The Changing Landscape of Statewide Assessment: Shifts towards Systems of Assessments

Virtual Session in NCME Fall Conference
August 24, 2020

Center for Assessment

Session

On the Shift Towards Balanced Assessment Systems: Past, Present and Future Brian Gong, Center for Assessment

Developing a Validity Research Agenda for Louisiana's Innovative Assessment Demonstration Authority Pilot Nathan Dadey, Center for Assessment; Michelle Boyer, Center for Assessment

On the Opportunity Provided in Creating an Innovative Assessment: Design Considerations and Agile Test Development in an Innovative Pilot Abby Javurek, NWEA; Paul Nichols, NWEA; Garron Gianopulos, NWEA

Discussant & QA Moderator: Carla Evans, Center for Assessment

Questions & Comments: Put in Chat/QA

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On the Shift Towards Balanced Assessment Systems: Past, Present and Future

Brian Gong, Center for Assessment

Presentation in the Session, “The Changing Landscape of Statewide Assessment: Shifts towards Systems of Assessments.” Virtual Session in NCME Fall Conference, August 24, 2020

Overview

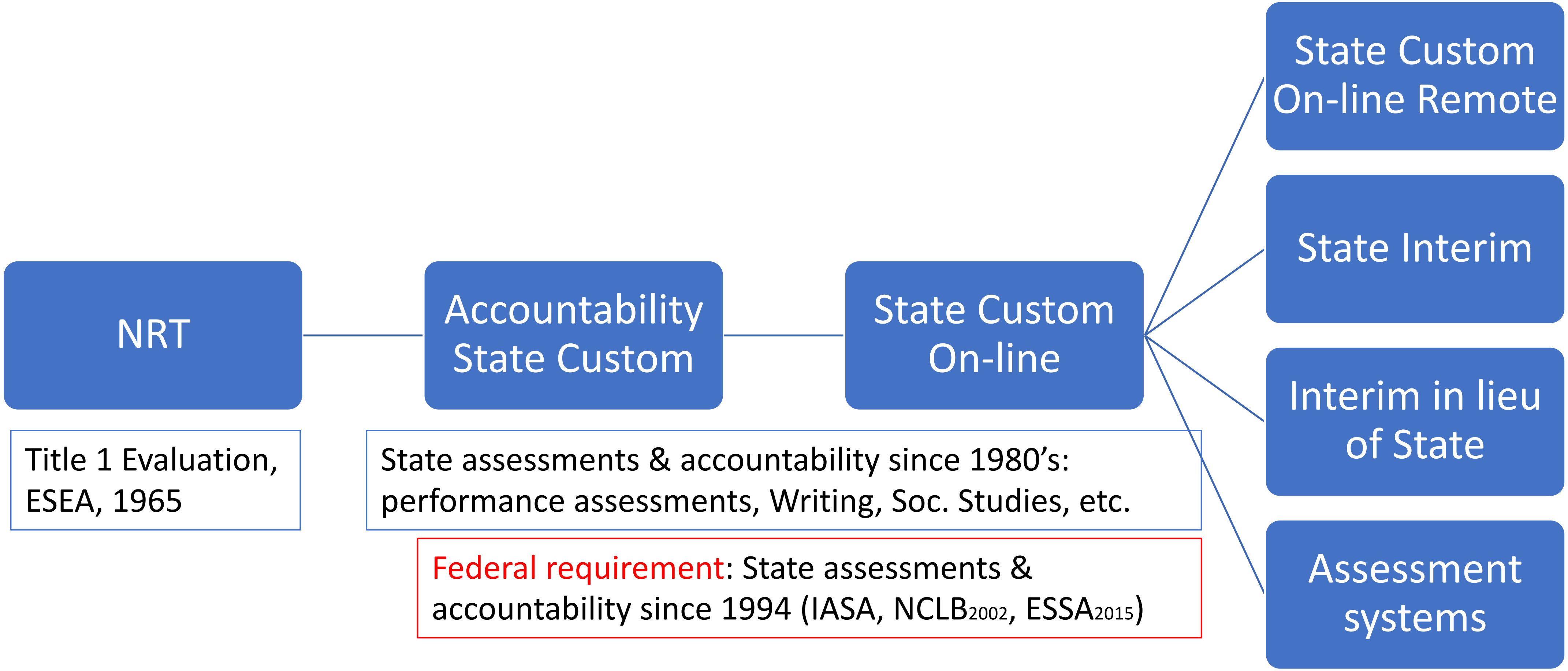
- Background: Problem definition and tools
- Systems of assessment
- Some innovative visions involving interim assessments
- A note about innovation

Problem definition and tools

Need for more, better, more timely assessment information

Theory of action and assessment validation

We're in a new generation of assessment policy and design



NRT

Accountability State Custom

State Custom On-line

State Custom On-line Remote

State Interim

Interim in lieu of State

Assessment systems

Title 1 Evaluation, ESEA, 1965

State assessments & accountability since 1980's: performance assessments, Writing, Soc. Studies, etc.

Federal requirement: State assessments & accountability since 1994 (IASA, NCLB$_{2002}$, ESSA$_{2015}$)

Push for different theories of action and assessment design

- Recognition that accountability’s summative assessments do not provide enough information to directly inform improved learning, at the right time, under the appropriate governance (control)
  - Need validation: starting with specific interpretive/use arguments
  - Validity research agenda
- Also often coupled with calls for different accountability system(s) under different theories of action

Assessments should be set within a larger theory of action

- The test interpretation usually informs some reasoning about additional information, and action. Most learning consequences are results of that reasoning and action, not directly of the test interpretation
  - Diagnosis [analysis of test results] → Prescription [what to do] → Treatment [do]
  - Program evaluation provides models for how to evaluate claims (ToA) about relationships between diagnosis/actions and outcomes
  - Validation of assessments through interpretive/use and validation arguments

Examples: Different uses imply different assessments

Improvement theories of action (examples) and associated needed test information

- Schools that perform relatively very low on state tests should be identified annually by the state for support
  - Assessments of annual stable performance of current year content are comparable across schools, time
- Districts/Schools should focus on improving core instructional effectiveness for all students
  - There should be assessments useful for informing within-cycle instruction and assessments for informing program evaluation closely tied to curriculum, instruction, conditions of school/district

Instructional theories of action (examples) and associated needed test information

- Present then remediate
  - Assess current content after instruction; grain-size: within-unit remediation
- Remediate before current unit
  - Assess previous year content before instruction
- Differentiate to keep on-grade
  - Assess current unit content and key (few) pre-requisites before instruction

Systems of assessments with a focus on interim

Assessment systems within larger systems

Vertical/horizontal coherence

Assessment systems

- **Multiple assessments**
- **System(s) of assessment by design**
  - Coherence
  - Comprehensiveness
  - Continuity
  - Utility

Marion et al., 2018. https://www.nciea.org/sites/default/files/inline-files/A%20Tricky%20Balance_092418.pdf

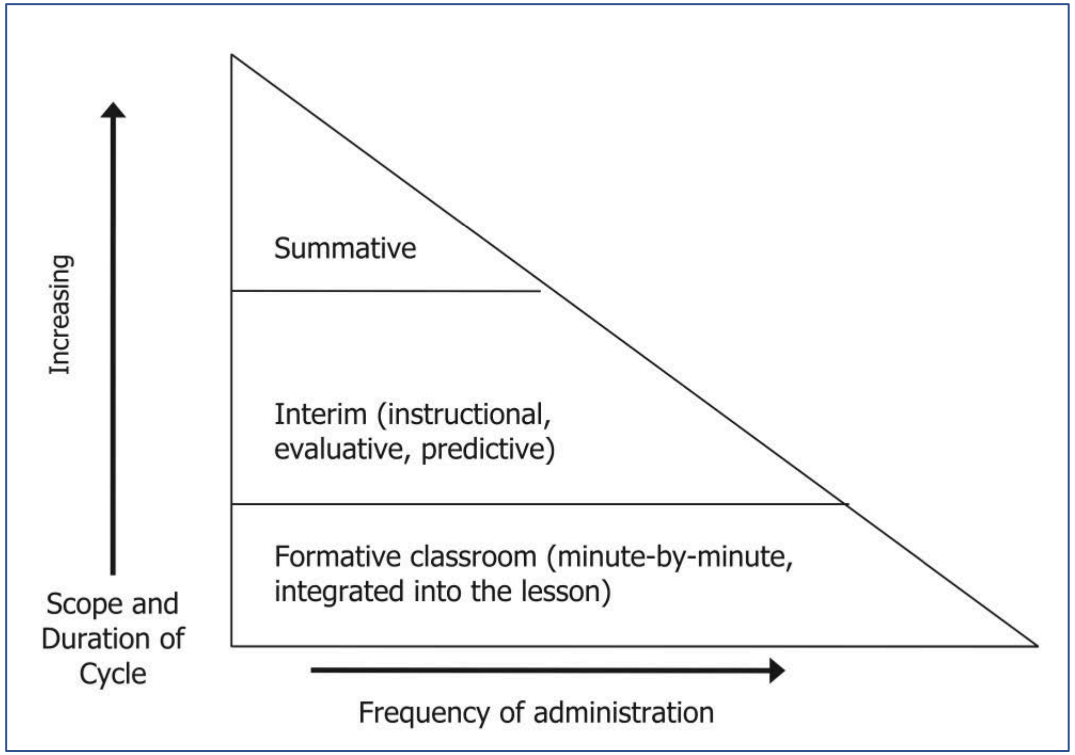
Assessment systems are parts of larger systems

- Accountability, instruction, curriculum, equity policy, educational funding
- Larger systems' goals, resources, constraints shape the assessment system
  - Examples:
    - System improvement (e.g., external accountability vs. internal formative evaluation)
    - Instructional approaches (e.g., Instruct-Remediate; Remediate-Instruct; Instruct on-grade with Differentiation)
- Assessment system should be coherent with larger system
  - Valid interpretations provide valuable information that can be used
  - Timely
  - Efficient / appropriate resources
  - Right governance / who owns the assessment information
  - Adaptable to changes in larger system

Focus on “Interim”

- Time: between a beginning and end
- Partial: one piece of a series or set
- Formative – summative evaluation
- Not confirmed, “acting”

- For this paper: Has a scale score intended to be generalized beyond the particular test items, combined and compared (Perie et al., 2009)



Increasing
Scope and Duration of Cycle
Summative
Interim (instructional, evaluative, predictive)
Formative classroom (minute-by-minute, integrated into the lesson)
Frequency of administration

Tiers of assessment (Perie et al., 2009)

Quarter 1 Quarter 2 Quarter 3 Quarter 4

Systems of Interim Assessments

- Multiple assessments during one year (horizontal)
  - “Interim,” “modular”
- Interim assessments in lieu of summative (vertical)
  - IADA – ESSA “Innovative Assessment Demonstration Authority”
    - Produce summative information about student proficiency in relation to state content and performance standards of sufficient quality to use in state accountability system (comparability)
  - Efficient? – If already administering interims, could eliminate summative?

Dadey, N. & Gong, B. 2017. https://ccsso.org/sites/default/files/2017-12/ASR_ESSA_Interim_Considerations-April.pdf

Dadey, N. 2018. https://www.nciea.org/blog/assessment/when-it-comes-getting-summative-information-interim-assessments-you-cant-have-your

Elements of claims for interim assessments that are especially important and challenging

- **Vertical coherence** for interim assessments that are designed/used as a part of a larger assessment system (how interim assessments relate to summative and formative assessments) – and where assessment fits in learning system
- **Horizontal coherence** for interim assessments that are designed as a set, and to interim assessments outside the set (how interim assessments relate to each other)
  - Is there a structure (e.g., boundary, sequence) to the **content** (e.g., grade level)
- Claims related to **time** (when the claim applies)
  - Often involves whether at another time there would be **learning/forgetting**; may involve assumptions about instructional supports or other **context**
- Claims/scores that embody **aggregation** of evidence across assessments
  - Claims when there is contradictory evidence across assessments

Examples of vertical coherence across types of assessments

- Monitoring of functioning at different levels of system for that level’s purposes (formative: student learning, interim: district program improvement, summative: state policy; national/international policy)
  - Governance assessment ecosystems: different assessments provide different information for different users—owned by different entities and therefore usually loosely coupled and barely coordinated
  - For example, international (TIMSS), national (NAEP), state, district, school, classroom, student
- Drill-down diagnosis: More general test → more specific test → even more specific test to identify specific weakness and reasons for it
- Support and preparation for valued outcome: formative: inform micro learning/teaching; interim: feedback on performance in less structured, more independent, larger performance contexts; summative: performance of record on target assessment

- Progressive attainment of increasing complexity and expertise
- Learning supports for progressive attainment
- Periodic external demonstration

Quarter 1 Quarter 2 Quarter 3 Quarter 4

Examples of horizontal coherence across interim assessments

Assessment target: growth or **progress over a course of instruction** (each implies a different test design)

- “Looking forward/Looking back” – timing relation to instructional use
- Construct definition over time
  - Opportunities to show **more accurate** performance on the same content
  - Divide up content domain into (sequence of) **different content**
  - **Increasing independence**/less scaffolding in solving similar problems
  - **Increasingly sophisticated** ways to solving the same/similar problems
  - Solving **more complex** problems
  - Application of **self-evaluation** to improve

Gong, B. 2010. https://rmcresearchcorporation.com/portsmouthnh/wp-content/uploads/sites/2/2019/01/Balanced-Assessment-Systems-GONG-002.pdf

Challenges for design and claims of interim assessments in systems of assessment

Challenges in design and possible solution approaches

Coherence across set of interim assessments (within year)

- Use – little coherence vs. high coherence
- What construct is—what develops over time
- What claim is
- How content is organized (what is assessed when)
- How performance at a point in time is viewed as evidence
- How assessments are compared with each other
- How performance at multiple points in time are viewed as evidence; if aggregated, how
    - Scaling

Challenges to claims when purposes are combined/shifted: example

Claims, intended information/interpretation, and design		
Summative/ policy/programmatic	← Interim → ?	**Formative/instructional**
Generalization to broad domain		Often as specific a content or subskill as possible
Student can perform independently		Student can learn interactively with teacher, peers, resources
Stable at the end of year or after		At that moment (it should change)

Some innovative visions involving interim assessments

Characteristics of some innovative projects involving interim assessments

- Increase cognitive complexity of assessment demands, e.g., performance assessments
- Relate more strongly to specific curricula
- Embed interim assessments into curriculum, i.e., local choices about administration, use locally (e.g., grades) as well as summative; sometimes local scoring
- Use multiple interim assessments to provide summative score in lieu of summative test
- Integrate interim assessments into vertical system (e.g., integrated content specifications, scale, selection and administration supports)

More innovations

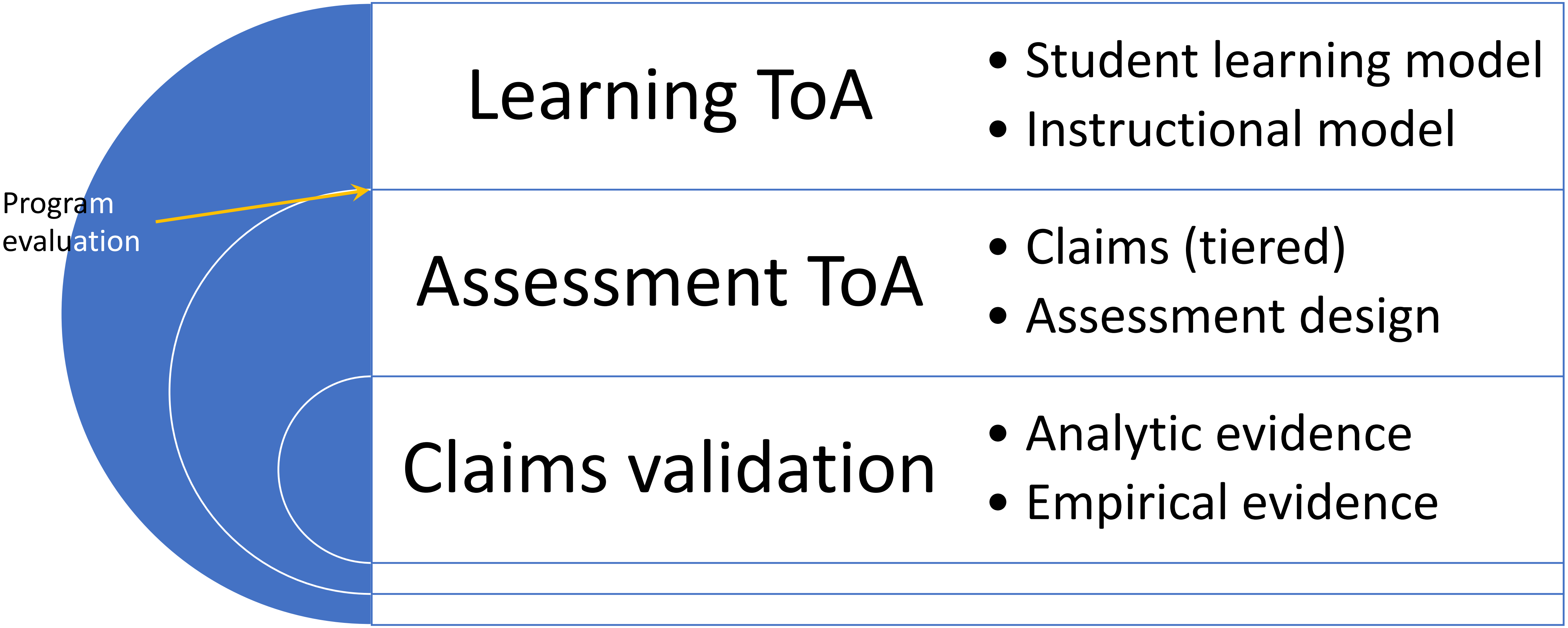
- Specify content to link claims to item development (e.g., range ALDs)
- Develop items to ALDs to enable front-end (embedded) alignment and standard-setting
- Develop processes and tools (e.g., principled assessment design) that build for validity and utility
- Develop culture and systems that allow for more rapid development try-outs, feedback, and improvements (e.g., continuous improvement, agile, scrum), particularly for new and not-yet-routinized projects

Using theories of action, program evaluations, and assessment validation to clarify aims and possible benefits of interim assessments

Evaluation to improve

- Evaluation of **goals** and intended **outcomes** – social policy evaluation and construction
- Evaluation of **theory of action** and associated **programs** – program evaluation; formative program evaluation especially useful to those enacting the theory of action
- Evaluation of **assessment** quality – validation arguments and evidence
  - Different theory, approaches, criteria?
    - Sufficiency,
    - Standardization

Evaluation of assessment in terms of validity and usefulness



Program evaluation

Learning ToA

- Student learning model
- Instructional model

Assessment ToA

- Claims (tiered)
- Assessment design

Claims validation

- Analytic evidence
- Empirical evidence

A note about innovation

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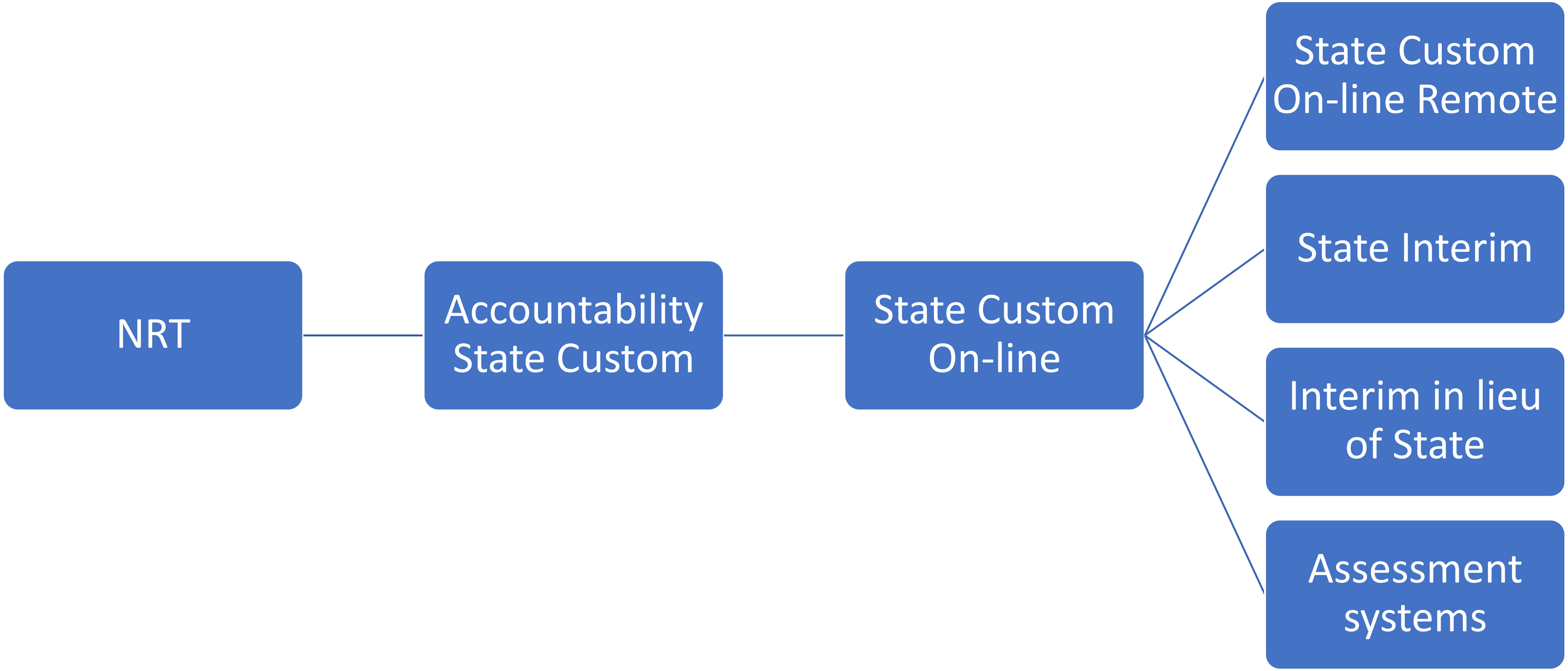
We’re in a new generation of assessment policy and design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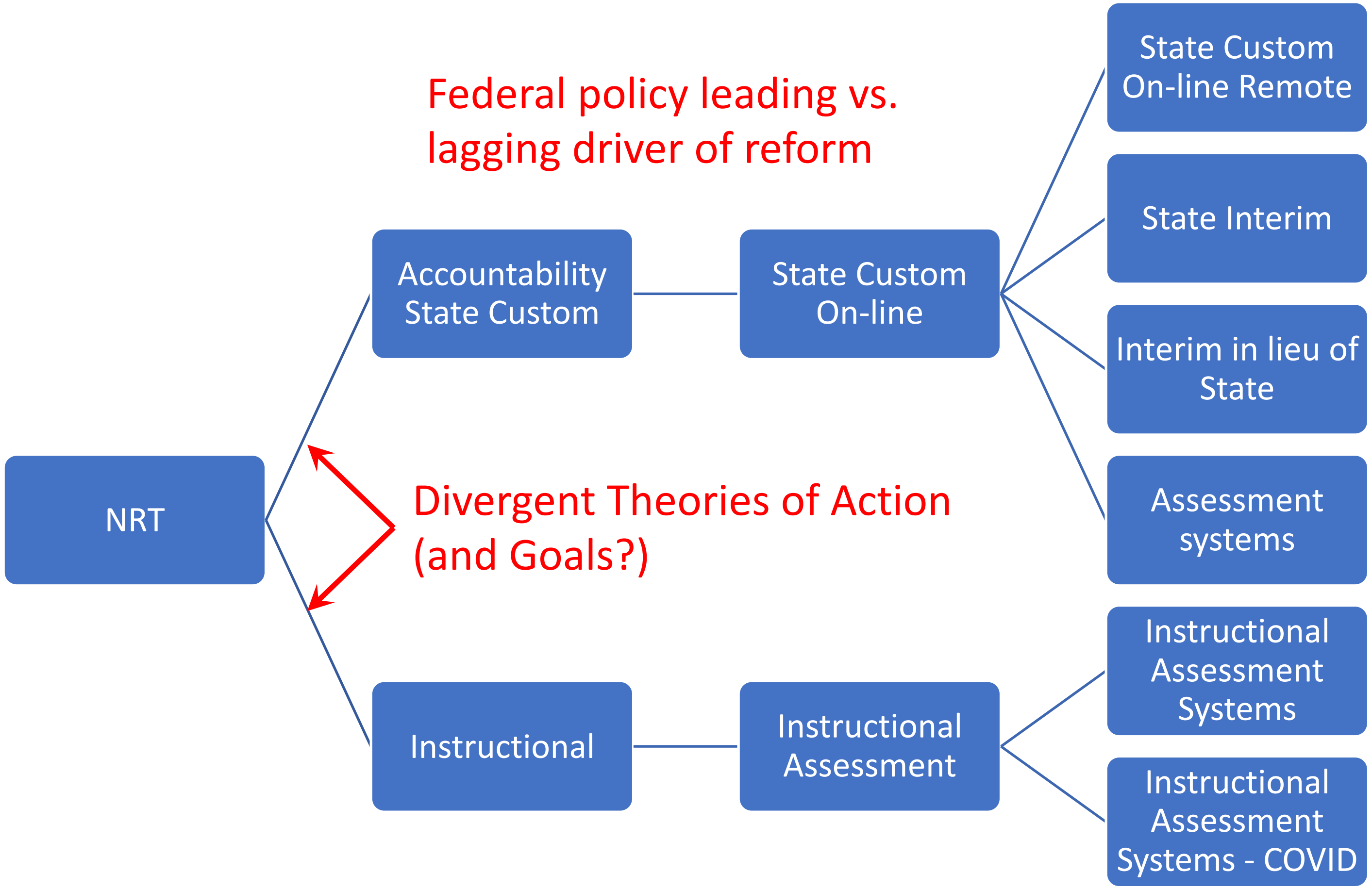

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State Interim

Interim in lieu of State

Assessment systems

Instructional

Instructional Assessment

Instructional Assessment Systems

Instructional Assessment Systems - COVID

Federal policy leading vs. lagging driver of reform

Divergent Theories of Action (and Goals?)

Center for Assessment

Brian Gong

bgong@nciea.org

www.nciea.org

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Developing a Validity Research Agenda for Louisiana’s Innovative Assessment Demonstration Authority Pilot

Nathan Dadey & Michelle Boyer
The National Center for the Improvement of Educational Assessment

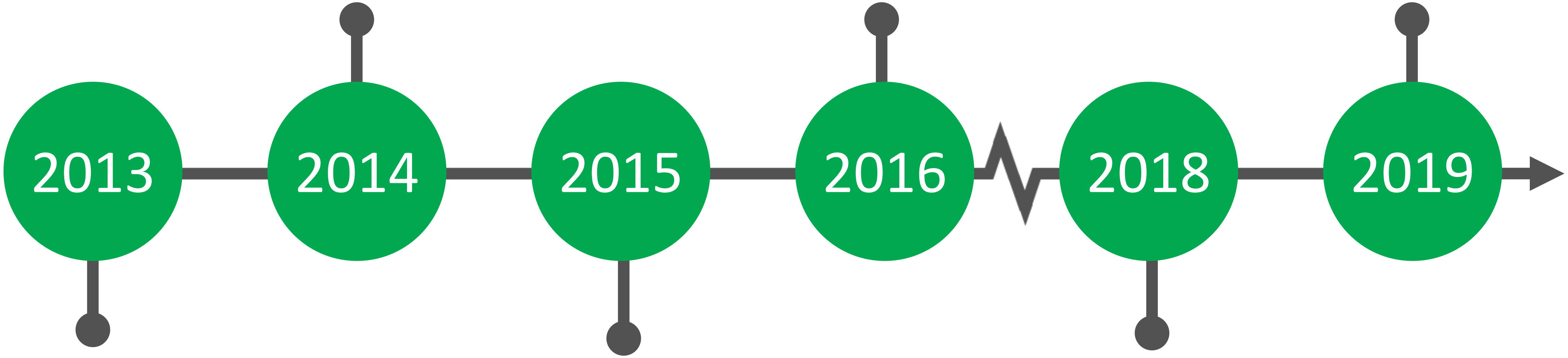
Outline

1. Context & Design
2. Program Theory: Theory of Action & Claims
3. Scaling
4. Conclusions & Next Steps

1. Context

Enabling factors for Louisiana's Innovative Assessment Demonstration Authority Pilot

State Assessment as a Continuation of Reform



2013

ELA Guidebooks framework and text sets developed

2014

ELA Guidebooks 1.0 released

2015

ELA Guidebooks 2.0 piloted with 10 districts

2016

ELA Guidebooks 2.0 released statewide

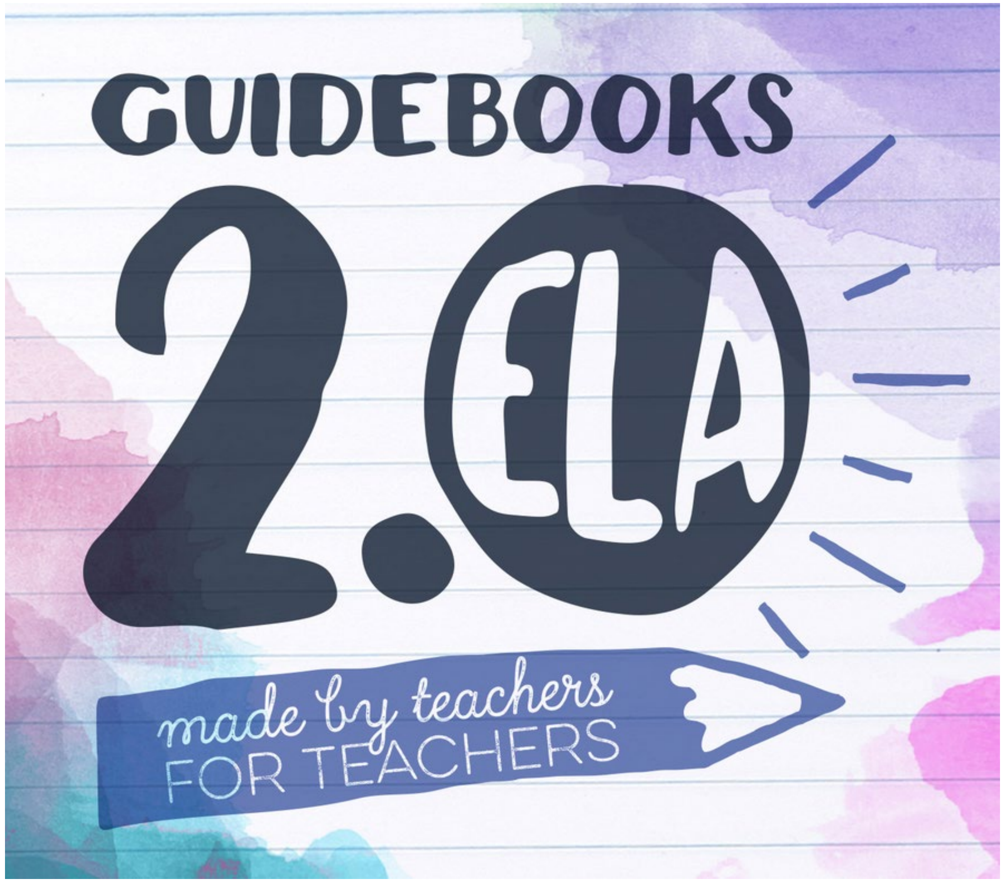
2018

Successful application to IADA Pilot & assessment development in grade 7

2019

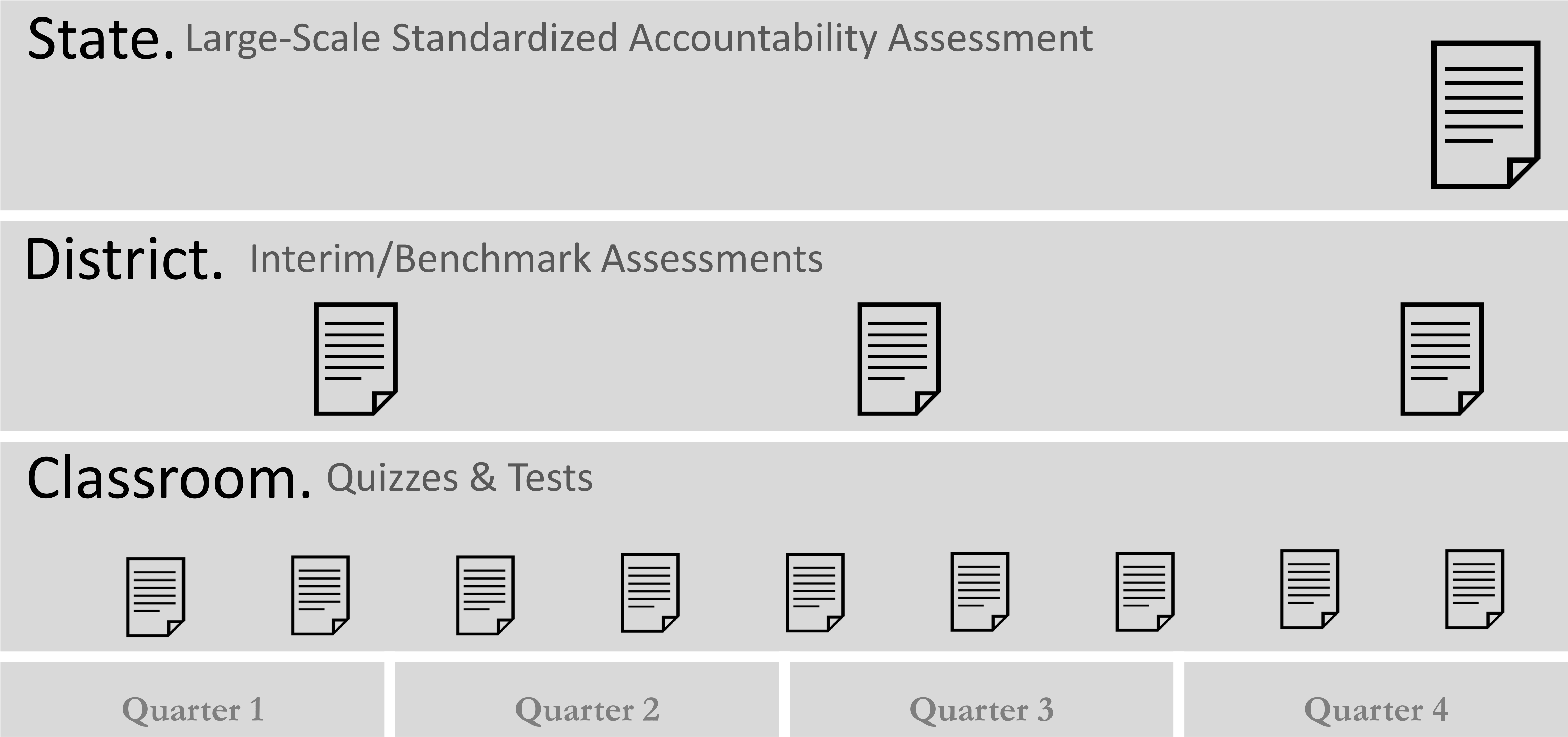
Partial grade 7 administration

Guidebooks 2.0:



- Open source curriculum
- Designed to meet Louisiana's criteria for high quality instructional materials
- Unit based, with each unit:
  - organized around a central idea with one or more corresponding texts
  - containing daily lessons, classroom assessments, instructional guides, writing samples and more
- Use is voluntary, but the majority of schools have adopted them

A System of Assessments Perspective: The Status Quo



State. Large-Scale Standardized Accountability Assessment

District. Interim/Benchmark Assessments

Classroom. Quizzes & Tests

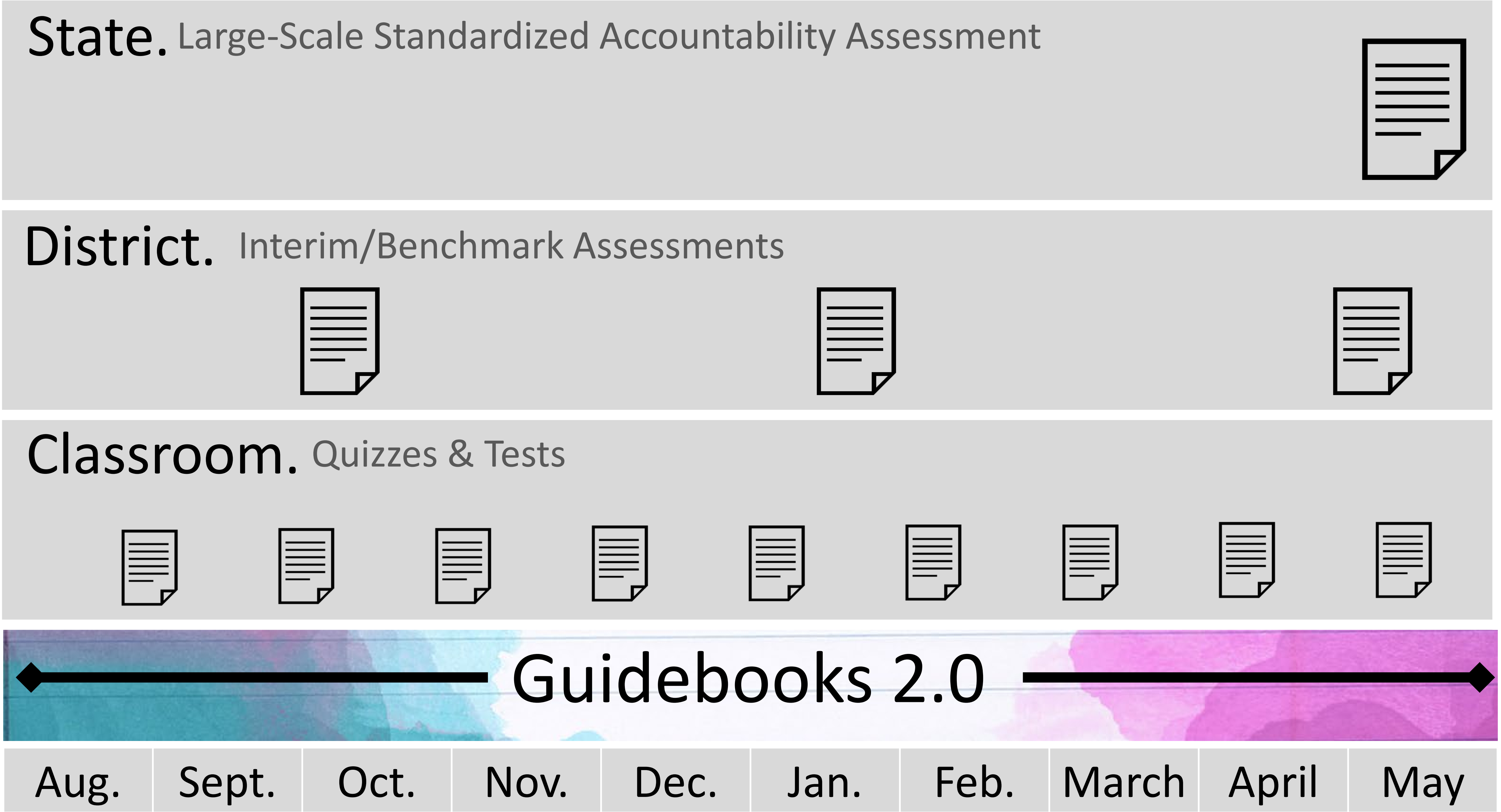
Quarter 1

Quarter 2

Quarter 3

Quarter 4

A System of Assessments Perspective



State. Large-Scale Standardized Accountability Assessment

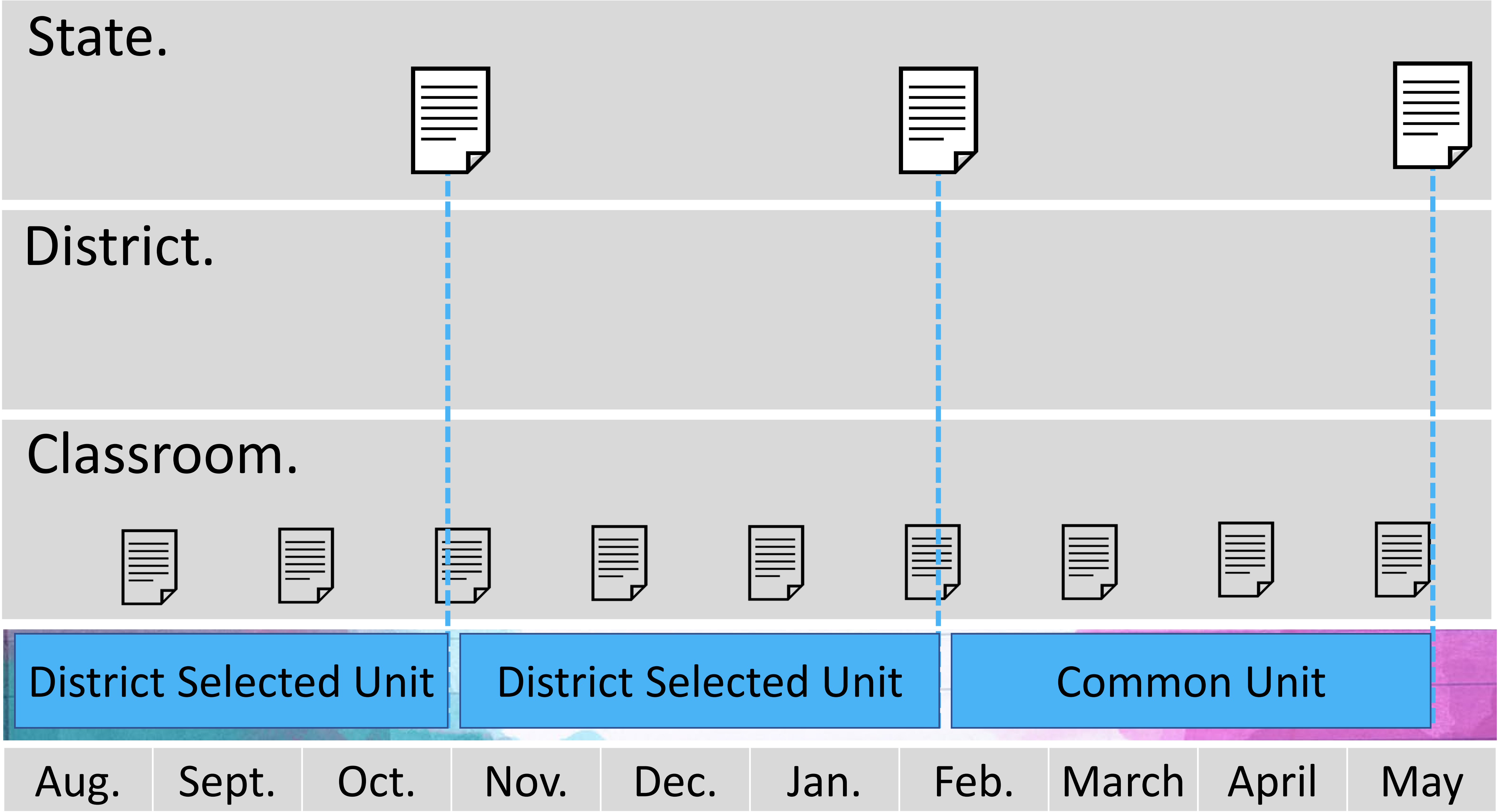
District. Interim/Benchmark Assessments

Classroom. Quizzes & Tests

Guidebooks 2.0

Aug. Sept. Oct. Nov. Dec. Jan. Feb. March April May

A System of Assessments Perspective



State.

District.

Classroom.

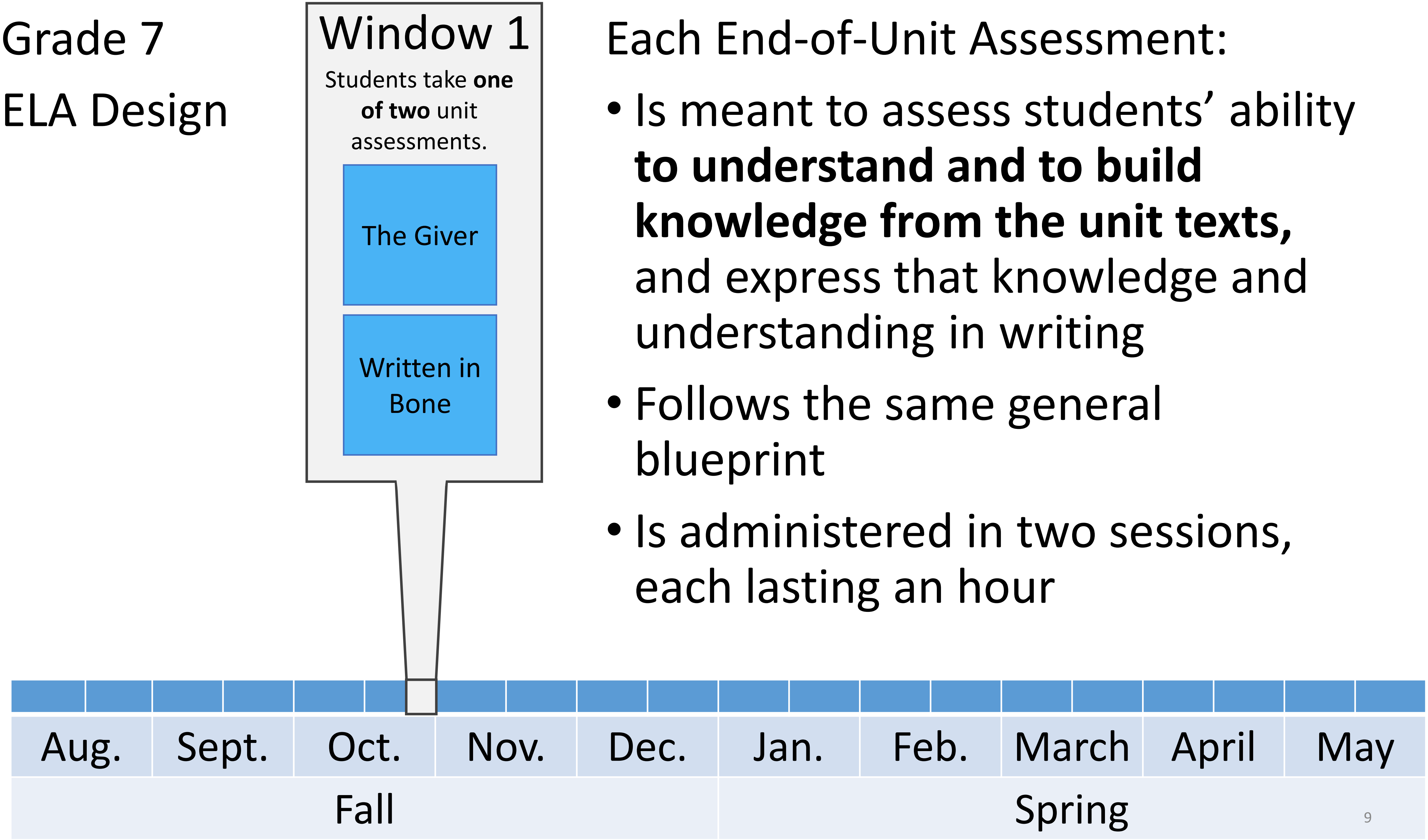
District Selected Unit

District Selected Unit

Common Unit

Aug. Sept. Oct. Nov. Dec. Jan. Feb. March April May

Grade 7
ELA Design



Window 1

Students take **one of two** unit assessments.

The Giver

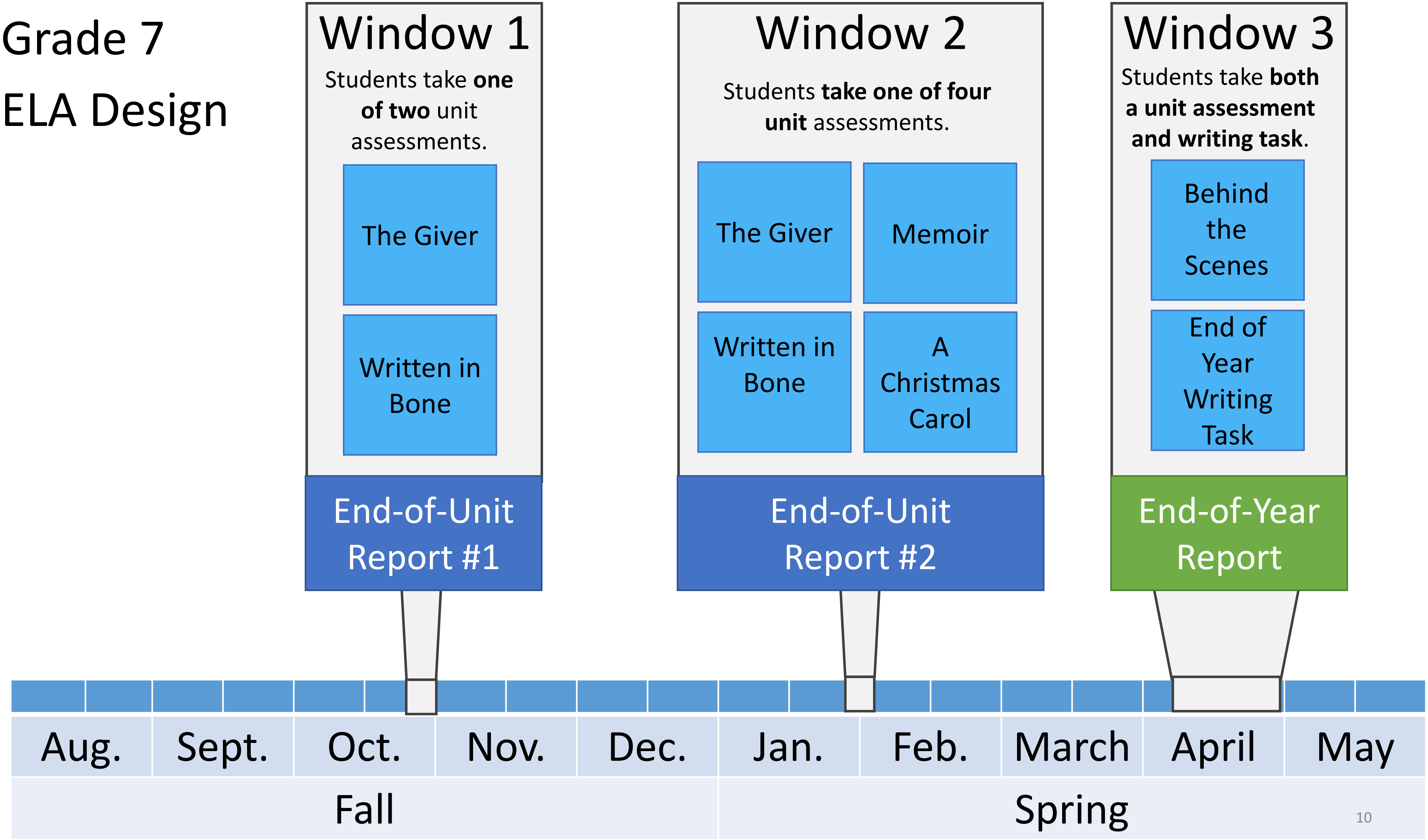
Written in Bone

Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May
Fall					Spring				

Each End-of-Unit Assessment:

- Is meant to assess students’ ability **to understand and to build knowledge from the unit texts,** and express that knowledge and understanding in writing
- Follows the same general blueprint
- Is administered in two sessions, each lasting an hour

Grade 7 ELA Design



Window 1

Students take **one of two** unit assessments.

The Giver

Written in Bone

End-of-Unit Report #1

Window 2

Students **take one of four unit** assessments.

The Giver

Memoir

Written in Bone

A Christmas Carol

End-of-Unit Report #2

Window 3

Students take **both a unit assessment and writing task**.

Behind the Scenes

End of Year Writing Task

End-of-Year Report

Aug. Sept. Oct. Nov. Dec. Jan. Feb. March April May

Fall

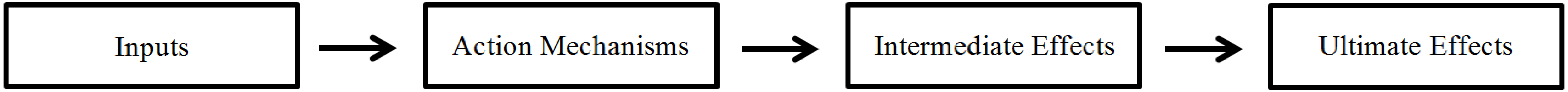
Spring

Program Theory

Theory of Action & Supporting Interpretive Argument

Need for a Theory of Action

Making good on the opportunities provided by the ELA 2.0 Guidebooks and the IADA waiver requires a **theory of action** that connects program inputs to ultimate outcomes.



Inputs → Action Mechanisms → Intermediate Effects → Ultimate Effects

Ideally, once articulated, the theory of action then helps define the needed **score interpretation(s)** (e.g., Bennett, Kane & Bridgeman, 2011).

→ Although we present our work here as linear, development was anything but. We have been continually revising and iterating.

“Validity is the degree to which evidence and theory support the interpretations of test scores for **proposed uses of tests.**”

(Emphasis Added, AERA, APA, NCME, 2014)

Theory of Action

- Developing a detailed theory of action lead us to differentiate between *within* year and *end of* year inputs, action mechanisms and outcomes.
  - E.g., smaller theories of action within the larger theory of action[1]
- These smaller theories contain specific use cases and supporting score interpretations.

A set, or better yet a system, of assessments can – potentially – support multiple claims and associated use cases.

[1] E.g., what Forte & Hebbler (2004) call a "grand theory of action".

End of Year *Working* Logic Model

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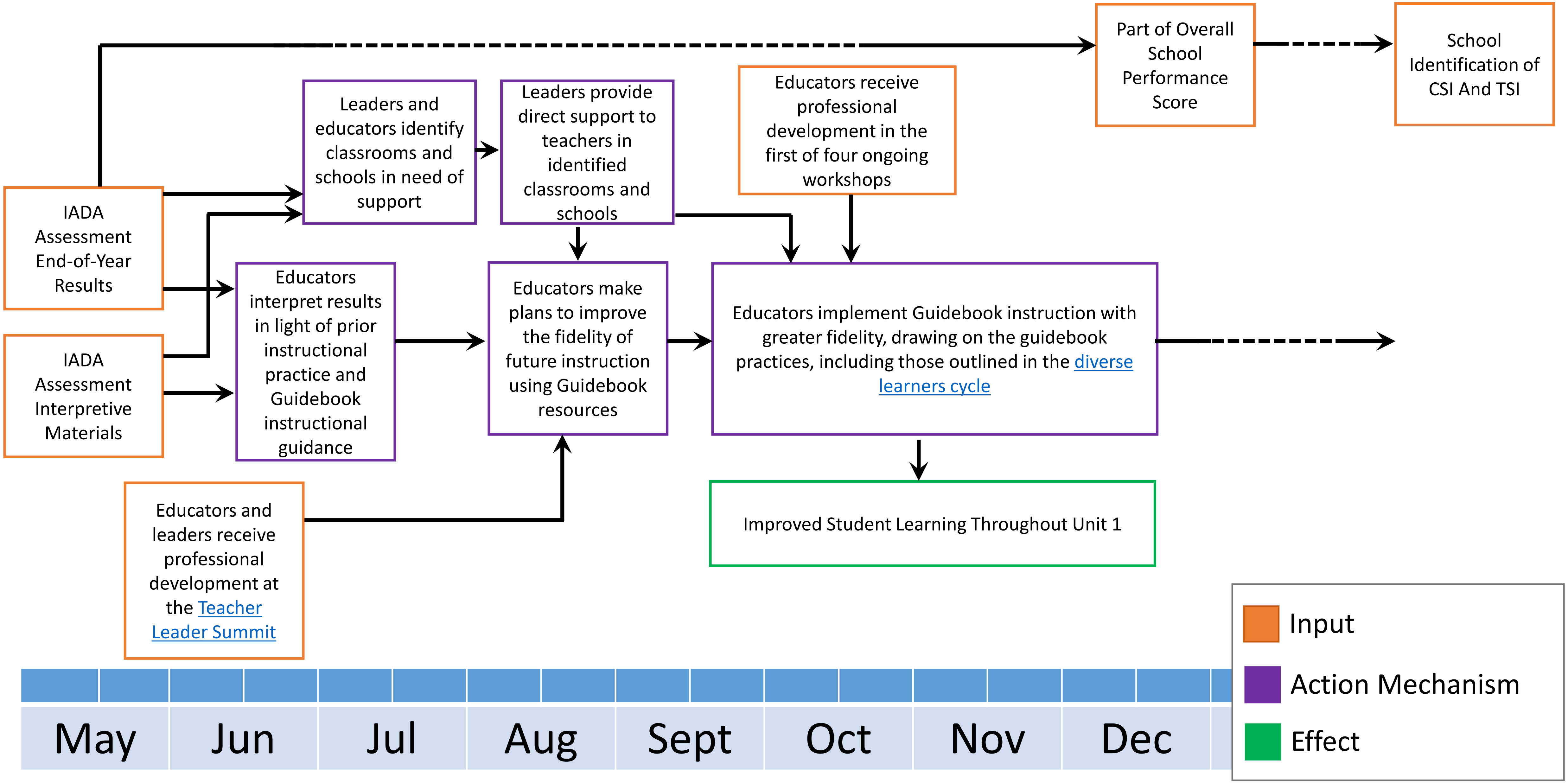


IADA Assessment End-of-Year Results

IADA Assessment Interpretive Materials

Leaders and educators identify classrooms and schools in need of support

Leaders provide direct support to teachers in identified classrooms and schools

Educators receive professional development in the first of four ongoing workshops

Part of Overall School Performance Score

School Identification of CSI And TSI

Educators interpret results in light of prior instructional practice and Guidebook instructional guidance

Educators make plans to improve the fidelity of future instruction using Guidebook resources

Educators implement Guidebook instruction with greater fidelity, drawing on the guidebook practices, including those outlined in the diverse learners cycle

Improved Student Learning Throughout Unit 1

Educators and leaders receive professional development at the Teacher Leader Summit

May Jun Jul Aug Sept Oct Nov Dec

🟧 Input

🟪 Action Mechanism

🟩 Effect

End of Year *Working* Logic Model

High-level Summary:

- Assessment results signal the need for instruction based on the Guidebooks to be implemented with fidelity
- Educators, support from local leaders and state experts, **will implement Guidebooks with greater fidelity**
- Resulting in improved student learning in the next year

Use Cases:

- Signal the need to focus on guidebook instruction
- Support state systems of accountability

May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Input

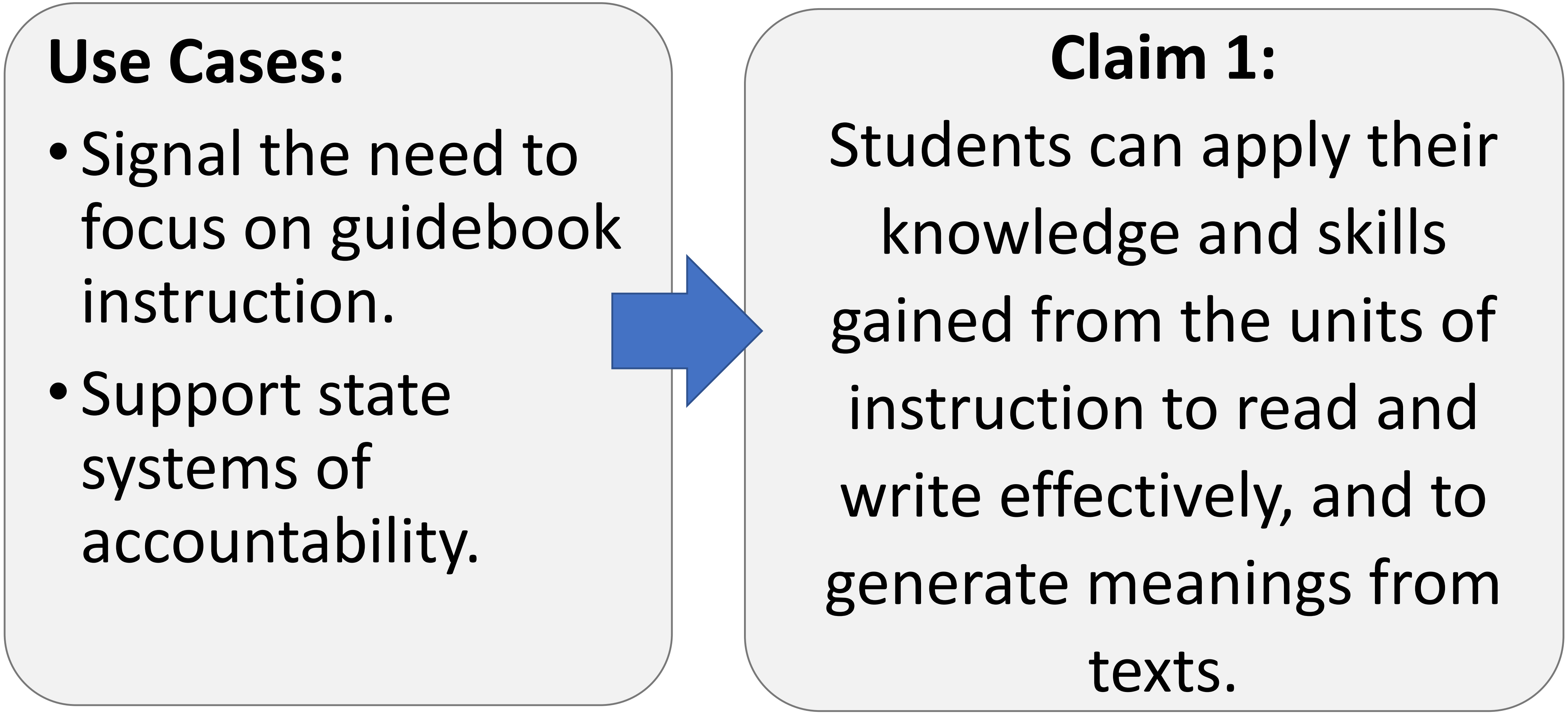
Action Mechanism

🟩 Effect

“Validity is the degree to which evidence and theory support the **interpretations of test scores** for proposed uses of tests.”

(Emphasis Added, AERA, APA, NCME, 2014)

First Claim



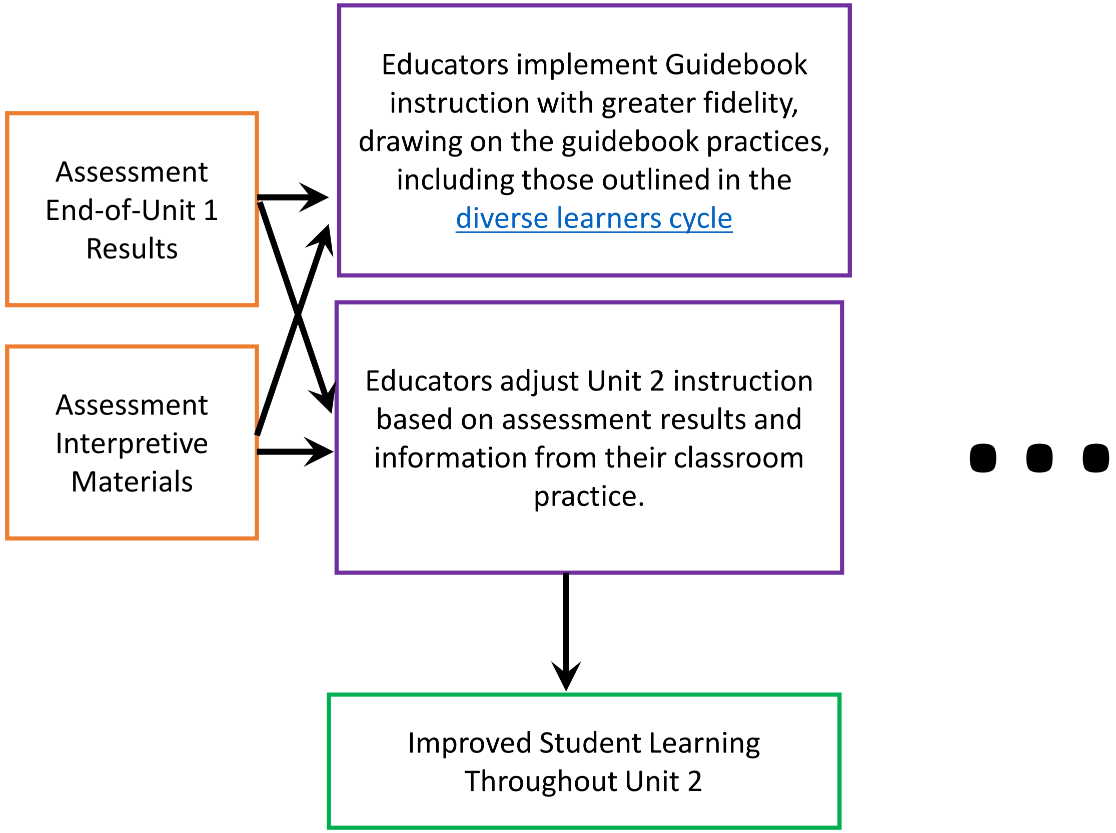
Use Cases:

- Signal the need to focus on guidebook instruction.
- Support state systems of accountability.

Claim 1:

Students can apply their knowledge and skills gained from the units of instruction to read and write effectively, and to generate meanings from texts.

Within Year *Working* Logic Model



Assessment End-of-Unit 1 Results

Assessment Interpretive Materials

Educators implement Guidebook instruction with greater fidelity, drawing on the guidebook practices, including those outlined in the diverse learners cycle

Educators adjust Unit 2 instruction based on assessment results and information from their classroom practice.

Improved Student Learning Throughout Unit 2

...

🟧 Input

🟪 Action Mechanism

🟩 Effect

Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May
Fall					Spring				

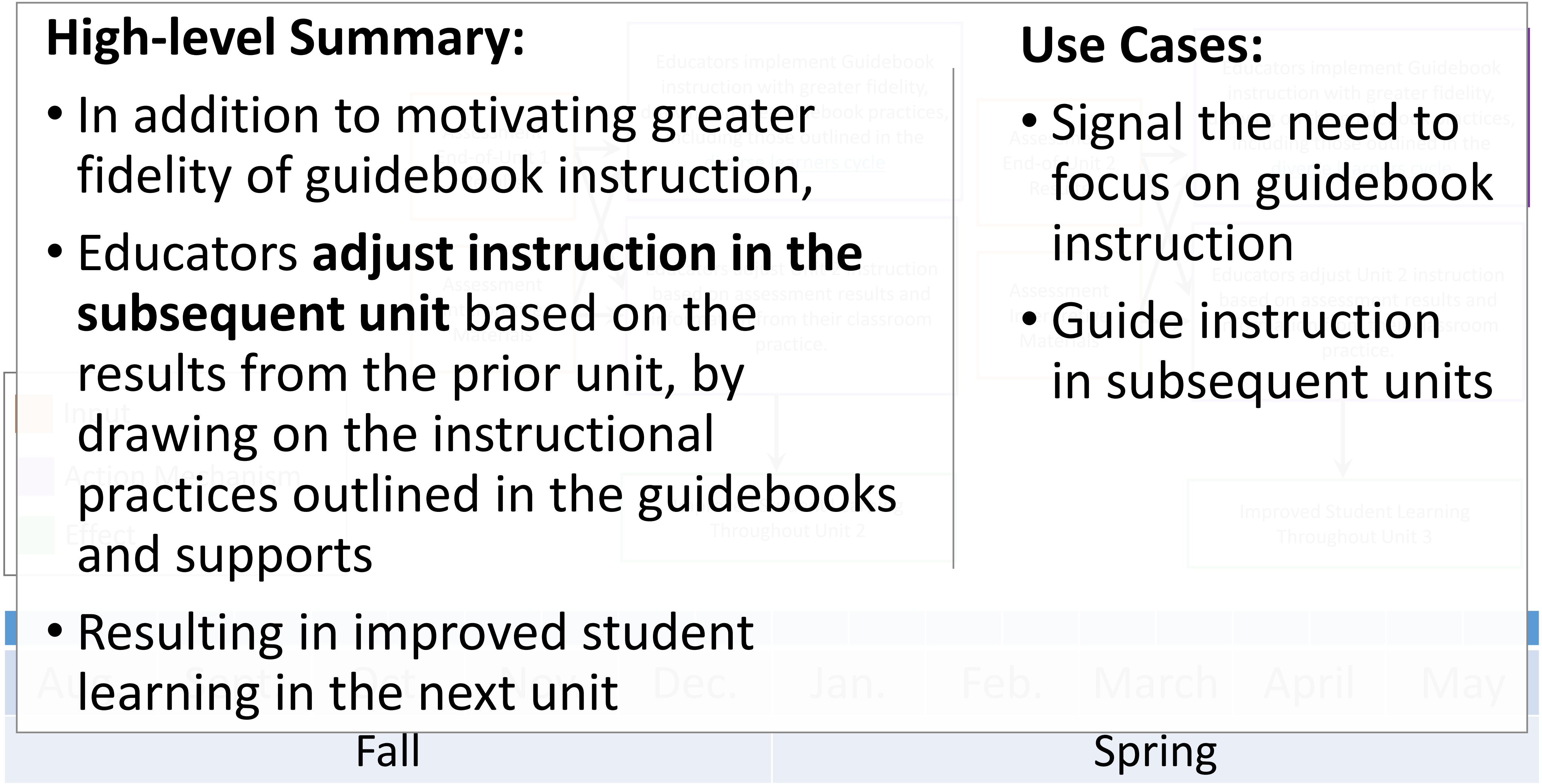
Within Year *Working* Logic Model

High-level Summary:

- In addition to motivating greater fidelity of guidebook instruction,
- Educators **adjust instruction in the subsequent unit** based on the results from the prior unit, by drawing on the instructional practices outlined in the guidebooks and supports
- Resulting in improved student learning in the next unit

Use Cases:

- Signal the need to focus on guidebook instruction
- Guide instruction in subsequent units



Educators implement Guidebook instruction with greater fidelity, d... ebook practices, including those outlined in the diverse learners cycle
Assessment End-of-Unit 1
Educators adjust Unit 2 instruction based on assessment results and ... from their classroom practice.
Assessment
Materials
Throughout Unit 2
Input
Action Mechanism
Effect
Educators implement Guidebook instruction with greater fidelity, ... ctices, including those outlined in the diverse learners cycle
Assessment End-of-Unit 2 Res
Educators adjust Unit 2 instruction based on assessment results and ... ssroom practice.
Assessment Instruct Materials
Improved Student Learning Throughout Unit 3
Aug.
Sept.
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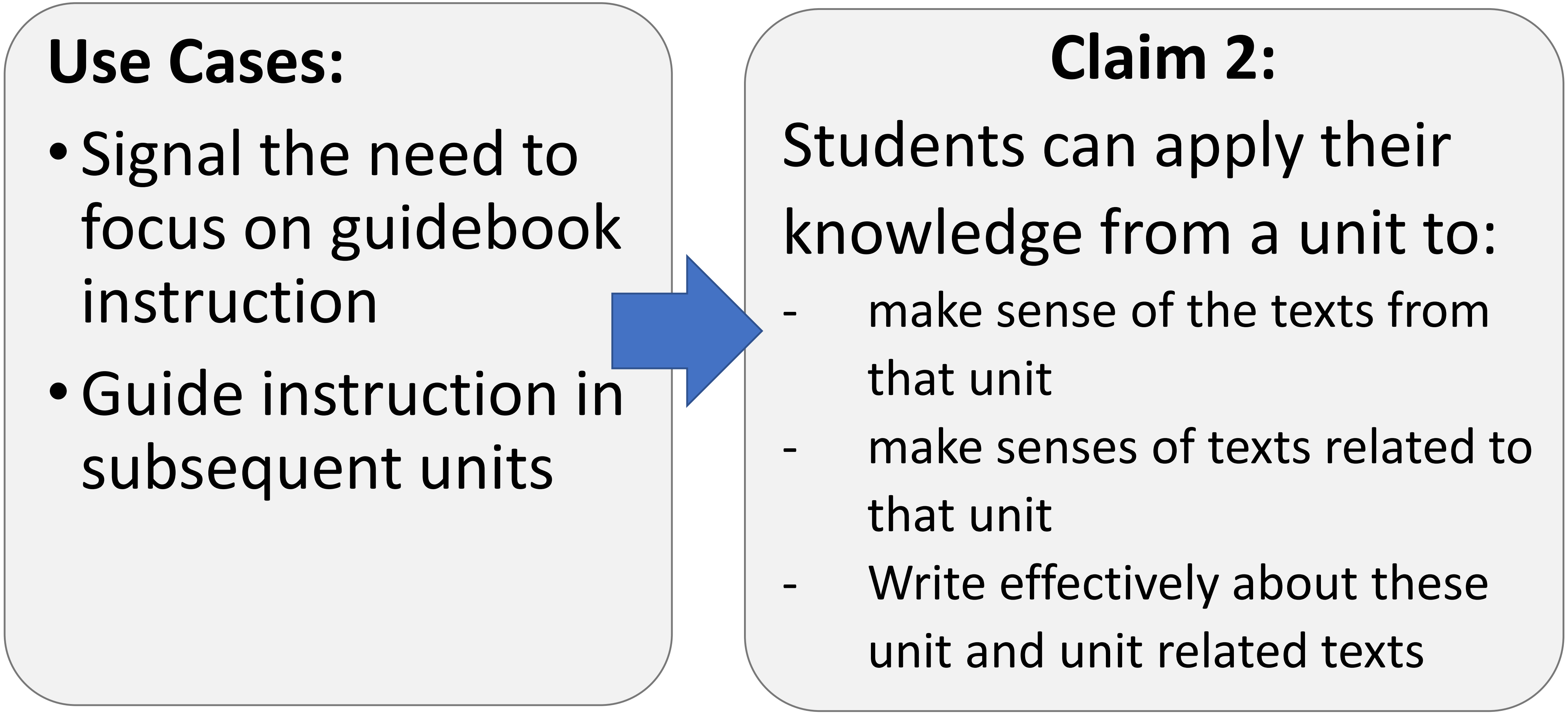
Jan.
Feb.
March
April
May
Fall
Spring

Second Claim based on The System



Use Cases:

- Signal the need to focus on guidebook instruction
- Guide instruction in subsequent units

Claim 2:

Students can apply their knowledge from a unit to:

- make sense of the texts from that unit
- make senses of texts related to that unit
- Write effectively about these unit and unit related texts

Restated

Support multiple claims and associated use cases within a system involves:

- Partitioning student performance by use case (and even designing assessments, or portions of assessments to satisfy one of the claims and uses)
- Using multiple measurement models to produce information based on subsets of the data to support the intended interpretations and uses

3. Scaling in Support of Claim 1

Producing a “single summative score”

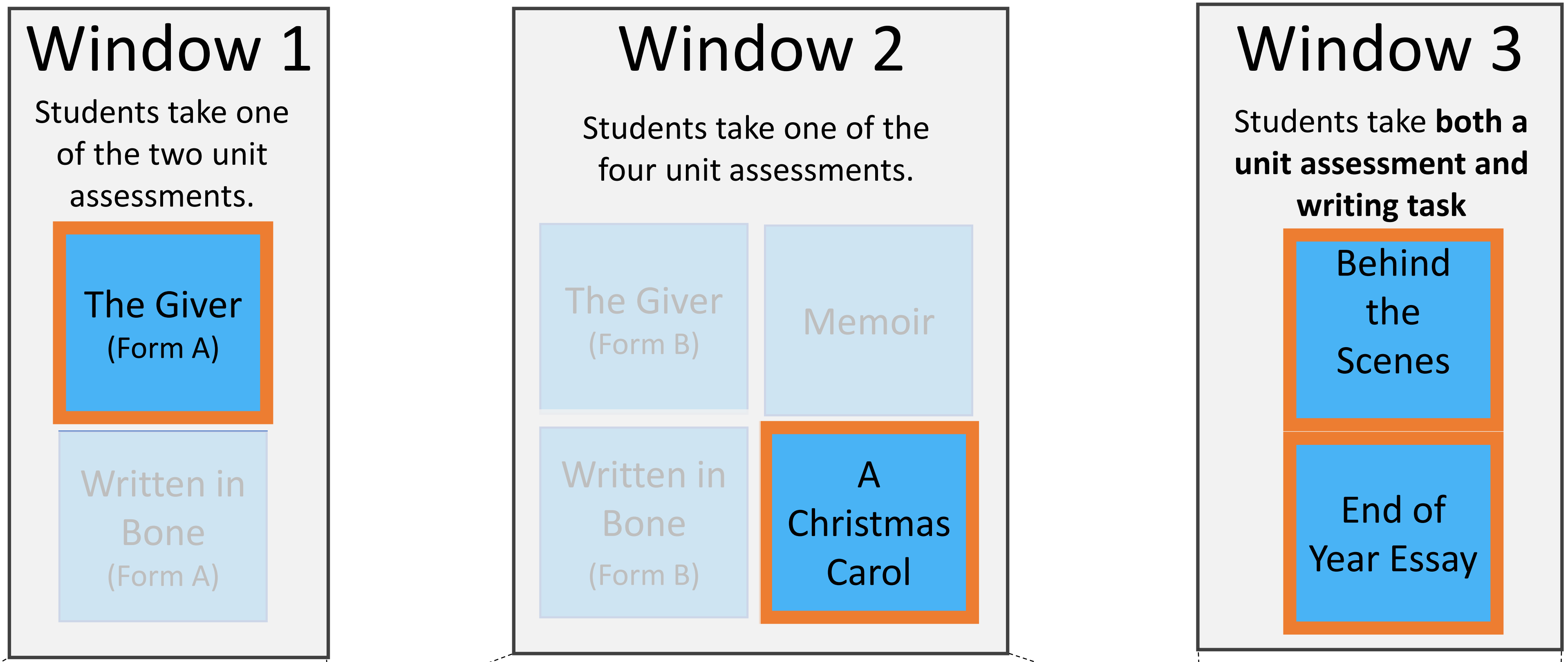
On A Summative Score

- The production of a **single summative score** based on multiple assessments has been an area of interest and limited research (e.g., Wise, 2011, Dadey & Gong, 2017)
  - Rooted in both measurement and value judgments
- Claim 1 requires the production of such a score:

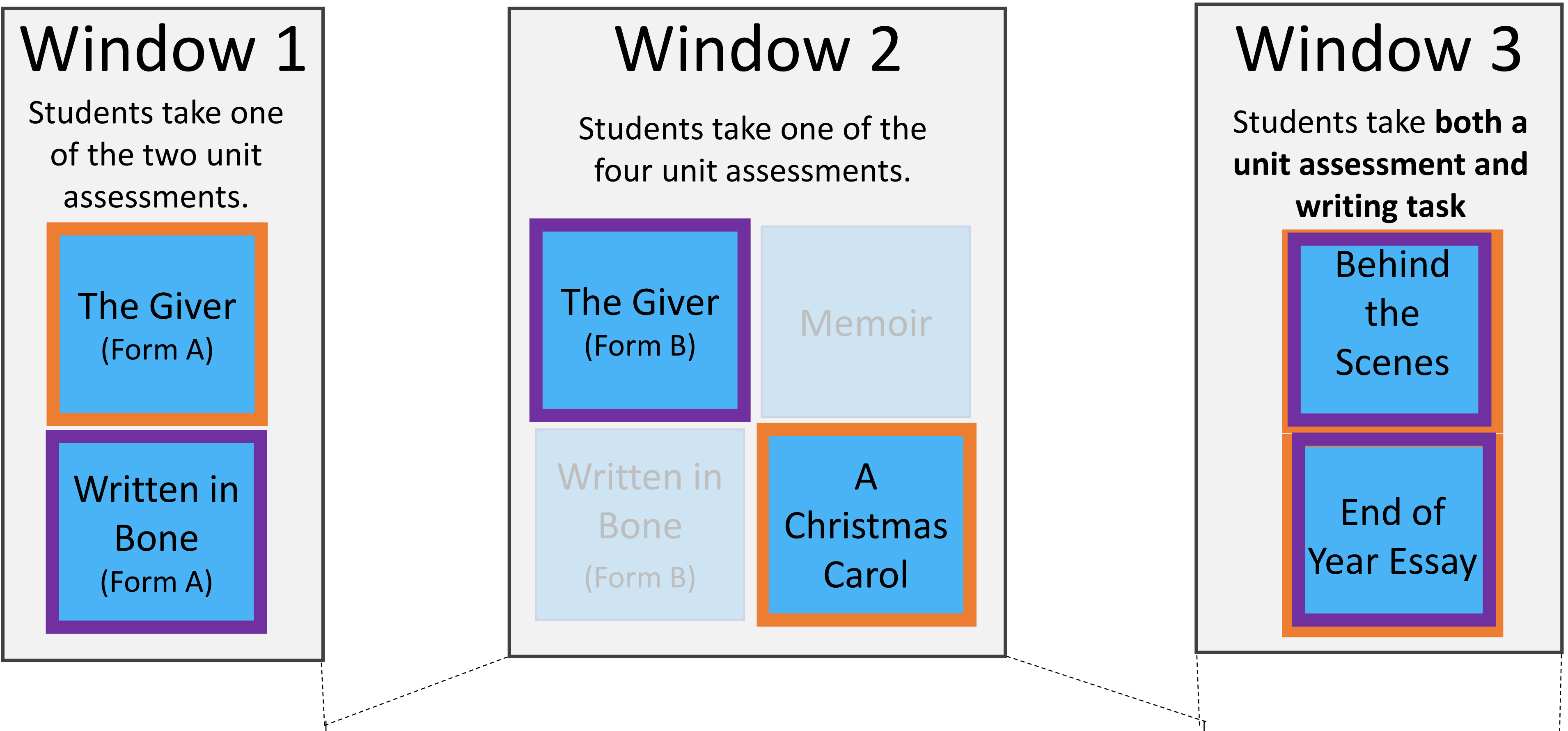
> Students can apply their knowledge and skills gained from the units of instruction to read and write effectively, and to generate meanings from texts.

On A Summative Score

- Current approach is to **pool item responses across windows**, treating the entire set of item responses as if they are one larger assessment
  - Doing so means that any estimates of item difficulty reflect difficulty right after learning occurs, instead of at the end of the year



	Window 1						Window 2												Window 3				
	The Giver (Form A)			Written in Bone (Form A)			The Giver (Form B)			Written in Bone (Form B)			Memoir			A Christmas Carol			Behind the Scenes			End-of-Year Essay	
	I1	…	I10	I1	…	I10	I1	…	I10	I1	…	I10	I1	…	I10	I1	…	I10	I1	…	I10	I1	I2
Student 1	▨	▨	▨													▨	▨	▨	▨	▨	▨	▨	▨



Window 1

Students take one of the two unit assessments.

Window 2

Students take one of the four unit assessments.

Window 3

Students take **both a unit assessment and writing task**

	Window 1		Window 2				Window 3	
	The Giver (Form A)	Written in Bone (Form A)	The Giver (Form B)	Written in Bone (Form B)	Memoir	A Christmas Carol	Behind the Scenes	End-of-Year Essay
	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 I2
Student 1	▨ ▨ ▨					▨ ▨ ▨	▨ ▨ ▨	▨ ▨
Student 2		▨ ▨ ▨	▨ ▨ ▨				▨ ▨ ▨	▨ ▨

Refining Claim 1

> Students can apply their knowledge and skills gained from the units of instruction to read and write effectively, and to generate meanings from texts.

- Collapsing data across windows means that data is aggregated in a “grade book” manner, meaning performance in each of the three windows is equally accounted for in the total score
  - Barring differences in item discrimination

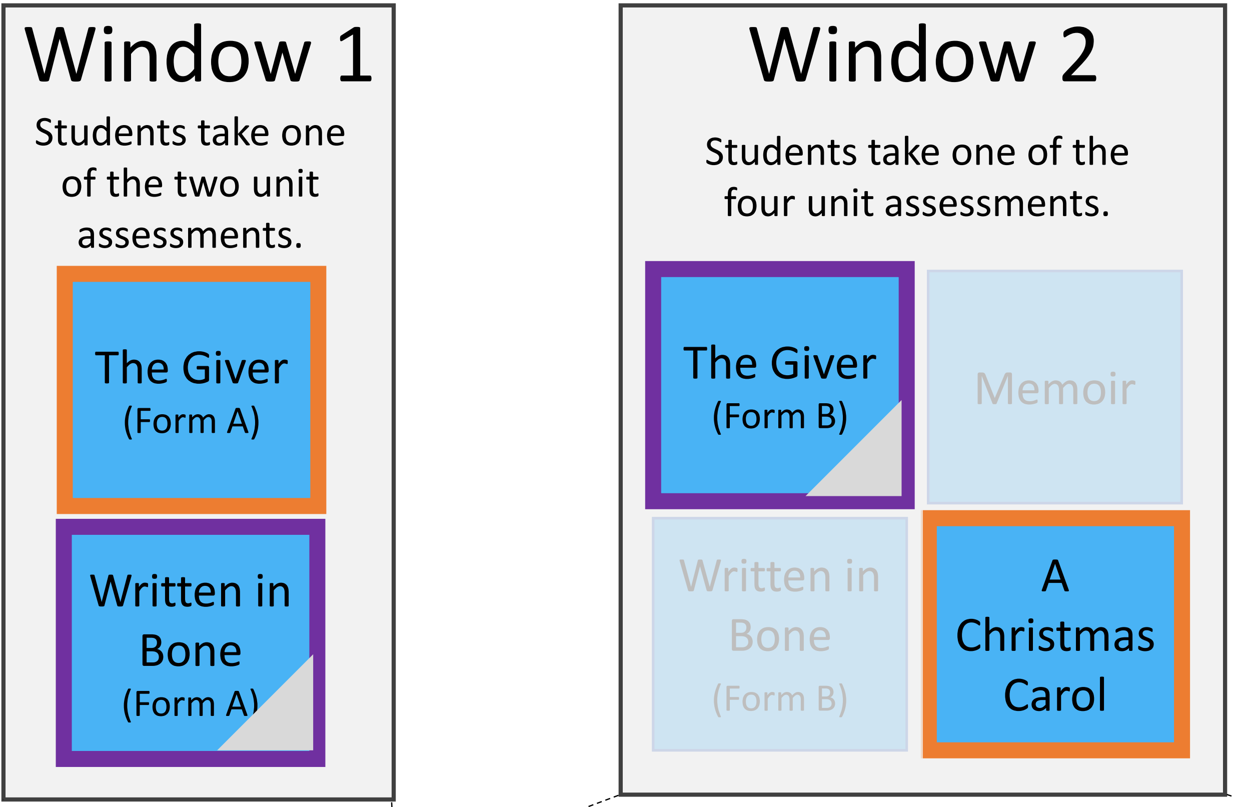
Refining Claim 1

> Students can apply their knowledge and skills gained from the units of instruction to read and write effectively, and to generate meanings from texts.

- Whether this approached results in scores that are comparable enough to the statewide assessment remains an open question
  - There are multiple options for weighting performance across the assessments

Grade 7 ELA Administration 19-20

Common Items



Window 1

Students take one of the two unit assessments.

The Giver (Form A)

Written in Bone (Form A)

Window 2

Students take one of the four unit assessments.

The Giver (Form B)

Memoir

Written in Bone (Form B)

A Christmas Carol

	Window 1		Window 2			
	The Giver (Form A)	Written in Bone (Form A)	The Giver (Form B)	Written in Bone (Form B)	Memoir	A Christmas Carol
	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 … I10	I1 … I10
Student 1	▨					▨
Student 2		▨	▨			

Conclusions and Next Steps

Future Directions

- Engage in formative evaluation of the program as a whole, and in doing so collect specific validity evidence for the interpretive and validity argument
  - Based on the five sources of validity evidence
- Continue to iterate on the program in areas that can be changed (e.g., use and interpretation of end-of-unit scores)

Please email for slides and working paper:

ndadey@nciea.org

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On the Opportunity Provided in Creating an Innovative Assessment: Design Considerations and Agile Test Development in an Innovative Pilot

NWEA
Working Presentation, NCME
August 24,2020
Abby Javurek, Paul Nichols & Garron Gianopulos

The Problem/Opportunity

- Assumptions about standard assessment practice challenged as part of IADA projects
- COVID-19 disruptions further challenged assumptions about the learning ecosystem
- Transdisciplinary approaches that borrow from traditional assessment approaches, systems thinking, and software development allow for Agile Development of assessments that better meet customer needs
- Allows for multiple Theories of Action for different users and buyers, centered in their role in accomplishing the Job-to-be-done (JTBD)

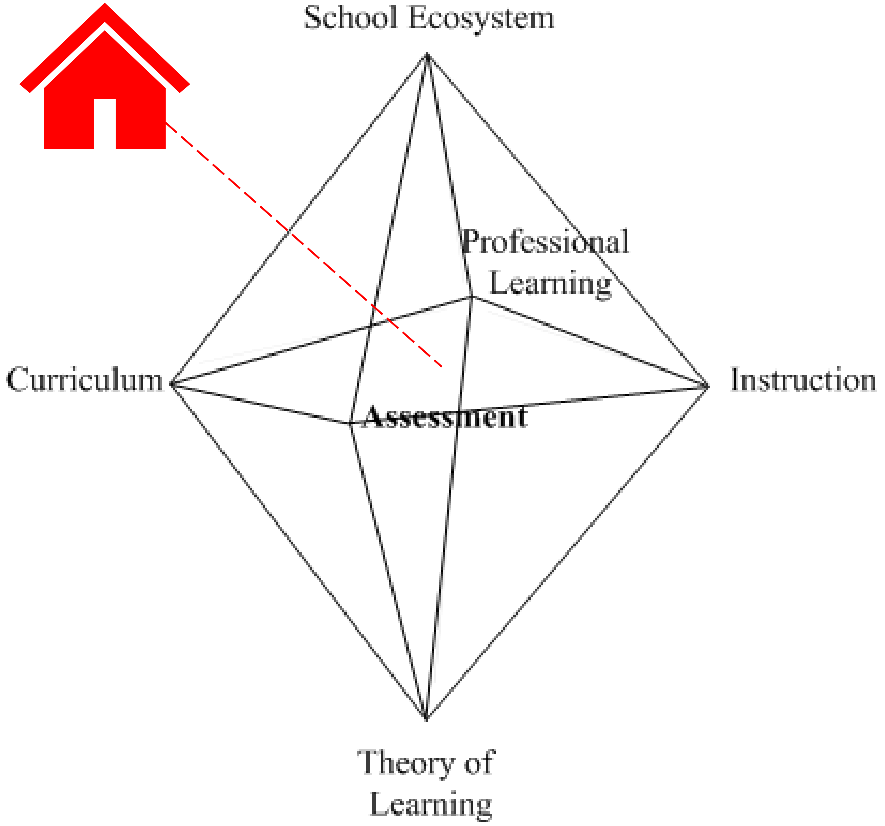
The Approach: A Transdisciplinary Process

- Back to First Principles
  - Testing and replacing out assumptions (continuously checking and refining)
  - Hypothesize, test, revise cycles
- Systems Thinking
  - System expansion to the extended learning ecosystem
- Agile Development
  - Personas
  - Job to Be Done
  - Short cycles/ sprints and A/B testing

Back to First Principles: New Assumptions

- Solutions should prioritize time for classroom instruction throughout the year
- Solutions should prioritize data that helps teachers inform instructional activities
- Solutions should build across the year and not be a “post-mortem”
- Solutions should take into account prior information about students
- Measuring the process of learning and tracking how students are growing is a priority
- Scoring and data reporting can happen in near real-time

Understanding the system to be changed: The Learning Diamond (Nichols & Ferrara, 2014)



- **School Ecosystem:** Who are the players that are shaping the ecosystem?
- **Professional Learning:** What is planned, what is needed?
- **Instruction:** Lever to create change
- **Curriculum**: Maintenance of local control as a priority
- **Theory of Learning:** Rooted in Range Achievement Level descriptors
- **Assessment:** Better interim data, and making a separate summative redundant
- **Home Ecosystem: More important than ever and we are still understanding it**

Who are the Key Personas and what are the Jobs to be Done (JTBD)?

- State and district leaders; teachers and school leaders; parents and students

  - Accelerate Learning for all students
  - Close Achievement Gaps
  - Foster Readiness for rigorous high school college and career readiness coursework

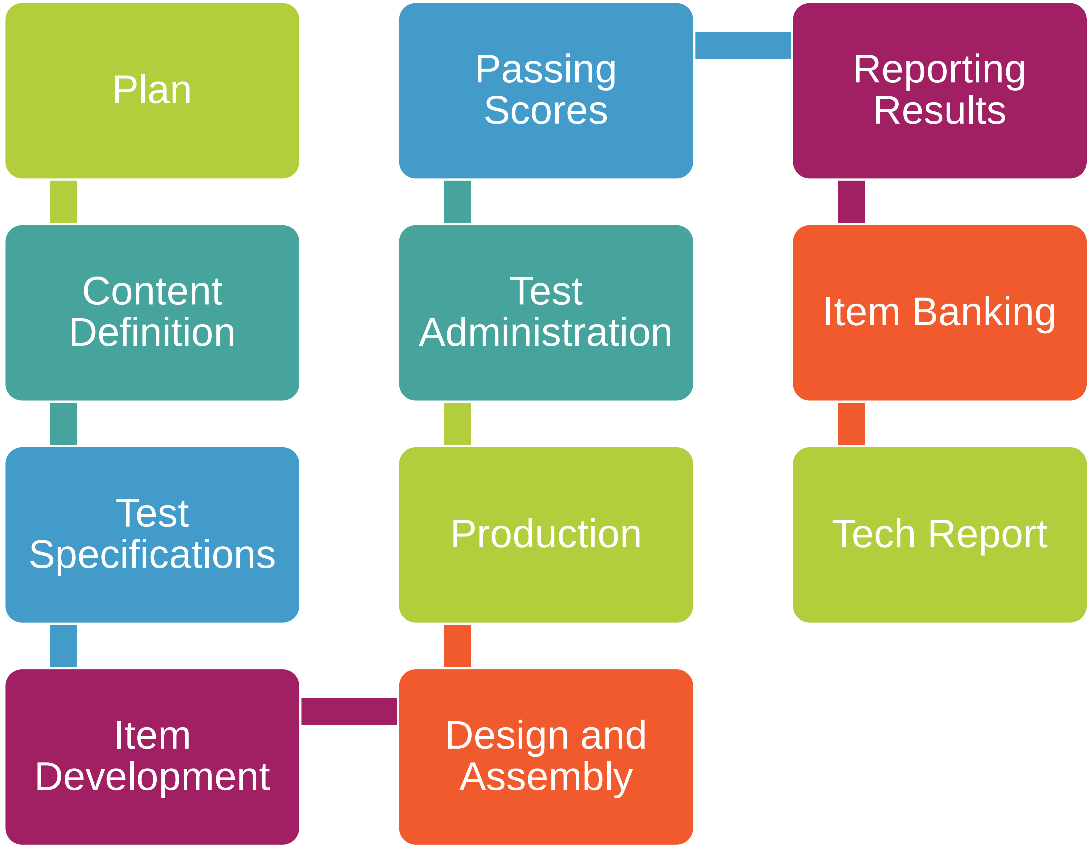
Agile Test Development

- Borrowing from the software industry:
  - Flexibility
  - Rapid Cycles of refinement
  - Constant value testing to prioritize focus
- Agile method during test design
  - Vision
  - Design Sprint
  - Hypothesis testing
    - Technically feasible?
    - Add value?
- Fail early, not late
- Solution must fit within customer/state/national policy constraints

What this means:

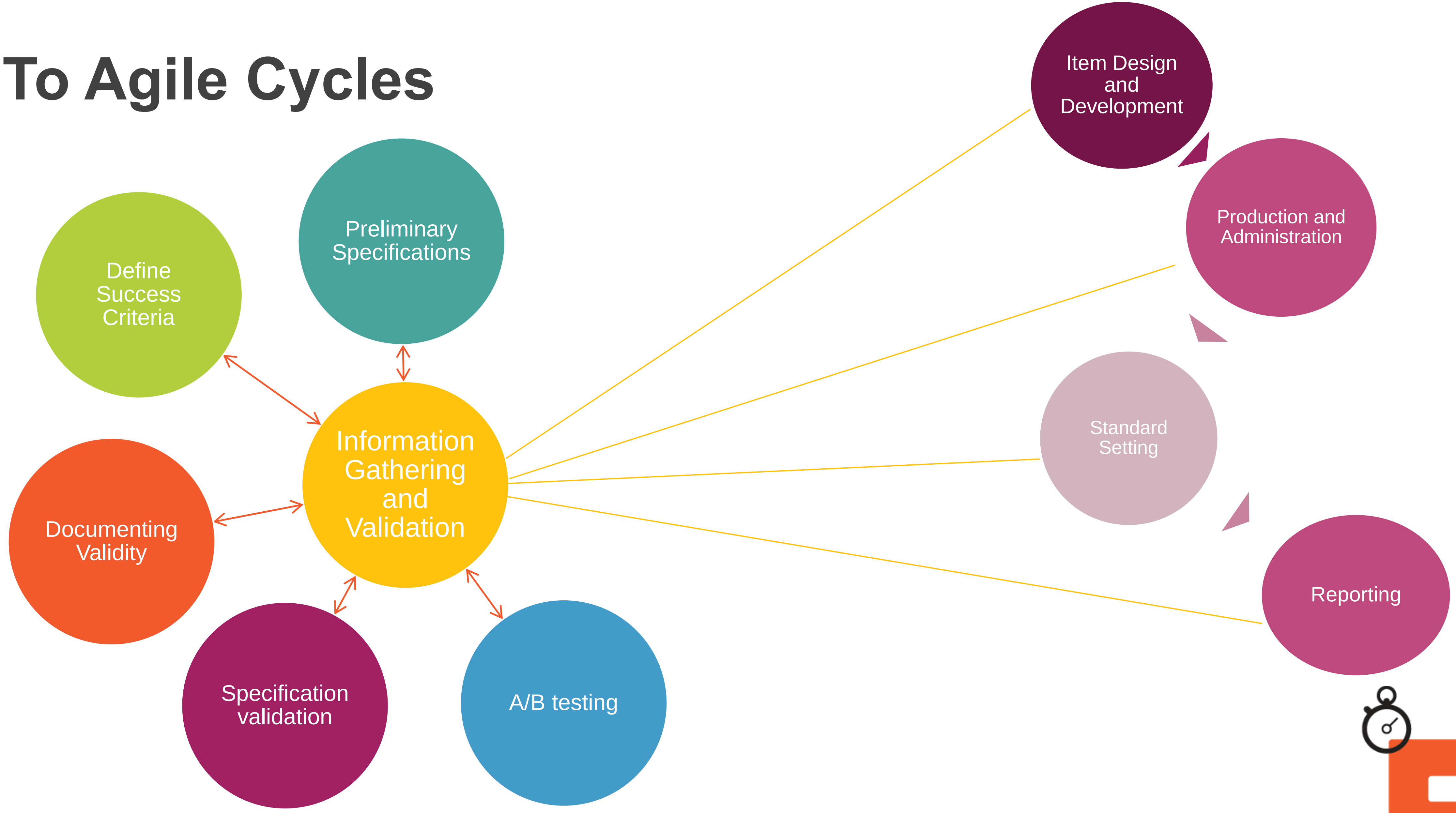
Prioritize This	Above this	In practice:
Individuals and Interactions	Process and Tools	cross functional teams
Working Prototypes	Excessive Documentation	Purposeful documentation re: validity and efficacy; not check lists
Customer collaboration	Rigid Contracts	Customers embedded in design and development processes
Responding to Change	Following a plan	Treating this like an optimization problem with small bets and A/B testing; testing assumptions

From Traditional Design and Development



Adapted from Downing's 12 Steps for effective test development (2006)

To Agile Cycles



Define Success Criteria

Preliminary Specifications

Information Gathering and Validation

Documenting Validity

Specification validation

A/B testing

Item Design and Development

Production and Administration

Standard Setting

Reporting

Process to Arrive at the Best Field Test Plan and Test Design

1. Define success criteria*
2. Define preliminary test specifications
3. Define administration constraints*
4. Document technological platform capabilities
5. Delimit adaptive test design options
6. Define item pool needed
7. Narrow field test options*
8. Vet field test options with decision makers and stakeholders*
9. Converge on best plans and design after multiple iterations

*Customer collaboration and consensus needed

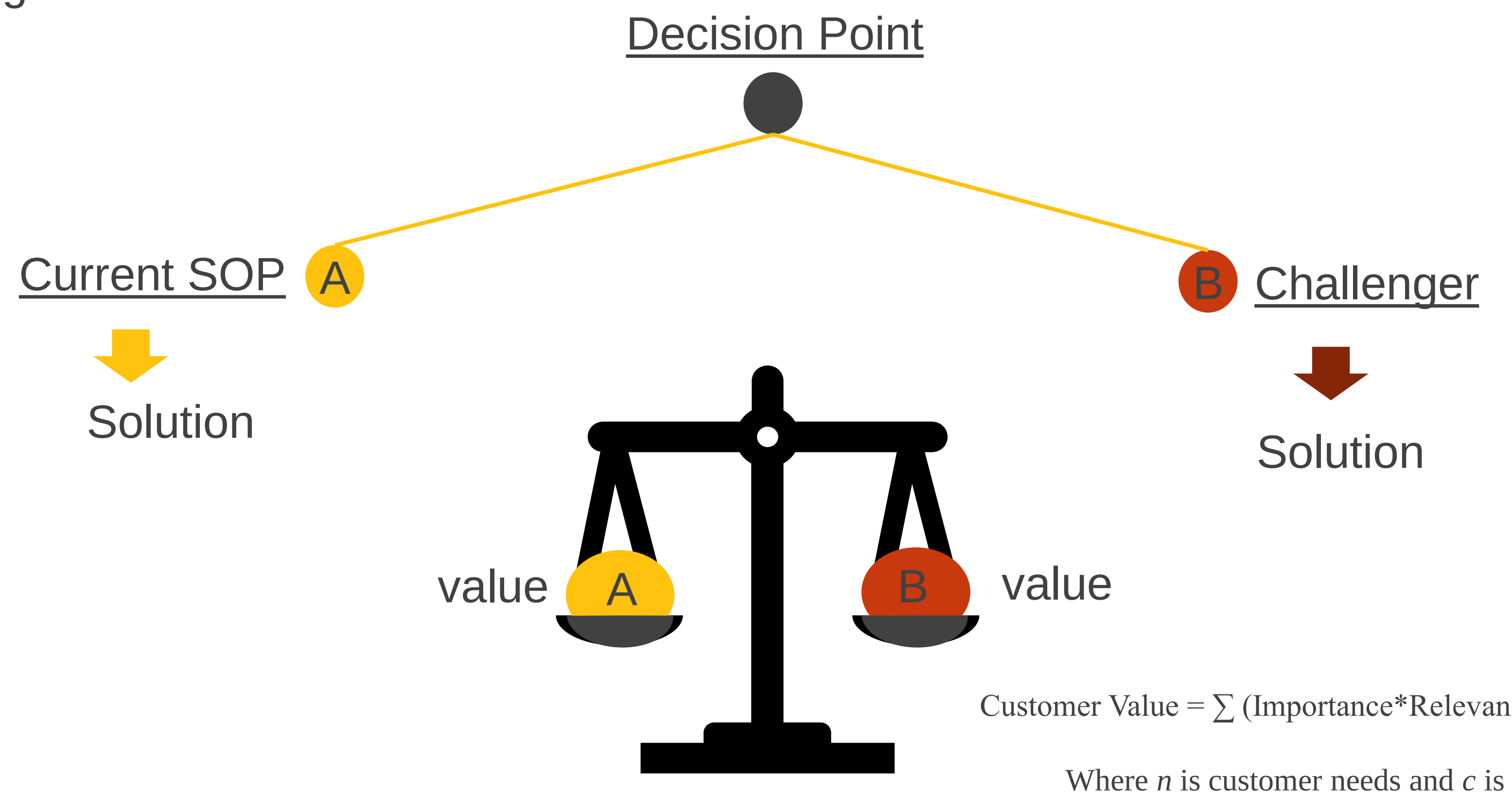
Design and Development Challenges examined during rapid cycle testing: A balancing act

- Level of detail vs test length
- Accountability vs utility
- Validity studies vs political realities of time
- Instructional relevance vs comparability
- Field testing and comparability
- Customization vs standardization

Make Evidence-Based Decisions

A = Champion

B = Challenger



Customer Value = $\sum$ (Importance*Relevance)$_n$ – $\sum$(Cost*Importance)$_c$.

Where *n* is customer needs and *c* is customer costs.

- Innovative solutions offer potential value but also bring potential risk.
- Current SOPs should only be replaced with an innovative solution if the value add is substantial.
- Research is necessary to collect evidence of feasibility (low risk) and utility (value) of an idea.

Implementation

Innovation driven by policy changes due to concerns about:

- Timeliness of results
- Actionable data
- Disconnects from instruction (assessments feel like events, not like learning)
- Over testing/ Testing time
- Making stakes too high

In Georgia SB 362: Up to 10 districts or consortiums of districts to apply to pilot innovative assessments aligned with content standards; Sets up clear roles for State Board Education, Georgia DOE, Office of Student Achievement, Independent third-party evaluator to examine comparability

Make “Small Bets” at Key Decision Points

Test Model Configuration

- TY Dynamic multi-phase test, with uninformative priors
- TY Multi-stage test
- Hybrid

Data Collection

- SOP
- H1: Randomly equivalent groups (CBE)
- H2: Common item non-equivalent groups (CBE)
- Combination

Psychometric Model

- SOP
- H1: Multigroup IRT calibrations will produce sufficiently precise and accurate item parameters
- H2: Modeling seasonal DIF will result in more precise and accurate latent trait scores
- H3: OTL accounts for seasonal DIF and therefore is construct relevant

Calibration

- SOP
- H3: Traditional Calibration with priors
- H4: Multi-phase calibration with priors if available (IRT software)
- H5: Online calibration (technology platform and CBE)

Item Pool

- Q2. 800- 1600 items per test, uniform distribution
- Q1. Uniform versus normal distribution of items
- On and off-grade adaptivity
- Hybrid

Operational Test

- SOP: Shadow CAT & MLE with fences
- Q3. TY Dynamic multi-phase test, with uninformative priors
- Q4. Different rules for adapting off-grade
- TY non-dynamic Multi-phase test

Scores

- Accuracy and precision as needed by score use
- Linked RIT scores
- Domain scores and on-grade/off-grade

Proficiency Classification

- Sensitivity and Specificity as needed by score use
- ALD Utility to teachers
- Classification decisions are comparable to Milestones

Each hypothesis is a small bet; If any bet succeeds, value will be added via increased adaptivity and measurement sensitivity. All desired outcomes in the TOA depend on measurement sensitivity.

GMAP: Through-year assessment summary

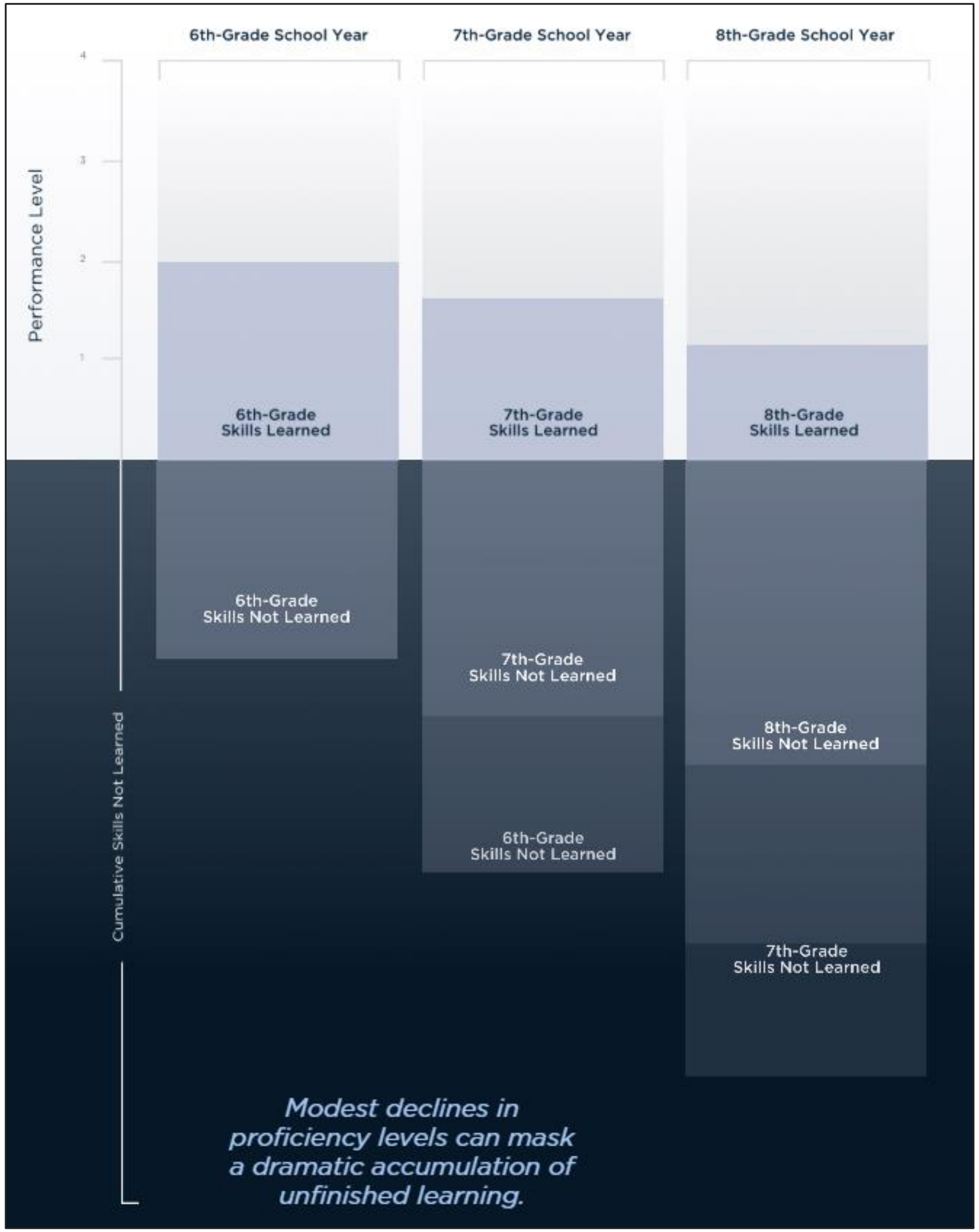
- Fall, winter, and spring assessments will measure student performance relative to the state blueprint while also adapting as needed
- Each assessment will measure growth and grade-level performance.
- Summative scores will be generated at year’s end.
- The result – richer data about student performance during the school year, a consistent testing experience built on a single “source of truth,” and the elimination of an extra summative test in the spring.

- Durable parts to accomplish JTBD
  - Multiple tests
  - Adaptivity
  - Through year growth
  - Instructionally useful data

Why adaptivity?

“Iceberg” problem: Unfinished learning accumulates and persists, hindering the ability for many students to become ready for college and career.

Solutions being tested…



Modest declines in proficiency levels can mask a dramatic accumulation of unfinished learning.

Source: https://www.icebergproblem.org/

Nuancing Designs to help meet JTBD: Range Achievement Level Descriptors (RALDs)

- RALDs explicate observable evidence of achievement, demonstrating how the skill changes and becomes more sophisticated for a standard across achievement levels for each standard and achievement level on the assessment
- RALDs provide intended content-based interpretations of what scale scores within a particular achievement level represent. Teachers can use RALDs to determine how students with different scale scores within the different achievement levels may differ in their abilities.
- Based in learning science, validated with local educators, RALDs drive item and test development

Going Forward: Studies for Interpretation

- Stakeholder reporting needs: via surveys and focus groups using representative samples of educators and families. One study outcome will be newly Stakeholder reporting needs: Method -surveys using representative samples of prioritized reporting lists aligned to the JTBDs.
- Rapid prototyping of reports: to iteratively refine reports to support the JTBD of each stakeholder, at the level appropriate for that stakeholder.
- Validation studies: to examine the degree to which intended score representations and recommendations result in accurate and useful feedback (is the data being used and not just valid for the interpretation?), and the degree to which instructional shifts and learning gains are realized.

Contact Us:

- Abby.Javurek@nwea.org
- Paul.Nichols@nwea.org
- Garron.Gianopulos@nwea.org

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Discussant Remarks & Panel Questions

Carla Evans

Center for Assessment

NCME Session: The Changing Landscape of Statewide Assessment—Shifts Towards Systems of Assessments

August 24, 2020

Themes Across Presentations

Shifts Towards Systems of Assessments Related to Statewide Assessment		
Key Barriers	**Two Sides of the Same Coin?**	**Key Facilitators**
• Federal requirements and constraints (e.g., comparability, summative score, validity and reliability) for IADA programs • Communication among various stakeholders and levels (state, district, school, classroom, etc.) • Implementation fidelity—need window into the classroom to gather information about TOA • Research and evaluation agendas • Political pressures and changes		• Robust theories of action • Agile development • Buy-in from teachers

Questions

1. What elements of a **theory of action** need to be in place in order to **improve student learning?** Are these elements consistent across assessment systems, or can they vary?
    - How does the currently implemented program reflect this?
2. **Changing instruction** tends to be a recurrent theme with respect to innovative assessment systems.
    - What does change to instruction mean? What are key features of improving instruction?
    - Do you think the outcome measure in the currently implemented program is sensitive enough to pick up on changes to instruction and student learning? Explain why or why not.

Questions, Cont'd

3. To what extent is **PD** an integral part of any TOA intended to improve student learning? Who should be the focus of PD and why? What are the challenges with such an approach to date?
4. What are some **unexpected events** that have happened during program development and what has allowed you to learn from unexpected occurrences (e.g., COVID)?
5. What is the **role of flexibility** in these systems (e.g., what aspects of the system can be changed to fit local contexts, and what cannot)?

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