

California Department of Education

Executive Office

SBE-003 (REV. 11/2017)

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# California State Board of Education January 2023 Agenda Item #03

## Subject

The California Assessment of Student Performance and Progress and the English Language Proficiency Assessments for California: Update on Program Activities.

## Type of Action

Information

## Summary of the Issue(s)

This item provides a summary of developments and updates related to the California Assessment of Student Performance and Progress (CAASPP) and the English Language Proficiency Assessments for California (ELPAC). Attachment 1 provides the CAASPP and ELPAC outreach and professional development activities from November and December 2022.

## Recommendation

No specific action is recommended at this time.

### Updates on Assessment Program Activities

The following sections provide a summary of developments and updates related to the federal peer review process, 2022–23 California Assessment System testing windows, the Smarter Balanced Interim Assessments for English language arts/literacy (ELA) and mathematics, the Smarter Balanced Demonstration of Concept Study, and new instructional and professional learning resources to support integrated deeper learning.

#### Federal Peer Review Update

The California Department of Education’s (CDE’s) assessments are required to undergo a federal peer review process during which the CDE submits to the U.S. Department of Education (ED) documents demonstrating that California’s assessments in English language arts, mathematics, science, and English Language proficiency meet the federal requirements for validity, reliability, and fairness established for states by the Every Student Succeeds Act (ESSA). As new assessments become operational, the CDE must provide additional evidence for peer review, covering each assessment that is required under ESSA. Peer review is often an iterative process, with states submitting additional evidence to meet the requirements as the evidence becomes available. The four possible outcomes are: (1) meets requirements, (2) substantially meets requirements, (3) partially meets requirements, and (4) does not meet requirements. Both “meets requirements” and “substantially meets requirements” are passing results for peer review. The status of each California assessment going through the peer review process is as follows:

* **Smarter Balanced Summative Assessments for ELA and mathematics**—In November 2022, the CDE was pleased to receive notification from the ED that these assessments fully “meet requirements” based on the full form blueprints. Continued use of the adjusted blueprints will require additional evidence submissions. The CDE, in partnership with the Smarter Balanced Assessment Consortium, will submit supplemental evidence related to the adjusted blueprints in 2023.
* **California Alternate Assessments (CAAs) for ELA and mathematics**—In November 2022, the ED notified the CDE that a small number of additional documents are required to fully meet requirements (e.g., evidence related to the procedures for hand-scored items). The CDE anticipates submitting this additional evidence in June 2023.
* **California Science Test (CAST) and Summative ELPAC**—The CDE submitted documents in support of the CAST and Summative ELPAC peer reviews in December 2021. In November 2022, the CDE received a rating of “substantially meets requirements” from the ED for both assessments. The CDE is currently working on fulfilling the ED’s outstanding requirements to achieve ratings of “meets requirement.” The CDE anticipates submitting this additional evidence in June 2023.
* **CAA for Science and Summative Alternate ELPAC**—The CDE will submit its first sets of evidence for the CAA for Science and the Summative Alternate ELPAC in June 2023. The CDE will provide an update upon receiving a response from the ED on its submission.

#### 2022–23 California Assessment of Student Performance and Progress and English Language Proficiency Assessments for California Testing Windows

The California Assessment System, which consists of the CAASPP and the ELPAC, is administered on an annual basis. The 2022–23 testing window start and end dates for each assessment are listed in table 1.

Table 1. 2022–23 CAASPP and ELPAC Testing Windows

| **Testing Window** | **Assessment(s)** |
| --- | --- |
| July 5, 2022, through June 30, 2023 | Initial ELPAC and Initial Alternate ELPAC |
| September 6, 2022, through July 17, 2023\* | CAA for Science |
| January 10 through July 17, 2023\* | * Smarter Balanced Summative Assessments for ELA and mathematics * CAST * CAAs for ELA and mathematics * California Spanish Assessment |
| February 1 through May 31, 2023 | Summative ELPAC and Summative Alternate ELPAC |

\* Or the end of the local educational agency’s (LEA’s) instructional calendar, whichever comes first.

#### Use of Smarter Balanced Interim Assessments in Local Educational Agencies

The Smarter Balanced Interim Assessments continue to be available for LEAs to support teaching and learning in ELA and mathematics throughout the school year. The interim assessments are available to LEAs year-round and are optional for LEAs to use. Three types of interim assessments are available: Interim Comprehensive Assessments (ICAs); Interim Assessment Blocks (IABs); and focused IABs. ICAs cover the same range of claims and learning targets as the full-form summative assessments and include the same item types and formats, including performance tasks. IABs and focused IABs assess a smaller number of targets than the ICAs; as such, they take significantly less time to administer compared to ICAs. In addition, IABs and focused IABs provide results at a more granular level, which can be particularly helpful in planning instructional next steps. Focused IABs assess no more than three targets but have approximately the same number of items as the IABs. (Note: Claims are broad categories that summarize the knowledge and skills students are expected to demonstrate on the assessment. Learning targets further specify the knowledge and skills within a claim.)

As of December 15, 2022, more than 2.3 million interim assessments had been started across approximately 1,000 LEAs for this school year. At that rate, the total number of interim assessments started for the 2022–23 school year is expected to exceed the total number started during the previous school year. During the 2021–22 school year, more than 7 million interim assessments were started across more than 1,600 LEAs. These numbers exceeded those for the 2020–21 school year, during which more than 3 million interim assessments were started across nearly 1,300 LEAs. The majority of interim assessments administered in California are IABs and focused IABs, with only 10 to 15 percent being ICAs.

The intent of the interim assessments, as outlined in California *Education Code* (*EC*)Section 60642.6(a), is to provide timely feedback to teachers that they can use, in combination with other sources of information they have about their students’ progress, to adjust instruction to improve learning.

LEAs have the flexibility to use the Smarter Balanced Interim Assessments in a standardized way or in nonstandardized ways to fit what teachers and students are working on at any point in the curriculum. During a standardized administration, students complete the interim assessment individually, following administration procedures that are the same or similar to those used for the summative assessments. During nonstandardized use of the interim assessments, the objective is to inform instruction within classroom time, and the assessments are a formative tool that help teachers make decisions in the moment about next steps for instruction. One example of nonstandardized use is a teacher displaying an assessment item while students answer cooperatively in pairs, in small groups, or as a whole class. Another example is a teacher reading an item aloud to a whole class, and then using a think-aloud formative assessment strategy or leading a class discussion.

Teachers can use the individual score reports and other interim assessment data available in the California Educator Reporting System—in conjunction with other classroom information gathered about students—to provide information about students’ strengths and needs to parents or guardians and inform instructional next steps.

While LEAs have flexibility in how they use the interim assessments, *EC* Section 60642.7(b) prohibits the use of the interim assessments for any high-stakes purpose. Examples of high-stakes use include teacher or other school staff evaluation, accountability, pupil grade promotion or retention, graduation, course or class placement, identification for Gifted and Talented Education, reclassification of English learners, or identification as an individual with exceptional needs.

#### Smarter Balanced Demonstration of Concept Study

Throughout 2022, the California Department of Education (CDE) provided the California State Board of Education (SBE) with information about the Demonstration of Concept Study, conducted by the Smarter Balanced Assessment Consortium in partnership with the New Teacher Center. This study served to (1) examine how Smarter Balanced Interim Assessment performance tasks can be incorporated into classroom instruction; and (2) build collective knowledge on how Smarter Balanced performance tasks can be embedded during instruction as part of the summative assessment process. This study is an important first step to evaluating how state-mandated assessment can be more effectively and efficiently used throughout the year to support individual student growth, by using it as a real-time tool for informing instruction and providing feedback on student learning, as opposed to a higher-stakes, backward-looking evaluation of students’ abilities to retain what they have learned over the course of a year.

The study, now concluded, is summarized as follows:

* Two California LEAs participated in the study—Upper Lake Unified and Val Verde Unified.
* Educators from those LEAs participated in professional learning sessions that addressed the following areas:
  + Implementation of the Integrated Deeper Learning Resources to support the administration of the interim assessment performance tasks
  + Administration of the interim assessment performance tasks
  + Collaborative scoring of the performance tasks
  + Planning for instruction and adaptations to curriculum on the basis of data gathered from the performance tasks

Feedback from participating educators generally supports the following:

* The Integrated Deeper Learning Resources, which are discussed in the next section, and other resources used as part of the study can help educators plan their instruction.
* Smarter Balanced performance tasks can be used to support teachers’ instructional decisions.

Based on the results of this initial study, Smarter Balanced, the CDE, and the SBE are engaging a broader set of interest holders to gain an understanding of how they would prioritize assessment system changes to improve teaching and learning.

A summary of the Demonstration of Concept Study and its results is provided as Attachment 2.

#### New Instructional and Professional Learning Resources to Support Integrated Deeper Learning

Two sets of resources for educators are now available from the Smarter Balanced Assessment Consortium to help analyze the Common Core State Standards and the depth of knowledge assessed in the Smarter Balanced Interim Assessment performance tasks. These resources support classroom instruction by incorporating activities that explore the full depth and breadth of the standards. The activities focus on the development of deeper learning skills and knowledge that can be transferred to new learning tasks. The two sets of resources are as follows:

* **Integrated Deeper Learning Resources**—instructional resources to support educators’ instruction in the full range of higher-order thinking skills that are measured by Smarter Balanced performance tasks. They can be used with individual students or collaborative student groups. The Integrated Deeper Learning Resources are available for ELA and mathematics for grades three through eight and high school.
* **Deeper Learning Educator Modules**—professional learning resources to support educators in integrating higher-order thinking skills into their instruction. These resources can be used independently or with a team of educators as part of a professional learning community. There are four modules for ELA and four for mathematics, with topics including understanding the claims, targets, and standards as well as defining the skills students need to meet desired expectations.

These resources were developed as a result of the 2021–22 Demonstration of Concept Study that Smarter Balanced undertook to evaluate the feasibility of an LEA determining when to administer a performance task within the LEA’s curricular scope and sequence and local context. These resources and modules are available on the Tools for Teachers website, which is available to all LEA staff at <https://www.smartertoolsforteachers.org/>.

## Summary of Previous State Board of Education Discussion and Action

In July 2022, the CDE provided an update that included a description of the Smarter Balanced Interim Assessments available to LEAs (<https://www.cde.ca.gov/be/ag/ag/yr22/documents/jul22item04.docx>).

In May 2022, the CDE provided an update on the Smarter Balanced Demonstration of Concept Study, which included a description of the activities completed by participating LEAs throughout the study (<https://www.cde.ca.gov/be/ag/ag/yr22/documents/may22item03.docx>).

In March 2022, the CDE provided an update on the Smarter Balanced Demonstration of Concept Study, including a description of the professional learning sessions offered. Those sessions focused on the implementation of a classroom performance task support activity, teacher collaboration while scoring student work, and job-embedded coaching (<https://www.cde.ca.gov/be/ag/ag/yr22/documents/mar22item02.docx>).

In January 2022, the CDE introduced the Demonstration of Concept Study, with a description of initial activities that included the recruitment of LEAs, development of content for the professional learning sessions, and development of performance task support activities (<https://www.cde.ca.gov/be/ag/ag/yr22/documents/jan22item03rev.docx>).

## Fiscal Analysis (as appropriate)

The fiscal year 2022–23 Budget Act provides a total of $67,806,000 for CAASPP contract activities and $25,855,000 funding for ELPAC contract activities. Funding for 2023–24 and beyond will be contingent on an annual appropriation being made available from the Legislature in future fiscal years.

## Attachment(s)

* **Attachment 1:** Outreach and Professional Development Activities (7 Pages)
* **Attachment 2:** Increasing the Relevance of Performance Tasks for Educators and Students (45 Pages)

# Outreach and Professional Development Activities

The California Department of Education (CDE), in coordination with California Assessment of Student Performance and Progress (CAASPP) and English Language Proficiency Assessments for California (ELPAC) contractors ETS and the Sacramento County Office of Education (SCOE), have provided a variety of virtual outreach activities, including workshops, focus group meetings, and presentations, to prepare local educational agencies (LEAs) for the administration of the CAASPP System and the ELPAC. In addition, the CDE continues to release information regarding assessment program updates, including weekly updates, on its website and through listserv email. The following tables provide descriptions of these virtual outreach and professional development activities during November and December 2022.

## Table 1. Trainings

| **Date(s)** | **Location** | **Estimated Number of Attendees** | **Description** |
| --- | --- | --- | --- |
| 11/2022 | 12 local training events throughout California (CA) | 280 | New ELPAC Coordinator Training  Held by our county office of education (COE) partners, this was the first in the 2022–23 series designed for ELPAC coordinators who were new to their role or wanting a refresher. These sessions were held across California. The training reviewed tasks associated with preparing for testing, covered how to support sites during testing, and assisted coordinators in planning for post-test activities, such as gathering feedback from site coordinators and test administrators. |
| 11/1 | Virtual | 125 | Introduction to California Educator Reporting System (CERS) for Teachers  This session was designed for users of the CERS—teachers who have students rostered in the system and other LEA staff interested in using CERS. This two-hour virtual training engaged attendees in the CERS system and its features. |
| 11/7 | Virtual | 185 | Data-Driven Decision-Making Training Series for Educational Leaders, Module 1  This training series, consisting of four 90-minute modules, included opportunities for attendees to engage with their statewide assessment data as well as assessment tools. Module 1 covered data available from summative assessments and how that can be used as a jumping off point to find areas of opportunity and connections to classroom teaching and learning. |
| 11/9 | Virtual | 450 | CAASPP and ELPAC Coffee Session  Hosted by the CDE and ETS, this virtual Coffee Session offered LEA staff an opportunity to ask questions and receive answers about assessments, trainings, resources, and assessment-related developments. |
| 11/15 | Virtual | 200 | Boosting Instruction with Formative Assessment and Accessibility Strategies  This webinar for all LEA staff, including administrators and classroom educators, featured California educators sharing how they use Tools for Teachers and related resources to support teaching and learning in the classroom. It included a question-and-answer session. |
| 11/15 | Virtual | 60 | What's New Overview Question and Answer Sessions for the Summative Alternate ELPAC Administration and Scoring Training  This meeting for LEA ELPAC coordinators or their designees was held by SCOE via Zoom. The training reviewed key updates to the administration and scoring training for the Summative Alternate ELPAC and answered test administration questions for the Summative Alternate ELPAC. Participants were provided the opportunity to ask questions after information was shared. |
| 11/17 | Virtual | 400 | Pretest Virtual Training Series—Get to Know the Test Operations Management System  This series provided coordinators with the information needed to successfully prepare for and administer the CAASPP and the ELPAC. By request from the field, the content had been modified to be presented over the course of several sessions to provide LEAs with timely information, training, and support throughout the year. |
| 12/2022 | 12 local training events throughout CA | 320 | New CAASPP Coordinator Training  Held by our COE partners, this was the first in the 2022–23 series designed for CAASPP coordinators who are new to their role or wanting a refresher. These sessions were held across California. The training reviewed tasks associated with preparing for testing, covered how to support sites during testing, and assisted coordinators in planning for post-test activities, such as gathering feedback from site coordinators and test administrators. |
| 12/6 | Virtual | 90 | Using Accessibility Resources in Daily Instruction (Session 1)  In this virtual training, participants first focused on gaining an understanding of how to use accessibility resources. Then, they learned how to observe students using assigned accessibility resources and how to make adjustments throughout the year on the basis of those observations. |
| 12/13 | Virtual | 90 | Using Accessibility Resources in Daily Instruction (Session 2)  In this virtual training, participants first focused on gaining an understanding of how to use accessibility resources. Then, they learned how to observe students using assigned accessibility resources and how to make adjustments throughout the year on the basis of those observations. |
| 12/13 | Virtual | 450 | CAASPP and ELPAC Coffee Session  Hosted by the CDE and ETS, this virtual Coffee Session offered LEA staff an opportunity to ask questions and receive answers about assessments, trainings, resources, and assessment-related developments. |
| 12/15 | Virtual | 400 | Pretest Virtual Training Series—ELPAC: What’s New for Testing?  The 2022–23 Pretest Virtual Training Series provided coordinators with the information needed to successfully prepare for and administer the CAASPP and the ELPAC. By request from the field, the content had been modified to be presented over the course of several sessions to provide LEAs with timely information, training, and support throughout the year. |

## Table 2. Advisory Panel/Review Committee Meetings

| **Date(s)** | **Location** | **Estimated Number of Attendees** | **Description** |
| --- | --- | --- | --- |
| 11/8–10 | Virtual | 20 | Alternate ELPAC Item Writer Workshop (Week 1)  Participants received training on how to write assessment items and learned about opportunities to write items for use in future versions of the ELPAC. |
| 11/15–17 | Virtual | 20 | Alternate ELPAC Item Writer Workshop (Week 2)  Participants received training on how to write assessment items and learned about opportunities to write items for use in future versions of the Alternate ELPAC. |
| 11/15–17 | Virtual | 20 | California Spanish Assessment (CSA) Item Writer Workshop  Participants received training on how to write assessment items and learned about opportunities to write items for use in future versions of the CSA. |

## Table 3. Presentations by California Department of Education Staff

| **Date(s)** | **Location** | **Estimated Number of Attendees** | **Description** |
| --- | --- | --- | --- |
| 11/2–4 | Anaheim | 350 | California Educational Research Association (CERA) Conference—Research 101: Improving Educational Outcomes  Assessment Development and Administration Division (ADAD) presentations included:   * Student Score Report Redesign * Development of Interim Assessments for the California Science Test (CAST) and the ELPAC * Bringing Artificial Intelligence into Student Sense-Making of Science * Update and Feedback Gathering on CAASPP Interim Development |
| 11/16 | Virtual | 25 | Regional Assessment Network Meeting  The ADAD provided a summary of the 2021–22 CAASPP and ELPAC summative assessments results as well as updates on other program activities and developments. |
| 11/17 | Virtual | 25 | Assessment Interest Holder Meeting  An update on action items from the California State Board of Education (SBE) November meeting were provided; a summary of the 2021–22 CAASPP and ELPAC summative assessments results were presented. |
| 11/17 | Virtual | 70 | Southern California Association of Science Specialists meeting with the Ventura, Santa Barbara, Imperial, San Diego, Los Angeles, and Riverside COEs and the Orange County Department of Education.  Participants learned about the variety of assessment resources available on both the CDE and CAASPP websites regarding the California Alternate Assessment for Science, including resources to help communicate with parents and guardians about the test. |
| 12/15 | Virtual | 25 | Assessment Interest Holder Meeting  The ADAD provided an update on the goals, timeline, and samples of the 2023–24 student score report redesign and updates on the CAST and ELPAC interim assessment development. |

# Increasing the Relevance of Performance Tasks for Educators and Students

Consistent with its vision for an education system that supports all students on a path to progress, the Smarter Balanced Assessment Consortium is committed to exploring innovations that support improvements in teaching and learning. As with many aspects of education, the pandemic created an additional sense of urgency regarding the need for states to revisit systems of assessment to ensure that they meet the current needs of policymakers, district and school administrators, teachers, parents, and students.

## Exploring a New Path

One path of innovation under consideration is a version of a “through-year” assessment that provides information about student learning during the academic year.

Nathan Dadey and Brian Gong at the Center for Assessment define through-year assessment as *“*those assessments administered multiple, distinct times across a school year, designed to support both annual summative determinations of proficiency and at least one additional goal” (Marion 2021). As foundational research regarding through-year assessments, Smarter Balanced released two papers that examine elements of through-year assessments, including alignment with instruction (Cole 2022) and the practical impact of through-year assessment for local educational agencies (LEAs) (New Teacher Center 2022). These papers described the range of options and challenges that states must consider when they design a through-year system.

On the basis of these papers and through discussions with the California State Board of Education (SBE) and the California Department of Education (CDE), Smarter Balanced began to explore how to make system changes that might mitigate some issues that have been identified, including length of the end-of-year test, the desire for information that can support student learning during the school year, and teachers’ learning and reflection about students’ progress, thus supporting educators in the acceleration of student learning throughout the school year. To further add to the consortium’s

knowledge base on through-year assessment, Smarter Balanced collaborated with the CDE and the SBE to explore whether performance tasks for the summative assessment could be administered during the school year in a way that would inform both instruction and assessment. Considerations for implementation included the following:

* Educators can embed the Smarter Balanced performance tasks in their instruction to increase the relevance of the data elicited so it is more useful to them as they help students improve their learning.
* Professional learning that is embedded in an LEA’s existing professional development processes can utilize the Smarter Balanced performance tasks to support educators in emphasizing higher-order thinking skills in their instruction.
* Performance tasks can ultimately be used and scored in a manner that would allow them to be included in summative information.

This report briefly summarizes the information gathered from the investigation. In addition, it describes planned future research to inform decisions regarding the implementation of performance tasks as part of a through-year approach to summative assessment.

## Promoting Higher-Order Thinking Skills in Instruction

Smarter Balanced assessments were groundbreaking in bringing performance assessment into a large-scale summative assessment that was able to meet the rigorous technical requirements of reliability and validity required by the No Child Left Behind Act and the subsequent Every Student Succeeds Act as well as numerous state education accountability laws and regulations. The Smarter Balanced performance tasks are designed to:

* Measure the higher-order thinking skills described by states’ college and career-ready content standards.
* Serve as a signal to educators regarding the knowledge and skills students need to learn to have a full range of choices for their education and careers after high school.

This investigation focused on how the use of the Smarter Balanced performance assessments, which engage students in applying their knowledge and skills to address real-world problems, can help educators better meet the needs of their students. These skills can be referred to as deeper learning competencies and can be defined as: (1) master core academic content; (2) think critically and solve complex problems; (3) work collaboratively; (4) communicate effectively; (5) learn how to learn; and (6) develop academic mindsets (William and Flora Hewlett Foundation 2013).

Research on performance assessment has found that it promotes deeper learning, builds students’ social–emotional skills, and enables students to demonstrate college and career readiness. In addition, research shows that using performance assessment in a formative way provides important benefits to teachers, including improved alignment of curriculum, instruction, and assessment; reflection on instructional practices; and stronger relationships with students and among teachers (Mair, Adams, and Burns 2020). The Building Educator Assessment Literacy (BEAL) project was designed to improve instruction by implementing comprehensive applied training to improve educators’ understanding of both performance assessment itself and how it relates to instruction. As part of the BEAL project, WestED found that when educators engage in professional learning that focuses on scoring and discussing the Smarter Balanced performance tasks, they report an increased appreciation of the value of the tasks as well as a better understanding of how to address deeper learning in the classroom (Arnold 2016).

Based on the above foundational research and looking toward the goal of increasing the value of the performance tasks as described above, Smarter Balanced collaborated with the New Teacher Center (NTC) to conduct the “Smarter Balanced Demonstration of Concept Study: Using Embedded Performance Tasks for Learning” (DOC study) during the 2021–22 school year.

## Professional Development Embedded into Existing Process

For the DOC study, preliminary evidence was collected in 2021–22 from English language arts/literacy (ELA) and mathematics teachers from elementary, middle, and high schools in two California school districts—Val Verde Unified School District and Upper Lake Unified School District. In addition to the goal of increasing the value of the performance tasks, the DOC study was designed to evaluate the feasibility of an LEA determining when to administer a performance task in accordance with their local context and to explore the viability of delivering the performance task portion of the assessment in the classroom during the school year rather than in the end-of-the-year test. As part of the professional learning provided with the DOC study, NTC also provided guidance to participating educators regarding how to utilize the Performance Task Support Activities (PTSAs)—which have since been renamed Integrated Deeper Learning Resources—that were developed for this study. (See [Appendix B](#AppendixB) for an example.)

PTSAs were designed to be used as part of educators’ instructional planning to support classroom instruction by:

* Attending to local contexts by incorporating students’ “ways of knowing” to better level the playing field and provide all students better access to the content of the instruction. “Ways of knowing” is the term used to refer to the variety of ways in which individuals make sense of the world and which are shaped by personal background and experience (Biernacki 2022).
* Helping teachers better understand the standards and content covered in performance tasks to support the teaching/learning cycle.
* Teaching and engaging students in accessing the higher-order thinking skills associated with performance tasks.

Teachers participated in the study by:

* Attending four virtual ***professional development*** sessions designed to deepen teachers’ understanding of the cognitive demands required by the performance tasks and support the identification and adoption of aligned instructional strategies.
* Implementing a ***PTSA*** designed to help educators support their students’ learning of the higher-order thinking skills measured by the performance tasks while attending to students’ ways of knowing. Note that the PTSAs do not mirror the full format of an interim assessment performance task; rather, they contain activities that target the skills needed to prepare for the full-write portion of the performance task.
* Administering and scoring a ***performance task***.
* Reflecting on their experiences in surveys and focus groups.

## Caveats and Constraints

Due to participating LEA constraints, the LEA selected a window in which all educators administered the performance task. Therefore, educator flexibility in the timing element of the study was not specifically addressed. In addition, in this study, the interim assessment performance task was used as a proxy for the summative assessment performance task because of its ready availability to teachers. The interim and summative performance tasks share the same design specifications. The only differences are that teachers can view the interim assessment performance tasks and conduct hand-scoring for those tasks as required using Smarter Balanced-supplied

rubrics, while the summative assessment performance tasks are not visible to teachers and are scored independently. Finally, this study examined how performance tasks might be better utilized within an assessment in the context of the current federal law regarding assessments and accountability. If there is additional flexibility in the law, then other models might be viable as well.

## Key Findings

While the DOC study was challenged by lower-than-anticipated participation due to the pandemic and the consequences it created for the education system, as described below, the study yielded valuable insights about embedding summative assessment performance tasks throughout the year as part of instruction that can serve to guide future investigations. Overall, teachers described that the interim assessment performance tasks can be useful for planning their instruction and supporting their instructional decisions. More than 85 percent of teachers surveyed said they felt that using performance tasks during classroom instruction rather than in the end-of-the-year test would support their understanding about what students know and can do, inform their understanding of the state standards, and support their instructional decision making.

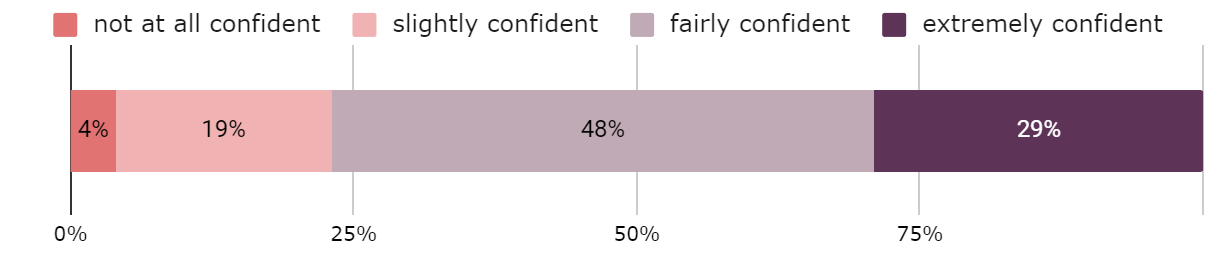
As shown below, following training, 70 percent of teachers felt that the instructional resources and performance tasks were useful to inform lesson planning, and 77 percent felt confident they could use performance task data to inform instructional decisions:

To what extent do you value the instructional resources and performance tasks we discussed today as a method to inform unity and lesson planning?

Graphic depicting percent responding to the respondents agreement with the extent do you value the instructional resources and performance task discussed as a method to inform unity and lesson planning. Line Chart with the following values: Not at all = 3%, Slightly = 27%, Fair Amount = 38%, Great Deal = 32%


n = 187 post-session survey responses

How confident are you that you can use performance task data to inform instructional decisions?

**

n = 187 post-session survey responses

Teachers noted in their feedback how the experience was helpful to them and their students as well as what they would like to see more of in the future:

“I talked [with students] about what I saw in the evidence. It gave me a chance to say what I saw that was good and not and emphasize what I expect to see.”

“It takes time to dive deeply into unpacking the student thinking, and the information is valuable to guide instruction.”

“It is important to use the rubric to truly guide the scoring of the questions. The exemplars were very helpful in calibrating the scoring of the questions. I will be reviewing rubrics and expectations with my students in the coming weeks.”

“I will use informational texts to help students add key details with their narrative writing.”

“I see myself exposing my students to more tables to become more familiar with making meaning of the information they are given.”

“It would be helpful to have more PT opportunities utilizing all the big ideas in math.”

## Additional Key Findings

* Teachers assigned the highest ratings to the professional development sessions that helped them understand how the performance tasks are scored and what is expected of students. They also described the process of using and scoring performance tasks as being valuable as an instructional tool.

“This process allowed us to better understand how to evaluate student writing using the rubric, and how SBAC writing is scored. It also highlighted the importance of team calibration. Thank you!”

* There were differences across the content areas as to when teachers prefer to measure students’ progress in learning higher-order thinking skills. Mathematics teachers preferred to administer the interim assessment performance task in mid-to-late spring, but ELA teachers saw benefits to administering performance tasks earlier in the year if the skills align with the unit they are teaching.
* Teachers reported that the PTSA assisted in identifying strategies they can use to support their students toward greater success in demonstrating their higher-order thinking skills.

“The lesson plans [PTSAs] that were given, gave me ideas on how to implement in my classroom with my own content.”

“Students need time and exposure to completing math tasks. Allowing them to collaborate initially is a great way to communicate their ideas and solve problems together prior to completing a full Math Performance Task.”

* Some teachers reported a preference for shorter PTSAs that can be more easily integrated into limited class time and that they would like more guidance on how to help students transition from the collaborative structure of the PTSA to demonstrating their skills independently. Some also mentioned how using the interim assessment performance tasks and associated PTSA requires considerable planning to ensure that the activity is meaningful for students.

“[I would like] more activities like the PTSA, smaller activities that break down the process so we could build their understanding throughout the year.”

“There is a lot in here for me to unpack and digest to be able to use this in my classroom. This is a lot more than a typical lesson.”

“I’m comfortable with the modeling process [in the PTSA] but I don’t feel confident that I can get this done in the 60 minutes that are estimated.”

## Key Issues

Some teachers found the information they encountered to be new and complex, while others who were already familiar with the Smarter Balanced performance tasks noted that some of the sessions they attended included information they already knew. Professional development should, therefore, be differentiated according to educators’ previous experience with Smarter Balanced performance tasks. The range of readiness is reflected in these comments:

“Awesome session.”

“I wish this last session could have been longer. I will use the resources in the playlist for future instruction.”

“Great refresher.”

“This [topic] is something we have spent a lot of time on in our district planning teams, so a lot of this honestly felt like a rehash of concepts already covered.”

A key issue raised by teachers is the importance of knowing ahead of time what the instructional activity and performance task will be and having the latitude to fit the task into the right context or unit during their instructional year rather than having to

administer it at an externally determined time, when it might disrupt the flow of another unit. As noted earlier in the context of the DOC study, participating districts decided on a specific time when the activities would take place throughout the district. The disjunctures between the units being taught and the timing of the tasks were noted by many teachers as a concern:

“The [interim assessment] performance assessment would [normally] be connected, but right now they are doing the activity on financial literacy and then the performance assessment is on learning styles. It just seems like a lot of topics thrown at them. My class is doing a rhetorical essay and now I’m going to say we’re going to stop and do this. My concern is that we’re just throwing all these things at them, we have no control over content, but here we are giving them different topics.”

“The timing was a little abrupt. My team would love to have this information at the beginning of the school year to better incorporate these lessons into our units.”

“I would have liked more autonomy in deciding when to give these. “

Because administration of the performance tasks as part of a secure summative assessment requires considerable planning and technology resources, school districts—rather than teachers or school administrators—may decide when performance tasks are administered. Therefore, successfully embedding secure performance tasks in instruction requires that district leaders establish a consultative process for school administrators and teachers that helps them gain insight into both performance task content and grade-level scope and sequence so the district can ensure that students have been instructed in the relevant content before assessment.

Across grade levels, topic areas, and professional development facilitators, teachers had differing views about the value of the different activities, tasks, and training. Deeper analysis of this feedback will support learning how to incorporate the features of more successful PTSAs and training experiences into others.

## Recommendations for Future Investigation

As planning for future work in the area continues, recommendations for future investigation include the following:

* Elicit more information from educators regarding how to improve the assessment system to accelerate student learning. Specifically, elicit information about the different needs of elementary, middle, and high school educators as well as how the content areas might differ.
* Collect additional data. The study had a limited scope of participants and would benefit from an expanded scale to better address the range of needs that exist across the Smarter Balanced Consortium membership.
* Focus professional development more on enabling teachers to connect the higher-order knowledge and skills measured by the performance task with their curriculum and/or instructional scope and sequence and how to apply those connections as part of their day-to-day instruction.

While limited in scope due to the limited participation, these studies provide useful preliminary results suggesting the potential for administering summative assessment performance tasks in a manner that better aligns with teachers’ instruction. The studies suggest several key elements that must be addressed for the through-year approach to succeed, including the following:

* Ensure that the timing of assessment administration aligns with curriculum and/or the scope and sequence of instruction. This will need to be supported with resources to help district leaders, working in partnership with school leaders and teachers, to appropriately schedule and support the administration of performance tasks.
* Differentiate professional development to support teachers with varying levels of experience with the Smarter Balanced performance tasks. This would include differences in understanding the task content and cognitive demands and in making the instructional shifts needed to support students.
* Embed a continuous improvement process to evaluate, refine, and continuously improve professional development and instructional resources over time.

The Smarter Balanced Assessment Consortium deeply appreciates California educators’ contributions to this study. We look forward to using these results and future insights from California educators and educators from across the country to drive innovations in assessment to continually improve and support the teaching and learning process.

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## Appendix A: Sample Performance Tasks

The [Smarter Balanced Sample Items website](https://sampleitems.smarterbalanced.org/) contains sample performance tasks for both mathematics and English language arts/literacy (ELA). For an example of each, please see the [sample ELA high school performance task](https://sampleitems.smarterbalanced.org/Item/200-57418?&isaap=TDS_SCNotepad;TDS_WL_Glossary;TDS_Highlight1;TDS_Dict_SD4;TDS_ExpandablePassages1;TDS_GN1;TDS_ST1;TDS_TH_TA;TDS_PS_L0;TDS_CC0;TDS_Masking0;ENU;TDS_ILG0;TDS_BT0;TDS_SLM0;TDS_TTS0;&isaap=TDS_SCNotepad;TDS_WL_Glossary;TDS_Highlight1;TDS_Dict_SD4;TDS_ExpandablePassages1;TDS_GN1;TDS_ST1;TDS_TH_TA;TDS_PS_L0;TDS_CC0;TDS_Masking0;ENU;TDS_ILG0;TDS_BT0;TDS_SLM0;TDS_TTS0;) and [sample math high school performance task](https://sampleitems.smarterbalanced.org/Item/200-183690?&isaap=TDS_SCNotepad;TDS_WL_Glossary;TDS_Highlight1;TDS_CalcSciInv&TDS_CalcGraphingInv&TDS_CalcRegress;TDS_ExpandablePassages1;TDS_GN1;TDS_ST1;TDS_PS_L0;TDS_CC0;TDS_Masking0;DISABLED;ENU;TDS_ILG0;TDS_ASL0;TDS_BT0;TDS_SLM0;TDS_TTS0;).

Performance tasks measure a student’s ability to demonstrate critical-thinking and problem-solving skills. They challenge students to apply their knowledge and skills to respond to complex real-world problems. They can be best described as collections of questions and activities that are coherently connected to a single theme or scenario. These activities are meant to measure capacities such as depth of understanding, writing and research skills, and complex analysis, which cannot be adequately assessed with traditional assessment questions. The performance tasks are taken on a computer (but are not computer adaptive) and will take one to two class periods to complete.

## Appendix B: Integrated Deeper Learning Resource: Mathematics, Grade Six

## Introduction

The integrated deeper learning resource, formerly named Performance Task Support Activity, is part of a Demonstration of Concept Study by Smarter Balanced. This study is designed for 250 educators in three states who are participating in an immersive professional learning program to support them as they try out these classroom resources, in which students practice the higher order thinking skills required by performance tasks.

Creating opportunities for students to engage with these higher depth of knowledge (DOK) tasks is one goal of the study. Another goal is to build into the classroom resources an approach to student engagement that builds on all the strengths and resources that students bring to the classroom and on how those strengths and resources can be integrated into a lesson or activity. Helping students understand what they bring to the classroom—their ways of expressing themselves creatively, their language skills, their personal background and culture, and their own life experiences—and how they bring them should be seen as valuable contributions to the classroom community.

The planned instructional activities practice the claim, target, and standards that are assessed on the partner interim performance task but with a different context. Although students practice the same high DOK thinking that is expected on the performance task, they do not preview any of the sources or items in the actual task.

During the study, educators will give feedback on the integrated deeper learning resources and make recommendations for changes to make them more effective.

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**Integrated Deeper Learning Resource:  
Mathematics, Grade 6**

The integrated deeper learning resource provides students the opportunity to practice the claim, target, and standards that are assessed on the partner interim assessment performance task. The context of the integrated deeper learning resource is unique and contains different source materials than that of the corresponding interim assessment performance task. At the conclusion of the integrated deeper learning resource the teacher discusses the general context of the upcoming interim assessment performance task with students.

Targeted Learning

In this activity, students recommend ways to raise funds to pay the expenses for all sixth graders to take a day trip to an amusement park. They understand the problem, examine given data, identify variables for consideration (including variables outside of the given data), and make a recommendation with justification. They organize collaborative discussion groups to create models to recommend the fundraisers that will raise enough money per month for a total of six months. Additionally, students compare models made by other groups and consider alternative ways to solve the problem. This integrated deeper learning resource is best implemented after students have learned how to calculate the mean and understand the benefit of using the mean to build a model for monthly earnings. In addition, students should have practiced developing mathematical questions.

Learning Goals

Students will

* use data and mathematical modeling to recommend the best fundraisers to meet a fundraising goal;
* justify mathematical models, recommend a solution for the problem, and communicate reasoning clearly; and
* consider how key factors and variables influence the decision about the solution for the problem.

Success Criteria

Students can

* use information from tables to create a mathematical model to solve the problem,
* communicate the reasoning and justification for the mathematical model used to develop the solution, and
* compare models presented by other students and evaluate the evidence to justify the recommendation.

Estimated Time to Complete the Integrated Deeper Learning Resource

The estimated times are approximate and consist of two class periods.

* In the first period, complete Activities #1–#3 in approximately 55 minutes.
* In the second period, complete Activities #4–#5 in approximately 50 minutes.

All times are suggested estimates and will be impacted by teacher implementation decisions. Teachers should use their professional judgment about when more or less time is needed for given activities and include additional supports or practice opportunities for students. See [Formative Assessment Matrix](#_heading=h.1pxezwc) for guidance on making instructional pacing decisions.

Accessibility

Teachers should provide all tiers of accessibility resources and strategies that are used during regular instruction as well as any specific accessibility resources required for individual students in the assessment setting. For more information about accessibility strategies and ways of ensuring that students have equitable access to learning based on their diverse needs and preferences, visit [Accessibility Strategies](https://smartertoolsforteachers.org/landing/accessibility).

Teacher Prompts

The teacher prompts located in each learning activity are suggested language for how teachers might approach the content and strategies throughout the integrated deeper learning resource. Teachers should use their professional judgment regarding the language of the prompts and alter them as necessary to support students.

**Materials to Be Provided with the Learning Experience**

Students:

* [Building the Model Response Tool](#_heading=h.qsh70q) (one per student)
* materials for students to create and present their recommendations and models: chart paper and markers, whiteboard space, or digital presentation tools (e.g., Google Slides)
* calculators

Teachers:

* [Formative Assessment Matrix](#_heading=h.1pxezwc)
* In the [Formative Assessment Matrix](#_heading=h.1pxezwc), teachers will find information further clarifying each activity, including additional information on the suggested formative assessment strategies, student look-fors, approximate DOK of each activity, and suggestions for differentiating or extending instruction.

**Integrated Deeper Learning Resource**

At-a-Glance

*Activity #1: Opening*

Students discuss prior knowledge of fundraising and bring to the discussion their own experiences and those of family and friends.

*Activity #2: Work Period—Getting Ready for the Problem*

Students answer guiding questions to prompt thinking about the proposed fundraisers to start thinking about the mathematics problem to be solved.

*Activity #3: Work Period—Planning the Model*

Three Reads

* Students read the context for the activity three times, with a different focus for each read.
* Students make connections between the Learning Goals and the description of the problem.
* Students make connections between the Success Criteria and the method to solve the problem with the evidence required to justify the answer.

*Activity #4: Work Period—Building the Model and Justifying the Recommendation*

Students work individually to develop a mathematical model to solve the problem and justify the recommendation with evidence in a presentation that is easy to understand.

They present the proposed recommendation to the whole class to persuade them to support it.

They refer to the Learning Goals and Success Criteria to check their work.

*Activity #5: Closing*

Each group presents the recommendation to the whole class.

The class evaluates the recommendations and votes on the best one.

Activity #1: Opening

**Time:** 15 minutes

*Teacher Prompt*

*Today, we are going to work on a mathematical model to make a recommendation for sixth graders to work together on fundraising activities to earn money for a special trip. I’m displaying the Learning Goals and Success Criteria for today:*

*The Learning Goals for today are to*

* *use data and mathematical modeling to recommend the best fundraisers to meet a fundraising goal;*
* *justify mathematical models, recommend a solution for the problem, and communicate reasoning clearly; and*
* *consider how key factors and variables influence the decision about the solution for the problem.*

*The Success Criteria to meet the goals are to*

* *use information from tables to create a mathematical model to solve the problem,*
* *communicate the reasoning and justification for the mathematical model used to develop the solution, and*
* *compare models presented by other students and evaluate the evidence to justify the recommendation.*

*To get ready for the task, we’d like you to think about some fundraising experiences that you know. Then, invite a classmate to be your partner to share what happened during these fundraisers and how they were or were not successful.*

*Some examples are*

* *raising money for a special trip,*
* *earning extra money to help someone in the community,*
* *raising funds for a special gift, or*
* *another reason important to you.*

*You might think about experiences both at school and in your community. While you are thinking and taking notes, I’ll start off the conversation with an example.*

*Example Teacher Sharing*

*A middle school service club that has members at each school across the district wants to raise funds to buy a van. They want to be able to provide club members rides to community areas when they conduct their service activities. They have figured out the cost of a used van and decided to set a goal to raise the funds before their first scheduled large event in the spring. They mowed lawns all summer to raise $4000. The fundraiser was considered a success because they were halfway to their goal.*

**Formative Assessment Strategy:** [Think-Pair-Share](https://smartertoolsforteachers.org/resource/43)

*Once you have notes about 2–3 ideas for fundraising, add to your notes the reasons the fundraisers were successful or unsuccessful. Once you have your list, invite a classmate to be your partner and share your ideas and the reasons the fundraisers were or were not successful. When you and your partner have discussed your lists, you will share your partner’s list with the whole class.*

* The teacher lists the fundraising ideas on a shared document or whiteboard along with the reasons the students share about why the fundraisers were successful or not.
* Next, the teacher chooses 1–2 successful fundraisers to build an example of the factors of success for fundraising. If the reasons already point to participation, price, and fun as reasons, then the teacher elicits more detail from students to build a more complete picture of the fundraisers and reasons for success. If these factors have not yet been articulated in the student examples, the following guiding questions may be helpful as discussion starters.

*Teacher Prompt*

* What are key factors that made these fundraisers successful?
* Why is it important to have many people trying to raise the funds?
* How does the price of the item make a difference?
* How does having fun during the fundraising activity make a difference?

*Example Student Responses*

* We need to have a big group of people to be able to sell to lots of people from across the community in different neighborhoods.
* The price makes a difference because some people won’t buy things that are expensive. We want students to participate, and they may be left out if the price is high.
* Students, especially, but other people also, are more interested in activities that are fun to do. We want enough people to do the work because it’s fun, so the job gets done quickly and my friends and family want to help.

*Evidence of Student Thinking*

The teacher displays the Learning Goals and asks students, *“Which learning goal relates to the discussion we just had?*” The Learning Goals are numbered 1–3. Hold up the number of the Learning Goal that is the correct answer.

1. Use data and mathematical modeling to recommend the best fundraisers to meet a fundraising goal.
2. Justify mathematical models, recommend a solution for the problem, and communicate reasoning clearly.
3. Consider how key factors and variables influence the decision about the solution for the problem.

*Correct Student Response*

Students hold up the number three. They are encouraged to display the number in ways that are comfortable for them such as holding up three fingers, adding to the chat, or drawing the number on a display.

*Clarifying Intended Learning*

Review and discuss learning goals and success criteria with students, prompting students to self-evaluate their understanding by asking them to restate the success criteria. Students will draw on their own prior knowledge and personal assets to describe the purpose of the lesson and how they will apply their learning to the performance task.

Activity #2: Work Period—Getting Ready for the Problem

**Time:** 20 minutes

*Teacher Prompt*

*Let’s stay in pairs to talk about actual fundraising ideas that the sixth graders have come up with to recommend to the committee. Table 1 has part of the data we need to use to solve a problem. Let’s look at Table 1 and discuss our ideas about the types of fundraisers that are being considered. You might decide to split up the types of fundraisers and take on two as an “expert.” Then, you and your partner combine your information to report to the whole class.*

* Encourage students to keep in mind the factors of participation, price, and having fun. Encourage students to respond and build on one another’s ideas (e.g., by asking for clarification, agreeing, or providing related examples).

**Formative Assessment Strategy:** [Notice/Wonder](https://smartertoolsforteachers.org/resource/30)

*Table 1. Estimated Sales Per Month by School for Each Fundraiser*

| **Schools Participating in Fundraising** | **Car Washes**  **(number of cars washed)** | **Movie Tickets**  **(number of advance tickets sold)** | **Dog Walks**  **(number of 40-minute dog walks)** | **Read-a-Thon**  **(number of pledges for 100 pages read)** |
| --- | --- | --- | --- | --- |
| Middle School A  (grades 6–8) | 240 | 500 | 350 | 324 |
| Middle School B  (grades 6–8) | 100 | 700 | 500 | 425 |
| Middle School C  (grades 6–8) | 200 | 250 | 750 | 562 |
| Elementary School A  (grades K–6) | 350 | 25 | 150 | 452 |
| Estimated Total from All Schools | enter total here: | enter total here: | enter total here: | enter total here: |

*Let’s apply the factors we just discussed to this table of fundraising activities.*

*What’s the one thing you notice about these activities in terms of the number of participants and how much fun it might be?*

* If students do not recognize price as an important factor, model the following wondering aloud, “*I wonder if there is additional information needed to determine the best fundraising idea or ideas to select?*”
* Students should recognize or be guided to recognize price as an important factor when selecting possible fundraisers.

*What’s one question you have about the activities on Table 1?*

* First, students share their answers to the questions about their two types of fundraisers with their partner and discuss the ideas (notice) and questions (wonder). Then, the partners share their questions about Table 1 with the whole class in a round robin activity using multiple methods for communication including drawings, writing, or other ways that build on their experiences and styles of communication.
* The teacher records students’ noticings and wonderings on chart paper, a shared document, or a whiteboard. The teacher should keep this chart paper available throughout the activity for students to reference as they work on their recommendations. The teacher takes time to answer any clarifying questions students may have about the data on Table 1.

*Sample Student Responses*

* I notice that car washes may take a lot of water, and you’d have to drive cars to a large place to hold the car wash.
* I notice that reading 100 pages will take a lot of time.
* I notice that you would have to like dogs to do the dog walks and some people may be allergic to or afraid of dogs.
* I wonder how many people would like to see movies that are related to their cultures and interests.
* I wonder if we can get friends, family, and students from other grades to help us.
* I wonder if we can do the read-a-thon online with books in different languages.

Activity #3: Work Period—Planning the Model

**Time:** 20 minutes

*Groupings: Collaborative Discussion Groups*

The purpose of this activity is to help students understand the elements of the problem before they begin to solve it. In a collaborative group, students reread and discuss a description of the situation several times, each time for a different purpose. This strategy supports reading comprehension, collaborative discussion skills, and an awareness of mathematical content language.

For this activity, the students form collaborative discussion groups of 3–4 students. Encourage students to reach out to classmates who have diverse experiences and ideas to broaden the range of ideas discussed. The discussion group uses collaborative discussion norms of assigning roles, preparing for the discussion, speaking in turns, asking clarifying questions, and considering the ideas of others when forming an opinion.

*Teacher Prompt*

*We will form discussion groups of 3–4 students who were “experts” in different fundraisers in the last activity and who will contribute their diverse experiences and knowledge to the discussion. Your group will work together to read and discuss the fundraising situation and identify the mathematical information that will help you solve the problem. Once the group has analyzed the information and discussed possible scenarios, you will work together to build a mathematical model with evidence and a rationale to justify your recommendation. There will be several options to meet the fundraising goal. Your group will consider several factors to build the justification and reasoning for your recommendation.*

*Collaborative Discussion Starter #1*

Assign a role to each member of the group as the expert in one of the types of fundraisers. The members of the group will focus on that type of fundraiser during the Three Reads activity to report information about that type of fundraiser during the collaborative discussion.Encourage students to create a display that utilizes their strengths in communication and creativity, building on their culture, language, and experiences.

*During this activity, you will work together to build a display to answer some guiding questions after each reading of the problem. You won’t calculate any missing information until you start to build the model in the next activity. This activity is to think about the “big picture” of what needs to be included in your mathematical model.*

**First Read:** What is the situation about?

* Have students read [School Fundraising](#_heading=h.3q5sasy) and in a collaborative discussion, answer the question, “What is this situation about?”

**Example Guiding Questions**

* What decisions have already been made about how the fundraising will be accomplished?
* How do these decisions limit your options when building a mathematical model?

**Sample Student Responses**

* The schools will work together to raise funds.
* The estimates of the numbers that can be sold by each school are the basis for the recommendation.
* The money must be raised in six months.

*Collaborative Discussion Starter #2*

**Second Read:** What are the quantities in this situation?

Have the groups read the problem a second time, keeping their roles as fundraiser expert, this time looking for the quantities in the situation. Ask them to pay attention to units and relationships among the quantities for the type of fundraisers.

**Example Guiding Questions and Sample Student Responses**

*All these fundraisers have different types of units. What are the types of units described on Table 1?*

* The units are 1 car wash, 1 movie ticket, 1 40-minute dog walk, and 1 set of 100 pages.

*Which units relate to participation?*

* The number of units estimated per school shows greater participation with higher numbers.

*Which units relate to price?*

* On Table 1, we don’t know the prices for the units.

*Do any units relate to having fun?*

* The fundraisers with higher estimated numbers may be more fun, but we don’t have a measure for that.

*When thinking about building your mathematical model, how might using Total Sales from All Schools be a problem in determining the amount of money needed to be raised?*

* The total sales, as a fixed number, could be too high or low of an amount the students need to meet every month.

*How might using the Mean Monthly Sales rather than the Total Sales from All Schools provide a better model to estimate the amount of money raised?*

* By using the Mean or Average, there is a better chance that the number expected will be closer to the actual sales because it is an average of all of the schools. It provides an overall view of money raised from across all schools.

Monitor the collaborative discussions and encourage students to ask clarifying questions and add to the ideas of other students to explain the quantities, the units, and the relationships among the quantities.

Call out important vocabulary such as “profit,” “income,” “mean,” and “estimated.” Teachers explicitly teach these words using a Word Wall or other strategy for learning unfamiliar vocabulary such as looking at multiple meanings, activating prior knowledge of the word in context, and looking at parts of the word.

*Collaborative Discussion Starter #3*

**Third Read:** What mathematical questions can we ask about the situation?

Have students in collaborative groups read the problem a third time, this time thinking about the questions they might ask about the situation to help them develop a solving method to build the mathematical model. The students take turns posing mathematical questions that may be the foundation for the model they develop to solve the fundraising problem. Students in the group list the mathematical questions that need to be answered to build the mathematical model and share the list with the teacher.

**Example Questions and Sample Student Responses**

*Are all schools going to participate for the full six months?*

* Because all schools are working together, they must keep going until all the money is raised.
* The elementary school has significantly lower participation in Movie Tickets, so they may drop out if the decision is to focus on Movie Tickets.

*Is the six-month period fixed?*

* Funds must be raised during the school year and before the trip.
* If the monthly amount is greater than the goal, the fundraising could be finished earlier.

*Are the estimates from each school final? Will the goal be met by a single type of fundraiser?*

* Just by looking at the amount earned by each type of fundraiser, it looks like one fundraiser will be enough to raise all the funds, but there is more than one way to solve the problem. We need to consider other factors.

**Formative Assessment Strategy:** [Three Reads](https://smartertoolsforteachers.org/resource/44)

*Evidence of Student Thinking*

The teacher collects the lists of mathematical questions from each group. The teacher notes which groups are asking questions that will lead to filling in the unknown information (e.g., calculating the mean amount per month for each fundraiser to find out which earns the highest amount). The teacher notes which students are considering the preferences of their friends and families and the likelihood that the types of activities would be popular locally.

*Suggested Division of the Integrated Deeper Learning Resource*

To divide the integrated deeper learning resource across two class periods, it is suggested that students complete Activities #1–#3 during the first period and Activities #4–#5 during the second period.

When concluding Activity #3 during the first period, the teacher should collect student materials and be prepared to redistribute them at the start of Activity #4 during the second period.

Activity #4: Work Period—Building the Model and Justifying the Recommendation

**Time:** 30 minutes

*Teacher Prompt*

*Let’s review which learning goals we have worked on so far.*

* *Use data and mathematical modeling to recommend the best fundraisers to meet a fundraising goal.*
* *Justify mathematical models, recommend a solution for the problem, and communicate reasoning clearly.*
* *Consider how key factors and variables influence the decision about the solution for the problem.*

*When your group discussed the situation in the first read, the quantities in the second read, and the mathematical questions in the third read, what Learning Goal were we working on? Display the number of the Learning Goal related to these activities.*

**Correct Answer:** Learning Goals 1 and 3. When the students discussed the quantities, they were using the data, and when they were developing mathematical questions, they were starting mathematical modeling in Goal 1. When they discussed the situation and raised questions about participation and having fun, they were considering factors in Goal 3.

*Collaborative Task: Build the Model*

Discussion groups assign roles to each member to collaborate on building the model. Students may continue to be the “expert” on a particular type of fundraiser to do the data calculation and discuss the benefits of choosing to include it in the model. The expert builds the model with just their own fundraiser as the basis for the recommendation and finds out if that type of fundraiser can meet the fundraising goal alone or if it needs to be combined with another fundraiser. The expert develops the mathematical model and makes a recommendation with justification and reasoning including other factors besides the estimated earnings. The expert prepares a presentation for the collaborative discussion group to persuade them to adopt the recommendation.

In addition to working independently to develop recommendations to bring to the collaborative discussion, group members work together to plan how to present the group’s final recommendation to the whole class. One of the roles they may consider assigning is presentation designer. This role provides an opportunity for students to bring creativity, cultural and language assets, and unique perspectives to the presentation for the whole class.

**Materials:** Print out or provide in a collaborative folder the [Building the Model: Student Response Tool](#_heading=h.qsh70q) that each student will use to complete the model and recommendation for one type of fundraiser independently before bringing the results to the collaborative discussion group. These response tools will be collected as evidence of individual student thinking.

*Teacher Prompt*

*Each school has come up with estimates for the number of sales per month for each type of fundraising shown in Table 1. Each member of your collaborative group is an expert on one type of fundraiser.*

*On the Response Tool, mark or highlight the type of fundraiser in which you are the expert.*

*Calculate the missing information on Table 1 and Table 2 for your fundraiser and then share the information with the collaborative group.*

*Each member of the group will develop their own proposal for the fundraisers by completing the Final Task independently before bringing it to the group for consideration.*

*Check the completeness of your recommendation against the Success Criteria.*

* The group discusses each member’s proposal and responds to clarifying questions or requests for additional information. The group discusses the best proposal to present to the whole class.
* The presentation designer works with the other members of the group to display the information in the Final Task: Recommendation, Mathematical Model, Reasoning, and Justification.
* For the section on Compare to Other Models, students display other models recommended within the group that were not chosen for the final recommendation. They display the similarities and differences along with the benefits of the model that was chosen.

Sample Student Responses

*Building the Model: Response Tool Example Answers*

**School Fundraising: Build a Mathematical Model to Solve the Problem**

*Part 1: Estimated Monthly Sales*

You are helping plan the class trip for all sixth-grade students. Each school needs to raise money for the trip. The basic information to consider is as follows:

* It will cost $50 per student to go on the trip.
* There are 538 students in sixth grade.
* The fundraising goal is to raise a total of $26,900.
* The schools have six months to raise the money.
* The plan is to raise $4,485 each month.
* Each school has proposed types of fundraisers with numbers to sell each month.

The task is to build a mathematical model using the information in Table 1 and Table 2 to make a recommendation about which fundraisers to sponsor to be able to raise $4,485 per month.

**Table 1. Estimated Sales Per Month by School for Each Fundraiser**

| **Schools Participating in Fundraising** | **Car Washes**  **(number of cars washed)** | **Movie Tickets**  **(number of advance tickets sold)** | **Dog Walks**  **(number of 40-minute dog walks)** | **Read-a-Thon**  **(number of pledges for 100 pages read)** |
| --- | --- | --- | --- | --- |
| Middle School A  (grades 6–8) | 240 | 500 | 350 | 324 |
| Middle School B (grades 6–8) | 100 | 700 | 500 | 425 |
| Middle School C (grades 6–8) | 200 | 250 | 750 | 562 |
| Elementary School A (grades K–6) | 350 | 25 | 150 | 452 |
| Estimated Total from All Schools | 890 | 1,475 | 1,750 | 1,763 |

Use the Estimated Total from all Schools to calculate the Mean Sold Per Month for your fundraiser to fill in the missing information on Table 2. Share your results with the collaborative group to fill in the missing information on the table.

*Part 2: Average Profit Per Month*

Table 2 shows how much money can be made from each fundraiser when they sell the mean number per month. Use your answers from Table 1 to calculate the mean sold per month for each fundraiser. Next, calculate the average profit made each month for each fundraiser.

**Table 2. Average Fundraising Earnings**

| **Fundraiser** | **Mean Sold Per Month** | **Earnings** | **Average Profit Per Month** |
| --- | --- | --- | --- |
| Car Washes | 223 | $12 per car wash | $2,676 |
| Movie Tickets | 369 | $17 per ticket | $6,273 |
| Dog Walking | 438 | $8.50 per 40-minute walk | $3,723 |
| Read-a-Thon | 441 | $10 per 100 pages | $4,410 |

Use your answers from Table 1, Table 2, and other factors from the collaborative discussion to help the fundraising committee choose which fundraisers to focus on for the next six months to earn at least $4,485 each month.

Explain your findings. Include all math necessary to support your answer.

*Recommendations*

**Sample Response 1: Movie Tickets**

We recommend the sixth graders do a monthly movie fundraiser. The average profit per month for the movie fundraiser is $6,273 if the schools sell 369 tickets at $17 per ticket. This is higher than the required $4,485 per month and provides a cushion to meet the goal.

**Sample Response 2: Car Washes and Dog Walking**

We recommend the sixth graders do monthly car washes and dog walking to raise the funds. Both activities are the least expensive and had higher participation from all four schools. In addition, the activities could be targeted to certain months when the weather may be better for being outside. If the sixth graders walk dogs for six months and wash cars for two months, they will earn $27,690, which is more than the funds needed for the trip.

**Sample Response 3: Read-a-Thon**

The estimated earnings per month from the Read-a-Thon is close but not enough for the monthly earnings required to raise the funds. The recommendation is to do the Read-a-Thon and go back to Middle School A to find out if they can increase their estimates for monthly participation to meet the goal. The best reason to do the Read-a-Thon is that students from all grades can participate and it supports better reading skills.

**Sample Response 4: Dog Walking and Read-a-Thon**

The estimated earnings from the Read-a-Thon are close to the amount needed, but students in our group want to also support Dog Walking. This activity was popular in all of the schools with almost as many participants as the Read-a-Thon. We estimate that if we do both activities, we will raise the funds needed in four months.

*Mathematical Model: (All responses)*

First, we calculated the estimated total sales for each type of fundraiser on Table 1 and then used that total to divide by the number of schools to get the mean number of sales per month.

**Mean number of washes sold per month for Car Washes**

240 + 100 + 200 + 350 = 890

890 ÷ 4 ≈ 223

**Mean Number of Tickets Sold per Month for Movie Tickets**

500 + 700 + 250 + 25 = 1,475

1,475 ÷ 4 ≈ 369

**Mean Number of Walks Sold per Month for Dog Walks**

350 + 500 + 750 + 150 = 1,750

1,750 ÷ 4 ≈ 438

**Mean Number of Pledges to Read 100 Pages per Month for the Read-a-Thon**

324 + 425 + 562 + 452 = 1,763

1,763 ÷ 4 ≈ 441

Then, we multiplied the price per sale by the mean sold per month to get the monthly earnings on Table 2 and compared the amounts. Movie Tickets earns more per month than needed. Read-a-Thon is very close to the amount needed. Dog Walking and Car Washes do not earn enough by themselves. They could be combined with another fundraiser.

* Movie Tickets, $6,273
* Read-a-Thon, $4,410
* Dog Walking, $3,723
* Car Washes, $2,676

*Reasoning and Justification*

**Sample Response 1—Movie Tickets**

We think holding monthly movies would be the best fundraiser because it earns more than the needed amount each month. In addition, there is more variety possible with all the different types of movies, so it could appeal to a larger audience. The amount estimated has a cushion of $1,788, so if the sales are lower in a particular month, there wouldn’t be a problem. In addition, the fundraising could be over more quickly because it will only take 4.3 months to earn $26,900.

**Compare to Other Models:** Other students may prefer the Read-a-Thon, but we think the estimate is too close to the needed amount without adding another type of fundraiser.

**Sample Response 2—Car Washes and Dog Walking**

Our collaborative discussion focused on the participation numbers from all the schools and the price of the type of fundraiser. These two fundraisers have the lowest costs, and we think that will be easier to sell. In addition, the members of our group like dogs and have experience walking dogs in the neighborhood as a summer job. Washing cars for two months earns $5,352. Add to that walking dogs for six months, which earns $22,338, for a total of $27,690. That is $790 more than the needed amount.

**Compare to Other Models:** The cost of the Movie Tickets was a major negative factor for our group. We were worried that the school estimates were too large for the number of sales at $17 each, month after month. Because many families have cable and streaming internet services, it seems unlikely that they will pay $17 to go to a movie theater.

**Sample Response 3—Read-a-Thon**

Our group thinks that the Read-a-Thon is the best recommendation to involve all students and support improving reading skills. Students keep the pledge sheets and have a teacher sign off on each 100 pages read. Also, we want to encourage reading books in different languages and set in different countries. Maybe the Read-a-Thon will encourage students to start reading discussion groups around student background knowledge, hobbies, and interests. The estimated pledges per month were only short by $75, so we are confident that we can get to the required amount each month.

**Compare to Other Models:** Unlike dog walking and car washes, there are no concerns about weather conditions or facilities to hold the Read-a-Thon. Our group had members who did not want to worry about students who were allergic to or afraid of dogs. In addition, they objected to the high price of the Movie Tickets.

**Sample Response 4—Dog Walking and Read-a-Thon**

Our group wanted to add dog walking to the Read-a-Thon to speed up the fundraising to finish reaching the goal earlier. Some members of our group have volunteered at the local veterinarian’s office helping to walk and wash dogs and clean out the dog runs. They have contacts that could help advertise the fundraiser. If two months of dog walking ($7,446) was added concurrently to five months of the Read-a-Thon ($22,050), they would raise $29,496, which is $2,596 over the goal.

**Compare to Other Models:** The other models are based on using the full six months to raise the funds. In addition, the other models require special facilities to host the car washes and movie nights. Our model tries to speed up the fundraising by adding in another activity to one that would make most of the money in six months. Also, the benefit of contacts in the local community from the volunteer work of our group members gave us ideas to help advertise the fundraisers.

Activity #5: Closing

**Time:** 20 minutes

*Evaluating the Solutions*

Each collaborative group designates one or more students to present the recommendation for the fundraising plan to the whole class. At the end of the presentations, the class will hold a quick poll on the recommendations to decide on the best recommendation based on the justification and rationale as well as the knowledge and experiences of the students in the class.

*Teacher Prompt*

*We will consider each group’s model and then the whole class will vote in a poll to choose the final recommendation for the sixth-grade fundraiser. As each group presents, take notes on whether the recommendation is alike or different from your group’s recommendation. Take notes on the Compare section of the Response Tool to record your thoughts about how the presentation is different or similar to your group’s presentation and the elements that make it more or less persuasive.*

*At the end of the vote, you will turn in the Response Tool to show the work you completed to build the model, justify the recommendations, and compare models. Be sure to add detail to explain your thinking.*

*Evidence of Student Thinking*

Collect the Response Tool from each student:

* calculations the student completed as an expert on a type of fundraiser on Tables 1 and 2
* Mathematical Model, Recommendation, Justification, and Reasoning in the Final Task with details to explain the rationale and justification
* Compare to Other Models: Note the comments written during the class presentations that show student thinking about why one model would be better, which may highlight knowledge outside of the classroom and build on prior experiences.

This independent work provides evidence of student thinking throughout the process of building the model and developing the recommendation. Notes scribed during collaborative discussions provide evidence of how the student was prepared for the collaborative discussion, presented the recommendation, answered clarifying questions, and may have adapted their thinking to incorporate the ideas of others. These two sources of evidence work together to show the student’s level of understanding and ability to build a mathematical model to solve a problem.

*Teacher Prompt*

*During our activities today, we’ve been working collaboratively to share ideas. However, during the performance task you will be working independently. Think about how you can successfully transition from working with peers to working on your own.*

* Use this time to remind students that the context of the integrated deeper learning resource is different than that of the performance task.

**Feedback**

Throughout the lesson and upon conclusion, give specific feedback to students to help them understand their strengths and challenges compared to the learning goals and success criteria. (See [Formative Assessment Matrix](#_heading=h.1pxezwc) for a list of possible feedback topics and strategies to support student learning.)

Identify additional practices that will be helpful to students based on the data collected from student artifacts, responses, and observations.

Engage students in providing feedback to peers as well as metacognitively reflecting on their own learning.

**Getting Ready for the Interim Assessment Performance Task**

This information is redacted to maintain integrity of the corresponding performance task. Educators will have access to this section of the resource when the Integrated Deeper Learning Resources are published on the *Tools for Teachers* website.

**Building the Model: Student Response Tool**

School Fundraising: Build a Mathematical Model to Solve the Problem

*Part 1: Estimated Monthly Sales*

You are helping plan the class trip for all sixth-grade students. Each school needs to raise money for the trip. The basic information to consider is as follows:

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Each school has proposed types of fundraisers with numbers to sell each month.

The task is to build a mathematical model using the information in Table 1 and Table 2 to make a recommendation about which fundraisers to sponsor to be able to raise $4,485 per month.

**Table 1. Estimated Sales Per Month by School for Each Fundraiser**

| **Schools Participating in Fundraising** | **Car Washes**  **(number of cars washed)** | **Movie Tickets**  **(number of advance tickets sold)** | **Dog Walks**  **(number of 40-minute dog walks)** | **Read-a-Thon**  **(number of pledges for 100 pages read)** |
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| Middle School C (grades 6–8) | 200 | 250 | 750 | 562 |
| Elementary School A  (grades K–6) | 350 | 25 | 150 | 452 |
| Estimated Total from All Schools | Enter total here: | Enter total here: | Enter total here: | Enter total here: |

Fill in the last row of the table to find out the Estimated Totals for your own fundraiser.

Use the Estimated Total from All Schools to calculate the Mean Sold Per Month for your fundraiser to fill in the missing information on Table 2. Share your results with the collaborative group to fill in the missing information on the table.

*Part 2: Average Profit Per Month*

Table 2 shows how much money can be made from each fundraiser when they sell the mean number per month. Use your answers from Table 1 to calculate the mean sold per month for each fundraiser. Next, calculate the average profit made each month for each fundraiser.

**Table 2. Average Fundraising Earnings**

| **Fundraiser** | **Mean Sold Per Month** | **Earnings** | **Average Profit Per Month** |
| --- | --- | --- | --- |
| Car Washes | answer here: | $12 per car wash | answer here: |
| Movie Tickets | answer here: | $17 per ticket | answer here: |
| Dog Walking | answer here: | $8.50 per 40-minute walk | answer here: |
| Read-a-Thon | answer here: | $10 per 100 pages | answer here: |

Use this table to show your mathematical calculations.

*Final Task*

Use your answers from Table 1 and Table 2 to help the fundraising committee choose which fundraisers to focus on for the next six months to earn at least $4,485 each month.

Explain your findings. Include all math necessary to support your answer.

*Recommendation*

* We recommend the six graders choose this many fundraisers: (how many?)
* They are: (name the fundraiser[s])

*Mathematical Model*

* The average profit per month for each fundraiser is:
* To raise $4,485 per month we need to:

*Reasoning and Justification*

* We think these fundraisers would be best because:

*Compare to Other Models*

* Other students may prefer:
* But we think:

**Formative Assessment Process Matrix**

| **Clarify Intended Learning** | **Elicit Evidence of Student Understanding** | **Interpret Evidence of Student Understanding** | **Act on Evidence to Clarify, Support, and Extend Student Understanding** |
| --- | --- | --- | --- |
| [**Activity #1: Opening**](#_heading=h.1ksv4uv)  Students discuss prior knowledge of fundraising and bring to the discussion their own experiences and those of family and friends. | **Formative Assessment Strategy:** [Think-Pair-Share](https://smartertoolsforteachers.org/resource/43)  Students are encouraged to share their own and others’ experiences inside and outside the classroom with fundraisers that relate to their interests and community relationships.  Encourage students to share traditions and festivals in which fundraising supports activities for youth groups.  Students identify key factors in fundraising by listing the reasons some fundraisers were successful.  Check for understanding of the Learning Goals by having students identify the Learning Goal related to the discussion. | **Look-Fors**  Students analyzing the reasons the fundraisers were or were not successful.  Students asking clarifying questions and add their ideas or more detail to the description of the fundraisers and reasons for success.  Students connecting the conversation about their experiences with fundraising to Learning Goal 3.  **DOK: 2**  Recall the details of 2–3 fundraisers and analyze the reasons for success or failure. | **Clarify and Support Student Understanding:**  Make sure that all students understand the vocabulary related to types of fundraisers.  Encourage students to discuss these concepts in their home languages.  If relevant and possible, pair English Learners with partners who share the same home language and can help them phrase clarifying questions. |
| [**Activity #2: Work Period**—**Getting Ready for the Problem**](#_heading=h.2jxsxqh)  Students answer guiding questions to prompt thinking about the proposed fundraisers to start thinking about the mathematics problem to be solved. | **Formative Assessment Strategy:** [Notice/Wonder](https://smartertoolsforteachers.org/resource/30)  Students share things they notice about the information in Table 1 as well as pose questions about the information that is not provided on the Table.  The partners plan a way to share each other’s thoughts with the whole group in a way that builds on their own communication styles. | **Look-Fors**  Students noticing which fundraisers have the greatest participation.  Students wondering about how much money is earned for each type of fundraiser.  Note how many students are recognizing the purpose of totaling up the amount for each type of fundraiser across all schools for the first step to solve the problem.  **DOK: 2**  Recall and use data analysis to pose questions. | **Clarify and Support Student Understanding:**  Encourage students to discuss these concepts in their home languages.  Pair English Learners with partners who share the same home language and can help them phrase clarifying questions.  **Validate and Extend Student Understanding:**  Use explicit vocabulary instruction to help students understand words like “mean” and “average” as they are used in mathematics. |
| [**Activity #3: Work Period**—**Planning the Model**](#_heading=h.3j2qqm3)  **Three Reads**  Students reread the context for the activity three times, with a different focus for each read.  Students make connections between the Learning Goals and the description of the problem.  Students make connections between the Success Criteria and the method to solve the problem with the evidence required to justify the answer. | **Formative Assessment Strategy:** [Three Reads](https://smartertoolsforteachers.org/resource/44)  Encourage students to put themselves in the situation of being on the fundraising committee and discuss how their classmates would react to these ideas for fundraisers.  Ask students if there are any concerns about these types of fundraisers among their community members.  Encourage students to suggest additional ideas that would be popular with their communities related to the type of activities, the cost of the items being sold, and the timing of a fundraising effort. | **Look-Fors**  Students recognizing that the mean sold per type of fundraiser is an important metric for comparing potential earnings.  Students understanding how to calculate the estimated earnings per month and why that is important in building the model.  Students having a rationale for the best way to reach the monthly fundraising goal that includes other factors besides monthly earnings.  **DOK: 3**  Recall information, apply the information to analyze data, and develop a rationale for an approach to the problem. | **Clarify and Support Student Understanding:**  After the first read, ask, “If this situation was a story instead of a math problem, how would you describe the characters and the plot?”  **Validate and Extend Student Understanding:**  Ask students which fundraisers would seem to be the best to reach their goal, based on just glancing at the data.  Challenge students to draw on their prior experiences thinking of what *best* means in different business and life situations and how the term *best* can be justified using data. |
| [**Activity #4: Work Period—Building the Model and Justifying the Recommendation**](#_heading=h.4i7ojhp)  Students work individually to develop a mathematical model to solve the problem and justify the recommendation with evidence in a presentation that is easy to understand.  They present the proposed recommendation to the whole class to persuade them to support it.  They refer to the Learning Goals and Success Criteria to check their work. | Encourage students to draw on their own communication styles and cultural assets to create a presentation.  Ask students to name factors not mentioned in the problem that should be considered based on their own experience with fundraisers in the local community.  Ask students what assumptions are important to convince their classmates to support their recommendation. | **Look-Fors**  Students asking clarifying questions and rephrasing the justifications to help them understand the presentation.  Students considering factors/parameters that are not named in the problem statement (e.g., number of sixth graders in a school).  Students providing substantial evidence to support their mathematical justification in a format that is easy for others to understand.  Students applying the Success Criteria to the student presentations to evaluate their effectiveness.  **DOK: 4**  Using data and information to create a mathematical model to make a recommendation and justify it with evidence and a rationale. | **Clarify and Support Student Understanding:**  As appropriate, provide students with sentence starters and sentence frames to use in structuring their recommendations.  Encourage students to list the similarities and differences among recommendations that are shared before deciding on a recommendation to support. |
| [**Activity #5: Closing**](#_heading=h.3whwml4)  Each group presents their recommendation to the whole class.  The class evaluates the recommendations and votes on the best one. | Students prepare presentations that highlight their communication strengths.  Students use their knowledge and experiences inside and outside the classroom to evaluate the presentations and vote on the best recommendation for the sixth-grade fundraiser.  Students take notes to compare recommendations and make judgments based on their experiences, knowledge, and preferences of the local community. | **Look-Fors**  How many recommendations have the same mathematical model but included local context or student experiences in developing the rationale.  The Compare section of the response tool to uncover reasons that go beyond the data analysis and include additional factors discussed earlier in the lesson.  **DOK: 3**  Students justify their thinking with evidence. | **Clarify and Support Student Understanding:**  Comment on parts of the recommendations that are addressing each Learning Goal.  Ask students to rephrase how they met the Success Criteria with parts of the presentation.  Ask students to substitute in another type of fundraiser and work out a model that would raise the money in only three months. What would have to change? |