



COMPETENCY BASED LEARNING

STATE OF THE US K-12 MARKET
JULY 2017

presented by :

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PROJECT OBJECTIVES



1. To understand the key characteristics of the CBL framework
2. To identify how widespread adoption is in K-12 education in the US
3. To identify the key players that make up and/or influence the CBL marketplace.
4. To identify and understand the technologies enabling this market.

PROJECT STRUCTURE

During November & December of 2016:

1. Extensive secondary research
2. 26 interviews of key actors: Educators, Investors, Tool + Service Providers
3. Survey re: CBL adoption and implementation sent to 100 district heads, 24 responses



OUR FINDINGS

1

A FOUNDATIONAL SHIFT

A K-12 system designed for CBL represents a fundamental shift in the way education is organized and delivered, and the way learning is structured and assessed.

2

KEY CHARACTERISTICS

Characteristics with the highest leverage include:

- Student as the prime mover
- Proficiency
- Personal Pathways

3

IMPLEMENTATION HURDLES

As a result of our primary research, we summarize the key challenges schools and districts face when deciding to adopt and implement CBL.

4

MARKET ADOPTION

What we learned about TAM, SAM, SOM and the drivers that affect market growth.

5

CBL TOOLS & SERVICES

A look at the actors supporting the space including technology vendors, their offerings and their reach.

CBL IS A FOUNDATIONAL SHIFT



in the way education is organized + delivered,
and the way learning is structured + assessed

DESIGN DIFFERENTIATORS

Creating a comprehensive CBL vision requires an examination of many accepted premises, purposes, and strategies.

Design of Traditional Education Systems

Design of Competency Based Systems

Purpose	
Teaching content	Educating learners
Preparing students to be productive industrial-age citizens	Preparing students to be productive citizens in a world of frequent change
Place	
Learning happens inside the classroom	Learning happens anywhere at any time
Pace	
Expectations based upon age &/or grade level	Expectations based upon mastery over standards

In reality, very few institutions exist at either end of this continuum. Contrasting design differentiators have been used to illustrate the deliberate and explicit choices that educators make as they adopt Competency Based Learning.

DESIGN DIFFERENTIATORS

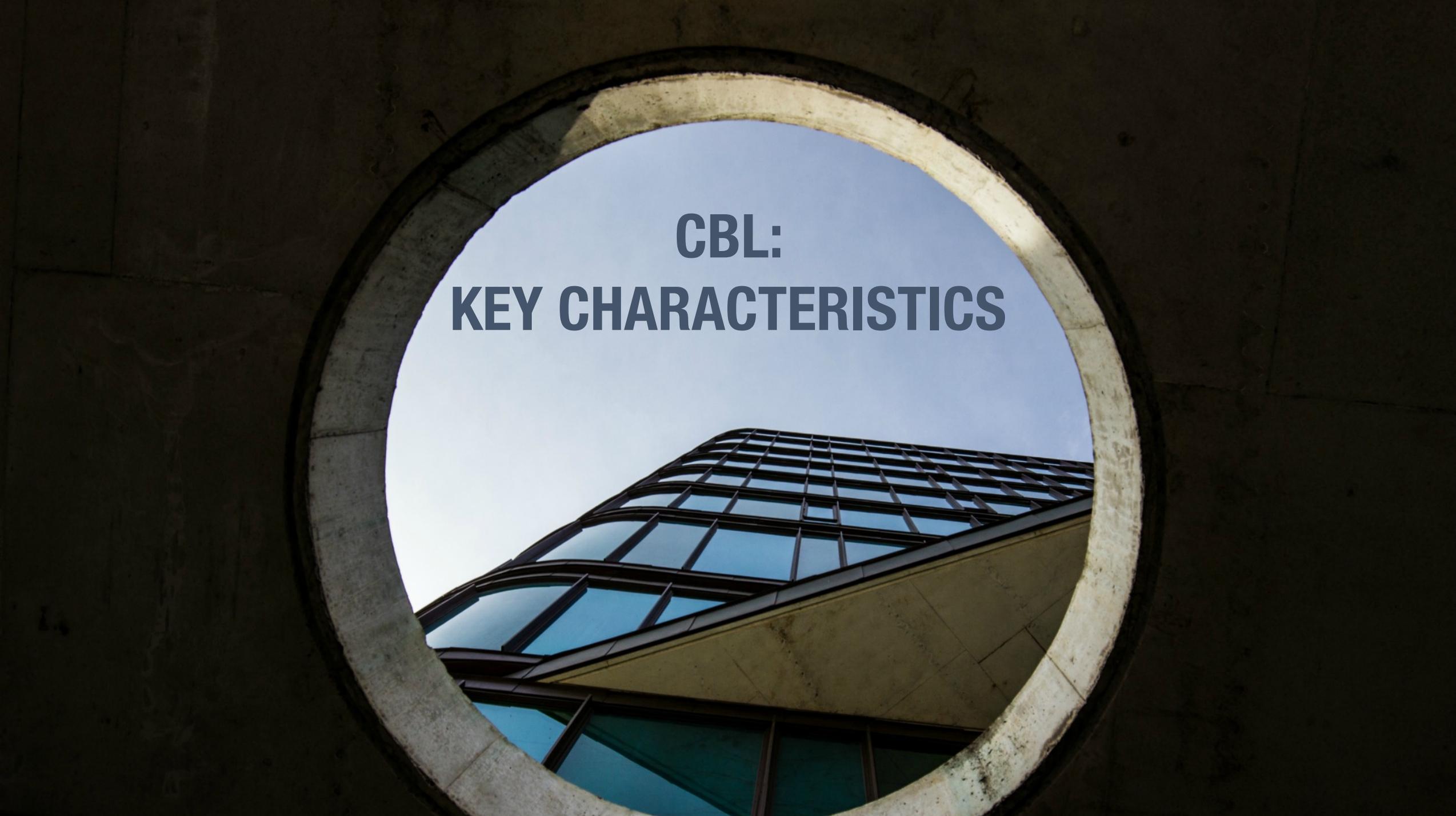
Creating a comprehensive CBL vision requires an examination of many accepted premises, purposes, and strategies.

Design of Traditional Education Systems

Design of Competency Based Systems

Assessment	
Courses as a means of accounting	Standards as a means of accounting
Student learning data generated primarily from disconnected assessments graded to create a normal distribution across cohorts.	Student learning data generated primarily from frequent, meaningful measurements of competency for individual students
Instruction	
Instructional design driven by standards & textbooks	Instructional design driven by learner needs
Instructional planning based on infrequent feedback loops	Instructional planning based on continuous feedback loops
Intervention & personalization sporadic & generic (unless at the ends of the bell curve)	Intervention & personalization are need-based, timely and differentiated
Primary Educator Roles: "Sage on the Stage", Sherriff	Primary Educator Roles: Instigator, Scout, Shepard

In reality, very few institutions exist at either end of this continuum. Contrasting design differentiators have been used to illustrate the deliberate and explicit choices that educators make as they adopt Competency Based Learning.



**CBL:
KEY CHARACTERISTICS**

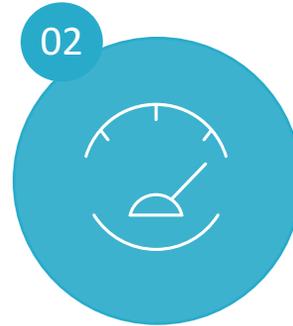
THE 3P'S OF COMPETENCY BASED LEARNING



STUDENT = PRIME MOVER

CBL is designed to give the student greater agency over their education experience.

CBL progressions are student-powered and give the learner increased responsibility for the pace of learning, and often ownership over its direction.

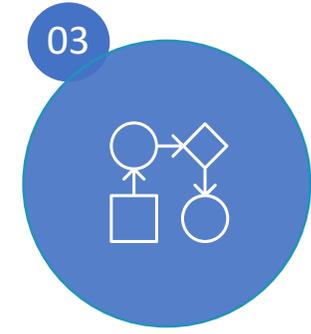


PROFICIENCY

CBL learning goals are organized into progressions based on explicit standards.

Standards create a roadmap while assessments & demonstrations give feedback about progress & pace toward mastery over expectations required for graduation.

This design allows empowered students to advance *ONLY* based on demonstration of competence.



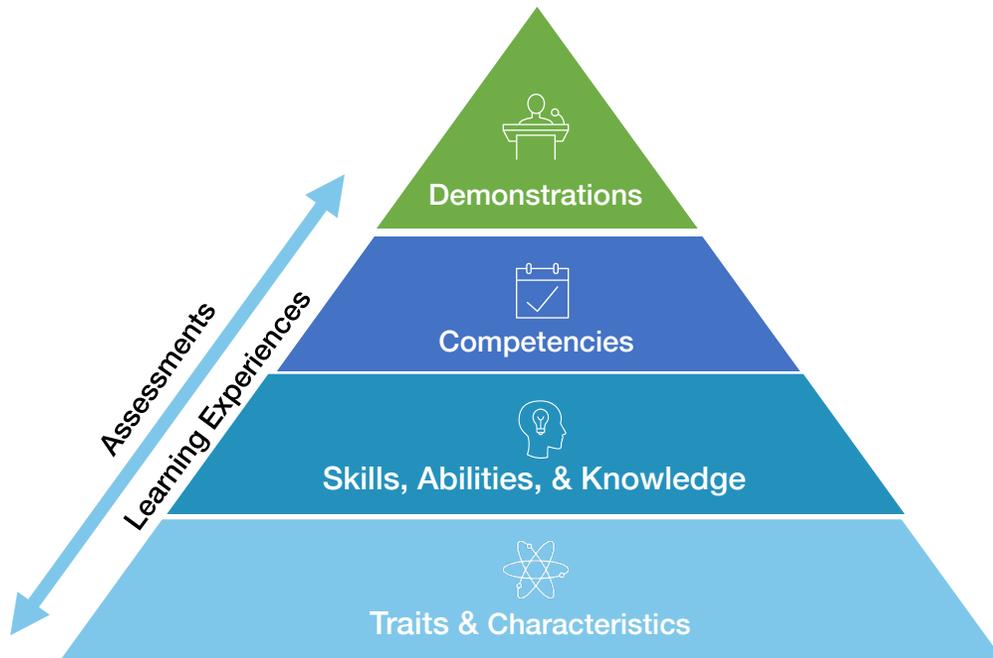
PERSONAL PATHWAYS

The instructional system in a CBL institution can support both common & unique learning experiences (in school & out of school).

CBL institutions can also allow for multiple ways for a learner to demonstrate competency.

STUDENT = PRIME MOVER

A CBL system is designed to create self-directed, future-focused, life long learners. A key design premise is that *the student is the engine of learning*.



CONCEPTUAL LEARNING MODEL¹

The competency based learning model recognizes that learning is progressive, “cross-curricular” and integrative.

Learning experiences build on foundational strengths to develop both tacit knowledge (“know how”) and explicit knowledge (“know that”).

CBL systems are designed to integrate learning experiences so students build skills, ability and knowledge and ultimately demonstrate a set of competencies that they have acquired.

1. Vorhees (2001) U.S. Department of Education, NCES Defining and Assessing Learning: Exploring Competency-Based Initiatives

GRAINS OF PROFICIENCY

With the student at the center of the learning, the system is organized around & measured on the skills, abilities, knowledge and competencies that are prioritized by parents, educators, employers & policy makers. Sample CBL learning progression (Adapted from Great Schools Partnership, [CT Assessment Institute 3/31/16](#)):

Stages of Learning	Goal Setting Example (Maine Standards of Learning)	Assessment Method	Reporting Method	Required for Graduation?
Learning Target: Objectives used to move students toward content-area competencies on a daily and weekly basis.	(G5) I can classify matter based on physical properties I can identify changes that can occur in the physical properties of ingredients of solutions	Ongoing formative assessments evaluate student progress	Feedback to student, reports embedded in curriculum products	NO
Performance Indicator: Evidence of student learning + a measure of content-area competency (5-10 per content area)	(G5) Develop a model to describe that matter is made of particles too small to be seen (G8) Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	Common summative assessments help to ensure consistency in the evaluation of learning	Progress reports	NO
Core Curriculum Graduation Competencies: Desired results by content area (5-8 content area)	PHYSICAL SCIENCES: STRUCTURE /PROPERTIES OF MATTER, FORCES, & INTERACTIONS Understand and analyze matter, reactions and physical systems as demonstrated through the integration of scientific and engineering practices and cross-cutting concepts	Various demonstration tasks can be used to verify and report progress toward the achievement of competencies.	Transcript and Report Cards	YES
Cross Curricular (21C) Graduation Competencies: A measure of the most foundational, enduring & leveraged concepts & skills within a discipline. (5-8 total)	SELF-KNOWLEDGE & INTERPERSONAL RELATIONSHIPS Assess and demonstrate a thorough understanding of the knowledge, attitudes, behaviors and skills needed to be successful in school, careers, civic life, and relationships with others.	Portfolios, exhibitions and other culminating demonstrations of learning are assessed	Transcript and Report Cards	YES

SCALES OF PROFICIENCY

Rather than grading on a curve to create a normal distribution of achievement in a cohort, Competency-Based Learning uses a progressive expectation scale measuring each student's knowledge and skills within the topic.

Generic Proficiency Scale	
4.0	Advanced content
3.0	Target content
2.0	Simpler content that is foundational for proficiency
1.0	Partial success (scores at 2.0 – 3.0) on content with help
0.0	Even with help, no success



SCORE DICTATES PACE:

A student must demonstrate their proficiency on a standard at the target level before they can move on to more complex topics as they proceed toward graduation.

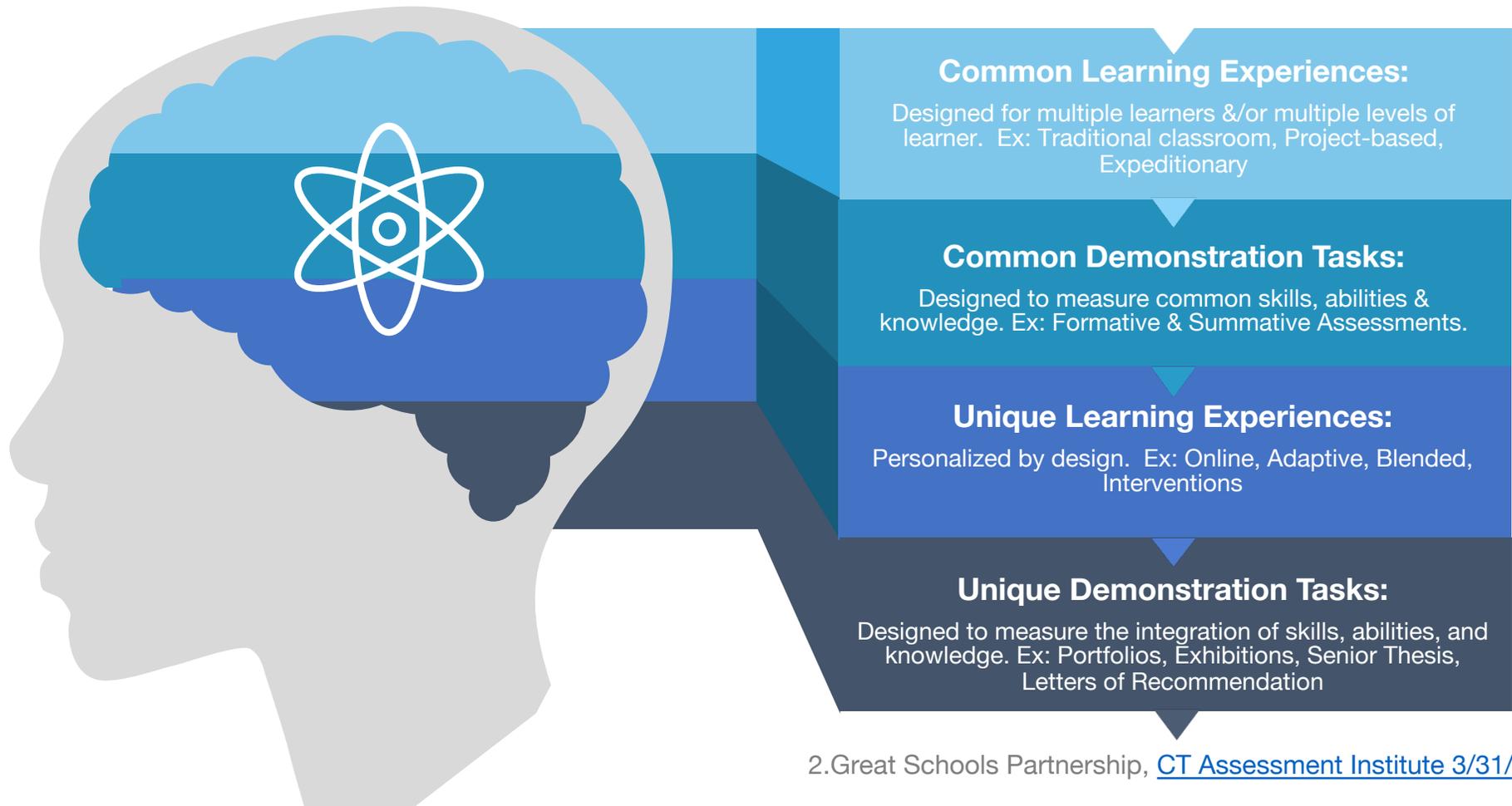


SCORE DETERMINES PLAN:

If a student is judged to be “not proficient” against a particular standard, well designed target indicators can provide the detail necessary for an intervention by an educator or other stakeholder so that progress can resume.

PERSONAL PATHWAYS

With a system designed to empower the student and an educational process that is clearly defined, sequenced, and measured, the conditions are sufficient for CBL institutions to experiment with the building blocks below to offer greater student choice but maintain a reliable and comparable educational experience. **However, to ensure that a system continues to move toward equity, scoring criteria must be consistent and common.**²



BARRIERS TO GROWTH



TOP BARRIERS: CBL ADOPTION

It is one thing to re-frame and re-imagine the way we see education, it is entirely another to actually change it. Most actors agree that a CBL adoption is a major undertaking – one with broad implications for the culture, organization, process, data and technology an educational institution relies upon.

1

Comprehensive change
Foundational + cultural, not merely technical



2

Pedagogical transformation
Transparent, explicit, & integrative infrastructure for instruction + assessment



3

Legacy structures that work against CBL
Seat time, grade levels & high stakes assessments



4

Lack of support
Best practices spread by few providers



3-5 years to fully implement

Given the far reaching changes required for a K-12 institution to adopt and implement CBL, it is not uncommon for it to take 2-3 years to get the system roughly into place, another 2-3 years to get a “finished process - one that can be honed forever.



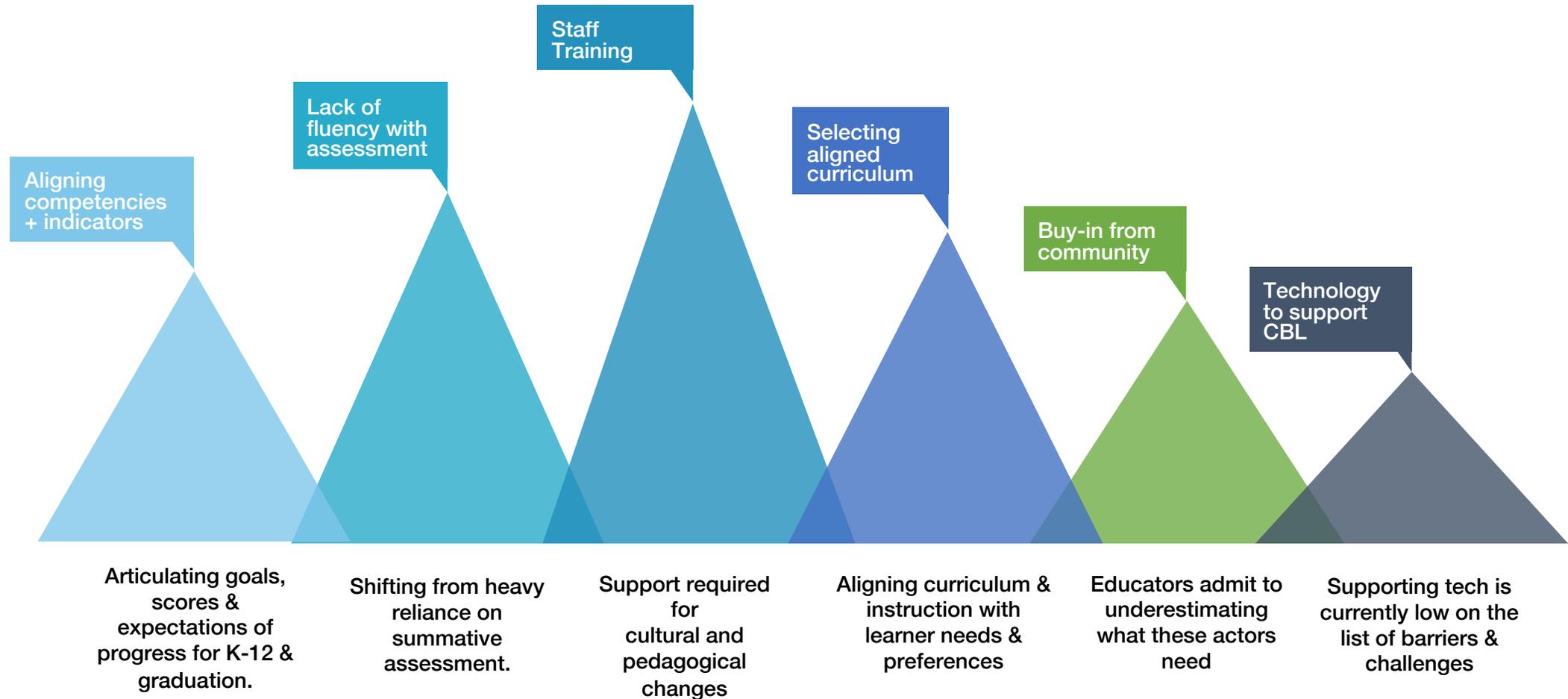
Investment of time, talent + treasure perceived to be high



Lack of evidence based outcomes

TOP BARRIERS: CBL IMPLEMENTATION

This complex, comprehensive system change requires staff training + buy-in up front and on an ongoing basis as pedagogies are examined and new ways of instructing and assessment are rolled out.



TECH DECISIONS: SOLUTIONS @ SCALE



Small student population/Pilot:

Low tech, adapted, or stitched together can work.

Ex: “Torturing PowerSchool”



Growing population/mix of online + off line paths:

(Larger schools/smaller districts and/or smaller schools later in implementation cycle). More reliant on tech and more sophisticated in tech combinations + adaptations

Ex: “LMS + CBE Gradebook + E-portfolio”



Large districts/robust implementations w/online paths:

Looking for one platform solution that addresses data, curriculum, instruction and reporting differences.

Ex: Empower, Summit, Motivis, EnLearn



MARKET ADOPTION

ADOPTION: HISTORICAL PERSPECTIVE



01

Early Innovation

Pockets of isolated innovation:
Chugach District, BDEA,
Diploma Plus

02

Defining CBE

1st Wave of State Policy:
NH (Carnegie to
Competency 2005), RI (PB
Diploma 2003), OR (PR
Credits 2002)

03

Growing Pull to Adopt

- 07-12: Educator driven experiments – ME (20+ districts), Lindsay, Adams 60.
- 2010: iNACOL + NMEF hold summit.
- 13 – 16 New Models: NGLC, Carnegie Opportunity by Design, League of Innovative Schools, (CCCSO) Innovation Lab Network. Scaling Strategies (NYC Mastery Collaborative, Henry, Charleston)

04

Policy Wave 2

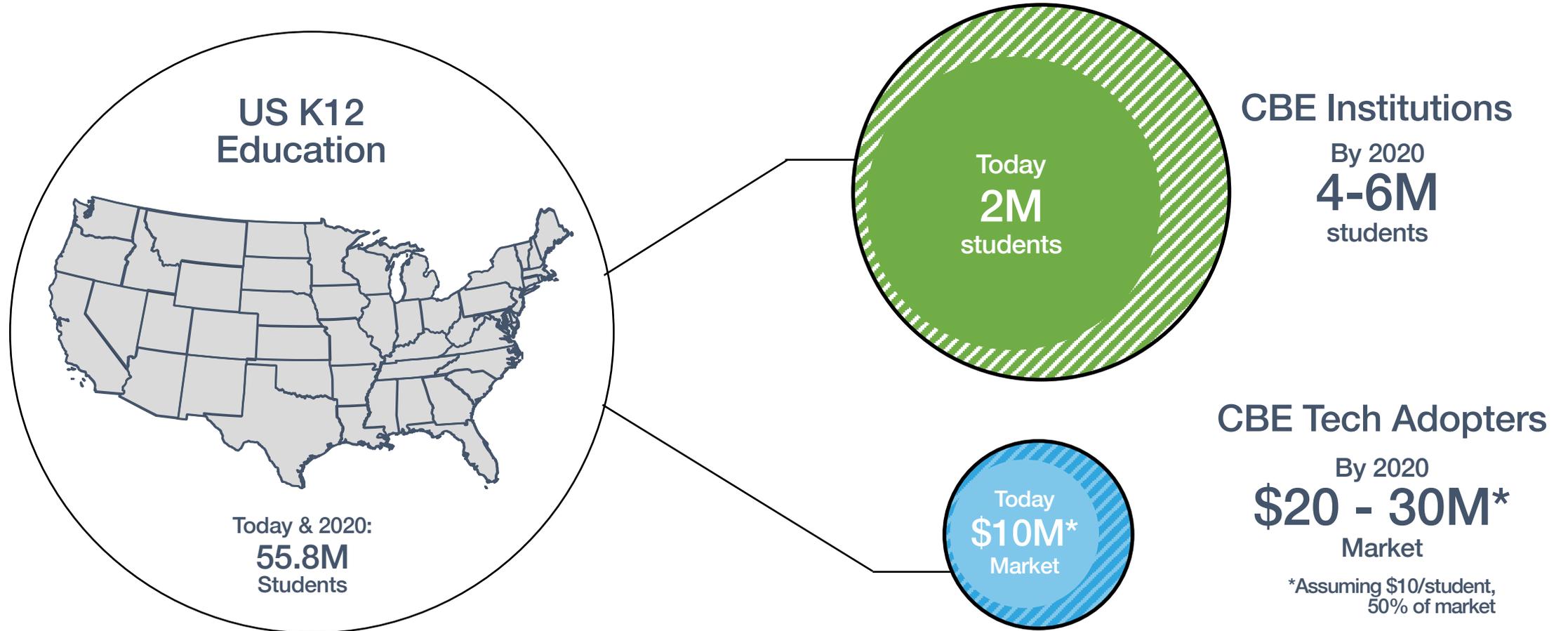
- KY (Innovation Zone), ME (LD 1422)
OR (essential skills), CO (PB Diploma)
- Pilots in OH, ID, IL, FL, .
Personalization in VT
- ESSA & alternative assessment

US CBL Market @ 20+ Years

- 600 colleges & universities with CBE programs
- 4% of US K-12
 - 2 states reaching scale: VT, ME
 - 20 states w/one strong demonstration school
 - 8 states with pilots

CBL MARKET ESTIMATE

The CBL market in 2016 is estimated to be 4%³. Absent policy prioritizing this shift or a breakthrough in student learning/achievement outcomes, market growth is predicted to be slow but steady through 2020.

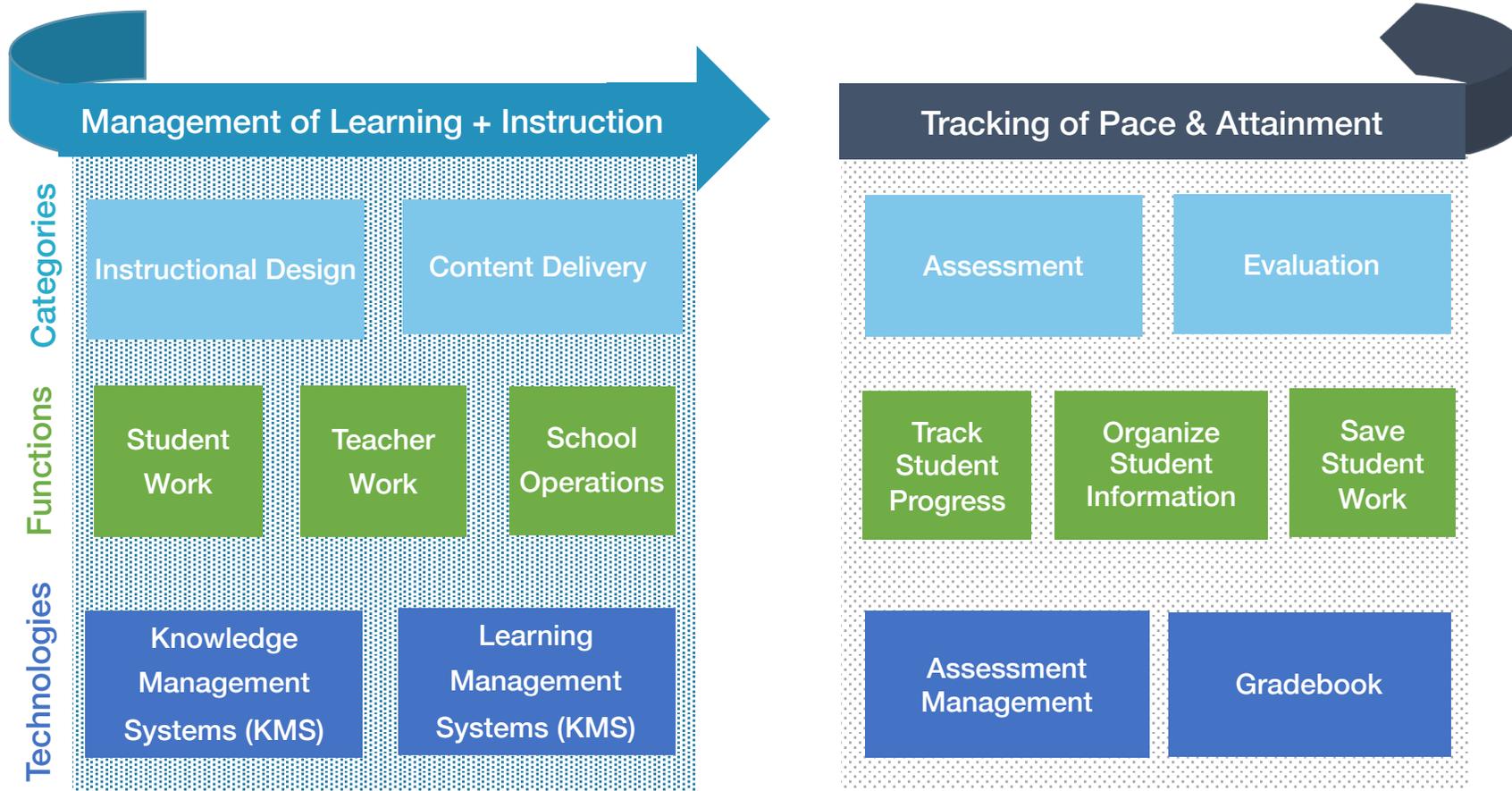


TOOLS & SERVICE PROVIDERS



CBL TECHNOLOGY FRAMEWORK

A CBL platform requires a student centric approach to data and a full suite of functionality to cover learning, instruction, assessment and reporting. Vendor lists continue to grow and technology continues to deepen & develop.



CCSSO Survey 2014:

31 Vendors (4 with 75%+)

- LMS
- Gradebook
- Data Integration
- SIS
- ePortfolio

Ed Surge Survey 2016:

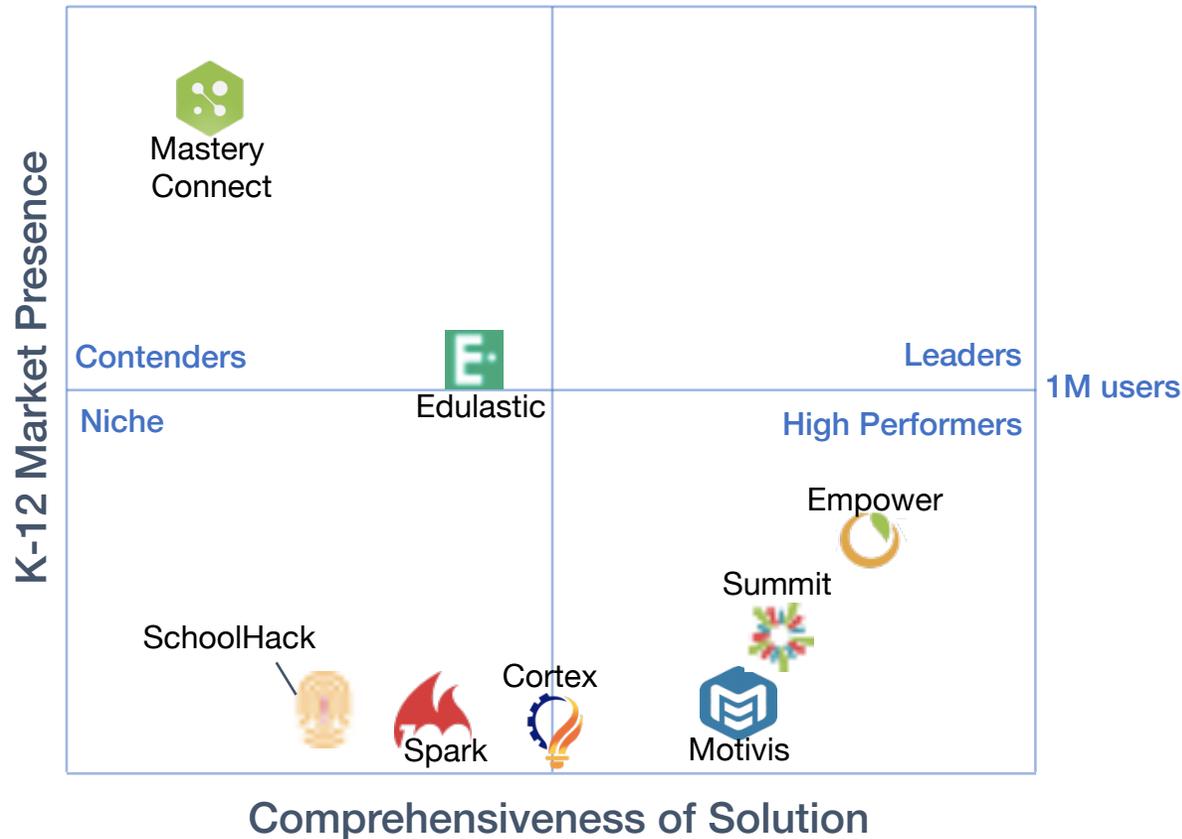
19 Vendors (12 with 75%+)

- Knowledge Management
- LMS
- Assessment Management
- Evaluation (Gradebook)
- Student Workspace/Profile
- Teacher Workspace
- School Ops (Scheduling)

Adapted from EdSurge's Conceptual Model, Aug 2016

CBL TECH LANDSCAPE: 2016 SNAPSHOT

Based on NSVF input, top vendors were selected, interviewed, demoed (when possible) to gain an understanding of how tools are supporting the ecosystem.



Key insights:

- A** The market lacks a clear platform leader with both comprehensive functionality and market share.
- B** High performers have either been at market for years, have strong UX capabilities and/or bring higher ed functionality to K-12. They have a breadth of features but have not yet exceeded 1M users.
- C** Tech contenders with market share have a narrower feature set and focus primarily on assessment
- D** Niche players tend to be new entrants without a large enough user base to confirm product/market fit

CBL TECH PLATFORMS: FUNCTIONALITY COMPARISON

	Standards Mapped Design	Robust Assessments	Flexible CBL Scoring & Evaluation	Student-paced Scheduling	Student Driven Design (Workspace & Profile)	Teacher Driven Design (Workspace)
 Empower Learning						
 Cortex: Innovate EDU						
 Summit: Basecamp						
 Matchbook: Spark						
 Motivis Learning						
 SchoolHack						
 Mastery Connect						
 SnapWiz: Edulastic						



**SUPPORTING DATA,
END NOTES,
GLOSSARY & OTHER
CREDITS**

ACKNOWLEDGEMENTS

This project represents independent research and analysis conducted by 230Trees. We conducted extensive secondary research and acknowledge the time, talent and treasure that went into the creation of the many resources that helped to frame our thoughts.

SECONDARY RESEARCH

- Liz Glowa (Feb 2013) [Re-Engineering Information Technology: Design Considerations for Competency Education.](#)
- Jennifer Norford and Robert J Marzano (Sept 2016) [Personalized Competency-Based Education: Creating a Cohesive and Coherent System.](#)
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In addition, we owe a debt of gratitude to the stakeholders that gave generously of their time and knowledge to participate in our interviews that ranged from 1 to 3 hours each.

PRIMARY RESEARCH

- Oliver Wreford, VP Strategy + Marketing, Powerschool
- Daniel Jarratt, Chief Data Scientist, Infinite Campus
- Ray Grogan, Principal, Freeport Middle School, RSU5
- David Ruff, Executive Director, Great Schools Partnership
- Mickey Revenaugh, Board President iNACOL
- Jean Hammond, Founder, Learn Launch
- Erin Mote, Executive Director, Brooklyn Labs/Cortex
- Elizabeth Chou, Partner, New Markets Venture Partners
- John Caesar, CEO & Benjamin Hartlieb, Product, Empower Learning
- John Deane, Deputy Director, Chan Zuckerberg
- Al Motley, CTO, Matchbook Learning/Spark
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- Laura Davis Gross, VP Marketing, Noodle Markets
- Elizabeth Chou, Partner, New Markets Venture Partners
- Christina Quatrucci, Director of Research, EdSurge
- Joy Nolan, Director Mastery Collaborative NYC
- Colin Irose, Director of Partnerships, Motivis LRM
- Chris Sturgis, Co-Founder, Competency Works
- Sam Strasser, Product Head, Summit BaseCamp
- Leslie Tyler, VP of Marketing, SnapWiz
- Aaryn Schmuhl, Asst. Superintendent for Learning, Henry County, GA

IMAGERY

All photos courtesy of UnSplash,

GLOSSARY OF KEY TERMS

Competency: a student's ability to transfer learning in and across content areas.

Competency based learning: systems of instruction, assessment, grading, and academic reporting that are based on students demonstrating that they have learned the knowledge and skills they are expected to learn as they progress through their education

Explicit knowledge: knowledge that can be readily articulated, codified, accessed and verbalized. It can be easily transmitted to others. Most forms of explicit knowledge can be stored in forms of media - ex: encyclopedias and textbooks. Often characterized as "Know That" - ex. I know that London is in England.

Graduation competency: a standard that focuses instruction on the most foundational, enduring, and leveraged concepts and skills within a discipline.

Learning pathway: a learning experience that could be common to a number of students or unique to an individual student.

Learning progression: A sequence of learning experiences designed to move a learner toward competency.

Learning targets: The component parts of a performance indicator - that is, the performance indicator has been broken down into a series of progressive steps and digestible chunks.

Measurements of competency: Assessments or demonstration tasks designed to measure a student's progress toward/achievement of mastery over a standard.

Performance indicator: Describes or defines what students need to know and be able to do to demonstrate mastery of a graduation competency

Prime mover: In engineering, a prime mover is an engine that converts fuel to useful work. In locomotives, the prime mover is thus the source of power for its propulsion. Generally it is any locomotive powered by an internal combustion engine.

Tacit knowledge: is the kind of knowledge that is difficult to transfer in writing or by verbalizing. It is often communicated through observation and deepened through practice - ex: apprenticeships. Often characterized as "Know How" - ex. I know how to speak a language or I know how to design and use complex equipment. This is the kind of know-how that requires all sorts of knowledge that is not always known explicitly, even by expert practitioners

Educational Solutions Consulting: Competency Based Learning Survey

100

District thought leaders surveyed

24

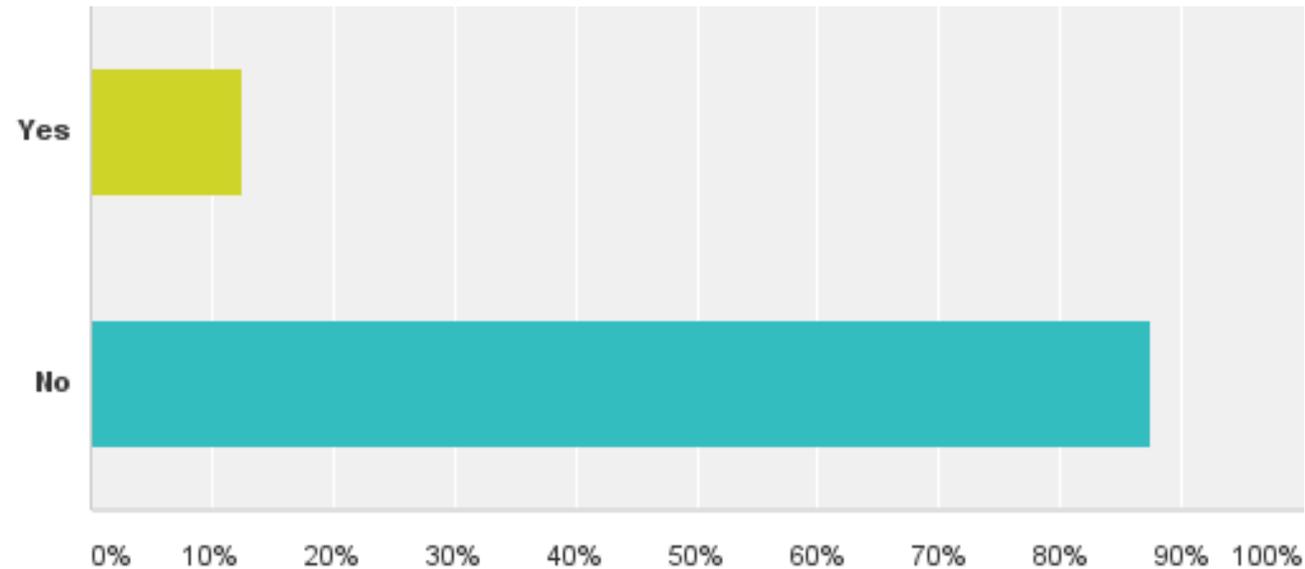
Total Responses

Date Created: Wednesday, December 07, 2016

Analysis Completed: Monday, January 09, 2017

Q2: Has your institution already adopted Competency Based Learning (CBL)?

- Answered: 24
- Skipped: 0



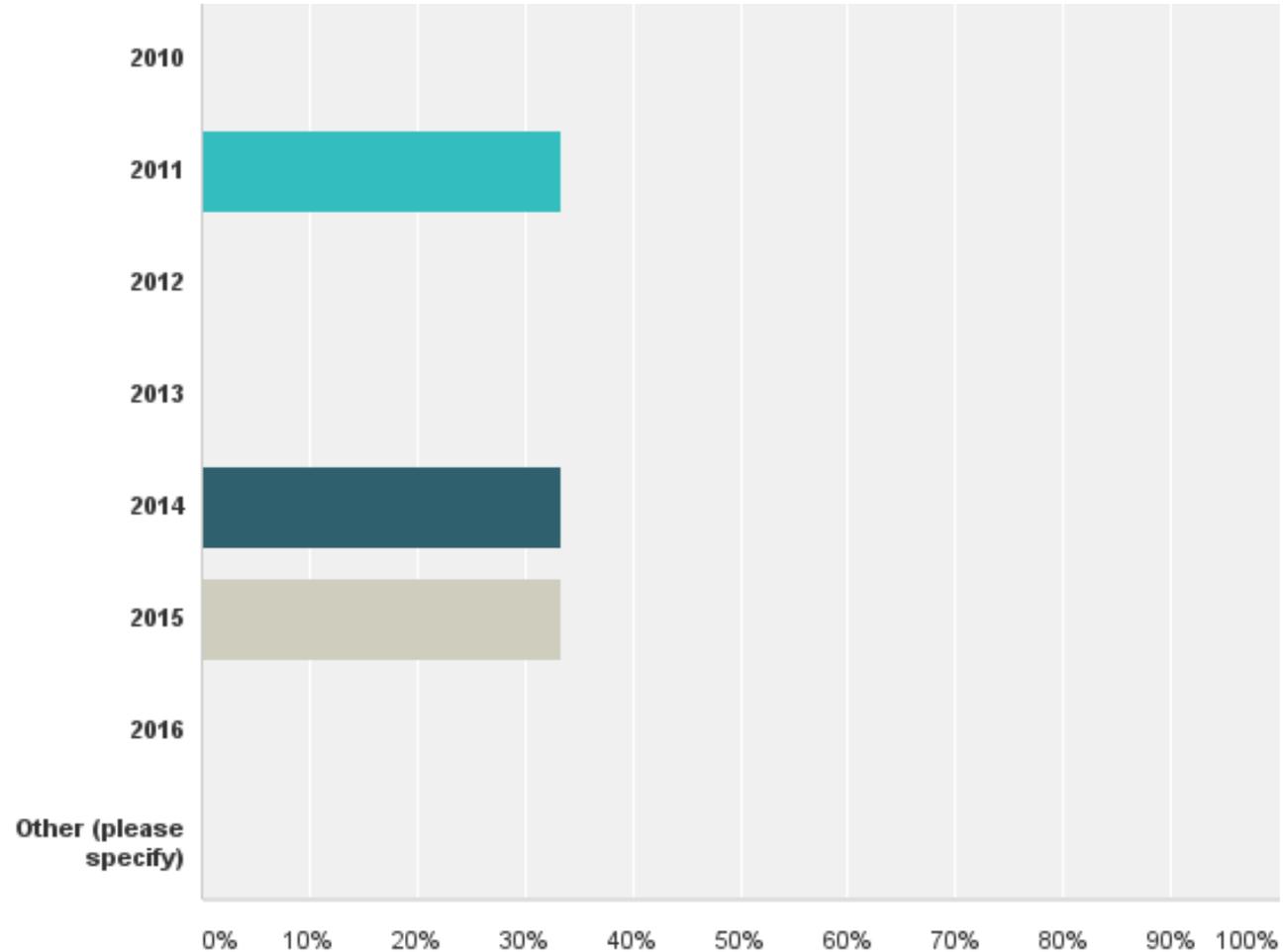
Q2: Has your institution already adopted Competency Based Learning (CBL)?

- Answered: 24
- Skipped: 0

Answer Choices	Responses
Yes	12.50% 3
No	87.50% 21
Total	24

Q3: When did you begin to implement Competency Based Learning?

- Answered: 3
- Skipped: 21



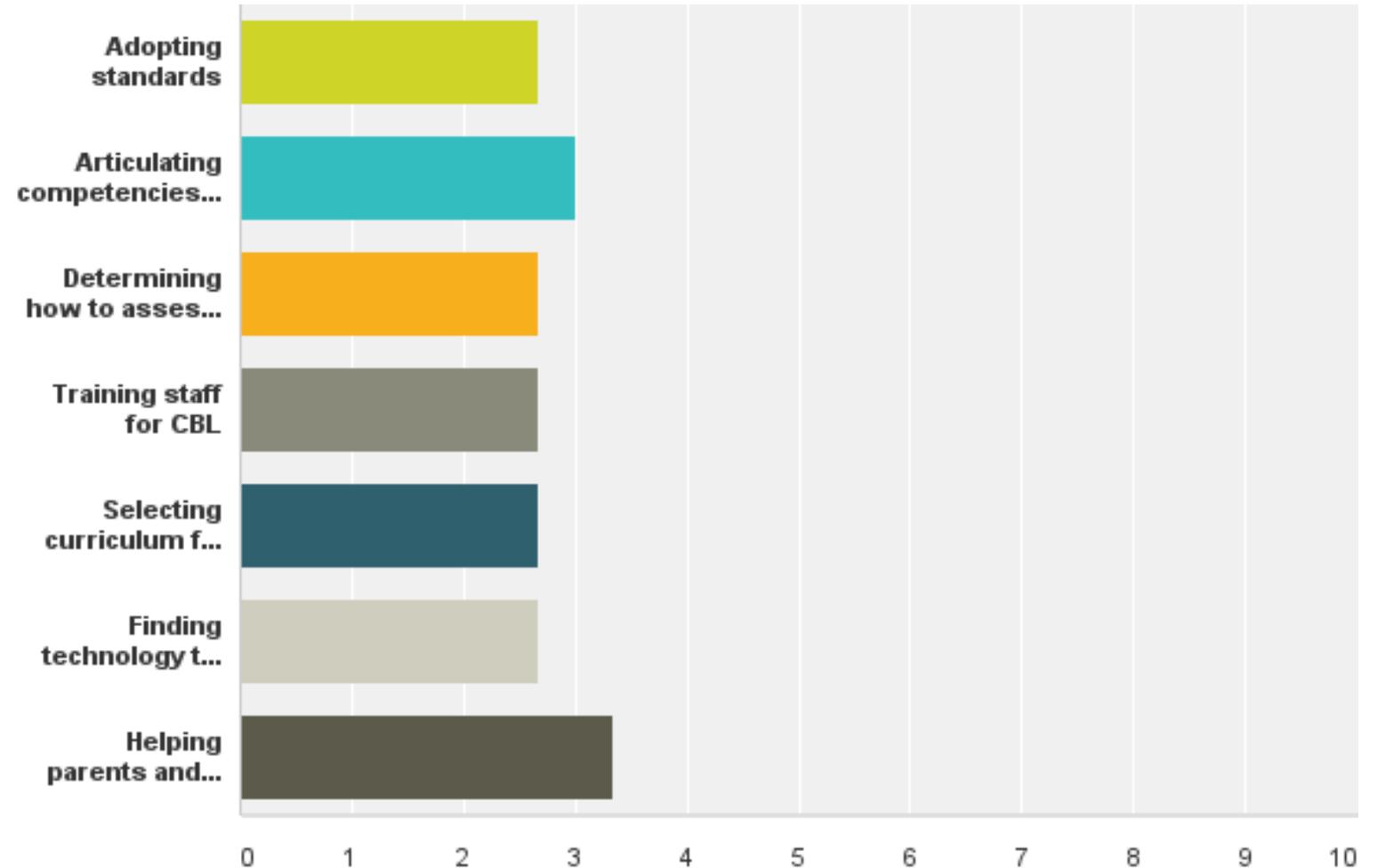
Q3: When did you begin to implement Competency Based Learning?

- Answered: 3
- Skipped: 21

Answer Choices	Responses
2010	0.00% 0
2011	33.33% 1
2012	0.00% 0
2013	0.00% 0
2014	33.33% 1
2015	33.33% 1
2016	0.00% 0
Other (please specify)	0.00% 0
Total	3

Q4: Please indicate level of difficulty of the tasks below during your CBL implementation.

- Answered: 3
- Skipped: 21



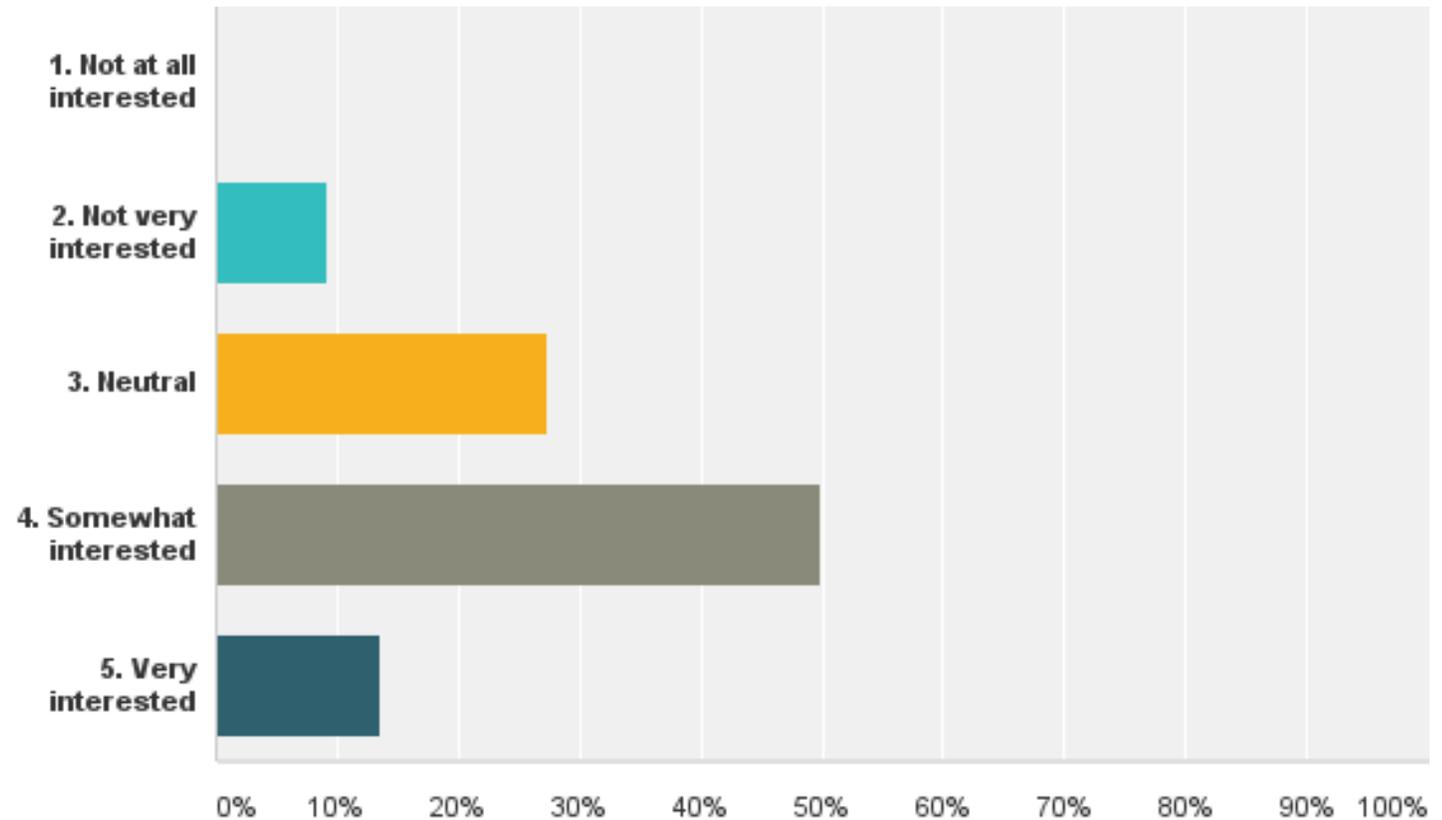
Q4: Please indicate level of difficulty of the tasks below during your CBL implementation.

- Answered: 3
- Skipped: 21

	not a challenge	minor challenge	moderate challenge	major challenge	N/A	Total	Weighted Average
Adopting standards	0.00% 0	33.33% 1	66.67% 2	0.00% 0	0.00% 0	3	2.67
Articulating competencies and indicators	0.00% 0	33.33% 1	33.33% 1	33.33% 1	0.00% 0	3	3.00
Determining how to assess competencies and progress toward competencies	0.00% 0	33.33% 1	66.67% 2	0.00% 0	0.00% 0	3	2.67
Training staff for CBL	0.00% 0	33.33% 1	66.67% 2	0.00% 0	0.00% 0	3	2.67
Selecting curriculum for CBL	33.33% 1	0.00% 0	33.33% 1	33.33% 1	0.00% 0	3	2.67
Finding technology to support CBL	0.00% 0	33.33% 1	66.67% 2	0.00% 0	0.00% 0	3	2.67
Helping parents and community understand the changes	0.00% 0	33.33% 1	0.00% 0	66.67% 2	0.00% 0	3	3.33

Q6: How interested are you in adopting Competency Based Learning?

- Answered: 22
- Skipped: 2



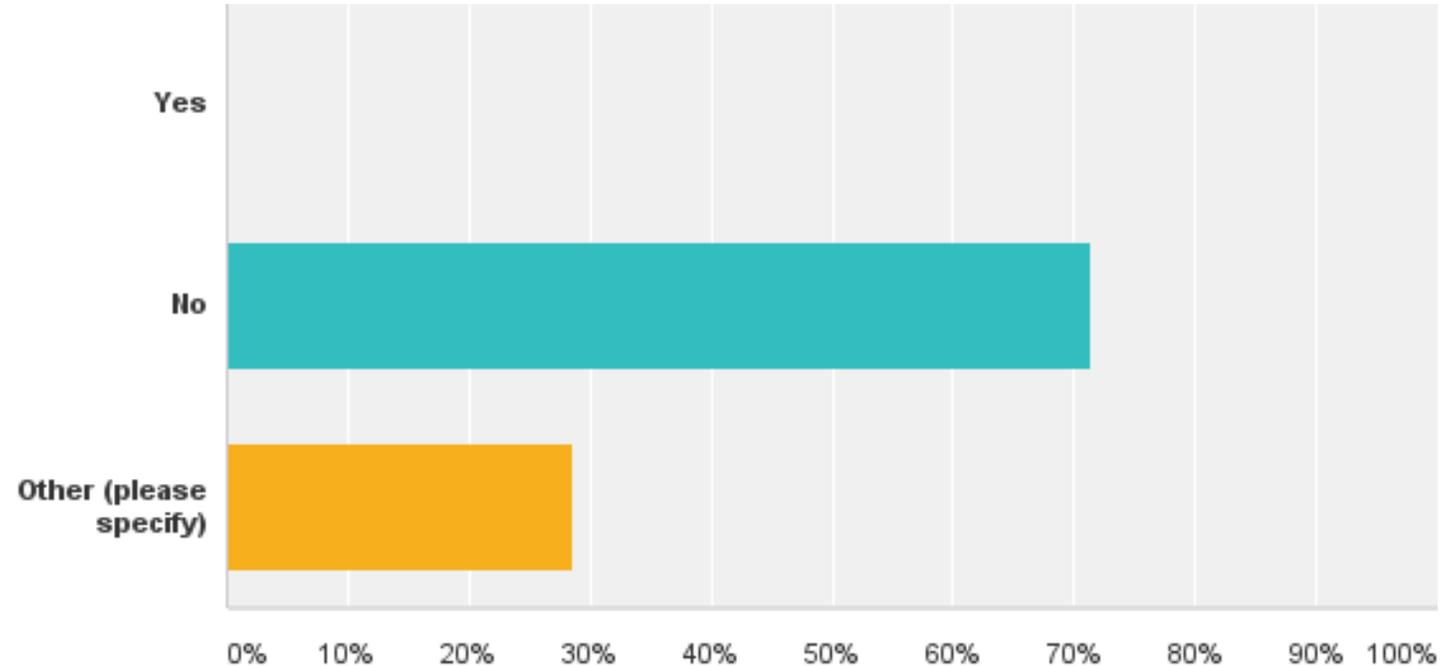
Q6: How interested are you in adopting Competency Based Learning?

- Answered: 22
- Skipped: 2

Answer Choices	Responses
1. Not at all interested	0.00% 0
2. Not very interested	9.09% 2
3. Neutral	27.27% 6
4. Somewhat interested	50.00% 11
5. Very interested	13.64% 3
Total	22

Q7: Do you intend to implement Competency Based Learning within the next 3 years?

- Answered: 7
- Skipped: 17



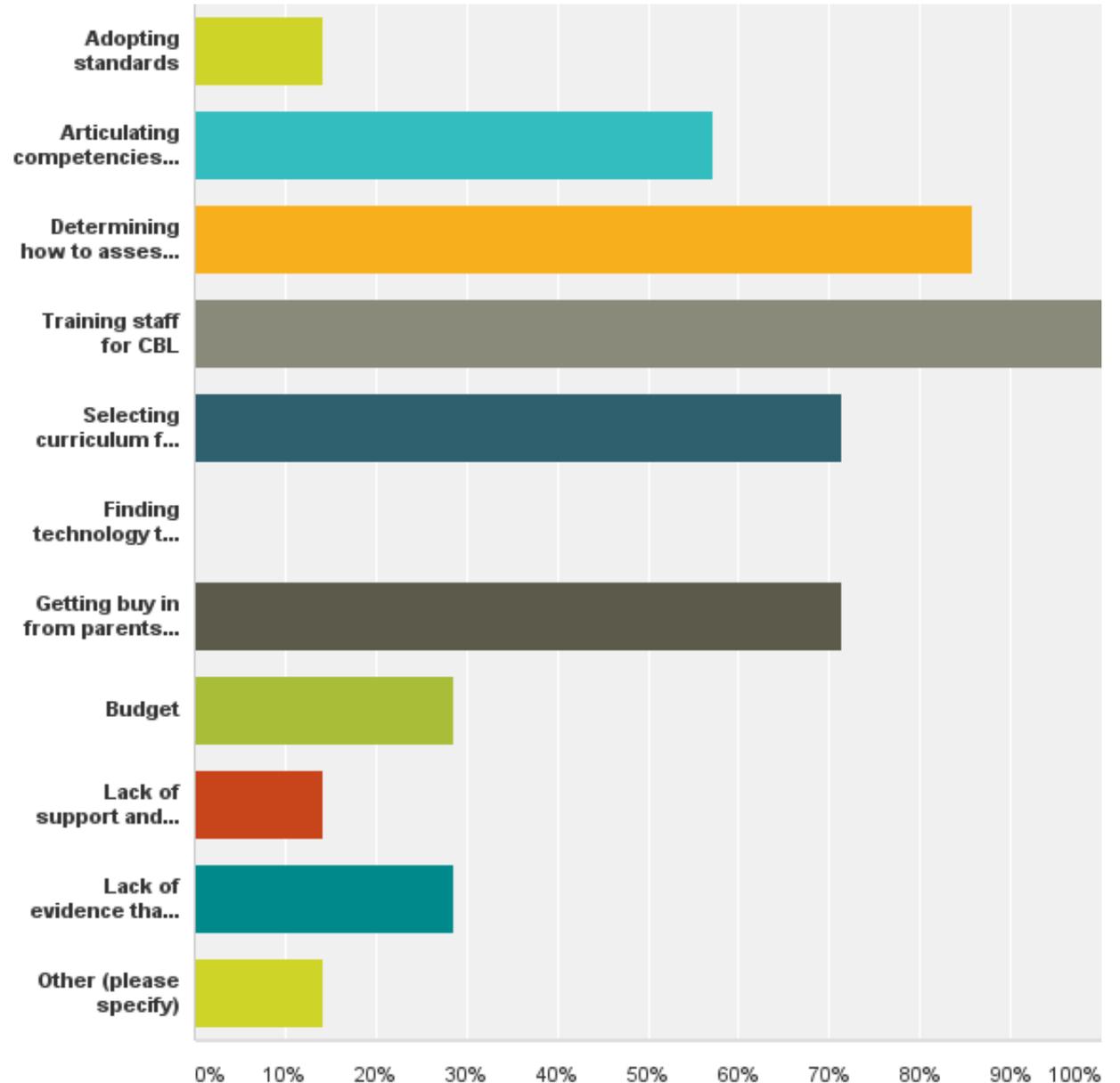
Q7: Do you intend to implement Competency Based Learning within the next 3 years?

- Answered: 7
- Skipped: 17

Answer Choices	Responses
Yes	0.00% 0
No	71.43% 5
Other (please specify)	28.57% 2
Total	7

Q8: What are the major challenges you see with adopting CBL? (Check any/all that apply)

- Answered: 7
- Skipped: 17



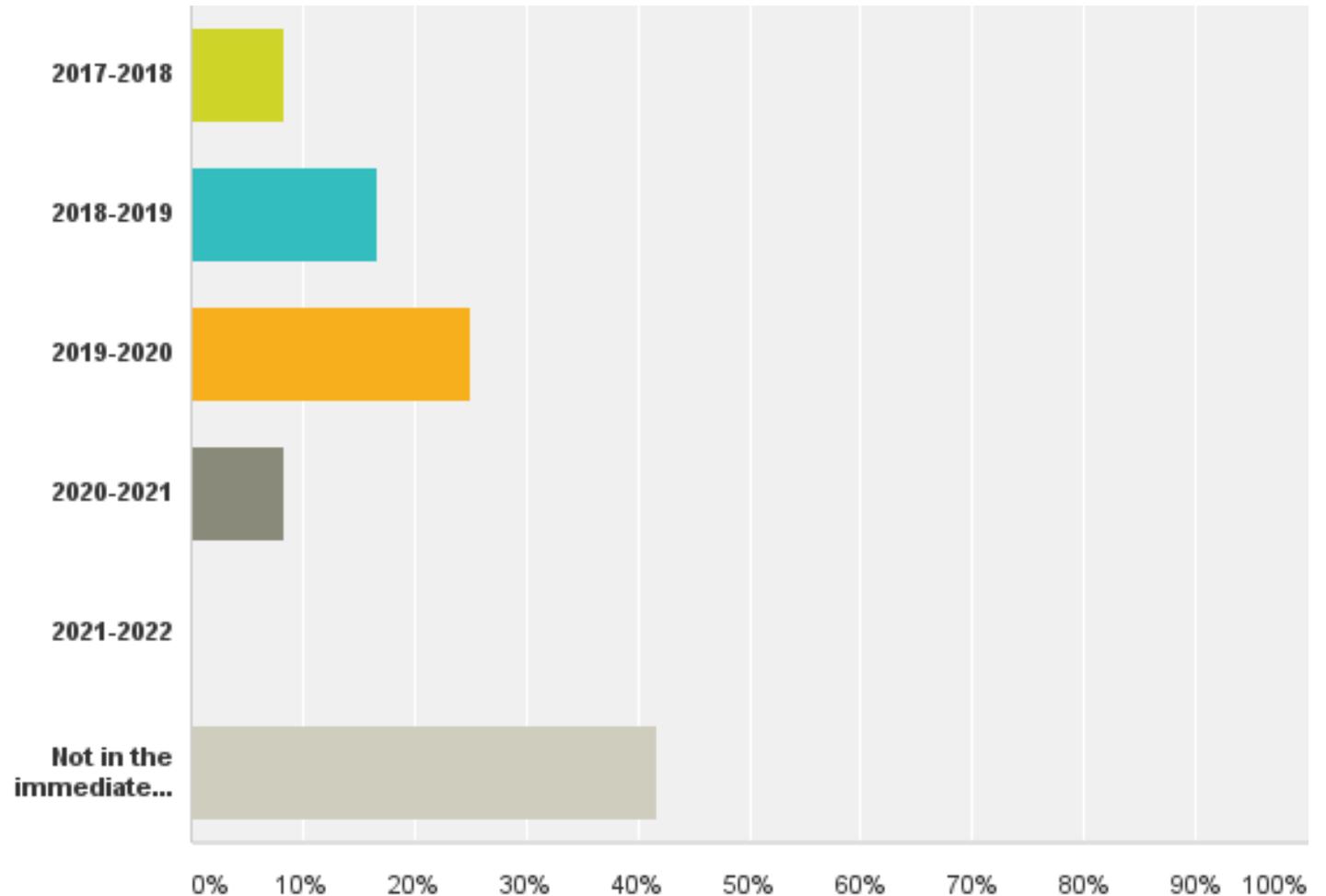
Q8: What are the major challenges you see with adopting CBL? (Check any/all that apply)

- Answered: 7
- Skipped: 17

Answer Choices	Responses	
Adopting standards	14.29%	1
Articulating competencies and indicators	57.14%	4
Determining how to assess competencies and progress toward competencies	85.71%	6
Training staff for CBL	100.00%	7
Selecting curriculum for CBL	71.43%	5
Finding technology to support CBL	0.00%	0
Getting buy in from parents and community	71.43%	5
Budget	28.57%	2
Lack of support and best practices to learn from	14.29%	1
Lack of evidence that the change creates meaningful improvement in outcomes	28.57%	2
Other (please specify)	14.29%	1
Total Respondents: 7		

Q9: How soon do you intend to implement Competency Based Learning?

- Answered: 12
- Skipped: 12



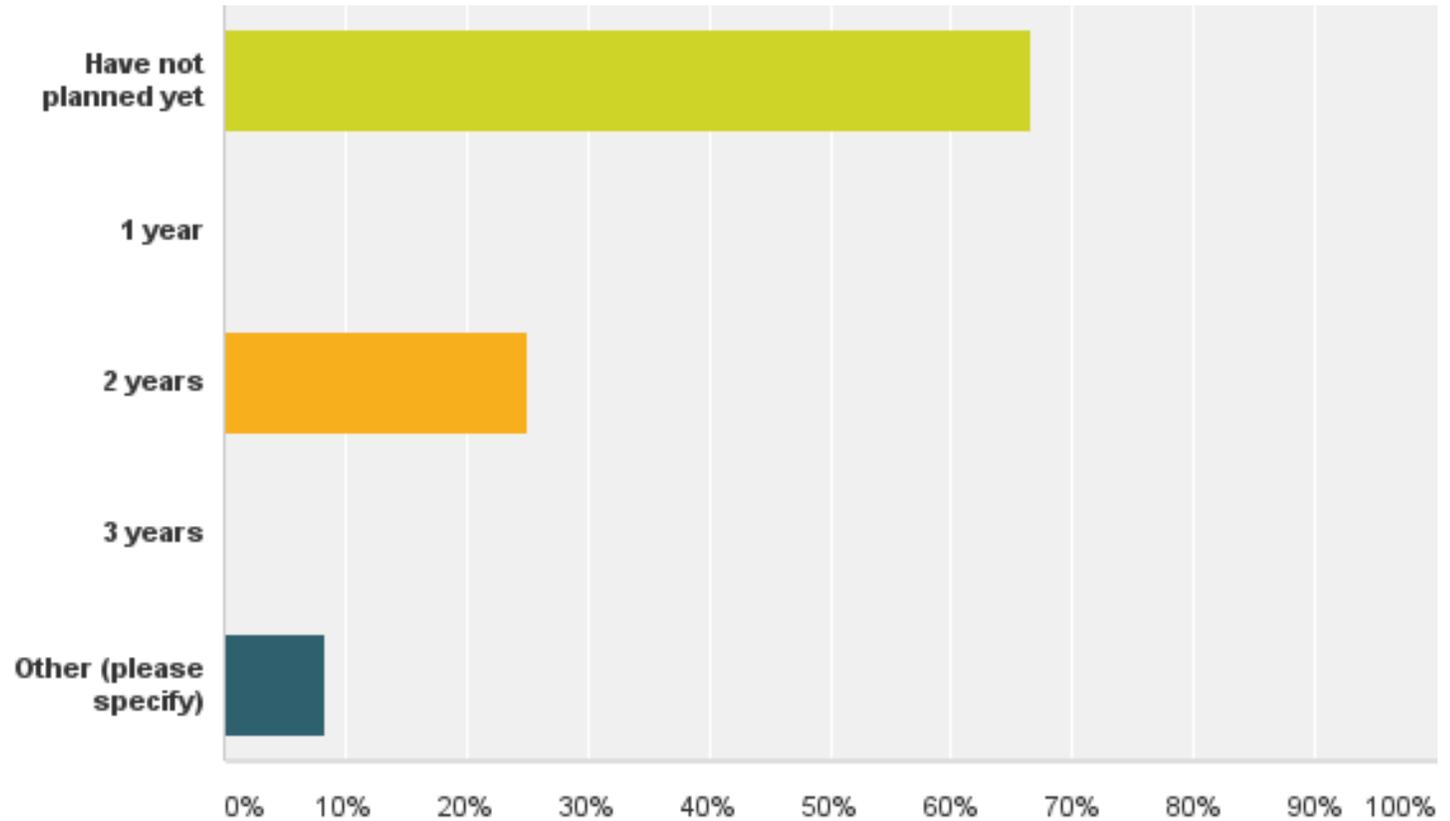
Q9: How soon do you intend to implement Competency Based Learning?

- Answered: 12
- Skipped: 12

Answer Choices	Responses	
2017-2018	8.33%	1
2018-2019	16.67%	2
2019-2020	25.00%	3
2020-2021	8.33%	1
2021-2022	0.00%	0
Not in the immediate future	41.67%	5
Total		12

Q10: How long have you been planning this change?

- Answered: 12
- Skipped: 12



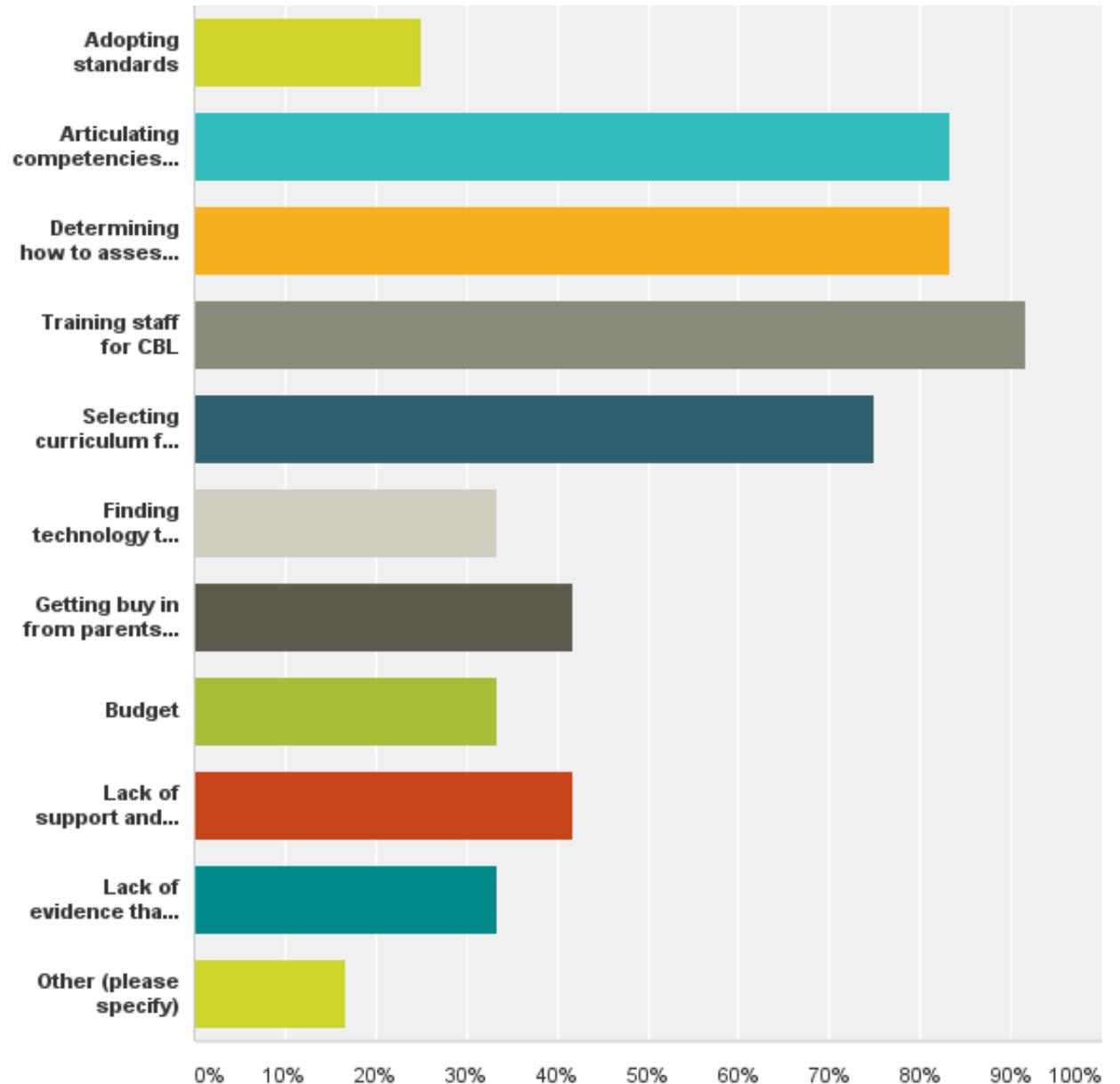
Q10: How long have you been planning this change?

- Answered: 12
- Skipped: 12

Answer Choices	Responses
Have not planned yet	66.67% 8
1 year	0.00% 0
2 years	25.00% 3
3 years	0.00% 0
Other (please specify)	8.33% 1
Total	12

Q11: What the major challenges you see with adopting CBL? (Check any/all that apply)

- Answered: 12
- Skipped: 12



Q11: What the major challenges you see with adopting CBL? (Check any/all that apply)

- Answered: 12
- Skipped: 12

Answer Choices	Responses
Adopting standards	25.00% 3
Articulating competencies and indicators	83.33% 10
Determining how to assess competencies and progress toward competencies	83.33% 10
Training staff for CBL	91.67% 11
Selecting curriculum for CBL	75.00% 9
Finding technology to support CBL	33.33% 4
Getting buy in from parents and community	41.67% 5
Budget	33.33% 4
Lack of support and best practices to learn from	41.67% 5
Lack of evidence that the change creates meaningful improvement in outcomes	33.33% 4
Other (please specify)	16.67% 2
Total Respondents: 12	