Park Hill K-8 School
5050 East 19th Avenue Denver, CO 80220

Denver

2.5 miles

Palmont Cemetery
Sly Park

Canyon Creek
Data centric: Graphical View

Student Performance
Colorado students are assessed once a year in order to measure their performance on state academic content standards, using the Colorado Student Assessment Program (CSAP).
Data centric: School View

PARK HILL K-8 SCHOOL
5050 EAST 19TH AVENUE
DENVER, CO 80220
(303)332-1811
School Type: Elementary
Grades: PK-8
District: Denver County 1

Children have attended or will attend:
Middle School
- SMILEY MIDDLE SCHOOL
Senior High
- EAST HIGH SCHOOL

School Performance Summary
Overall Academic Performance on State Assessments
Academic Growth of Students

Staff Data
Data centric process

1. Explore and analyze data
2. Develop and refine conceptual understanding
3. Data implies concepts
Concept centric: concept builder

Concept centric approach – focuses on concepts first and leads to using data to support conceptual framework

Colorado School Choice Wizard

Focus Area: Academic Achievement

Academic achievement refers to the achievement of students attending a school. Academic achievement may be measured in multiple ways. It is most often measured using standard...

1. How do the school’s test scores compare to those of other schools?
2. How well have children similar to yours performed on these tests?
3. How does the school explain the rise or decline?
4. In the past few years, have test scores risen or declined?

Please arrange the questions in order of importance by dragging and dropping them in place. Close questions not important to you by clicking the 'X' icon.

Focus Area: Curriculum
Focus Area: Behavior Policy
Focus Area: Your Child’s Needs
Focus Area: Your Child’s Learning Style
Focus Area: Facilities and Services
Great we're nearly done! One last question!
We're nearly ready to recommend some schools to you. Let us know a few details about where you live and we'll get that report for you.

Street Address: 1580 Detroit Street
City: Denver
Miles you are willing to travel: 2
Student's Grade: 3

Questions you thought were important to you:
Click the "Go back to Questions" button to make any changes to your choices.

- How do the school's test scores compare to those of other schools?
- In the past few years, have test scores risen or declined?
- How does the school explain the rise or decline?
- How well have children similar to yours performed on these tests?
- What evidence is there that the school is effectively teaching students to read and do math?
- Does the school offer challenging courses such as Advanced Placement, International Baccalaureate, or dual enrollment?
- If your child has special learning needs, does the school have a curriculum and the necessary supports?
We have identified 27 schools matching your criteria. Please select the schools you would like to appear on your customized guide.

<table>
<thead>
<tr>
<th>Select</th>
<th>School</th>
<th>Distance</th>
<th>Score</th>
<th>Performance</th>
<th>Growth</th>
<th>ACT Scores</th>
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<tbody>
<tr>
<td>☐</td>
<td>1. EAST HIGH SCHOOL</td>
<td>0.07 miles</td>
<td>2.36</td>
<td>47.33%</td>
<td>56%</td>
<td>18.91</td>
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<tr>
<td>✔</td>
<td>2. POLARIS AT EBERT ELEMENTARY SCHOOL</td>
<td>1.57 miles</td>
<td>1.95</td>
<td>97%</td>
<td>69.5%</td>
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<tr>
<td>✔</td>
<td>3. STECK ELEMENTARY SCHOOL</td>
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<td>91.33%</td>
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<tr>
<td>✔</td>
<td>4. BROMWELL ELEMENTARY SCHOOL</td>
<td>1.33 miles</td>
<td>1.71</td>
<td>85%</td>
<td>73%</td>
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<tr>
<td>✔</td>
<td>5. MOORE K-8 SCHOOL</td>
<td>1.31 miles</td>
<td>1.54</td>
<td>48%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>✔</td>
<td>6. MOORE K-3 SCHOOL</td>
<td>1.31 miles</td>
<td>1.54</td>
<td>64%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>✔</td>
<td>7. MOREY MIDDLE SCHOOL</td>
<td>1.23 miles</td>
<td>1.37</td>
<td>65.57%</td>
<td>46.57%</td>
<td></td>
</tr>
<tr>
<td>✔</td>
<td>8. TELLER ELEMENTARY SCHOOL</td>
<td>0.77 miles</td>
<td>1.23</td>
<td>61.33%</td>
<td>56.33%</td>
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<tr>
<td>✔</td>
<td>9. PALMER ELEMENTARY SCHOOL</td>
<td>1.72 miles</td>
<td>1.00</td>
<td>54.33%</td>
<td>53.33%</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>10. PARK HILL K-8 SCHOOL</td>
<td>1.35 miles</td>
<td>0.97</td>
<td>58.33%</td>
<td>60.33%</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>11. PARK HILL K-8 SCHOOL</td>
<td>1.35 miles</td>
<td>0.97</td>
<td>44%</td>
<td>60.33%</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>12. ONLINE HIGH SCHOOL</td>
<td>1.73 miles</td>
<td>0.06</td>
<td>18.33%</td>
<td>27.57%</td>
<td>7.09</td>
</tr>
</tbody>
</table>
Concept centric: customized school report

- About school choice
- Comparative analysis
- School profiles
- Application procedures
- Other resources
Concept centric: Bridge

Concepts
- Concept discovery
- Question identification
- Clarification of information needs

Geodata

Data and Research Strategies

Information
- Quantitative data
- Geographic data
- Qualitative data
- Research strategies

Customized Research and Information Guide
Concept centric process model

1. Exploration and discovery of concepts
2. Refine conceptual understanding
3. Identify information needed
4. Formalize questions
5. Gather data
6. Analyze data

Circle flowchart showing the process of concept-centric modeling.
Concept centric: Supporting theory and research

- Sense Making – Brenda Dervin, Karl Weick, et al.
- Cognitive scaffolding / Cognitive accessibility
- Decision making and problem solving
- Complex problems / “Wicked problems”
- Information behavior / IBEC / Karen Fisher
- School choice – Bryan Hassel, Paul Teske, et al.
Concept centric: Strengths

- Broader understanding of a problem
- Wider scope of inquiry
- Supports a different decision making path
- Not as much “framing” a problem
Conclusion: Future Directions

- Use of platform for other contexts
- Collaborative features that allow new concept areas to be introduced
- Concept visualization
- Refinement of engine
- Evaluation
For more information

Concept Wizard Whitepaper

CiviCore
http://www.civicore.com

Piton Foundation
http://www.piton.org

9News.com
http://www.9news.com

University of Washington Information School - Information Behavior in Everyday Context
http://ibec.ischool.washington.edu