

Amplifying Voices: Representing Marginalized Students in Data Use and Reporting

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Abstract: This literature review examines how marginalized students are represented in educational data, addressing disparities faced by student groups such as racialized students, those with disabilities, LGBTQ+ students, students from low-income backgrounds, and those with limited English proficiency. Research on data and data reporting in schools is systematically examined, resulting in the identification of the need for a more holistic approach to gathering and analyzing student data. Approaches such as the integration of student stories and context into data analysis are considered in recommendations for various levels of data use. Recommendations for teachers and classrooms include acknowledging bias in interpretation, aligning outcomes with holistic student goals, and incorporating formative assessment data in classrooms. For administrators and schools, starting the data analysis process with data from marginalized groups, and reinforcing statistics with qualitative data are key. Educational systems can prioritize local needs for improvement, combine accountability with teacher development opportunities, and empower educators to lead school improvement efforts actively. Combined, these approaches to representing and reporting data can improve decision-making in education by recognizing diverse student needs and experiences.

Keywords: Data, Reporting, Inclusive Education

Introduction

In today's educational landscape, ensuring accurate and appropriate representation of students in data is critical. Many researchers will assert that understanding assessment and data is key to understanding student learning and should inform effective decision making within schools (Brookhart, 2015; Finnigan et al., 2012; Guskey, 2012). In addition, creating inclusive school environments where all students feel represented fosters a positive and supportive educational experience. The underrepresentation or misrepresentation of marginalized students across classroom, school, and system-wide levels not only hinders their academic and socio-emotional growth but also contributes to systemic inequities within educational systems. This issue carries profound implications for educators and policymakers as it affects the validity of data-driven decision-making processes, the equitable distribution of resources, and the promotion of inclusive environments conducive to student success. This analysis will synthesize evidence illustrating the disparities and challenges faced by marginalized student populations, examine how to represent marginalized students accurately and appropriately in data reporting across classrooms, schools, and educational systems, and explore strategies to address this data reporting gap.

Literature Review

Data Forms and Use

Data collection is a complex process, as “reality is complicated, and every statistic is someone’s summary, a simplification of that complexity. Every statistic must be created, and the process of creation always involves choices that...affect what we understand” (Best, 2001 as cited in Garner, 2013, p.161). To address this concern, there are many researchers that have been calling for a more holistic view of data and data analysis within school environments (Finnigan et al., 2012; Garner, 2013; Darling-Hammond & Friedlaender, 2009; Roxas & Rios, 2022; Safir & Dugan, 2021). Finnigan et al. (2012) shared that holding narrow definitions of data limit the effectiveness of evidence-based instruction. In addition, it is important to note that translating raw data into information and knowledge requires skill and is inherently a social process. The data chosen to support decision making should always be related to its intended purpose (Brookhart, 2015). In schools, the intent of data analysis should be to move student learning forward (Gurskey, 2012).

Standardized tests, or norm-referenced tests, are designed to rank test takers on a bell curve where most of the results fall within the middle and taper off at the higher and lower ends (Wolsey et al., 2020). Alongside norm-referenced testing, schools may also use criterion-referenced data that is connected to a pre-established set of standards (Wolsey et al., 2020). However, it is generally agreed that testing in schools should encompass a wide range of evidence and move beyond just the acquisition of norm or criterion-referenced test scores. In addition, test use (the practical application of testing students) and test analysis (the interpretation of test data) are related, but different concepts. The incorporation of multiple sources such as student portfolios, formative assessments, and surveys in test

analysis will support the effective interpretation of student learning data (Brookhart, 2015; Gurskey, 2012). Using and interpreting this holistic data in a cyclical process where administrators identify a problem, try a solution, evaluate effectiveness, and then start the cycle again is considered an effective approach to data informed decision making (Brookhart, 2015).

Data Analysis and Marginalized Students

Webber and Scott (2012) asserted that to support students in a democratic society, schools should facilitate the achievement of basic knowledge and skills that are accessible to all, regardless of background. However, our current school systems, practices, and narratives often perpetuate disparities in outcomes for marginalized students (Safir & Dugan, 2021). Marginalized students in school systems can include racialized students, students with disabilities, LGBTQ+ students, students from low-income backgrounds, and students with limited English proficiency. These groups often face various barriers to education, such as discrimination, lack of resources, inadequate support services, and systemic biases that can negatively impact their academic achievement and overall well-being (Safir & Dugan, 2021).

Schools are a primary location where ability is measured and constructed (Parekh et al., 2021). Studies have shown that just having one of these factors, such as being an English language learner or experiencing a lower socioeconomic status, can impact assessment results on content based standardized tests due to bias in testing (Salazar et al., 2022). Parekh et al. (2021) used critical disability theory as a lens from which to analyze the consequences of assessment and social identification of ability and inability in schools. Their research found that there were widespread differences in teacher perception across student demographic identities such as ability, income, race, and family structure, which in turn impacted interpretation of student test results. In fact, implicit bias was demonstrated in the ways teachers viewed how students approached their own learning, where white students and students without a special education need were interpreted as having “better” approaches to learning than those of their racialized, disabled, and less privileged counterparts (Parekh et al., 2021). Sociocultural factors, in turn, impact not only the interpretation of assessment results, as they often reflect social context as opposed to cognitive ability (Salazar et al., 2022). Research has also demonstrated an increased gap for students who belong to more than one marginalized group, as Roxas and Rios (2022) identified a trend in overrepresentation of students who are racialized and have a special education need within segregated classrooms that support behaviour challenges, and the underrepresentation of these same students in congregated settings that support cognitive or physical disabilities. These factors impact the collection of standardized student data. The above information calls into question how subjective and objective forms of assessment are defined, as studies have shown that all forms of assessment are vulnerable to bias (Parekh et al., 2021).

If the task of education is to provide an equal opportunity for students to play an active role in shaping the future of society (Webber & Scott, 2012), then the use of data within school environments should support equity in representation of all students, not just those who represent the mean. Safir and Dugan (2021) shared that to “repurpose data as a tool for equity and inclusion” (p. 53), school administrators should shift their focus to the margins as a starting point for data conversations. Darling-Hammond and Friedlaender (2009) added to this through maintaining that educators have an ethical imperative to look beyond norm-referenced tests, as focusing on average scores dehumanizes all students, not just students on the margins. Garner (2013) outlined the use of Rasch Measurement as a solution to associating students to standardized numbers. Instead of placing students as “below average” in reference to a statistical norm, Rasch Measurement examines the location of the individual on a continuum, emphasizing personal growth. Incorporating context and qualitative data such as stories is another way to move beyond standardized scores to what Wang (2016) called “thick data”: numbers brought to light using ethnographic research methods that centre and uncover emotions, stories, and models of each student’s world. Incorporating context supports educators and administrators in re-integrating meaning that may have been lost in the process of normalizing, standardizing, and defining statistical data (Wang, 2016). Roxas and Rios (2022) added to this concept by emphasizing the need to encourage teachers and leaders to move beyond a singular notion of a marginalized student when interpreting data, and train educators to effectively embrace and understand the fluidity and intersectionality of identity. Incorporating context into interpretation allows meaning to be applied to numbers, especially those that represent students outside the standardized norm. It also prevents the use of “bad statistics,” or numbers that have been manipulated or selected to reaffirm individuals’ interests or agendas (Garner, 2013).

Application

It is not enough to just develop a deep understanding of data representation. To lead an effective and evidence informed learning environment, teacher leaders, administrators, and educational systems need to actively apply this understanding to building equity in data representation. Concerns such as conflicting external demands, ambiguous causal relationships in educational data, and the impact of personal belief on teachers grading systems emphasize the importance of exploring and interrogating traditional grading practices and standardized data interpretation (Feldman, 2023; Yurkofsky et al., 2020). Incorporating data from marginalized students is crucial for creating a more inclusive and equitable educational system as it allows educators to better understand the unique experiences and needs of all students, thereby facilitating more informed decision-making and ensuring that policies and practices resonate with diverse student populations. In other words, “to have impact numbers need stories and vice versa” (Wang, 2016, p.1). The following suggestions and implications for teachers, administrators, and educational systems support effective representation of *all* students in school data, to move beyond categorizing and sorting (Feldman, 2023), and move towards fostering an evidence-informed learning culture that promotes fairness, understanding, and improved outcomes for all students.

Considerations for Teachers and Classrooms

Classroom assessment has social, emotional, and academic implications (Webber et al., 2013). Due to this, educators should have a clear understanding of the potential impact of the practices they use for assessment and evaluation (Green, Johnson, Kim, & Pope, 2007). The use of equitable, bias-resistant, and motivational grading practices is paramount to moving student learning forward (Feldman, 2023). Within classrooms, supporting all students' needs involves a clear understanding of both *what* teachers should assess and *how* they are assessing. Research demonstrates that quality assessment practices need to be planned and structured deliberately to have the intended positive impact on students learning (Green et al., 2007; Webber & Scott, 2012; Webber et al., 2013). In addition, assessment should be responsive to the diversity within our society and take into consideration students' culture, ability, gender, language, and socioeconomic context (Feldman, 2024; Webber & Scott, 2012). According to Green et al. (2007), assessments should also aim to reflect students' mastery of content accurately, be administered fairly, and be treated confidentially. To support all students, teachers should have a clear understanding of what outcomes they are anticipating. These identified outcomes should move beyond the memorization and regurgitation of test content, and towards life skills and interdisciplinary, critical thinking (Darling-Hammond & Friedlaender, 2009). To support diverse learners, assessments should reflect the extent to which students have mastered these goals of instruction and avoid practices that improve test performance without increasing mastery of the content itself (Green et al., 2007). Although students require content to think with and about, teaching and assessing only for facts, rather than moving beyond facts to understanding, will not provide students with the skills they need to become active and engaged citizens (Steinberg, 2009). Steinberg (2009) also suggested how to assess responses to questions aligned with these outcomes, which can seem subjective. Well-developed, consistent, and culturally responsive rubrics support teachers in understanding and assessing students' abilities to achieve mastery.

In addition, research emphasizes the importance of incorporating and emphasizing assessment for learning within classrooms. Formative assessment engages students in metacognitive strategies like goal setting, self-monitoring, and self-reflection, empowering them to take control of their learning and become more dedicated and proficient learners (Heritage & Wylie, 2018; Wolsey et al., 2020). The following components should be present in classrooms to encompass effective assessment for learning, and therefore support teachers in meeting assessment equity goals:

1. A clear understanding and communication of learning goals
2. Intentional gathering of evidence throughout learning activities (through dialogue, demonstration, or observation)
3. Opportunities for self-assessment
4. Timely and specific feedback that supports students in meeting learning goals (Heritage & Wylie, 2018)
5. The incorporation of student voice in the interpretation and application of formative assessment data (Webber et al., 2013)

Teachers are most effective and can advance equity goals within their classrooms when they use assessment to develop insights into student learning, provide opportunities that support that student's competence, and support personalized and continuous improvement (Heritage & Wylie, 2018). Through incorporating assessment for learning, teachers aim for grading to be honest and respectful, incorporating a strong understanding of what each student can do as a learner. These grading practices disrupt existing patterns that lead to high achievement for some groups and consistent underachievement for others. In addition, this supports targeted support for historically underserved student groups (Feldman, 2023).

Considerations for Administrators and Schools

School leaders have a clear role in both facilitating improvements to student learning, and in promoting high quality assessment within schools (Buske & Zlatkin-Troitschanskaia, 2019; Lynch et al., 2016; Webber et al., 2013). In addition, an administrator's beliefs about how knowledge is collected and understood directly impact the use of data in schools (Buske & Zlatkin-Troitschanskaia, 2019). Leaders should be actively involved in facilitating assessment and ensuring assessment of student learning occurs regularly and is done effectively. Effective assessment, as shared above, should be anchored in the demonstration and evaluation of applied skills in authentic settings for students (Safir & Dugan, 2021). Furthermore, school leaders should ensure that assessment information is shared with parents and the wider school community (Webber et al., 2013).

School leaders should work to create a school culture that recognizes and celebrates differences and is rooted in the belief every student can succeed (Roxas & Rios, 2022). A multidimensional perspective of educational assessment facilitates a more inclusive and culturally responsive learning environment and ensures schools goals are aligned with the educational aspirations of all stakeholders (Webber & Scott, 2012). In fact, Lynch et al. (2016) share that without multidimensional data and the capacity to interpret it, there are negative implications to school improvement and school culture. School data use should be a collective activity, incorporating teachers, administrators, parents, and community leaders (Buske & Zlatkin-Troitschanskaia, 2019; Webber & Scott, 2012). In addition, school leaders should ensure assessment is aligned with school learning goals (Webber et al., 2013). Safir and Dugan (2021) also shared establishing a focusing direction as a tool for equity that supports schools in moving past outlier syndrome, and toward collaborative practice. Alongside this, it is important for leaders to provide professional learning to support teachers' understanding of assessment practices and is aligned with the established direction (Webber et al., 2013; Lynch et al., 2016). Coherence in grading practices and assessment literacy is important to move student learning forward, enact change, and improve social emotional wellbeing (Feldman, 2023; Safir & Dugan, 2021)

Considerations for Educational Systems

While teachers and administrators' assessment and leadership can positively impact the learning of all students, including those who are from traditionally marginalized groups, Webber and Scott (2012) shared that educational institutions collectively play an influential role in establishing and maintaining a civil society. Individual and school-based work alone is not enough to effect meaningful change for marginalized students and their families. A critical analysis of the policies, procedures, and practices that guide how schools are structured and how they use assessment data is also necessary (Roxas & Rios, 2023). Four shared commitments support the development of educational systems that both "raise the bar and narrow the gap" (Barber, 2005, p. 18):

1. Ensure improvement efforts reflect local concerns or needs
2. Empower teachers and leaders to take an active role in school improvement
3. Ensure school improvement is cyclical, and involves action, assessment, reflection, and adjustment
4. Aim to create change across systems, not just within individual classrooms (Yurkofsky et al., 2020)

Educational systems can also focus on accountability systems which, when implemented effectively, drive equitable practice. Effective accountability systems are not purely based on test and exam results, but also examine how schools address the acquisition of 21st-century competencies such as self-discipline, responsibility, and community participation through task design, processes, and structures (Barber, 2005). Klinger et al. (2011) had found that large scale and centralized accountability frameworks have failed to improve these educational outcomes for students, and they often do not also provide an opportunity for teachers to explore and improve their own knowledge and skills. In Canada, accountability frameworks promote improvements through encouraging schools to use data to

identify goals, enact initiatives, and assess impact through school improvement plans (Klinger et al., 2011). To add complexity to this, it has been extensively shown through research that this data is influenced by variables such as socioeconomic background, language, race, sexual orientation, and gender (Barber, 2005; Klinger et al., 2011; Webber et al., 2013) so providing opportunities for leaders to analyze these contextual factors and isolate variables when determining next steps forward will be beneficial. To support this, school districts should also allocate resources to supporting educators and administrators in accessing professional development around assessment literacy and practices (Webber et al., 2013) as it is only alongside this work that accountability measures are truly effective.

Recommendations

Based on the analysis, Table 1 outlines recommendations to ensure marginalized students are accurately and appropriately represented across all three levels of schooling:

Table 1: Recommendations for Reporting and Use of Assessment Data

<i>Level</i>	<i>Recommendations</i>
<i>Teachers and Classrooms</i>	<ul style="list-style-type: none"> -Develop a clear understanding of equitable assessment practices -Acknowledge bias in assessment interpretation -Assess outcomes that align with holistic goals for students and content mastery -Incorporate formative assessment data into practice -Use student self-assessment to inform the next steps -Communicate and identify next steps for learning with students
<i>Administrators and Schools</i>	<ul style="list-style-type: none"> -Identify and understand assessment beliefs and views on the use of assessment data -Communicate assessment information to all stakeholders. -Gather feedback to inform the next steps. -Start data analysis and goal setting with the students in the margins -Reinforce numbers and statistics with qualitative data -Establish a focusing direction to guide leadership actions (ensure coherence)
<i>Educational Systems</i>	<ul style="list-style-type: none"> -Use local needs to inform improvement measures -Ensure accountability systems exist alongside opportunities for teacher/school leader growth and professional development -Empower teachers and leaders to actively contribute to and set direction for school improvement measures

Through a focus on the research-informed areas identified above, teachers, schools, and educational systems can begin to represent traditionally marginalized students more accurately and appropriately in their data gathering, analysis, and reporting processes.

Summary

Currently, there are disparities in educational outcomes for marginalized students within schools. This paper aims to investigate the accurate and appropriate representation of marginalized students in data reporting across classrooms, schools, and educational systems. Research highlights how factors such as social identity, socioeconomic status, and bias in testing can impact assessment results and teacher perceptions of student abilities. Scholars emphasize the need for educators to incorporate qualitative data, such as stories and context, into their data analysis. This data is asset based and builds on an understanding of culturally responsive education as “stories represent systemic information about student learning” (Safir & Dugan, 2021, p. 63). Embracing intersectionality and fluidity of identity in data interpretation, alongside growth driven accountability for schools and systems, can enhance equity and ensure that all students are represented meaningfully in educational settings. Inclusion of data from marginalized students is essential for creating a more informed and inclusive educational system, enabling educators to grasp the unique experiences and needs of all students, and driving equitable decision-making.

REFERENCES

- Barber, M. (2005). The virtue of accountability: System redesign, inspection, and incentives in the era of informed professionalism. *Journal of Education*, 185(1), 7-38. <https://doi.org/10.1177/002205740518500102>
- Brookhart, S. M. (2015). *How to make decisions with different kinds of student assessment data*. ASCD.
- Buske, R., & Zlatkin-Troitschanskaia, O. (2019). Investigating principals' data use in school: The impact of evidence-oriented attitudes and epistemological beliefs. *Educational Management, Administration & Leadership*, 47(6), 925-942. <https://doi.org/10.1177/1741143218753192>
- Darling-Hammond, L., & Friedlaender, D. (2009). Creating excellent and equitable schools. In Scherer, M. (Ed), *Challenging the Whole Child: Reflections on Best Practices in Learning, Teaching, and Leadership* (pp. 26–41). ASCD.
- Feldman, J. (2023). *Grading for equity: What it is, why it matters, and how it can transform schools and classrooms* (2nd edition.). Corwin Press Inc.
- Finnigan, K. S., Daly, A. J., & Che, J. (2012, April). *The acquisition and use of evidence districtwide*. Paper presented at the Annual Meeting of the American Educational Research Association, Vancouver, BC.
- Garner, M. (2013). Lies, damn lies, and tests. *Measurement: Interdisciplinary Research and Perspectives*, 11(1-2), 36-39. <https://doi.org/10.1080/15366367.2013.784159>
- Green, S. K., Johnson, R. L., Kim, D., & Pope, N. S. (2007). Ethics in classroom assessment practices: Issues and attitudes. *Teaching and Teacher Education*, 23(7), 999-1011. <https://doi.org/10.1016/j.tate.2006.04.042>
- Guskey, T. R. (2012). The rules of evidence: Focus on key points to develop the best strategy to evaluate professional learning. *Journal of Staff Development*, 33(4), 40-43.
- Heritage, M., & Wylie, C. (2018). Reaping the benefits of assessment for learning: Achievement, identity, and equity. *ZDM Mathematics Education*, 50(4), 729–741. <https://doi.org/10.1007/s11858-018-0943-3>
- Klinger, D. A., Maggi, S., & D'Angiulli, A. (2011). School accountability and assessment: Should we put the roof up first? *The Educational Forum*, 75(2), 114-128. <https://doi.org/10.1080/00131725.2011.552671>
- Lynch, D., Smith, R., Provost, S., & Madden, J. (2016). Improving teaching capacity to increase student achievement: The key role of data interpretation by school leaders. *Journal of Educational Administration*, 54(5), 575-592. <https://doi.org/10.1108/JEA-10-2015-0092>
- Parekh, G., Brown, R. S., & Zheng, S. (2021). Learning skills, system equity, and implicit bias within Ontario, Canada. *Educational Policy (Los Altos, Calif.)*, 35(3), 395–421. <https://doi.org/10.1177/0895904818813303>
- Roxas, K. & Rios, F. (2022). Intersection of multicultural education and special education in theory and practice. In Aziz, N. & Perzigan, A. (Eds). *Multicultural special education for inclusive classrooms: intersectional teaching and learning* (pp. 17-38). Routledge, Taylor & Francis Group.
- Safir, S. & Dugan, J. (2021). *Street data: A next-generation model for equity, pedagogy, and school transformation*. Corwin.
- Salazar, M. del C., Bruno, J. K., & Schneider, M. P. (2022). High quality, equity, and assessment: An analysis of variables impacting English learner standardized science test performance and implications for construct validity. *Sustainability (Basel, Switzerland)*, 14(13), 7814-7820. <https://doi.org/10.3390/su14137814>
- Steinberg, R. J. (2009). Assessing what matters. In Scherer, M. (Ed), *Challenging the Whole Child: Reflections on Best Practices in Learning, Teaching, and Leadership* (pp. 207-218). ASCD.
- Wang, T. (2016, January 20). *Why big data needs thick data*. Medium. <https://medium.com/ethnography-matters/why-big-data-needs-thick-data-b4b3e75e3d7>
- Webber, C. F., Scott, S., Aitken, N., Lupart, J., & Scott, D. E. (2013). Leading assessment for enhanced student outcomes. *School Leadership & Management*, 33(3), 240-255. <https://doi.org/10.1080/13632434.2013.773885>
- Webber, C. F., & Scott, S. (2012). Student assessment in a Canadian civil society. *Journal of Management Development*, 31(1), 34-47. <https://doi.org/10.1108/02621711211190989>
- Wolsey, T. D., Lenski, S., & Grisham, D. L. (2020). *Assessment literacy: An educator's guide to understanding assessment, K-12*. Guilford Press.
- Yurkofsky, M. M., Peterson, A. J., Mehta, J. D., Horwitz-Willis, R., & Frumin, K. M. (2020). Research on continuous improvement: Exploring the complexities of managing educational change. *Review of Research in Education*, 44(1), 403–433. <https://doi.org/10.3102/0091732X20907363>

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