Quantitative "versus" Qualitative Data

William M.K. Trochim
www.socialresearchmethods.net/kb/datatype.htm

We'll talk about data in lots of places in The Knowledge Base, but here I just want to make a fundamental distinction between two types of data: **qualitative** and **quantitative**. The way we typically define them, we call data 'quantitative' if it is in numerical form and 'qualitative' if it is not. Notice that qualitative data could be much more than just words or text. Photographs, videos, sound recordings and so on, can be considered qualitative data.

Personally, while I find the distinction between qualitative and quantitative data to have some utility, I think most people draw too hard a distinction, and that can lead to all sorts of confusion. In some areas of social research, the qualitative-quantitative distinction has led to protracted arguments with the proponents of each arguing the superiority of their kind of data over the other. The quantitative types argue that their data is 'hard', 'rigorous', 'credible', and 'scientific'. The qualitative proponents counter that their data is 'sensitive', 'nuanced', 'detailed', and 'contextual'.

For many of us in social research, this kind of polarized debate has become less than productive. And, it obscures the fact that qualitative and quantitative data are intimately related to each other. ***All quantitative data is based upon qualitative judgments; and all qualitative data can be described and manipulated numerically.*** For instance, think about a very common quantitative measure in social research -- a self esteem scale. The researchers who develop such instruments had to make countless judgments in constructing them: how to define self esteem; how to distinguish it from other related concepts; how to word potential scale items; how to make sure the items would be understandable to the intended respondents; what kinds of contexts it could be used in; what kinds of cultural and language constraints might be present; and on and on. The researcher who decides to use such a scale in their study has to make another set of judgments: how well does the scale measure the intended concept; how reliable or consistent is it; how appropriate is it for the research context and intended respondents; and on and on. Believe it or not, even the respondents make many judgments when filling out such a scale: what is meant by various terms and phrases; why is the researcher giving this scale to them; how much energy and effort do they want to expend to complete it, and so on. Even the consumers and readers of the research will make lots of judgments about the self esteem measure and its appropriateness in that research context. What may look like a simple, straightforward, cut-and-dried quantitative measure is actually based on lots of qualitative judgments made by lots of different people.

On the other hand, all qualitative information can be easily converted into quantitative, and there are many times when doing so would add considerable value to your research. The simplest way to do this is to divide the qualitative information into units and number them! I know that sounds trivial, but even that simple nominal enumeration can enable you to organize and process qualitative information more efficiently. Perhaps more to the point, we might take text information (say, excerpts from transcripts) and pile these excerpts into piles of similar statements. When we do something even as easy as this simple grouping or piling task, we can describe the results quantitatively. For instance, if we had ten statements and we grouped these into five piles, we could describe the piles using a 10 x 10 table of **0**'s and **1**'s. If two statements were placed together in the same pile, we would put a **1** in their row-column juncture. If two statements were placed in different piles, we would use a **0**. The resulting matrix or table describes the grouping of the ten statements in terms of their similarity. Even though the data in this example consists of qualitative statements (one per card), the result of our simple qualitative procedure (grouping similar excerpts into the same piles) is *quantitative* in nature. "So what?" you ask. Once we have the data in numerical form, we can manipulate it numerically. For instance, we could have five different judges sort the 10 excerpts and obtain a 0-1 matrix like this for each judge. Then we could average the five matrices into a single one that shows the proportions of judges who grouped each pair together. This proportion could be considered an estimate of the similarity (across independent judges) of the excerpts. While this might not seem too exciting or useful, it is exactly this kind of procedure that I use as an integral part of the process of developing 'concept maps' of ideas for groups of people (something that *is* useful!).

QUALITATIVE DATA COLLETION METHODS

Surveys

ADVANTAGES

- Create data on perceptions, attitudes, behaviors that cannot be seen
- Collect data fast from large number of people in many different locations (saves time and cost)
- Standardizes responses
- Easy to analyze

LIMITATIONS

- Subject to respondent bias (intrusion into personal life, protect a program, recent experience may color perceptions, selective memory)
- May not probe the depth or breadth of possible responses (limits topics of responses)
- May not be able to generalize if sample not selected properly or if too many non-responses
- No chance to clarify: if not asked properly, could get invalid/unusable responses

> Simple example of a flawed open-ended question: "How did you get to work today?" The respondent could describe the mode of transportation ("I came by car"), the route taken ("I came up Main St. and over on Pacific Ave."), or who was involved ("I rode with David and Mary").

To counter these limitations:

- Ensure confidentiality or have a 3rd party administer survey
- Take time to learn range of possible responses
- Carefully think through constructs
- Write clear and unambiguous items
- Use clear language
- Avoid jargon, abbreviations, and double-barreled questions
- Don't make it too long
- Pretest the survey first to see if the survey "works" as expected
- Administer at the right time

SIX IDEAS TO MAXIMIZE SURVEY RESPONSES

- Send advance notice
- Say how results will be used
- Get endorsement from others
- Provide incentives
- Not having the survey be too much of a burden (length, cognitive load, logical flow)
- Follow-up by letter, phone, or email as a reminder

Keep in mind how you are going to use the results and remember the trade-off between length and response rate

Try to get a 70% response rate, determine if non-responders are similar to responders

Surveying Young Children in Educational Settings

Designing a clear survey that yields valid results is a challenging task. Designing such a survey for young children is even more challenging, and the research literature on designing surveys for these children is scarce. The wide variation in children's reading ability, vocabulary, cognitive skills, and memory ability makes this a difficult task, and a child's emotional and psychological condition adds to the challenge. Children may not feel comfortable or confident taking a survey when answering questions that are not age-appropriate, are not relevant to their experience, or they don't fully understand. Children also have a desire to please and give the "right" answer, so they may respond in ways they don't really think or feel. This document summarizes what is currently considered best practices when creating and administering surveys to children ages 5 to 8 (in grades K-3).

Pros and Cons Related to Using Surveys with Children

Surveys are good at gathering a lot of information in a cost-effective manner. They can be anonymous so children are more able to express what they think and how they feel without worrying that they will hurt someone's feelings when responding honestly. Written surveys can be done independently by children as young as 8 years old, and children as young as 3 years old can take a survey that is given face to face.

Nevertheless, it is difficult to obtain in-depth information from a child using a survey unless it is part of a more specific conversation that explores a child's thoughts. Also, children with a learning difficulty may require support from an adult to participate in the survey, but if the survey relates to the adult, the child's responses may not be accurate and the experience can make the child uncomfortable. If children need help completing a survey, make sure the help comes from a person they trust.

Types of Surveys to Consider

- **Online survey** software (e.g., Survey Monkey) is easy to use, can be free or inexpensive, and collates data automatically for immediate analysis. They can be electronically distributed and are convenient for those who have access to the internet. They can be made attractive and fun for children to complete.
- **Paper surveys** are accessible to those without internet access, can be attractive, and can be simple to complete at any time or place. However, there are printing and distribution costs involved, and they are more time consuming to complete, collate, and analyze.
- **Face-to-face** surveys require trained interviewers to question children and record answers. These surveys can be used with young children because the interviewer can explain questions using age-appropriate terms. Face-to-face surveys cost more because they take more time to complete, summarize, and analyze. Accessing the child also may be more difficult.
- **Group surveys** are used when children don't know how to read and are a hybrid of the paper and face-to-face surveys. A trusted adult reads the questions aloud to the group and children respond on a paper answer sheet that may have visual aids. While these surveys take more time to complete, collate, and analyze, the extra effort may be worth it because the adult can add prefacing statements and children can ask clarifying questions during the survey, both of which increase the chances for more honest responses. Nevertheless, there is still a danger that the adult may unintentionally influence the responses.

Item Scales

It helps to pose questions and statements in a variety of ways in order to keep children's attention and interest, (although too much variation may cause confusion or lead to misinterpretations of the question/statement). Here are different types of responses to consider for different types of survey items (questions or statements).

- Scale responses using number (1-3 or 1-5) or images (e.g., happy to sad emoticons)
- Importance scales (not at all important/extremely important with points in between)

- Agreement scales (agree/disagree/don't know; agree a lot/agree a little/disagree a little/disagree a lot/don't know/no opinion).
- Frequency scales (never, rarely, sometimes, often/usually, always)
- Uncertainty responses (don't know, not sure, don't want to answer)
- Use open-ended and yes/no response options only when necessary

Tips on Survey Structure

1. Limit the total number of items on the survey. Don't ask questions you don't need to ask. Each item should be essential and unable to be answered using another source. Gender may be the only group identifier needed.
2. Limit the number of response options. Children find it difficult to process a range of choices. Give only 2 or 3 response options for young children. Use images and/or words to describe each point on the scale.
3. Make it easy to respond. Have places to check or circle. Avoid having children write anything.
4. Have an equal balance among the response options. If you have two positive options (e.g., agree, agree a lot) have two negative options (e.g., disagree, disagree a lot).
5. Reverse the direction of some questions. For example, if an "agree" response to most questions means a positive response, have a few items where "agree" means a negative response (e.g., "I hate my desk partner"). This minimizes the effect of a child's tendency to agree with statements presented to them.
6. Make it interesting. Young children have a short attention span. Use images, video, or audio to make the survey engaging. Electronic-based surveys can make the survey more interactive. Use color.
7. Start the survey with easy items. Asking about a child's gender (boy, girl) and grade are good 'warm-up' questions. Then list the items in a logical order.

Tips on Writing Survey Items

1. Keep questions as short as possible. Use simple words and sentence structure. Ask only one question at a time and use only one adjective.
2. Be very specific. Children interpret language very literally. Distinguish between a school and classroom experience, even though a class is part of a school. Indicate clearly if you want children to answer on behalf of all children in a classroom or just for themselves.
3. Avoid de-personalized and abstract questions. Children have a low threshold for ambiguity (e.g., "kids my age" or "most people". Make the survey about them.
4. Use vocabulary that children will understand. Use age-appropriate words and terms that are relevant to children's everyday life and the media they follow. Use words that represent existing cultural practices that are part of children's vocabulary. Avoid technical terms and words that have several meanings. Design different versions for different age groups.
5. Make sure questions are phrased in a neutral way. Children are suggestible so avoid "leading" statements that increase the chances a certain response is selected. Don't imply a negative or positive judgment.
6. When using lists to check, always end with an "other" option and, when appropriate, ask what "other" means.
7. Avoid asking about the distant past or future. Young children have a different sense of time, so asking about past events/behaviors or the future may not yield accurate responses. Stick to their current situation, a specific time in the recent past (e.g., "think about yesterday and today"), and the immediate future.
8. Ask children to respond to affirmative statements. Disagreeing with a negatively phrased item is confusing.

Administering the Survey

The goal of the survey is to get honest responses from the children. Since children are suggestible, like to please adults, and may try to figure out what the "right" answer is, they are easily influenced by adults. They may also think that adults will eventually know the answers they provide. Hence, the person leading the survey experience needs to reduce the chances that any outside influence will affect children's responses. To do this, ask the children to answer honestly and let them know there are no right or wrong answers. Let them know that their marks will be kept private and nobody will know their answers. They need to understand that their responses will be combined with those of all the others in the class in order to help the teacher be a better teacher. Be nice and put them at ease by using a preface statement, such as "Some children agree with this, and others do not." Finally, gauge the children's stamina and take a break or continue the survey at another time if they are getting tired or are disengaging.

After the survey structure and items are created, the survey needs to be given to a few children to identify any changes that are needed before its administration in a wider "pilot" phase. The pilot administration will provide additional insights into how well the survey works and will highlight any problems that need to be addressed before the survey is finalized. These pre-administration steps may take longer than expected and require multiple iterations, as it takes time to develop a tool that can produce an accurate understanding of children's views.

Reviewing Results

Once the survey is administered and results are tabulated, don't take the results too seriously. Given the challenges of getting accurate feedback from children and that their responses change substantially and quickly over time as they mature emotionally and grow in their cognitive abilities, consider the data "soft." When reviewing the survey results, look for trends and outliers and ask general questions, such as "what can I learn from this?" and "what changes can I make that could make a difference?" Statistical analyses of the data are usually not warranted, especially when the number of students surveyed is relatively small.

References

Borgers, N., de Leeuw, E., and Hox, J. (2000). "Children as respondents in survey research: Cognitive development and response quality," in *Bulletin de méthodologie sociologique*, 66(1), April. DOI: 10.1177/075910630006600106 http://joophox.net/publist/bms66.pdf

Dillman, D. (2000). *Mail and internet surveys: The tailored design method. 2nd Ed.* New York: Wiley.

Fuchs, M. (2009) *The reliability of children's survey responses: The impact of cognitive functioning on respondent behavior.* Statistics Canada's International Symposium Series. https://www150.statcan.gc.ca/n1/en/pub/11-522-x/2008000/article/10961-eng.pdf?st=K5lHsG8c

General Accounting Office (1993). *Developing and using questionnaires.* Program Evaluation and Methodology Division, GAO/PEMD-10.1.7. Washington, DC: Author. http://archive.gao.gov/t2pbat4/150366.pdf

London School of Economics and Political Science (undated). *FAQ 18: What are good tips for phrasing questions in a survey to children?* EU Kids Online. http://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/toolkit/frequently-asked-questions/FAQ-18.pdf

New Zealand Office of the Children's Commissioner (2015). *Engagement methods: Surveys.* Author. https://www.occ.org.nz/assets/Publications/surveys.pdf

Read, J. and Fine, K. (2005). *Using survey methods for design and evaluation in child computer interaction.* University of Central Lancashire. http://www.chici.org/references/using_survey_methods.pdf

Read, J. and MacFarlane, S. (2006). *Using the fun toolkit and other survey methods to gather opinions in Child Computer Interaction.* University of Central Lancashire. Paper published in the Proceedings of the 2006 conference on interaction design and children, June 7-9, pages 81-88. DOI: 10.1145/1139073.1139096 http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.469.944&rep=rep1&type=pdf

Interviews

1. Used extensively in case studies and when developing pre-tests
2. Can range from very structured to flexible/exploratory
3. Use to supplement other data collection methods (observation, surveys, document review)
4. Record if possible and permission is granted
   If not recording:
   - Have more than one person there and share notes
   - Write up notes soon afterward (within 48 hours)
   - If applicable, send person your write-up to verify its accuracy
5. Types of Questions
   - Investigative – straight-forward inquiry to obtain information (opinions, beliefs, facts, attitudes, behaviors, perceptions)
   - Hypothetical – what if
   - Devil's Advocate – challenge with opposing view
   - Ideal Position – describe the ideal situation
   - Interpretive – active listening (what I hear you say is …)
   - Summarize
6. Interviewing Hints
   - Work around their schedule and location
   - Let them know the topics that will be covered so they can be prepared
   - Let them know about how long it will take (courtesy)
   - Can let them know the specific questions if they are real busy (they may provide written responses)
   - Establish rapport, be neutral
   - Order of questions
     - Grouped in logical sequence
     - Transition from one topic to another
     - Go from the general to the specific and from easy to hard
     - Have prompts to get them to focus on the type of thing you are looking for
   - Take notes, use a guide with spaces to fill in answers as you go (even if recording)
   - Analyze as you go (think about completeness and need to pursue further, be ready to follow-up if something new and noteworthy is mentioned, stay on task, don't write down everything)
   - Use probes and reinforcers (e.g., silence, asking for more details or clarification, *uh-huh*/ nodding)
   - Don't press too hard or too fast– it's not an interrogation
   - Ask to contact them in the future if needed to clarify answers (and get more info if time has run out) – you may encounter conflicting views or data that need to be reconciled
   - Avoid
     - Leading/biased questions
     - Long questions
     - Rhetorical questions and statements about your beliefs
     - Asking multiple questions without giving the person a chance to respond to each one
     - Yes/No questions
     - Using jargon or difficult terms if they might be unfamiliar to those being interviewed

Focus Groups

Small group of people (6-10) discussing a particular topic with aid of non-threatening moderator

Cost-effective interview technique to draw out views and attitudes and determine strength of views

Useful to develop list of ideas for further investigation in planning stage

Used extensively in market research – uses group dynamics to reduce inhibitions and help clarify views – can observe non-verbals

Not meant to achieve consensus or develop a plan/course of action (but does generate ideas)

Requires a good cross-section of participants

Uses primarily open-ended questions

A successful *moderator* …

- Provides introduction/purpose and explains ground rules/guiding principals (e.g., no right answers, agreement is not the goal, timeframe, roles, confidentiality of responses, recording comments, etc.)
- Puts individuals at ease
- Ensures all have the opportunity to be heard and nobody dominates
- Keeps the group on task

An *assistant moderator* takes care of logistics (e.g., tapes for recorder, name tags, dealing with late-comers), takes notes (including non-verbals) in case recorder has problems, helps analyze data

Basics of Conducting Focus Groups

Carter McNamara
www.mapnp.org/library/evaluatn/focusgrp.htm

Focus groups are a powerful means to evaluate services or test new ideas. Basically, focus groups are interviews, but of 6-10 people at the same time in the same group. One can get a great deal of information during a focus group session.

Preparing for Session

1. ***Identify the major objective of the meeting.***
2. ***Carefully develop fix to six questions (see below).***
3. ***Plan your session (see below).***
4. ***Call potential members to invite them to the meeting.*** Send them a follow-up invitation with a proposed agenda, session time and list of questions the group will discuss. Plan to provide a copy of the report from the session to each member and let them know you will do this.
5. ***About three days before the session, call each member to remind them to attend.***

Developing Questions

1. ***Develop five to six questions*** - Session should last one to 1.5 hours -- in this time, one can ask at most five or six questions.
2. ***Always first ask yourself what problem or need will be addressed by the information*** gathered during the session, e.g., examine if a new service or idea will work, further understand how a program is failing, etc.
3. ***Focus groups are basically multiple interviews.*** Therefore, many of the same guidelines for conducting focus groups are similar to conducting interviews.

Planning the Session

1. ***Scheduling*** - Plan meetings to be one to 1.5 hours long. Over lunch seems to be a very good time for other to find time to attend.
2. ***Setting and Refreshments*** - Hold sessions in a conference room, or other setting with adequate air flow and lighting. Configure chairs so that all members can see each other. Provide name tags for members, as well. Provide refreshments, especially box lunches if the session is held over lunch.
3. ***Ground Rules*** - It's critical that all members participate as much as possible, yet the session move along while generating useful information. Because the session is often a one-time occurrence, it's useful to have a few, short ground rules that sustain participation, yet do so with focus. Consider the following three ground rules: a) keep focused, b) maintain momentum and c) get closure on questions.
4. ***Agenda*** - Consider the following agenda: welcome, review of agenda, review of goal of the meeting, review of ground rules, introductions, questions and answers, wrap up.
5. ***Membership*** - Focus groups are usually conducted with 6-10 members who have some similar nature, e.g., similar age group, status in a program, etc. Select members who are likely to be participative and reflective. Attempt to select members who don't know each other.
6. ***Plan to record the session with either an audio or audio-video recorder.*** Don't count on your memory. If this isn't practical, involve a co-facilitator who is there to take notes.

Facilitating the Session

1. ***Major goal of facilitation is collecting useful information to meet goal of meeting.***
2. ***Introduce yourself and the co-facilitator, if used.***
3. ***Explain the means to record the session.***
4. ***Carry out the agenda*** - (See "agenda" above).
5. ***Carefully word each question*** before that question is addressed by the group. Allow the group a few minutes for each member to carefully record their answers. Then, facilitate discussion around the answers to each question, one at a time.

6. ***After each question is answered, carefully reflect back a summary of what you heard (the note taker may do this).***
7. ***Ensure even participation.*** If one or two people are dominating the meeting, then call on others. Consider using a round- table approach, including going in one direction around the table, giving each person a minute to answer the question. If the domination persists, note it to the group and ask for ideas about how the participation can be increased.
8. ***Closing the session*** - Tell members that they will receive a copy of the report generated from their answers, thank them for coming, and adjourn the meeting.

Immediately After Session

1. ***Verify if the tape recorder, if used, worked throughout the session.***
2. ***Make any notes on your written notes***, e.g., to clarify any scratching, ensure pages are numbered, fill out any notes that don't make senses, eta.
3. ***Write down any observations made during the session.*** For example, where did the session occur and when, what was the nature of participation in the group? Were there any surprises during the session? Did the tape recorder break?

Data-Related Terms

General Terms

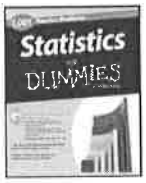
- Descriptive statistics
- Sample, population, universe, n, N
- Sampling – random, convenience, stratified, self-selected
- Random control trial (RTC)
- Variables – dependent, independent
- Validity, reliability
- Endogenous, exogenous
- Norm-referenced, criterion-referenced
- Null hypothesis
- Type I and Type II errors
- Raw score
- Scale score
- Bias, halo effect, horn effect, Hawthorne effect
- Outlier
- Subgroup
- Quantitative, qualitative
- Longitudinal, cross sectional, cohort

Data Visualization Terms

- X and Y axes
- Bar chart, cluster bar chart, stacked bar chart
- Line chart
- Histogram
- Scatterplot
- Box-and-whiskers
- Normal distribution, Bell-shaped curve
- Skewed distribution
- Venn diagram
- Decision tree, probability tree

Statistical Analysis Terms

- Frequency, cumulative frequency
- Central tendency – average, mean, median, mode
- Variation – range, standard deviation, non-parametric distribution
- Quartiles, quintiles, stanine
- Z score
- T score
- Probability (p), odds, likelihood
- Confidence level, $p < .05$
- Statistical significance
- Margin of error, confidence interval
- Effect size
- Percent/percentiles/percentile rank/percentage points
- Correlation (r)
- Analysis of variance (ANOVA), multiple analysis of variance (MANOVA)
- Regression (r^2) – linear, multiple, cubic, quadratic
- Confounding, spurious
- Permutations
- Combinations



Statistics: 1,001 Practice Problems For Dummies (+ Free Online Practice)

Consumer Dummies

ISBN: 978-1-118-77604-9
Paperback
512 pages
August 2014
US $22.99
Other Available Formats: E-book

Description **Table of Contents** **Related Websites**

Bracey, Gerald. W. (2006). *Reading Educational Research: How to Avoid Getting Statistically Snookered.* Portsmouth, NH: Heinemann.

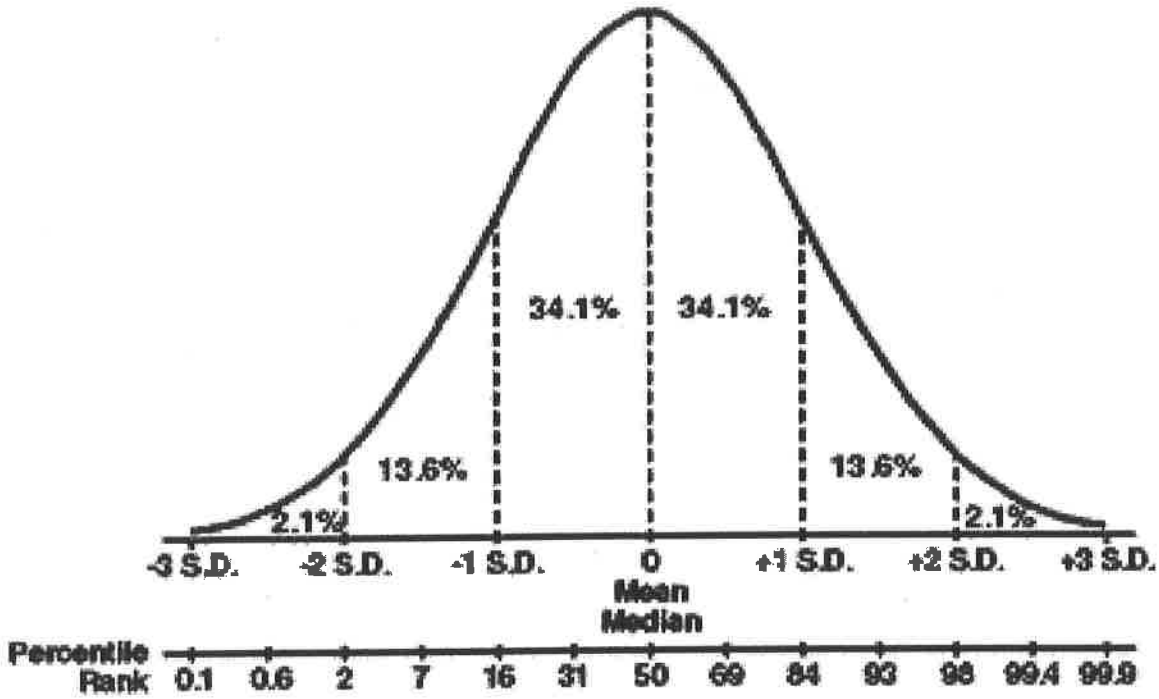
Reviewed by Darrell L. Sabers, University of Arizona, May 29, 2006
http://edrev.asu.edu/reviews/rev494.htm

Reading Educational Research: How to Avoid Getting Statistically Snookered is the latest book by Gerald Bracey. He delivers what is expected by those of us who read his work, with many examples of how others lie with statistics and interpret data to fit their agendas. The book is focused on 32 "Principles of Data Interpretation" that should provide many readers with a set of instructions to examine and understand reports and claims about various educational issues. The 32 principles are as follows:

Principles of Data Interpretation

1. Do the arithmetic.
2. Show me the data!
3. Look for and beware of selectivity in the data.
4. When comparing groups, make sure the groups are comparable.
5. Be sure the rhetoric and the numbers match.
6. Beware of convenient claims that, whatever the calamity, public schools are to blame.
7. Beware of simple explanations for complex phenomena.
8. Make certain you know what statistic is being used when someone is talking about the "average."
9. Be aware of whether you are dealing with rates or numbers. Similarly, be aware of whether you are dealing with rates or scores.
10. When comparing either rates or scores over time, make sure the groups remain comparable as the years go by.
11. Be aware of whether you are dealing with ranks or scores.
12. Watch out for Simpson's paradox.
13. Do not confuse statistical significance and practical significance.
14. Make no causal inferences from correlation coefficients.
15. Any two variables can be correlated. The resultant correlation coefficient might or might not be meaningful.
16. Learn to "see through" graphs to determine what information they actually contain.
17. Make certain that any test aligned with a standard comprehensively tests the material called for by the standard.
18. On a norm-referenced test, nationally, 50 percent of students are below average, by definition.
19. A norm-referenced standardized achievement test must test only material that all children have had an opportunity to learn.
20. Standardized norm-referenced tests will ignore and obscure anything that is unique about a school.
21. Scores from standardized tests are meaningful only to the extent that we know that all children have had a chance to learn the material which the test tests.
22. Any attempt to set a passing score or a cut score on a test will be arbitrary. Ensure that it is arbitrary in the sense of arbitration, not in the sense of being capricious.
23. If a situation really is as alleged, ask, "So what?"
24. Achievement and ability tests differ mostly in what we know about how students learned the tested skills.
25. Rising test scores do not necessarily mean rising achievement.
26. The law of WYTIWYG applies: What you test is what you get.
27. Any tests offered by a publisher should present adequate evidence of both reliability and validity.
28. Make certain that descriptions of data do not include improper statements about the type of scale being used, for example, "The gain in math is twice as large as the gain in reading."
29. Do not use a test for a purpose other than the one it was designed for without taking care to ensure it is appropriate for the other purpose.
30. Do not make important decisions about individuals or groups on the basis of a single test.
31. In analyzing test results, make certain that no students were improperly excluded from the testing.
32. In evaluating a testing program, look for negative or positive outcomes that are not part of the program. For example, are subjects not tested being neglected? Are scores on other tests showing gains or losses?

After 20 pages of introduction of topics about data-driven decisions and abuses of data, the principles are incorporated into the text with examples and explanations. Many of these examples are based on reports of educational evaluations, and Bracey does not hesitate to include controversial topics with political agendas. Most of this book is very good reading, and it is not intended only for the reader who has no background in reading research reports.



Normal Distribution Curve

	4%	7%	12%	17%	20%	17%	12%	7%	4%
Stanine	1	2	3	4	5	6	7	8	9
Percentile Rank	Below 4	4–10	11–22	23–39	40–59	60–76	77–88	89–95	Above 95
NCE	1.0–10.4	13.1–23.0	24.2–33.7	34.4–44.1	44.7–54.8	55.3–64.9	65.6–74.7	75.8–84.6	86.9–99.0
		Below Average		Average			Above Average		

SYNTHESIS OF EVIDENCE

1. **Preparing the Evidence to Make Your Point**
   - Review data collected (physical, documentary, testimonial, analytic) through various means (interviews, surveys, document review, observations, focus groups, etc.)
   - Analyze data (qualitative/quantitative methods)
   - Monitor as you go
     - What are you learning?
     - Are there any holes in your evidence?
   - Bring together all evidence to answer each evaluation question
     - Sufficient (enough to convince a reasonable person)
     - Competent (timely, accurate, credible sources)
     - Relevant (stay on topic)

   Start answering each question with key points, supported by various types of evidence

   Question #1

   1A. Key Point

   Evidence:
   Evidence:
   Evidence:

   1B. Key Point

   Evidence:
   Evidence:
   Evidence:

   - Tips
     - Stop collecting data when the holes are filled
     - Allow enough time to analyze data (disaggregate)
     - Build extra evidence if findings are controversial, unexpected, and/or negative
     - If appropriate, describe criteria for comparison to actual conditions
     - Be sufficient, not exhaustive (less is more)
     - Show impact of shortcomings if you find them (answer the question "so what?")
     - Link recommendations to findings – address root problems
     - Don't generalize beyond your scope/sample – note limitations and topics for further study

WRITING THE REPORT

A. Planning Phase (Preparing to Write)

Step 1: Assemble and conduct content analysis of evidence
Organize into main ideas and subordinate points
Use chart paper, brainstorming, and/or story boards to outline messages

Step 2: Organize ideas and points into a logical flow/sequence/order

B. Initial Drafting

Step 3: Draft title, main headings, table of contents — be message oriented

Step 4: Write rough 1st draft of Executive Summary
(don't "polish" the prose – that comes much later)

Step 5: Write rough 1st draft of report
Review for completeness* (address all objectives), convincing* (best evidence)

C. Revising

Step 6: Review and revise order and content of sentences, paragraphs, sections
Insert charts and tables to support points
Review for accuracy

D. Polishing

Step 7: Review for clarity, conciseness, and objectivity

PRESENTING INFORMATION TO A GENERAL AUDIENCE

Analysts/Evaluators want:
- Completeness & accuracy
- "Number" factor
- Parts to the whole

Busy Readers want:
- Brevity
- "Human" factor
- Whole to the parts

Short-Term Memory can handle about 7 bits of information (+/- 2). That is about what a general reader can handle. To aid memory, keep it simple and have a logical order or conceptual framework. *(Letter code exercise)*

Experts already have acquired a pattern of learning and observing, so their thinking can be at a sophisticated level. Non-experts have to think at a basic level because they do not yet have deep understanding of the facts and concepts. For example:

> If you know baseball well, you know the difference between a S and a SF in the box score (or the difference between a H and a BH next to the pitcher's name). If you don't know baseball well, the general concept must first be explained, then the differences in the application must be explained. Even then, it may not sink in.

"Expertise in a particular domain does not guarantee that one is good at helping others learn it. In fact, expertise can sometimes hurt teaching because many experts forget what is easy and what is difficult for students … Some groups who design educational materials pair content area experts with "accomplished novices" whose area of expertise lies elsewhere: their task is to continually challenge the experts until the experts' ideas for instruction begin to make sense to them." *John Bransford et al, How People Learn: Brain, Mind, Experience, and School*

Keep it simple. Less is more and more is often less.

Let us see it in how you say it. Most people have a visual learning style, so use charts/illustrations.

Have a consistent structure. Being organized helps the reader remember and learn faster.

Write for interruptions, postponements, and cancellations. Make your point quickly, and anticipate the reader's need to be able to skim the document quickly.

Several techniques can help make your report more "accessible." Using an introductory or *topic sentence* helps the reader know the content of the material that follows. Using *parallel structure* – having the same grammatical structure – helps the reader recognize patterns and understand items are linked to each other. Using *bullets* allows the text to become shorter by eliminating extra words. Using *headings and side-caps* helps the reader quickly locate specific information (it helps if these are also in a parallel structure).

Ten of ***THE*** **MOST** Common Writing Errors

Avoid:

1. Very excessive, flowery adjectives with the intent purpose to aptly describe the committed and well-meaning objectives of the long-standing, well-established organization's dedicated board and its highly competent and professional staff
2. The highest level of superlatives you will ever need unless you can absolutely stand behind them.
3. Soul reliance on spellcheck
4. Incomplete thoughts and the tendency
5. Those long and winding sentences that seem to fill up a paragraph worth of space when really the eye captures maybe three to four words in a sentence such that you end up losing the ability to comprehend the point of the sentence and this requires you to read it over at least one or more times.. (try moving one of these extra periods to some other place in this sentence)
6. Unsubstantiated statements of fact
7. The mention of T/TA or other ISA[1], for example, unless you have spelled it our in first use (darn, that spell check again!)
8) Unnecessary or inappropriate use of 'first person writing' when I know my organization would prefer that I express my mission and my accomplishments in the third person so that they can present their message in a professional and objective manner
9. The passive voice that eventually induces a sleep-like mode into the reader's behavior rather than the reader *holding* on to every word in the proposal because words *do* have legs, words *tell* a story, words become actions
10. ***Overemphasis*** which can lead the reader to question what is *really* **IMPORTANT** from what is really ***really*** important!!!

Which brings us to this final reminder when it comes to the form and substance of a proposal:

Write, and emphasize, with consistency and authenticity.

(and *less is more*...or have we said too much? Still awake?)

[1] Industry Standard Acronyms

PRESENTING EVIDENCE: ACCURACY & BALANCE *

1. Accuracy

Because evidence answers the question "How do you know this?", the credibility of the report and its ability to convince readers ultimately depend on how a report presents GAO's evidence. Therefore, all the elements of a finding must be supported by evidence that convinces readers that the findings and conclusions are well supported by facts. Not only should there be a sufficient weight of evidence, but it must be presented to show that it is directly relevant to the findings in the report. The following issues have been central in determining the successful presentation of evidence:

- o Documentary and Physical Versus Testimonial Evidence

  -- What GAO saw is better than what we were told. Whenever possible, the report should present physical and documentary evidence. Using documents, such as official memoranda, invoices, and similar kinds of evidence generally shows the factual basis for findings more convincingly than does testimonial evidence obtained in interviews.

  -- Who or what else says so? When using testimonial evidence, a report should present corroboration by including interviews with other individuals or by citing relevant documents to the extent possible. Where other evidence runs counter it must also be presented along with GAO's reasons for accepting one set of evidence over another. The position and credibility of the people interviewed, as well as the quality of corroboration, are important in helping to establish the validity of testimonial evidence.

  -- Being told so doesn't make it fact. The report should distinguish between what GAO has determined is a fact from what we were told but have not corroborated. A problem we find in reports is that uncorroborated testimonial evidence--even after having been labeled as such--is then used as though it were "hard" factual information.

* This information has been extracted from an exposure draft by GAO's Office of Quality Assurance (OQA), entitled Guidelines for the Effective Presentation of Evidence, Findings, and Conclusions.

If, for example, a program official said that there has been no management attention to a problem, the report cannot treat that as a fact and then call for increased or improved management attention. That information is only an uncorroborated statement. Of course, statements of agency policies by high level officials can be presented as factual. However, observe the cautionary note below.

- o Official Agency Position

Wherever possible, it is important to present the official position of the agency being evaluated. However, reports should not present the statements of agency program officials as official agency positions unless GAO has confirmed it by documentary evidence or from a senior responsible official. In any case, wherever possible the report should identify GAO's source of the official agency position.

- o When Experts Disagree

When there are differences of opinion or conclusion among competent experts, the report needs to present these in a balanced way. In these cases, we should be cautious about agreeing with one group of experts over another without giving solid reasons. Where we do take such a position, the report needs to explain why GAO favors one group's opinions, advice, credibility, etc., over another's.

- o Using Others' Work

Sometimes GAO's reports use reports and data published or commissioned by other agencies and organizations. We should take care to attribute evidence of this type clearly, so that the reader will not assume that it is correct unless we have validated it. While commissioned studies can be used to support GAO findings and conclusions, they should not be our sole source of support unless we have independently verified their validity.

- o Lack of Agency Disagreement Is Not Evidence

  Agency agreement with out findings, or the lack of contradictory agency comments, should not be considered "supporting evidence" for those findings. That evidence must be strong enough to support the finding independently because the agency could be wrong or could decline to comment for reasons other than the validity of GAO's position. The agency's agreement can validly bolster or help confirm out findings, and should be stated in the report; but it cannot be presented as the basis on which the reader should accept our conclusions.

- o Late Breaking Events

  Occasionally, after a draft report is written, there are changes in legislation of agency policy or performance that bear directly on the findings and/or conclusions of the report. When such late-breaking events are important enough to affect the report's findings and conclusions, they cannot be reported as incidental afterthoughts (e.g., by relegating them to a footnote or by first presenting them in the agency's comments or our responses to agency comments). When new information raises questions regarding the current validity of a finding or conclusion, we need to assess whether the report's message needs to be changed. The report must be valid--to the best of GAO's knowledge--when issued. This may on occasion justify delaying the release of a report.

2. Balance

Balance means that we should present all of the major, directly relevant perspectives on an issue. A report's credibility is significantly enhanced when it presents evidence in a balanced manner so that readers are persuaded by the facts--as GAO was. This helps assure readers that GAO considered the relevant data and viewpoints on all sides of an issue, and that our conclusions are based only on the demonstrated weight of the all relevant evidence rather than on a possible lack of knowledge regarding contradictory evidence.

PRESENTING EVIDENCE: ACCURACY & BALANCE (contd.)

- Using All Relevant Evidence

  GAO reports must not present evidence selectively to build a desired case. Reports must place contradictory evidence in perspective and deal with it. If including contradictory evidence makes it difficult to support the point GAO thought the report was going to make, it is essential to reconsider the validity of that point.

  If our evidence is inconclusive, we should report that also. If our findings cannot be supported by the weight of the evidence, then we do not have reportable findings.

- Characterizing Evidence by Innuendo

  Sometimes reports use adjectives to characterize evidence in a way that implies a conclusion by innuendo. For example, if we find that an agency has implemented program changes in half of the target cities and is currently implementing the changes in the other half, the report might state that the program has been completed in "only" half of the target cities. This should be avoided unless the criteria actually call for greater progress by this time. Our evidence must be persuasive by itself, without using unwarranted qualifying adjectives. Using appropriate adjectives can help make reports more clear and interesting, but such adjectives should follow from criteria and evidence.

- Present Their Side of the Story

  To be most effective, it is generally not enough to report only facts and figures, devoid of human reflection or understanding of the circumstances. In identifying shortcomings in agency performance whenever possible GAO reports should tell readers what agency officials have told us in their explanation of the situation. Not only is this fair, but also it is more convincing and credible to tell readers that we have heard and considered the other side of the story.

- o We Don't Always Have To Say Nice Things

  "Balance" does not mean that reports should offset every criticism with a positive finding or dilute well-supported adverse findings. Reports should not reach beyond the evidence to praise an agency any more than to criticize it. Thus, balance requires that we report evidence that is favorable and evidence that is unfavorable to the agency, where relevant to the issues. Where appropriately supported by the evidence, a report can make a positive finding that a program is being well implemented.

3. Be Efficient in Using Background Information and Evidence

In the course of conducting a review, we usually gather much more information than we need to include in the report. Resist the temptation to use it all. Points are made more convincingly by the quality of evidence and its direct relevance to a conclusion than by the volume of evidence.

A useful test for deciding what background information to use is whether it helps link findings, conclusions, and recommendations. Information that bears directly on those linkages, and helps demonstrate them to the reader, should be included. If information does not bear directly on findings, conclusions, and recommendations, consider including it in an appendix if it would be helpful to a special category of readers.

4. Use Examples

Using examples is an effective way of helping the reader understand a particular problem or deficiency. Examples should be used when they present information GAO used to develop a finding or other point aNd when they fairly represent the conclusion drawn in the report. Be sure to tell the reader if an example is extreme when compare to the majority of cases.

5. Use Graphics

Information can be usefully illustrated--by graphs, tables, or pictures--where this reduces repetition and eliminates confusing detail in the text, and where it can provide "at-a-glance" comprehension. Graphs and charts, in particular, often illustrate key points more effectively than tables or text. Graphs and charts can make reports easier to read and remember.

-- Graphs and charts should be considered, in particular, when the report needs to show key relationships between several important items such as dollars, participants, or pollution levels. In such cases, relationships may occur over time, between agencies, between categories, and so on. For example, the chart below dramatically compares the trends in reading program funding and illiteracy rates.

-- Use tables containing long lists of numbers or items only when the numbers or items are important to the reader in understanding and believing the report.

6. Footnotes

Footnotes are a particularly useful format for presenting information that is helpful but not essential to understand the report. This would include making citations or cross-referencing to other parts of the report. They are particularly effective when used to define technical terms or to present other detailed information which if inserted in the text would break the flow of the report.

Care should be taken not to use footnotes:

-- to present essential information necessary to support the analysis of the report, or

-- to relegate contradictory evidence to a subordinate position.

EVALUATION REPORTING GUIDELINES

UNDERLYING PRINCIPLES

All evaluations should reflect the various dimensions of quality. In addition, research and evaluations made available to the public should have a consistent format, with some flexibility allowed for differences in the target audience and the form of communication.

DIMENSIONS OF QUALITY

Relevance: The information is important and useful to the intended audience; information is provided in a timely manner.

Objectivity: Fact-based, unbiased tone and language; fair and balanced.

Accuracy: Clear description of the facts; sound methods; analysis and text reviewed for errors; conclusions based on evidence that is sufficient, relevant, convincing, and from credible sources.

Clarity: Information presented in clear and concise language using simple and nontechnical language and using clear examples and figures (technical language can be used for the knowledgeable audience); no jargon or "bureaucratic" language; technical terms clarified with examples or explanation; technical details provided in an appendix; organized in logical and easy-to-follow sections; abbreviations are defined; materials are edited prior to review.

CONTENT, ORGANIZATION, AND STYLE

To make reports readable and useful, the information presented needs to (1) have certain content, (2) be organized clearly and consistently, and (3) be presented in a style that is easy to read. This helps readers organize and remember the materials presented. This section provides guidelines regarding the content, organization, and style of evaluation reports. These are general guidelines rather than absolute rules – certain audiences and forms of communication may require different content, organization, and styles.

Content

Executive summary: Aimed at the busy reader; usually no more than 1-2 pages; contains purpose, objectives, short statement of scope and methodology, major findings, conclusions and recommendations (if applicable).

Table of Contents: Helps the reader understand the main points and supporting points; outlines and conveys structure and flow; has descriptive titles and headings (not just the topic); include meaning of abbreviations.

Introduction:

- Purpose: Brief explanation of why the issue is relevant/important.
- Objectives: Clearly state the issues or questions being addressed.
- Scope/Methodology: Briefly discuss the data sources and timeframes, the analysis methods, and any study limitations; provide more detailed information in a technical appendix.
- Background: Provide information that puts study in context and explains any issues that must be understood by the uninformed reader.

Results: Organize the main ideas into logical sections and categories; provide a short summary of results or main points, followed by discrete sections with a detailed explanation of the results or points; provide ample evidence supporting each point.

Conclusions: Summarize main points, data, and results; present significance and implications; offer recommendations when warranted.

Appendixes: When appropriate, provide individual appendixes for additional background information, a more technical and detailed description of analysis methods, any technical results of the analyses, any supporting resources, and a bibliography.

Organization

Titles & Headings: Provide a clear and easily understandable description of the content; subordinate minor points to major points by using different appearances (e.g., **HEADING**, **Sub-heading**, Sub-sub-heading) to guide the reader through the text.

Chapters: If warranted, start with a summary of the chapter before getting into the individual sections (similar to an abstract or mini-executive summary); put sections and paragraphs in logical sequence; chapters/sections devoted to distinct ideas or issues.

Paragraphs: Use a topic sentence or a clear introduction to give the overall message or theme of the paragraph; move from the general to the specific by ordering supporting sentences in a logical flow; use short and concise sentences; edit and simplify unneeded or difficult words; don't have too many ideas or details or numbers; provide evidence with examples to support the main point.

Style and Presentation

Tone: Uses objective, straightforward language (simplify the complex)

Structure: Use a deductive structure which places the main idea at the beginning (vs. inductive, which puts the main idea at the end); use active voice (unless passive verbs are warranted); use bullets and simple visual aids (charts, tables, pictures) that have a consistent format to make the document easier to read and remember; use footnotes (rather than endnotes) to present needed information which would interrupt the flow of ideas if inserted in the text.

Other: Unjustify right margin; use 12-pitch for text; use a consistent font and format within document; use proper grammar, spelling, and punctuation; provide an electronic copy using Microsoft software (e.g., Word, Excel).

March 2018

K-12 EDUCATION

Discipline Disparities for Black Students, Boys, and Students with Disabilities

GAO Highlights

Highlights of GAO-18-258, a report to congressional requesters

Why GAO Did This Study

Research has shown that students who experience discipline that removes them from the classroom are more likely to repeat a grade, drop out of school, and become involved in the juvenile justice system. Studies have shown this can result in decreased earning potential and added costs to society, such as incarceration and lost tax revenue. Education and Justice are responsible for enforcing federal civil rights laws that prohibit discrimination in the administration of discipline in public schools.

GAO was asked to review the use of discipline in schools. To provide insight into these issues, this report examines (1) patterns in disciplinary actions among public schools, (2) challenges selected school districts reported with student behavior and how they are approaching school discipline, and (3) actions Education and Justice have taken to identify and address disparities or discrimination in school discipline. GAO analyzed discipline data from nearly all public schools for school year 2013-14 from Education's Civil Rights Data Collection; interviewed federal and state officials, as well as officials from a total of 5 districts and 19 schools in California, Georgia, Massachusetts, North Dakota, and Texas. We selected these districts based on disparities in suspensions for Black students, boys, or students with disabilities, and diversity in size and location. We also reviewed federal laws and a non-generalizable sample of seven recently resolved federal school discipline investigations (selected in part based on the type of alleged discrimination). We incorporated technical comments from the agencies as appropriate.

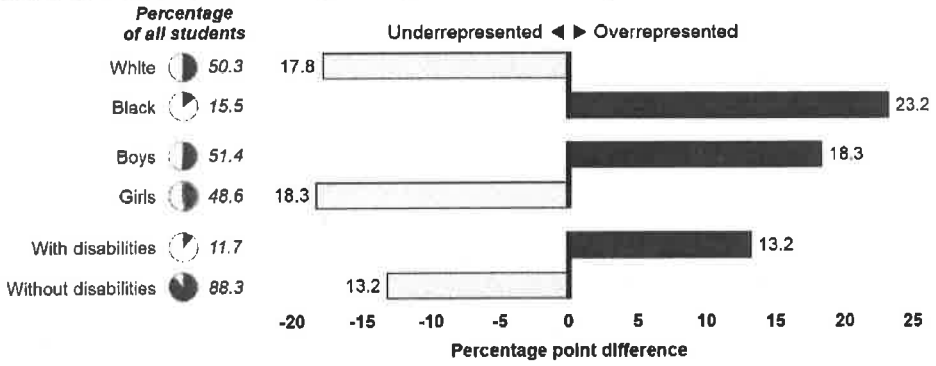
View GAO-18-258. For more information, contact Jacqueline M. Nowicki at (617) 788-0580 or nowickij@gao.gov.

What GAO Found

Black students, boys, and students with disabilities were disproportionately disciplined (e.g., suspensions and expulsions) in K-12 public schools, according to GAO's analysis of Department of Education (Education) national civil rights data for school year 2013-14, the most recent available. These disparities were widespread and persisted regardless of the type of disciplinary action, level of school poverty, or type of public school attended. For example, Black students accounted for 15.5 percent of all public school students, but represented about 39 percent of students suspended from school—an overrepresentation of about 23 percentage points (see figure).

Students Suspended from School Compared to Student Population, by Race, Sex, and Disability Status, School Year 2013-14

This chart shows whether each group of students was underrepresented or overrepresented among students suspended out of school. For example, boys were overrepresented by about 18 percentage points because they made up about 51% of all students, but nearly 70% of the students suspended out of school.



Source: GAO analysis of Department of Education, Civil Rights Data Collection. | GAO-18-258

Note: Disparities in student discipline such as those presented in this figure may support a finding of discrimination, but taken alone, do not establish whether unlawful discrimination has occurred.

Officials GAO interviewed in all five school districts in the five states GAO visited reported various challenges with addressing student behavior, and said they were considering new approaches to school discipline. They described a range of issues, some complex—such as the effects of poverty and mental health issues. For example, officials in four school districts described a growing trend of behavioral challenges related to mental health and trauma. While there is no one-size-fits-all solution for the issues that influence student behavior, officials from all five school districts GAO visited were implementing alternatives to disciplinary actions that remove children from the classroom, such as initiatives that promote positive behavioral expectations for students.

Education and the Department of Justice (Justice) documented several actions taken to identify and address school discipline issues. For example, both agencies investigated cases alleging discrimination. Further, to help identify persistent disparities among the nation's schools, Education collects comprehensive data on school discipline every other year through its Civil Rights Data Collection effort.

GAO

Highlights

Highlights of GAO-19-373, a report to the Chairman, Committee on Education and Labor

June 2019

K-12 EDUCATION

Certain Groups of Students Attend Alternative Schools in Greater Proportions Than They Do Other Schools

Why GAO Did This Study

Students who attend public K-12 alternative schools may be at risk of educational failure for many reasons, including poor grades, disruptive behavior, mental health issues, and other life circumstances. Movement of students in and out of alternative schools can be fluid, with some students attending for a few days to a few years, and some cycling in and out of these schools repeatedly. Support staff, such as school psychologists and social workers, can play a role in supporting students' health, behavioral, and emotional needs.

GAO was asked to review alternative schools. This report examines what is known about enrollment, discipline, and support staff in alternative schools, among other objectives. GAO analyzed data on alternative schools for school years 2013-14 and 2015-16 from Education's Civil Rights Data Collection (most recent years available); visited selected school districts and alternative schools in Florida, Illinois, and Texas, selected for a mix of types (regular alternative, charter, and juvenile justice) and focuses (disciplinary or academic) of alternative schools; and interviewed federal officials.

In commenting on this report, Education expressed concern that GAO's analysis could confuse readers about whether race/ethnicity and other demographic variables are the cause of disproportionality or are simply correlated. GAO believes this concern is misplaced because the report clearly states that GAO's analysis is descriptive and does not imply causation or make inferences about disproportionality.

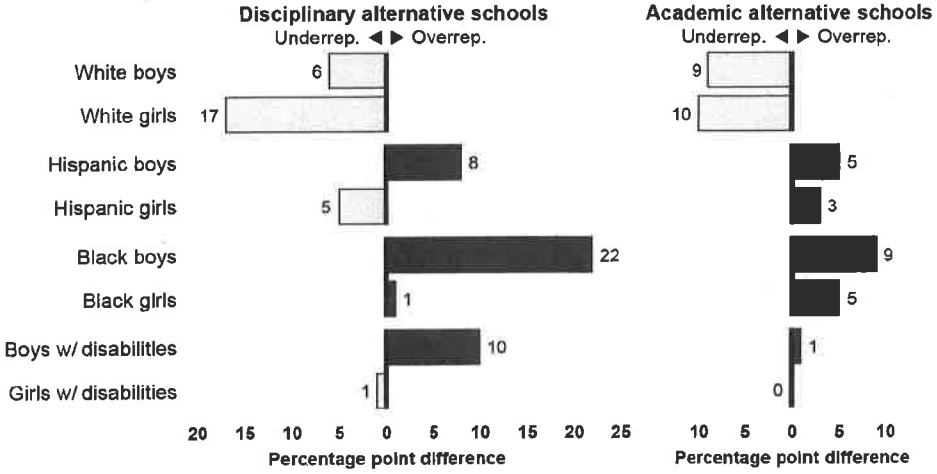
View GAO-19-373. For more information, contact Jacqueline M. Nowicki at (617) 788-0580 or nowickij@gao.gov

What GAO Found

Certain groups of students are overrepresented at alternative schools—public schools with a disciplinary or academic focus that serve students who have been expelled or suspended from school, or are at risk of educational failure—compared to their enrollment at nonalternative schools. Overall enrollment and discipline of students at these schools dropped between school years 2013-14 and 2015-16, according to GAO's analysis of Department of Education (Education) data. Declines in White and Hispanic student enrollment accounted for most of the drop. Some groups, such as Black boys and boys with disabilities, were overrepresented in alternative schools, particularly those with a discipline focus, compared to their enrollment at nonalternative schools (see figure). While overall discipline dropped for students at alternative schools, school arrests and referrals to law enforcement went up by 33 and 15 percent, respectively, for Black boys and girls between school years 2013-14 and 2015-16.

Under/Overrepresentation at Alternative Schools, School Year 2015-16

We used the terms "underrepresented" and "overrepresented" to describe instances in which a student group had a lower or higher level of enrollment at alternative schools compared to their representation in the student population at nonalternative schools. *Our analyses of these data, taken alone, do not establish whether unlawful discrimination has occurred.*



Source: GAO analysis of data from the Department of Education's Civil Rights Data Collection for school year 2015-16. | GAO-19-373

Alternative schools have some of the most vulnerable students, but lower percentages of alternative schools have various types of support staff than nonalternative schools. Compared to nonalternative schools in 2015-16, a lower percentage of alternative schools had social workers, nurses, and counselors—support staff who serve different roles in addressing the health, behavioral, and emotional needs of students. For example, 47 percent of nonalternative schools had at least one social worker, compared to 26 percent of alternative schools. In every district GAO visited, officials said students had experienced multiple types of trauma, such as gang violence, death of schoolmates or parents, poverty, or homelessness—consistent with research linking trauma with educational and behavioral challenges—and described various strategies they used to meet student needs despite their staffing challenges.

August 2019

HIGHER EDUCATION

More Information Could Help Student Parents Access Additional Federal Student Aid

GAO Highlights

Highlights of GAO-19-522, a report to congressional requesters

Why GAO Did This Study

Student parents face many challenges, including paying for child care, that can make it difficult for them to complete a degree. The federal government supports student parents through Education's CCAMPIS program, which provides colleges funding for child care services, and federal student aid, which can also help students pay for child care. GAO was asked to provide information on student parents and the federal programs that support these students.

This report examines, among other objectives, what is known about the characteristics and degree completion of undergraduate students with children; what is known about the CCAMPIS program and how reliable Education's reported outcomes are; and to what extent selected schools publicize the option to increase federal student aid to help pay for child care. GAO analyzed 2009 and 2016 federal student data (the most recent available) and CCAMPIS program performance data, reviewed how the 62 schools that were awarded CCAMPIS grants in 2017 publicized the student aid option to help pay for child care, and reviewed relevant federal laws and regulations and agency documents. GAO interviewed officials from Education and selected schools.

What GAO Recommends

GAO is making three recommendations to Education to correct its CCAMPIS persistence and graduation rate calculations and to encourage schools to inform students about the option to increase federal student aid to help pay for child care. Education disagreed with GAO's recommendations, but described plans to improve its performance calculations. GAO continues to believe additional actions are warranted.

View GAO-19-522. For more information, contact Melissa Emrey-Arras at (617) 788-0534 or emreyarrasm@gao.gov.

What GAO Found

More than one in five undergraduate students were raising children, and about half of student parents left school without a degree, according to Department of Education (Education) data. In 2015-2016, an estimated 22 percent of undergraduates (4.3 million of 19.5 million) were parents. An estimated 55 percent of student parents were single parents, 44 percent were working full-time while enrolled, and 64 percent attended school part-time. Undergraduate student parents had fewer financial resources to fund their education than students without children. Nearly half of student parents reported paying for child care, with monthly costs averaging about $490. A higher percentage of student parents left school without a degree (52 percent) compared to students without children (32 percent) as of 2009 (the most recent data available).

About 56 percent of undergraduate student parents had a child age 5 or younger in school year 2015-16.

Source: GAO file photo. | GAO-19-522

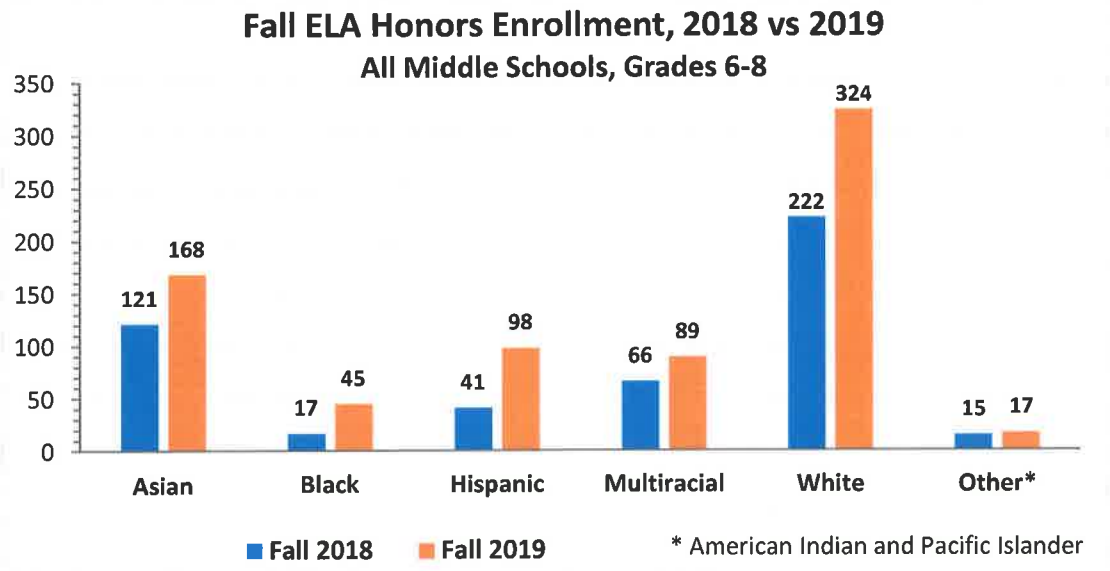
Education's Child Care Access Means Parents in School (CCAMPIS) program helped about 3,300 students pay child care costs for about 4,000 children in 2016-2017. Another 4,200 children were on waiting lists to receive assistance. Most CCAMPIS participants paid some child care fees after receiving subsidies—the median payment each month was about $160. Education measures participants' persistence in school and graduation rate to assess the performance of the CCAMPIS program. However, flaws in its calculations of these two measures prevented Education from reporting reliable results, making it difficult for Education and Congress to evaluate the program's effectiveness.

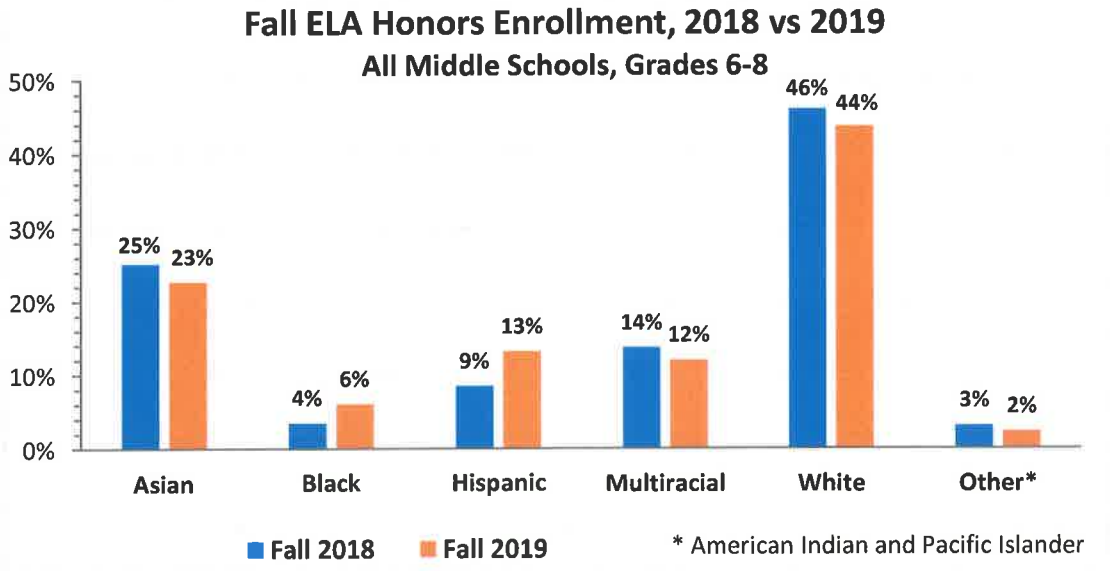
Some student parents could be eligible to increase their federal student loans to help pay for child care by asking their schools to include an allowance for dependent care expenses in their financial aid calculations. However, schools do not always publicize this allowance to current and prospective students. GAO reviewed the websites—where schools post other college cost information—of schools serving student parents and found that about two-thirds of these websites did not mention the allowance. Schools are not required—and Education does not encourage them—to inform student parents about the allowance. As a result, eligible student parents may be unaware of this option to request additional financial support to help them complete their degree.

Middle School ELA Honors Program Analysis

Enrollment

Under the "opt-in" policy, enrollment in ELA Honors classes in grades 6-8 across the district rose from 482 in Fall 2018 to 741 in Fall 2019, a 259 student (54%) increase. Asian and White student enrollment increased as more of these students took advantage of the new policy, but their participation rate declined slightly because enrollment also increased substantially among Black and Hispanic students, which increased their participation rate.

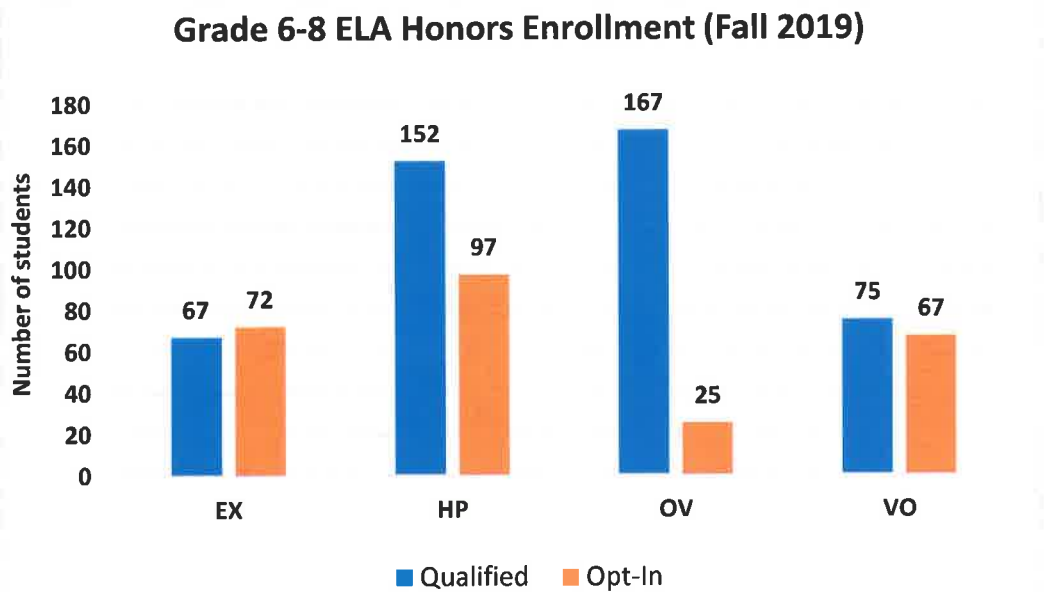




Student enrollment was also analyzed based on how well students performed on their STAR and SBA results, a system that was previously used to determine which students qualified for Honors. Under the new system, no cut score criterion was used, allowing any student to enroll. Further analysis of the enrollment data involved comparing students who would have qualified under the old system ("*Qualified*") and those who would not have qualified last year but who enrolled this year ("*Opt-In*").[1]

[1] Students in Summit were not included in the analysis.

Harbour Pointe had the most *Opt-in* students, and Olympic View had the fewest (most of their students would have qualified under the previous system). Explorer and Voyager had about the same number of students *Opt-in* compared to those who would have qualified last year, essentially doubling their ELA honors enrollment.



Note: Some students who enrolled in ELA honors classes were new to the district and are not included in this analysis.

Academic Performance

The previous academic performance of the two groups of students, *Qualified* and *Opt-in*, was different from each other in three areas: STAR, class grades, and SBA (see table below).

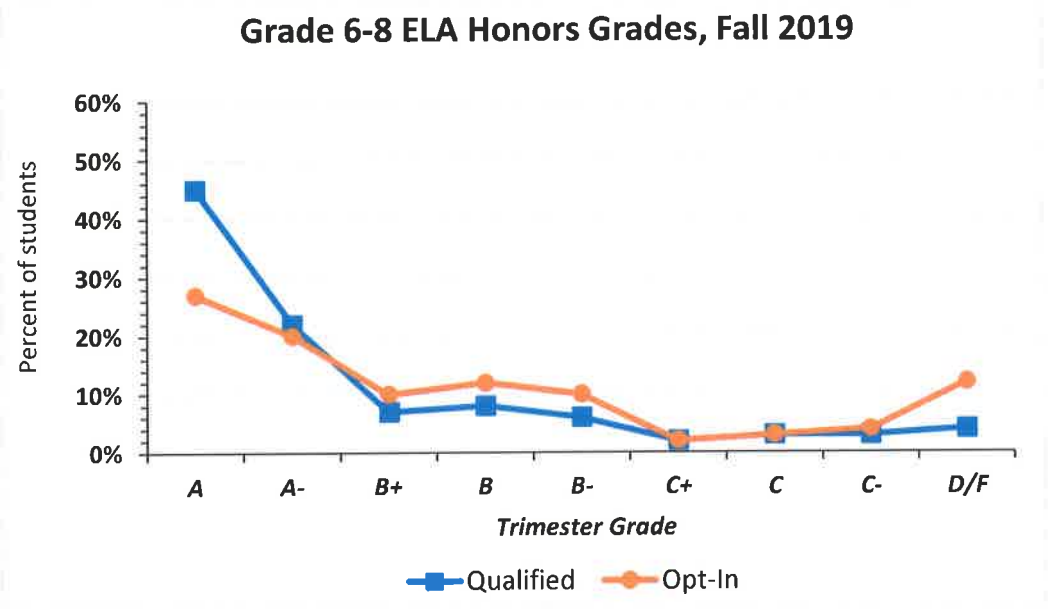
- *Qualified* students were typically in the top 20% of their class in terms of the STAR and SBA percentile ranks (PR). These students also had better grades this year – they were more likely to have a high STAR reading level, better ELA grades this year, and better SBA scores last year.
- *Opt-in* students were, by definition, below the top 20% of their class, although in most cases, they were in the next 30% (still above average). There were 20 *Opt-in* students who were below the 40th PR. The eight students in the bottom three deciles (below the 30th PR) were well below the others in all areas.

Results for Fall ELA Honors Students in Grades 6-8, All Middle Schools

			Qualified			Opt-In		
Rank Decile	Qualified N	Opt-In N	Fall 2019 STAR GE	Class Grade	SBA PR	Fall 2019 STAR GE	Class Grade	SBA PR
10	131	0	11.4	3.64	95.5			
9	206	0	9.6	3.46	87.8			
8	121	58	8.6	3.19	79.1	8.6	3.28	77.9
7	3	82	8.2	3.47	63.6	7.5	3.02	68.8
6	0	77				6.8	2.90	58.8
5	0	24				6.3	3.07	49.5
4	0	12				4.8	2.58	37.4
3	0	6				5.1	1.95	27.7
2	0	1				3.3	1.70	18.0
1	0	1				2.1	1.70	8.4
Total/Avg	461	261	9.79	3.42	87.1	7.20	2.99	63.2

The distribution of grades earned in the Fall 2019 Trimester among the *Qualified* and *Opt-in* students is shown below for all schools and all grades. The pattern is similar for grades 6-8.

- A high percentage of *Qualified* students get an A, and *Opt-in* students are more likely to get a D or F.
- The distribution of the two types of students is very similar for the seven grades from a A- to C-. Surprisingly, some *Qualified* students still get a C or below.



	A	A-	B+	B	B-	C+	C	C-	D/F
Qualified	210	104	35	37	26	9	13	15	18
Opt-In	68	51	36	30	26	4	9	10	32
Total	**278**	**155**	**71**	**67**	**52**	**13**	**22**	**25**	**50**
Percent									
Qualified	45%	22%	7%	8%	6%	2%	3%	3%	4%
Opt-In	26%	19%	14%	11%	10%	2%	3%	4%	12%
Total	**38%**	**21%**	**10%**	**9%**	**7%**	**2%**	**3%**	**3%**	**7%**

Conclusions

- From an equity perspective, the Opt-in policy is working. Many more students of color are taking honors classes and the disparities between Asians and Whites have closed slightly.
- Principals report relatively few problems and that parents are happier with having their child be able to take an honors class.
- Some students, especially those who have relatively low academic skills, are not performing well. This merits a closer look at these students to see what could be done to mitigate what appears to be a misplacement.
- As with any new initiative, there are positive outcomes but also unintended consequences. The composition of the honors classroom has an impact on teacher expectations and pedagogy and scheduling was impacted. Further investigation into these and other consequences should be taken to determine how best to address actual and perceived shortcomings of the new policy.

Memorandum

Date: February 26, 2020
To: Pat Hegarty
From: Pete Bylsma
Subject: Impact of Boundary Change

A total of 94 students were moved to another school due to the boundary change in Merrill Creek and Upper Ridge areas (both north of Rt 526). Specifically, 53 students in grade 6 were reassigned from OV to HP, and 41 students in grade 9 were moved from MA to KA. The table below provides demographic data about these students compared to others who were not reassigned.

	HP 6th Graders		KA 9th Graders	
	Moved	**All Others**	**Moved**	**All Others**
Total students	53	280	41	512
Pct Male	49%	51%	41%	50%
Pct Asian	4%	21%	2%	21%
Pct Black	14%	6%	5%	4%
Pct Hispanic	24%	3%	37%	1%
Pct Multiracial	20%	18%	12%	15%
Pct White	37%	52%	44%	59%
Pct Other	1%	0%	0%	0%
Pct Low Income	45%	28%	46%	11%
Pct ELL	14%	8%	15%	6%
Pct SWD	8%	17%	12%	9%

The results from the Fall STAR assessments of the students who were moved from OV to HP are shown below. Their performance is compared to all 6th graders at HP.

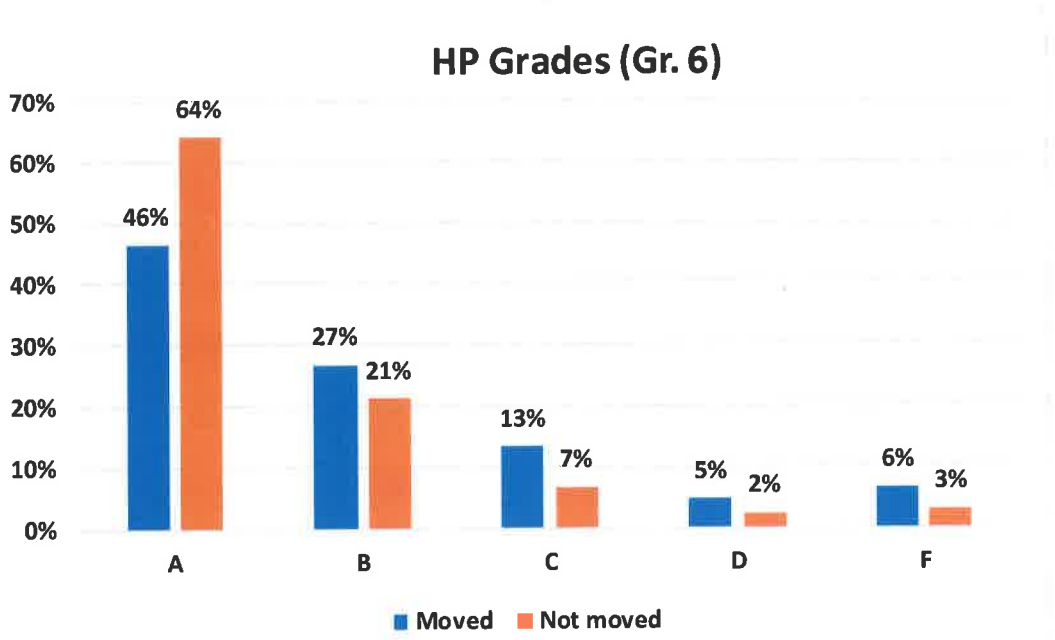
	Grade Equivalent*		Percentile Rank*	
	Moved	All others	Moved	All others
Avg STAR Reading	5.5	6.4	37.4	50.1
Avg STAR Math	6.3	7.8	44.5	62.7

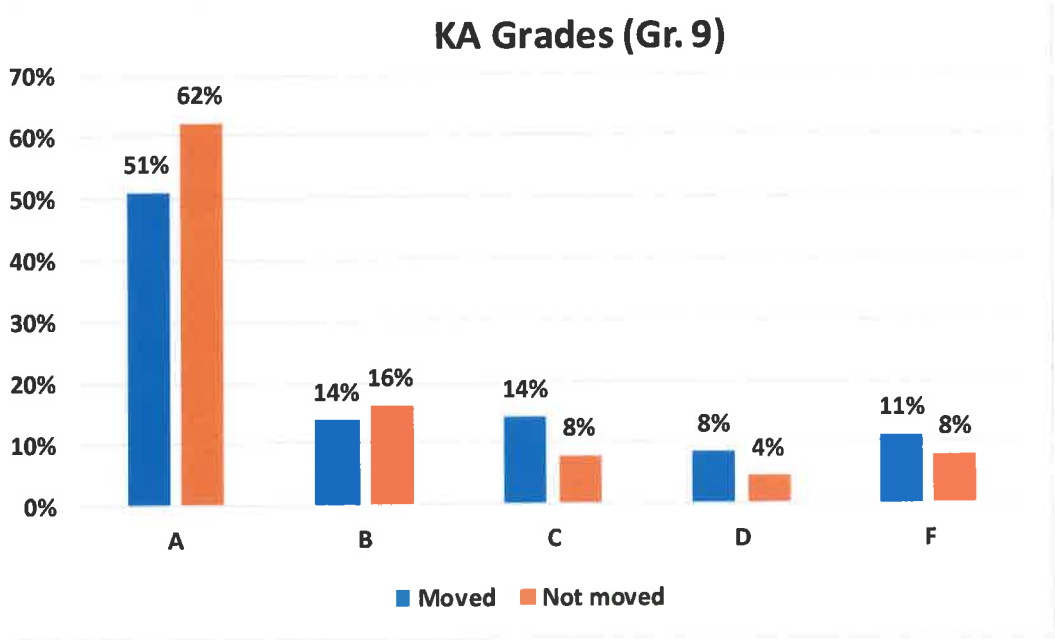
*Initial results in September/October (GE decimals indicate months)

An analysis of the grades earned by students who were moved is shown below. The table shows the percentage of failing grades of all grades assigned for these students, and that percentage is compared to all other students in that grade at the school. The average GPA is also shown for the two groups at both schools.

	Harbour Pointe (Gr 6)		Kamiak (Gr 9)	
	Moved	All others	Moved	All others
Pct D or F Grade*	11.1%	5.3%	19.5%	12.3%
Grade Point Avg.*	3.07	3.45	2.96	3.27

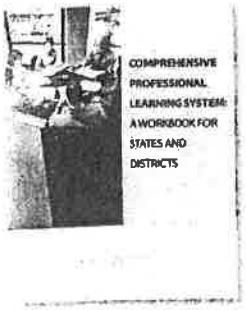
*Grades are for the Trimester and Semester as well as their current grade.





Data Summary

Students who were moved to HP and KA were different demographically and academically from the students who were attending these schools. Those who were moved were more likely to be Hispanic, ELL, and from low income homes, and their academic skills were not as high as those who were assigned to HP and KA. The boundary change will likely result in lower SBA results at both HP and KA than what has occurred in the past.



Comprehensive Professional Learning System:
A WORKBOOK FOR STATES AND DISTRICTS
Learning Forward, 2013

This workbook guides a team in reviewing, revising, or replacing an existing professional learning system. The process outlined and the tools included support the team in conducting all aspects of its work, usually done over several months, with continuous progress monitoring and input from research, experts, and constituents. The workbook is designed to be used by leaders in education agencies, including state departments or ministries of education, local school systems, and other governing agencies or organizations that provide professional learning.

Available to download free at **www.learningforward.org/publications/implementing-common-core.**

CONDUCT ONGOING ASSESSMENT AND EVALUATION

Assessment and evaluation have multiple purposes. First, they support continuous improvement. With data collected in formative and summative evaluations, leaders of professional learning systems have evidence to make improvements.

Second, they generate evidence to determine whether the system is working both to support effective professional learning planning, implementation, and evaluation and to improve educator effectiveness and student success.

In addition, an evaluation can inform resource investments. For a comprehensive professional learning system to work smoothly and to meet its many goals, all components of the system must be finely tuned and coherent.

Recommended steps for the evaluation of a comprehensive professional learning system include:

- Plan the evaluation;
- Establish the evaluation framework;
- Conduct the evaluation;
- Report the evaluation; and
- Evaluate the evaluation.

Included here are two tools, **Guide to Evaluation** and **Professional Learning Organizing Checklist.** The first tool summarizes these steps, outlines the questions, and serves as a planning guide for conducting an evaluation of a comprehensive evaluation system.

The second tool offers a guideline for conducting an evaluation of a comprehensive professional learning system. This checklist, which is adapted from *Doing What Works*, a U.S. Department of Education website devoted to providing research and evidence-supported practices, is a complement to the evaluation of specific professional learning programs contained in short- and long-term professional learning plans, not a replacement for those.

These tools are from *Comprehensive Professional Learning System: A Workbook for States and Districts* (Killion, 2013), which outlines eight steps for developing a comprehensive professional learning system. The eight steps are:

1. Launch the work.
2. Collect and examine data and research.
3. Establish vision, assumptions, purpose, definition, and goals.
4. Design system operations.
5. Revise or develop policies.
6. Plan short- and long-term professional learning.
7. Provide professional learning for full implementation.
8. Conduct ongoing assessment and evaluation.

For more information, visit www.learningforward.org/publications/implementing-common-core.

REFERENCE

Killion, J. (2013). *Comprehensive professional learning system: A workbook for states and districts.* Oxford, OH: Learning Forward.

GUIDE TO EVALUATION

Use this guide to plan, conduct, and report an evaluation of a comprehensive professional learning system.

Purpose	To guide the planning, conduct, and reporting of an evaluation of a comprehensive professional learning system.	
Nonpurpose	To provide a turnkey evaluation plan.	
Step	**Question**	**Responses**
Determine the purpose and focus of the evaluation.	What is the reason or purpose for this evaluation?	
Determine the audience for the evaluation.	Who wants this evaluation? What does this particular individual, group, etc. want to know about the comprehensive professional learning system?	

GUIDE TO EVALUATION continued

Step	Question	Responses
Design the evaluation questions.	What do we want to know? What questions are we trying to answer? How important is it to answer these questions?	
Determine the need for an external evaluator.	Is an external evaluator needed or can an internal team or person conduct this evaluation? What are the advantages and disadvantages of either approach? Do we have resources for an external evaluator?	
Establish the evaluation framework.	How will we conduct the evaluation? What data do we need to answer the questions? What is the source of the data? How will the data be collected? What is the timeline? How will we analyze the data? Who will be responsible for this process or aspects of it?	
Collect data.	How will we manage, track, and be accountable for accurate data collection?	

GUIDE TO EVALUATION continued

Step	Question	Responses
Analyze data.	Are the planned data analyses appropriate given the data? What changes do we need to make? How can the analyzed data be displayed so that multiple stakeholders can interact with it easily? What additional analyses are possible that had not been planned?	
Interpret analyzed data.	How can we engage stakeholders to add value and meaning to the analyzed data? What information can they add to increase the usefulness of the analyzed data? What conclusions are evident? What recommendations do they suggest for next steps based on the conclusions?	
Report the findings.	To whom do we need to report about the evaluation? What are the best formats or media for reporting to each audience? How do we help those to whom we report understand the value and meaning of the conclusions and recommendations and engender their support?	
Evaluate the evaluation.	What did we learn about the evaluation process and our competencies as evaluators that we can apply to future evaluations? How did this evaluation help us improve our evaluation skills?	

PROFESSIONAL LEARNING ORGANIZING CHECKLIST

Use this tool to plan and conduct an evaluation of a comprehensive professional learning system.

Purpose	Determine readiness and thoroughness in planning an evaluation.
Nonpurpose	Describe best practices for evaluating a comprehensive professional learning system.

Evaluation organizer

This organizer supports the following four primary parts of program or system evaluation:

- Planning the evaluation;
- Collecting implementation and educator and student performance data;
- Analyzing and interpreting data; and
- Sharing and using evaluation findings to improve quality and results.

Person(s) responsible for evaluation: _____

Purpose of evaluation: _____

Evaluation questions: _____

_____

_____

Evaluation organizer checklist

Indicate the current status of each action and note the expected date of completion.

Action steps	Completed	In progress	Under consideration	Not applicable	Expected date of completion
A. PLAN THE EVALUATION					
1. **The evaluation purpose is clearly defined (e.g. system improvement, system effectiveness, system efficiency).**					
2. **Key stakeholders (e.g. teachers, parents, community members, school and district administrators, third-party providers, institutions of higher education, education agencies, education advocacy groups, technical assistance providers) are involved in or informed about, as appropriate, the evaluation plan.**					

PROFESSIONAL LEARNING ORGANIZING CHECKLIST continued

Action steps	Completed	In progress	Under consideration	Not applicable	Expected date of completion
3. The evaluation plan has the following components:					
a. Purpose;					
b. Evaluation questions based on identified outcomes and indicators of success;					
c. Evaluation design (e.g. descriptive, qualitative, quantitative, quasi-experimental, control group, case study);					
d. Data and/or evidence needed to answer the evaluation questions;					
e. Data sources, or who or what will provide the data or evidence needed (e.g. educators, system data, resource utilization, impact data);					
f. Data collection methodology appropriate to data sources (e.g. gather existing data, conduct surveys, interviews, observations; collect artifacts, documents, records);					
g. Plans to ensure confidentiality and anonymity in data collection and reporting;					
h. Plans to meet the standards for education program evaluation standards;					
i. Plans to protect the rights of participants (e.g. Family Educational Rights and Privacy Act, institutional review board, when required or desired);					
j. Data analysis plans;					
k. Dissemination of final report plans;					
l. Timeline for carrying out each evaluation activity.					

PROFESSIONAL LEARNING ORGANIZING CHECKLIST continued

Action steps	Completed	In progress	Under consideration	Not applicable	Expected date of completion
4. Determine the need for an external evaluator.					
5. Develop strategies for maintaining integrity, objectivity, reliability, and validity in the evaluation.					
6. Get required permissions and support from authority and stakeholders.					
7. Define roles for stakeholders engaged in the evaluation (e.g. data collection or transmission, interpretation of analyzed data, development of recommended next actions, reporting findings).					
8. Assign oversight and/or leadership for evaluation with appropriate level of authority designated.					
B. COLLECT DATA					
9. Obtain appropriate permissions or consents after informing participants about the evaluation and their rights as human subjects before data collection begins.					
10. Collect appropriate data (e.g. process, impact, implementation).					
11. Minimize data burden with the use of extant data, or using what is available when possible.					
12. Collect data from multiple stakeholders to support triangulation.					
13. Identify gaps between what the system is designed to do and how it is implemented.					
14. Analyze data to reveal information of system impact on specific educator groups (e.g. teachers, principals, district staff) or work environments (e.g. school, district, outside of school or district).					

PROFESSIONAL LEARNING ORGANIZING CHECKLIST continued

Action steps	Completed	In progress	Under consideration	Not applicable	Expected date of completion
15. Analyze data to identify patterns, trends, etc., of successes and problem areas.					
16. Analyze data to suggest contributing factors for findings.					
17. Propose recommendations for next actions based on findings.					
18. Plan broad-based dissemination.					
19. Plan multiple dissemination media and formats as appropriate to stakeholder groups.					
20. Engage stakeholders in using findings to identify improvements.					
21. Leadership team, in collaboration with stakeholders, plans improvement actions and timeline.					
22. Improvement plan components included: **a.** Goals;					
b. Strategies for achieving goals;					
c. Roles and responsibilities for implementing the strategies;					
d. Timelines for implementing and achieving the goals;					
e. Resources for implementing the plan;					
f. Monitoring the implementation of the plan;					
g. Indicators and measurements for success.					

Source: Killion, J. (2013). *Comprehensive professional learning system: A workbook for states and districts.* Oxford, OH: Learning Forward.

Quotes about Evaluation and Statistics

Evaluating program effectiveness and analyzing data are challenging tasks. Evaluation threatens the status quo, so it naturally faces resistance by those who are being evaluated. When evaluations are mandated, people will be coy about what they reveal and take exception to your findings. You will need to have a repertoire of reasons why evaluations are needed. Quoting others is a handy way to showing that evaluation is justified.

Read the following list of quotes and identify two in particular that resonate the most with you. Then reflect on all the quotes and determine at least two major themes you can take from the quotes. Be prepared to share why you picked those quotes and the major themes you identified.

Not everything that counts can be counted, and not everything that can be counted counts. *Albert Einstein*

There is always an easy solution to every human problem—neat, plausible, wrong. *H. L. Mencken*

We're all entitled to our own opinions, but we're not entitled to our own facts. *Daniel Patrick Moynihan*

The greatest obstacle to discovering the shape of the earth, the continents, and the oceans was not ignorance but the illusion of knowledge. *Daniel Boorstin*

There is nothing more fearful than ignorance in action. *Johann Wolfgang von Goethe*

Show me a thoroughly satisfied man and I will show you a failure. *Thomas Edison*

Real knowledge is to know the extent of one's ignorance. *Confucius*

There is no birth of consciousness without pain. *Carl Jung*

All learning begins when our comfortable ideas turn out to be inadequate. *John Dewey*

Life can only be understood backwards; but it must be lived forwards. *Soren Kierkegaard*

To go fast, go alone. To go far, go together. *African proverb*

Torture numbers, and they'll confess to anything. *Gregg Easterbrook*

Statistics are like bikinis. What they reveal is suggestive, but what they conceal is vital. *Aaron Levenstein*

Say you were standing with one foot in the oven and one foot in an ice bucket. According to the percentage people, you should be perfectly comfortable. *Bobby Bragan*

Statistics can be made to prove anything - even the truth. *Author Unknown*

Statistics are human beings with the tears wiped off. *Paul Brodeur*

Mathematics is an exact fact; figures don't lie, but liars sometimes figure. *Col. L. F. Copeland* (1888)

Facts are stubborn things, but statistics are more pliable. *Author Unknown*

There are three kinds of lies - lies, damned lies and statistics. *Benjamin Disraeli*
(Commonly misattributed to Mark Twain because he quotes Disraeli in his autobiography)

He uses statistics as a drunken man uses lampposts - for support rather than for illumination.
Andrew Lang

Do not put your faith in what statistics say until you have carefully considered what they do not say.
William W. Watt

There is the man who drowned crossing a stream with an average depth of six inches. *W.I.E. Gates*

Satan delights equally in statistics and in quoting scripture. *H.G. Wells*

While the individual man is an insoluble puzzle, in the aggregate he becomes a mathematical certainty. You can, for example, never foretell what any one man will be up to, but you can say with precision what an average number will be up to. Individuals vary, but percentages remain constant. So says the statistician. *Arthur Conan Doyle*

Statistics may be defined as "a body of methods for making wise decisions in the face of uncertainty."
W.A. Wallis

I abhor averages. I like the individual case. A man may have six meals one day and none the next, making an average of three meals per day, but that is not a good way to live. *Louis D. Brandeis*

The death of one man is a tragedy. The death of millions is a statistic.
Joe Stalin (comment to Churchill at Potsdam, 1945)