The Nine Dimensions of Data Assumptions in Education

A framework for understanding why educators make decisions that seem irrational to outsiders—and why those decisions are actually logical given their assumptions

From "The Data Divide in Education" by EDSTAR Analytics

Over three decades of evaluating education programs, we identified nine dimensions that explain nearly everything we encountered. For each dimension, people occupy one of several **assumption states**. Once you know which state someone is in, their behavior makes sense. State 1 represents data-informed practice; higher-numbered states represent increasing distance from data-driven decision-making.

- State 1: Data-informed
- State 2: Aware but dependent
- State 3: Unaware but asking
- State 4: Assumption-driven

A — Knowing What Can Be Known

1. I know this can be known, and I know how to know it.
2. I know this can be known, but I don't know how. I will ask for help.
3. I don't know what can be known, but I know to ask someone who might.
4. I believe this cannot be known. I don't try to find it.

B — Guess and Check—or Not Check

1. We can run a list from the data system of all students who meet specific criteria.
2. We can't run this list ourselves, but we know someone can, so we find that person.
3. We think of who might meet the criteria, then pull up files one at a time to check.
4. A proxy exists for these criteria—demographics, neighborhood, appearance—that is the same as using actual data.

C Cause and Effect

1 I know the research on what services are associated with intended outcomes. I use this to design programs.

2 I don't have time to keep up with research, but I know it exists and welcome help.

3 We've always done innovative things for at-risk kids. At-risk kids must benefit from innovative things.

4 We are providing random services with no accountability. There's nothing you can do because this got funded.

D Expert vs. Evidence

1 Statistical analyses trump expert opinions. Evidence tells us what actually works.

2 Evidence should be weighed equally with expert advice. Sometimes we believe data; sometimes we believe experts who contradict it.

3 You can't trust data—kids are more than test scores. What we believe about kids matters more than what data says.

4 Programs are selected by people who earned their way up. A perk of rank is choosing programs. Evidence doesn't matter.

E How to Classify Things

1 Creating usable data requires well-defined data types, metadata, and professional data structures. If we lack expertise, we hire someone.

2 We can set up our own files and track kids using IDs, buildings, or birthdays. Combining all these in one field is fine.

3 There's no real reason to keep track of who was served. That would take time away from serving kids.

F Understanding Data-Handling Laws

1 We understand FERPA. We know the laws allow contracted evaluators to access data with proper procedures.

2 If we don't want to provide data, we can claim it's a FERPA violation—even when it isn't.

3 People in authority can create their own data requirements—like requiring IRB approval when it's not needed.

4 We've never heard of FERPA. We send any data to anyone with no concern for what we're sharing.

G — Skill Set Required for Data Analysis

1. Analyzing data is like flying a plane—it requires specific knowledge, statistical background, and experience. We hire for this.

2. Data work is basically a low-skilled job that just about anyone can do. It's like programming in vocational ed.

3. We don't like computers. We analyze data by cutting out paper strips and tacking them to a wall—like a spreadsheet you can see.

H — What Is the Goal?

1. Maximize learning and prepare students for both STEM and non-STEM careers.

2. Protect the status quo. No one likes change. Just keep things from changing.

3. Please the people who can make or break my career.

4. Some combination of personal benefit, institutional inertia, or simply getting through the day.

I — How Technology Works

1. I know computers can scan huge amounts of data and identify patterns—and I know how to use them for this.

2. I don't know how computers work for data, but I know others do, and I go to them when needed.

3. I have no idea how computers work, other than for social media, games, or watching movies.

When you understand which assumption state someone is operating from, their behavior makes sense. It's not irrational. It's not malicious, in most cases. It's logical, given their beliefs about what's possible, what's true, and what matters. The problem is that their beliefs are often wrong. Data can be known. Lists can be run. Evidence does exist. But if you don't know that, you can't act on it.