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TECHNOLOGY AND K–12 EDUCATION

The NCES Ed Tech Equity Initiative

INSTITUTE OF EDUCATION SCIENCES
NATIONAL CENTER FOR EDUCATION STATISTICS

Contents

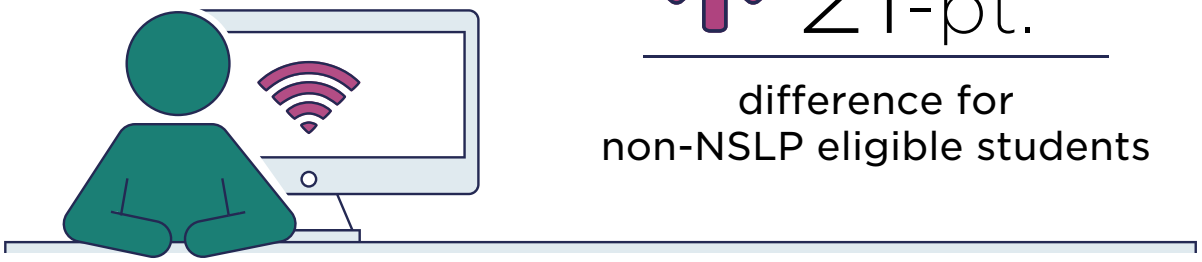
INTRODUCTION

The National Center for Education Statistics (NCES) is the primary federal entity responsible for collecting and analyzing data related to education in the U.S. and other nations. In carrying out this mission, NCES has collected and analyzed data that suggest inequities in student achievement persist but may differ where technology (i.e., digital resources) is a factor. The National Assessment of Educational Progress (NAEP) is the largest ongoing nationally representative assessment of what U.S. students know and can do. Student performance on the NAEP 2017 Mathematics Assessment provides one such example of a significant difference in performance where technology played a role.

Among eighth-grade participants, higher socioeconomic (SES) students (i.e., students not eligible for the National School Lunch Program [NSLP]) consistently performed better than lower SES students (i.e., students eligible for NSLP). But students who reported having access to computers at home, regardless of SES, had higher average scores than those who reported no access to computers at home.

While NCES has historically provided education technology and equity (ed tech equity) related data, it currently lacks comprehensive data on certain issues critical to this topic—such as access to technology outside of school, how technology is integrated into learning, and students' technology-related knowledge and skills.

Eighth-grade students who had a computer at home scored higher than their peers on the 2017 NAEP mathematics assessment, regardless of socioeconomic status.



↑ 12-pt.

difference for NSLP-eligible students

↑ 21-pt.

difference for non-NSLP eligible students

NOTE: NCES uses National School Lunch Program (NSLP) eligibility as a proxy for socioeconomic status. The NAEP Mathematics scale ranges from 0 to 500. Difference is statistically significant at the $p < .05$ level. Only differences found to be statistically significant are referred to as higher or lower.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP, 2017 Mathematics Assessment).

PURPOSE

When technology is a factor, what is the difference between K–12 students' educational experiences and outcomes across key subgroups?

NCES launched *The NCES Ed Tech Equity Initiative* to better inform the condition of American education by giving greater attention to education technology and equity (ed tech equity) as it relates to K–12 education. More specifically, ed tech equity refers to the difference between students' educational experience and outcomes when technology is a factor, with a particular focus on key subgroups (e.g., by English language learner status, disability status, geographic location, race/ethnicity, sex, socioeconomic status, etc.).

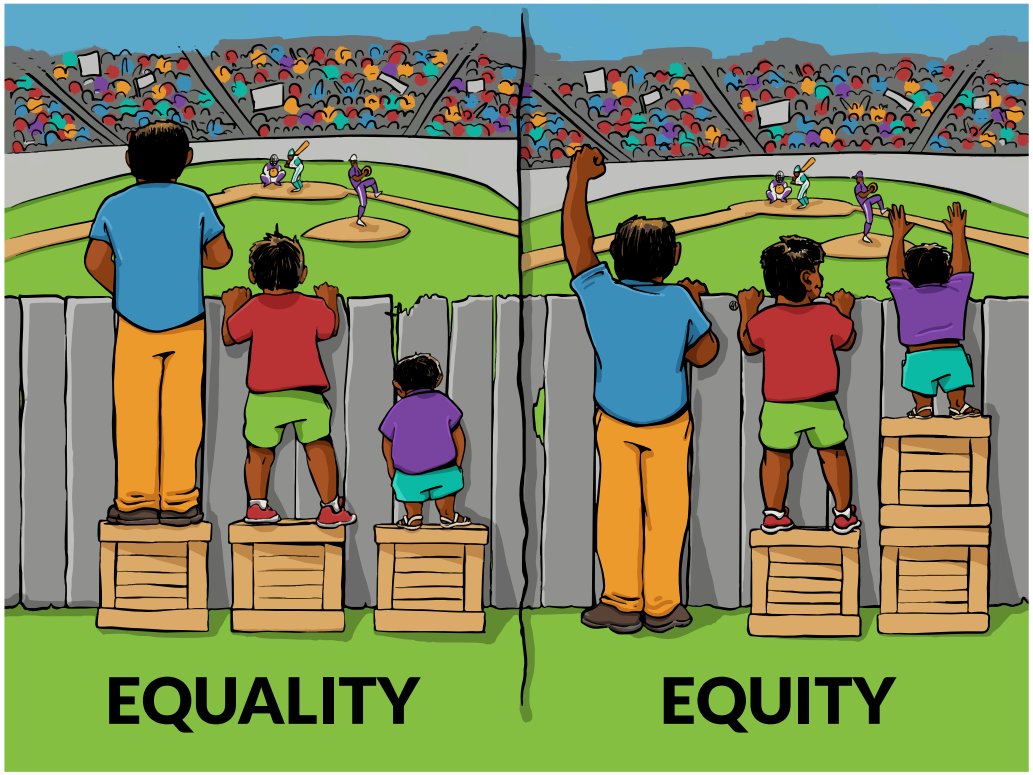


Image: Interaction Institute for Social Change | Artist: Angus Maguire

ED TECH EQUITY: the difference between students' educational experience and outcomes when technology is a factor, with a particular focus on key subgroups.

The NCES
Ed Tech Equity
Initiative

GOAL

NCES intends to position itself as the go-to source for ed tech equity information by collecting policy-relevant data and communicating these data in a way that is accessible, understandable, and actionable for education stakeholders. There are three key components to achieving this goal.

Give greater focus to the relationship between technology and K–12 students' educational experiences and outcomes by prioritizing ed tech equity data collection, reporting, and dissemination across relevant NCES studies.

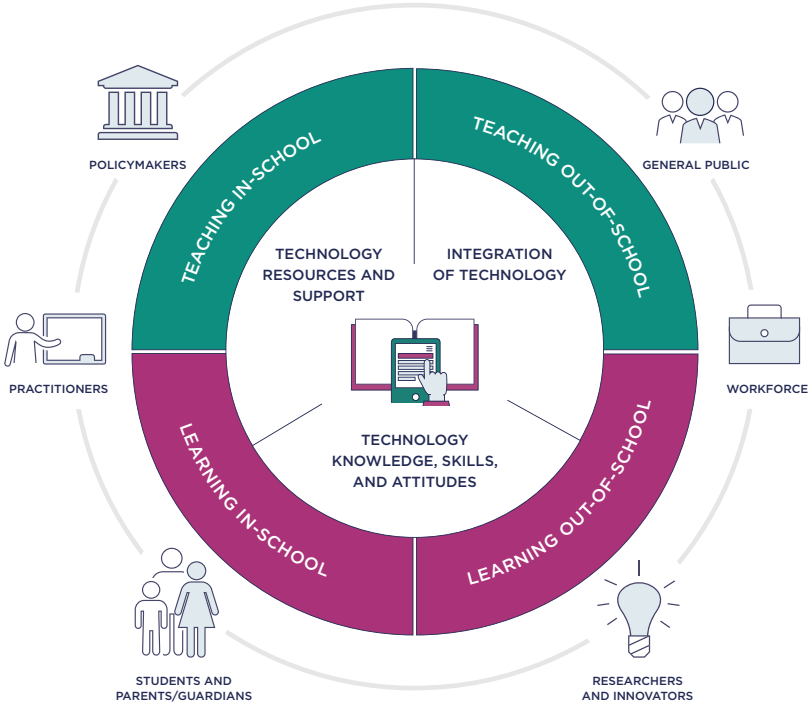
Enhance NCES' technology-related activities for collecting, reporting, and disseminating data to improve relevance, accuracy, and usefulness.

Maintain ongoing communications with education stakeholders to ensure that NCES is fully aware of the information needed to inform the condition of ed tech equity in the context of K–12 education.

FRAMEWORK

NCES designed *The NCES Ed Tech Equity Initiative Framework* (the Framework) as a guide to ensure that NCES' technology-related efforts are focused on the most critical areas that inform the relationship between technology and K–12 education. The survey questions NCES will use to collect ed tech equity data will align with the various components of the Framework. The interaction of the Framework's components informs ed tech equity.

INDICATORS | DIMENSIONS AND ENVIRONMENTS | CHANGE AGENTS



This Framework is not static; rather, it will evolve over time to remain aligned with changes in ed tech equity and K–12 education.

Click a component from the legend above to learn more about the following:

- INDICATORS
- DIMENSIONS AND ENVIRONMENTS
- CHANGE AGENTS

To learn more about the Framework NCES is using to guide its ed tech equity efforts, explore *The NCES Ed Tech Equity Initiative Framework* fact sheet.

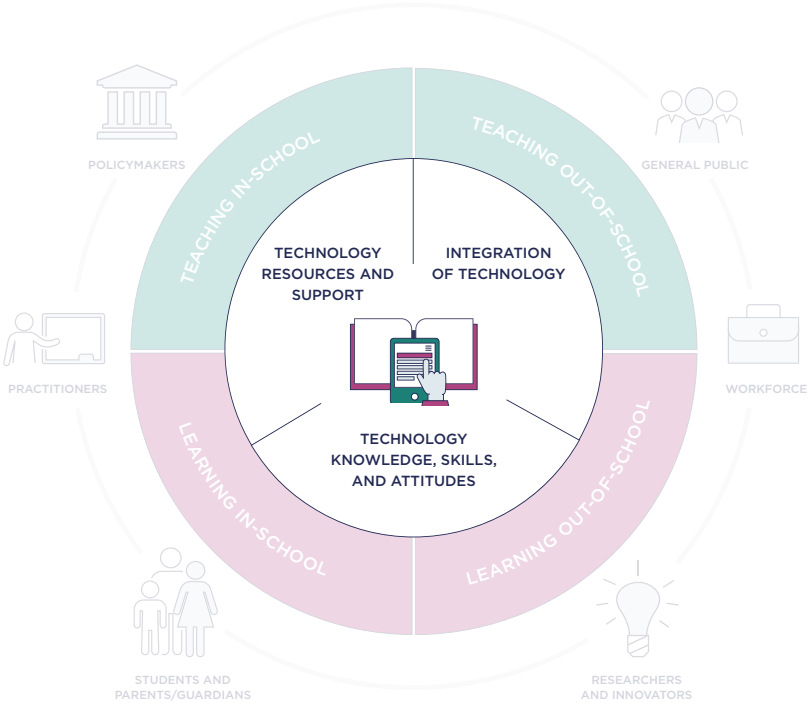
The NCES
Ed Tech Equity
Initiative

FRAMEWORK

The Framework will help NCES ensure that its efforts are focused on the critical areas that inform ed tech equity in the context of K–12 education.

Click a component from the legend:

INDICATORS | DIMENSIONS AND ENVIRONMENTS | CHANGE AGENTS



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INDICATORS represent the broad categories that will be used to capture the most critical technology-related data needed to inform the relationship technology has with K–12 students' educational experiences and outcomes.

- **TECHNOLOGY RESOURCES AND SUPPORT** is the availability of tech-based resources (e.g., internet, tablets, software, etc.) and the infrastructure in place to sustain and enhance the quality of those resources (e.g., staff with technology expertise).
- **INTEGRATION OF TECHNOLOGY** focuses on how, where, when, and why technology is incorporated into students' educational experiences and the frequency of technology use.
- **TECHNOLOGY KNOWLEDGE, SKILLS, AND ATTITUDES** refers to individuals' technology-related knowledge and skill and the ability to apply that knowledge and skill (e.g., use of learning games in the classroom as a teaching tool). This indicator also captures one's perception of technology (e.g., a useful tool that can improve learning or a complicated tool that should not be used in teaching).

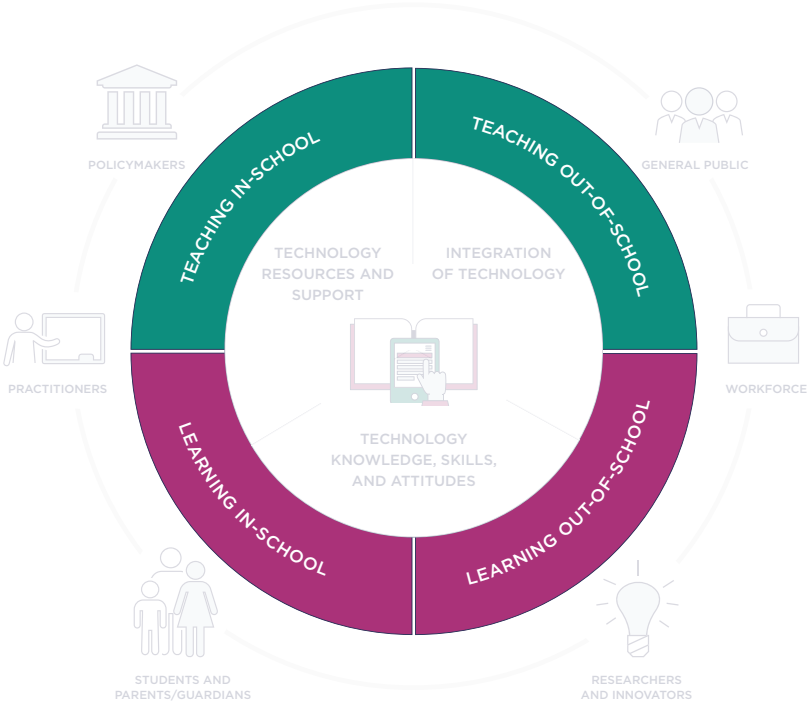
The NCES **Ed Tech Equity** Initiative

FRAMEWORK

The Framework will help NCES ensure that its efforts are focused on the critical areas that inform ed tech equity in the context of K–12 education.

Click a component from the legend:

INDICATORS | DIMENSIONS AND ENVIRONMENTS | CHANGE AGENTS



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DIMENSIONS are the key contexts in which NCES will focus its observation of the Framework's indicators.

- **TEACHING** includes activities that involve the facilitation of acquiring knowledge and skills by a formal (e.g., classroom teacher) or informal teacher (e.g., a museum curator providing a tour during a field trip).
- **LEARNING** is the acquisition of knowledge and skills through study, experience, or being taught—whether formal (e.g., learning coding through a teacher at school) or informal (e.g., learning coding through a YouTube tutorial).

ENVIRONMENTS are the settings in which each indicator will be evaluated.

- **IN-SCHOOL** refers to any activity that is initiated by, facilitated by, or directly associated with a school (e.g., home school, virtual school, etc.)—during or outside of school hours (e.g., an after-school program), on or beyond school premises (e.g., a field trip).
- **OUT-OF-SCHOOL** includes any activity that is not initiated by, facilitated by, or directly associated with a school (e.g., parents, nonprofit initiatives, community organizations, etc.).

FRAMEWORK

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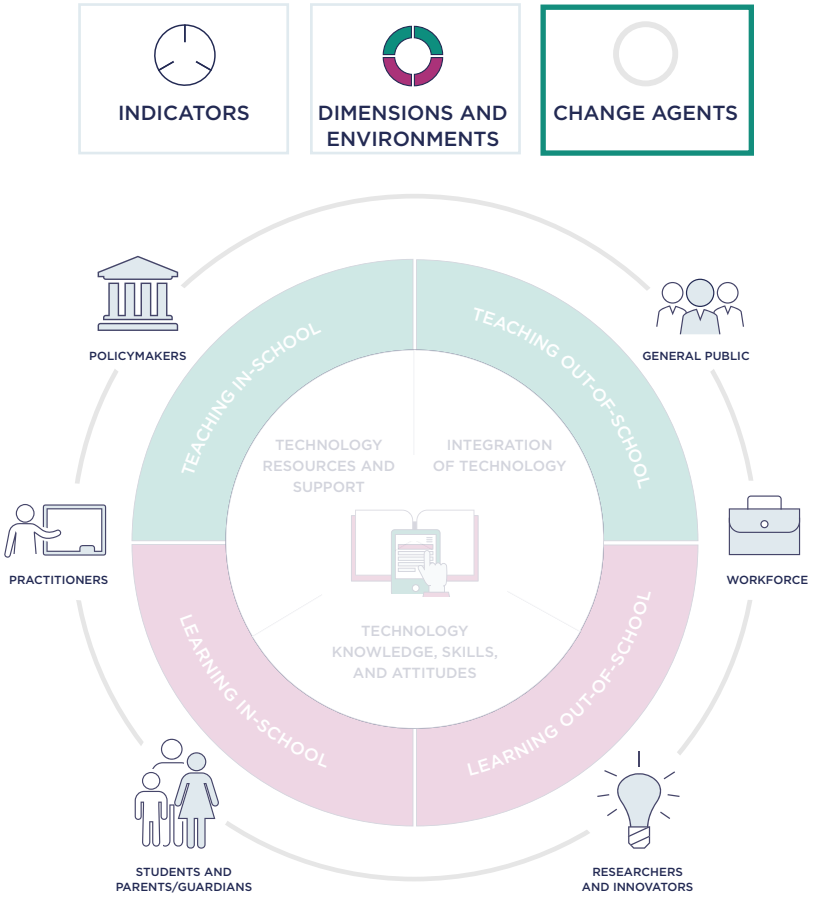

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CHANGE AGENTS are the key stakeholders that impact or influence students' educational experiences and outcomes. A stakeholder may align with more than one category.

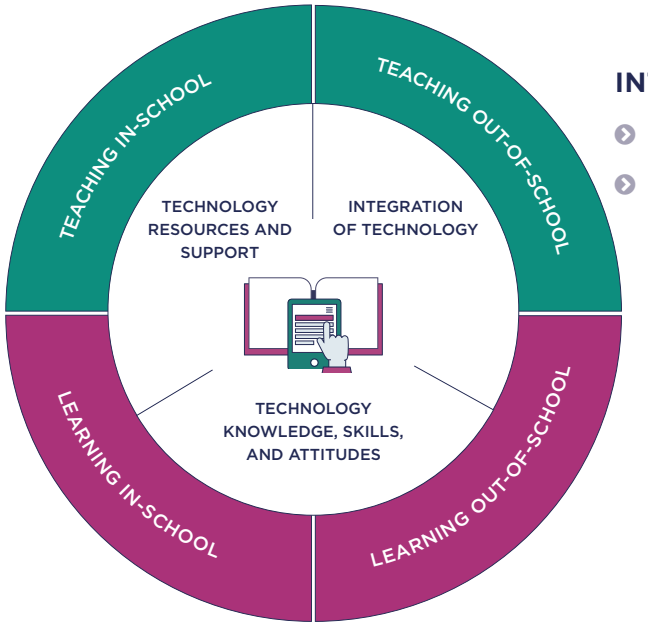
- **POLICYMAKERS** are responsible for establishing laws and policies, as well as making resource allocation decisions at the school, district, state, and/or national levels (e.g., Congress, state and district leaders, etc.).
- **PRACTITIONERS** determine how to use and/or whether to use technology as a tool in students' educational experiences (e.g., principals, teachers, technology integration specialists, etc.).
- **STUDENTS AND PARENTS/GUARDIANS** engage in learning and/or have significant influence on students' access to and use of technology.
- **RESEARCHERS AND INNOVATORS** investigate or evaluate the use of technology in education (e.g., academics) and/or create innovative products and services that can be used in education (e.g., technology developers).
- **WORKFORCE** includes entities and individuals who serve as employers and can inform the level of knowledge and skill needed to succeed in a given field.
- **GENERAL PUBLIC** includes individuals and entities who are interested in and influence the condition of our nation's education system (e.g., media, advocates, etc.).

PRIORITIES

After conducting an internal review of existing NCES technology-related survey questions and gaining insight and recommendations from stakeholders, NCES developed a list of subtopics to prioritize across the three indicator categories highlighted in *The NCES Ed Tech Equity Initiative Framework* (the Framework). This list is not comprehensive of all subtopics that inform ed tech equity; rather, this list highlights select topics that are aligned with the needs and interests of education stakeholders, as well as the ability of NCES survey respondents to provide meaningful information that can be utilized to create the types of data and statistics that will inform ed tech equity.

TECHNOLOGY RESOURCES AND SUPPORT

- Access to digital devices and tools in-school
- Access to digital devices and tools out-of-school
- Access to internet in-school
- Access to internet out-of-school
- IT staff in-school
- IT staff out-of-school



INTEGRATION OF TECHNOLOGY

- Technology use in-school
- Technology use out-of-school

TECHNOLOGY KNOWLEDGE, SKILLS, AND ATTITUDES

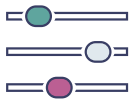
- Students' technology knowledge and skills learned in-school
- Students' technology knowledge and skills learned out-of-school
- Educators' technology knowledge and skills
- Educators' attitudes toward technology

For information about the specific subtopics that NCES will prioritize within each of the Framework indicators, explore *The NCES Ed Tech Equity Initiative Data Collection Priorities* fact sheet.

OUTCOMES

As a result of the work of *The NCES Ed Tech Equity Initiative,* stakeholders will have access to information that will better inform ed tech equity in the context of K–12 education. More specifically

IMPROVED DATA: NCES will update its database of technology-related survey questions. These questions will be integrated into relevant NCES surveys to capture the data needed to provide stakeholders with the ed tech equity information they need.



CUSTOMIZABLE RESOURCES: NCES intends to develop a suite of resources (e.g., web tools, fact sheets, infographics, etc.) that allows users to easily access the information that is most important to them.

For an overview of key steps NCES is taking to advance this work, explore *The NCES Ed Tech Equity Initiative* infographic.

GLOSSARY

ED TECH EQUITY: education technology and equity—the difference between students' educational experience and outcomes when technology is a factor, with a particular focus on key subgroups (e.g., by English language learner status, disability status, geographic location, race/ethnicity, sex, socioeconomic status, etc.).

ED TECH EQUITY EXPERTS: individuals—including policymakers, practitioners, researchers, and innovators—with extensive expertise as it relates to ed tech equity in the context of K–12 education.

TECHNOLOGY: digital resources (e.g., internet, smart phones, laptops, tablets, and software).

CONTACT

Halima Adenegan
Project Director
EdTechEquity@ed.gov

NCES.ED.GOV