

Classroom to Boardroom Solutions to Address New and Emerging AI



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Montana Learning 2025 Cohort

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How have you used AI?

Culture Trumps Strategy

Examples of AI for Administrators

- Caring for the present

Opportunities

A critical skill in the age of artificial intelligence is the ability to write sophisticated **prompts**

A critical skill in the age of artificial intelligence is the ability to do sophisticated **editing**.

Examples of AI for Administrators

- Communication
 - Write Draft

Prompt:

Draft a letter from a Superintendent of Schools in a rural Montana school district to taxpayers asking them to write to their elected state and federal officials to request an increase in funding for their schools.

Provide specific reasons the taxpayers should include in their letters or emails explaining why the increased funding is needed.

ChatGPT 4:

Dear Valued Taxpayers of [Name of School District],

I hope this letter finds you in good health and spirits. As the Superintendent of [Name of School District], my commitment to the education and well-being of our students is unwavering. Today, I reach out to you, the backbone of our community, to discuss a matter of great importance – the funding of our local schools.

In recent years, our district, like many others in rural Montana, has faced significant financial challenges. These challenges threaten the quality of education and resources we can offer our students. To address this, I am urging you to write to our elected state and federal officials, advocating for increased funding for our schools. Your voice is powerful, and here are specific reasons why this increase is critically needed:

ChatGPT 4 (continued):

- 1. Modernizing Educational Facilities:** Our school buildings are aging and require urgent upgrades to provide a safe and conducive learning environment. Funds are needed for essential repairs, modernization of classrooms, and updating technology infrastructure.
- 2. Enhanced Learning Resources:** The need for up-to-date textbooks, learning materials, and technology is crucial in preparing our students for the future. Increased funding will ensure our students have access to the resources they need to succeed in an increasingly digital world.
- 3. Supporting Special Education:** Our commitment to inclusivity means providing necessary resources for students with special needs. Additional funding will allow us to expand special education programs, ensuring all students receive the personalized support they deserve.

ChatGPT 4 (continued):

- 4. Recruitment and Retention of Quality Teachers:** To provide the best education, we must attract and retain highly qualified educators. Competitive salaries and professional development opportunities, funded by increased financial support, are key to this endeavor.
- 5. Expanded Extracurricular Activities:** Extracurricular programs are vital for student development and community engagement. More funding would enable us to offer a wider range of activities, supporting the diverse interests of our students.
- 6. Transportation Needs:** As a rural district, many of our students travel long distances to and from school. Enhanced funding will improve our transportation system, ensuring safe, reliable, and efficient travel for our students.

ChatGPT 4 (continued):

I encourage you to share your personal experiences and insights in your letters or emails. Your firsthand accounts of how these issues impact our community and children will resonate powerfully with our elected officials.

The future of our children and our community depends on the quality of education we provide today. By joining forces and raising our collective voices, we can ensure that our students have access to the exceptional education they deserve.

Thank you for your continued support and dedication to our schools. Together, we can make a difference in the lives of our students and our community.

Sincerely,

[Your Name]

Superintendent, [Name of School District]

Examples of AI for Administrators

- Communication
 - Write Draft
 - Research on Who, What, When

Examples of AI for Administrators

- Communication
- Assist in Teacher Evaluation

Examples of AI for Administrators

- Communication
- Assist in Teacher Evaluation
- Research on Trends, Best Practices and Background Information

Examples of AI for Administrators

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- 1st Cut of Master Schedule

Examples of AI for Administrators

- Communication
- Assist in Teacher Evaluation
- Research on Trends, Best Practices and Background Information
- Sounding Board for Ideas
- 1st Cut of Master Schedule
- In near future

AI can help give your teachers and staff their nights and weekends back

- Lesson plans
- Describe a lesson and ask for way to make it more engaging
- Assessments
- Curriculum
- Communications with parents
- IEPs

Please select a specific 9th-grade math and a 9th-grade science Montana Content Standards that requires students to use critical thinking skills, work collaboratively, and create a project around it.

For a 9th-grade math and science project in Montana that emphasizes critical thinking, collaboration, and project creation, I'll choose appropriate standards from the Montana Content Standards. Let's start with a math standard:

Math Standard:

•**Standard:** A-REI.B.3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. For instance, students could work on a project where they must design a simple economic model (like a budget for a school event or a small business plan) using linear equations. They'll need to use critical thinking to set up and solve the equations, and collaboration to work in groups and make decisions about their model.

Science Standard:

•**Standard:** HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. This standard lends itself well to a project where students could collaborate to create a model or prototype of a technology that reduces environmental impact, such as a water filtration system, energy-efficient device, or a sustainable agricultural practice. They would use critical thinking to evaluate the effectiveness of their solution and refine it based on feedback and research.

Project Idea:

1.Math Component: Students are tasked to create a budget for a hypothetical environmentally friendly product or initiative. This will involve using linear equations to calculate costs, revenues, and potential profits or savings. They must consider various factors such as material costs, labor, marketing, and environmental impact costs.

2.Science Component: The same groups then use their budget to design a prototype or detailed plan for their environmentally friendly product or initiative. This could be a physical model, a detailed design plan, or a digital presentation, depending on resources available. The project should demonstrate how their solution reduces human impact on natural systems.

3.Integration and Presentation: Finally, students present their project, explaining both the mathematical and scientific aspects. They should demonstrate how their budgeting informed their design choices and how their project is a viable solution to a real-world environmental problem.

This integrated project allows students to apply math and science concepts in a real-world context, encourages collaboration, and requires them to engage in critical thinking throughout the process.

T You
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Can you write up a rubric and quick assessment on this project so I can be sure the students understand the standards included in it?

Quick Assessment

1. **Math Assessment:** Provide a simple scenario requiring the construction of a linear equation (e.g., calculating costs for materials based on quantity and price). Ask students to formulate the equation and solve it.
2. **Science Assessment:** Pose a question about the environmental impact of a common product or activity. Ask students to propose a technological solution and explain how it reduces the impact.
3. **Reflection:** Ask students to write a brief reflection on how they integrated math and science concepts in their project and what they learned about teamwork and problem-solving.

This rubric and assessment provide a structured way to evaluate the students' grasp of the standards and the skills they've developed during the project.



Certainly! Here's a rubric and a quick assessment for the integrated math and science project based on the chosen Montana Content Standards. The rubric will help in evaluating the students' performance, and the quick assessment will check their understanding of the concepts involved.

Project Rubric

1. Understanding and Application of Mathematical Concepts (A-REI.B.3)

- **Exemplary (4 points):** Demonstrates a thorough understanding of linear equations in creating a detailed, accurate budget. Uses coefficients and variables appropriately.
- **Proficient (3 points):** Demonstrates a good understanding of linear equations. The budget is accurate with minor errors.
- **Basic (2 points):** Demonstrates a basic understanding with some misconceptions. The budget has several errors.
- **Needs Improvement (1 point):** Struggles to apply linear equations correctly. The budget is inaccurate or incomplete.

2. Understanding and Application of Scientific Concepts (HS-ESS3-4)

- **Exemplary (4 points):** Demonstrates a thorough understanding of environmental impacts and effectively integrates this knowledge into the design of a viable technological solution.
- **Proficient (3 points):** Demonstrates a good understanding of environmental impacts with a well-thought-out technological solution.
- **Basic (2 points):** Demonstrates basic understanding with some misconceptions; the technological solution is somewhat effective but lacks detail.
- **Needs Improvement (1 point):** Limited understanding of environmental impacts; the technological solution is ineffective or poorly conceptualized.

3. Collaboration and Teamwork

- **Exemplary (4 points):** Excellent teamwork, with all members contributing equally and effectively.
- **Proficient (3 points):** Good teamwork with effective collaboration.
- **Basic (2 points):** Some teamwork, but not all members are effectively contributing.
- **Needs Improvement (1 point):** Poor teamwork and collaboration.

4. Critical Thinking and Problem Solving

- **Exemplary (4 points):** Demonstrates exceptional critical thinking in both math and science components, with innovative and effective problem-solving strategies.
- **Proficient (3 points):** Good critical thinking and problem-solving skills shown.
- **Basic (2 points):** Basic level of critical thinking; problem-solving lacks depth.
- **Needs Improvement (1 point):** Limited evidence of critical thinking or problem-solving.

5. Presentation and Communication

- **Exemplary (4 points):** Clear, coherent, and engaging presentation. Effectively communicates the project's math and science aspects.
- **Proficient (3 points):** Good presentation skills. Communicates most aspects of the project well.
- **Basic (2 points):** Presentation is understandable but lacks clarity or engagement.
- **Needs Improvement (1 point):** Poor presentation. Struggles to communicate the project effectively.

Challenges

ChatGPT

ChatGPT can write:

- Poetry
- Essays
- Writing assignments
- Complete math problems

AI test classifier

GPTZero

Have ChatGPT prepare test questions to evaluate students' knowledge of what they wrote.

Use ChatGPT for a first draft and then direct students to improve upon it.

“Where will I ever use this?”

“Why do I need to learn this?”

Workplace, Home, and Society



Examples

- Caring for the present
- Preparing for the near future

AI is transforming the world of work
and the skills today's workers need.

Non-Generative AI vs. Generative AI

Non-Generative AI can find and analyze enormous amount of information at lighting speed but does not create new information.

What is Generative AI?

- Identify patterns across enormous sets of data and generate new content... at lightening speed.

ChatGPT (OpenAI)
to
BARD (Google)
to
LLaMa (Meta)
to
ClaudeAI
to
Pi your personal AI
to
Gamma
to
Microsoft Bing

The rate of change we have seen in the last year pales in comparison to what we are about to experience.

The past is a prelude to the future

Third Wave of School Reform

SPN

Successful
Practices
Network



NATIONAL
DROPOUT
PREVENTION
CENTER

Third Wave of School Reform

- The Nation at Risk (1983)

Third Wave of School Reform

- The Nation at Risk (1983)

- No Child Left Behind

- Standards Movement (2002)

Results of the Standards Movement

- Deep focus on college ready

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- Deep focus on college ready
- Increased accountability through state testing

Results of the Standards Movement

- Deep focus on college ready
- Increased accountability through state testing
- Double-down on
 - Basic skills
 - Content

Third Wave of School Reform

- The Nation at Risk (1983)

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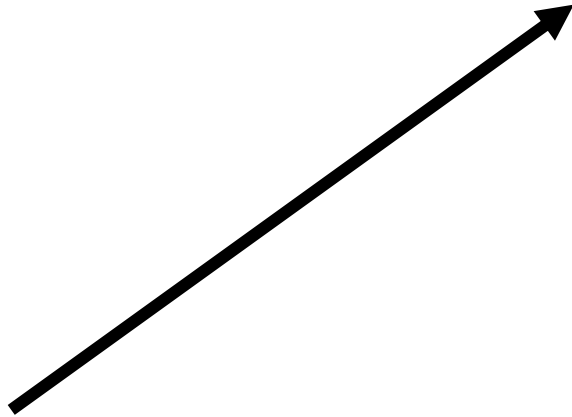
- Standards Movement (2002)

- The Third Wave is Being Pushed by Workforce Related Issues

Where are you on this Journey and where do you want to be in 2 years?

Future Focused

Success



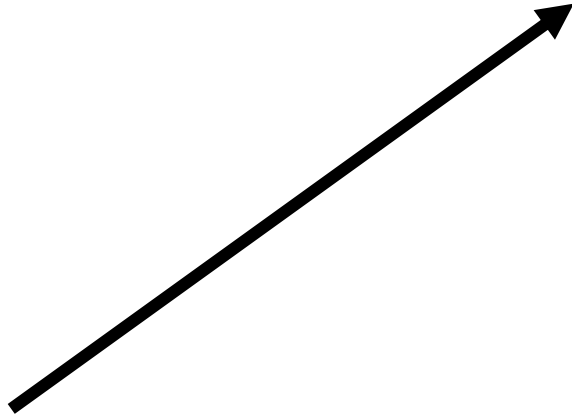
What people think it
looks like

It is not Linear

Future Focused

Success

Success



What people think it
looks like

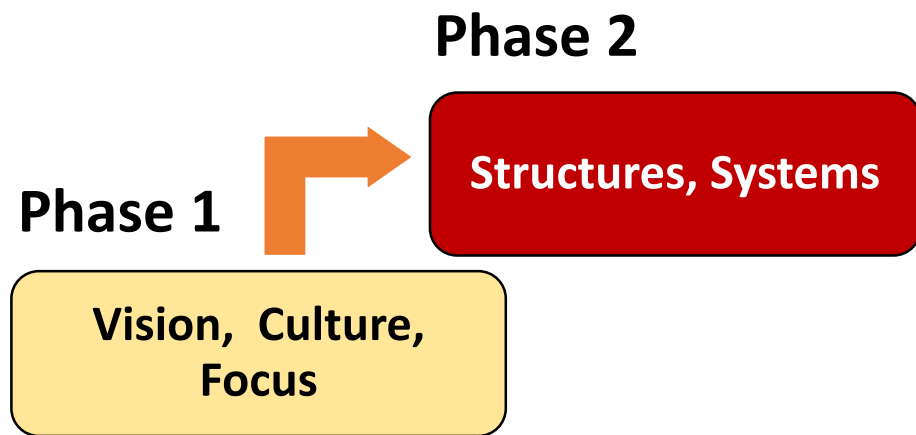
This is what it really look like...
You must navigate through the process

HOW to Transform a School System

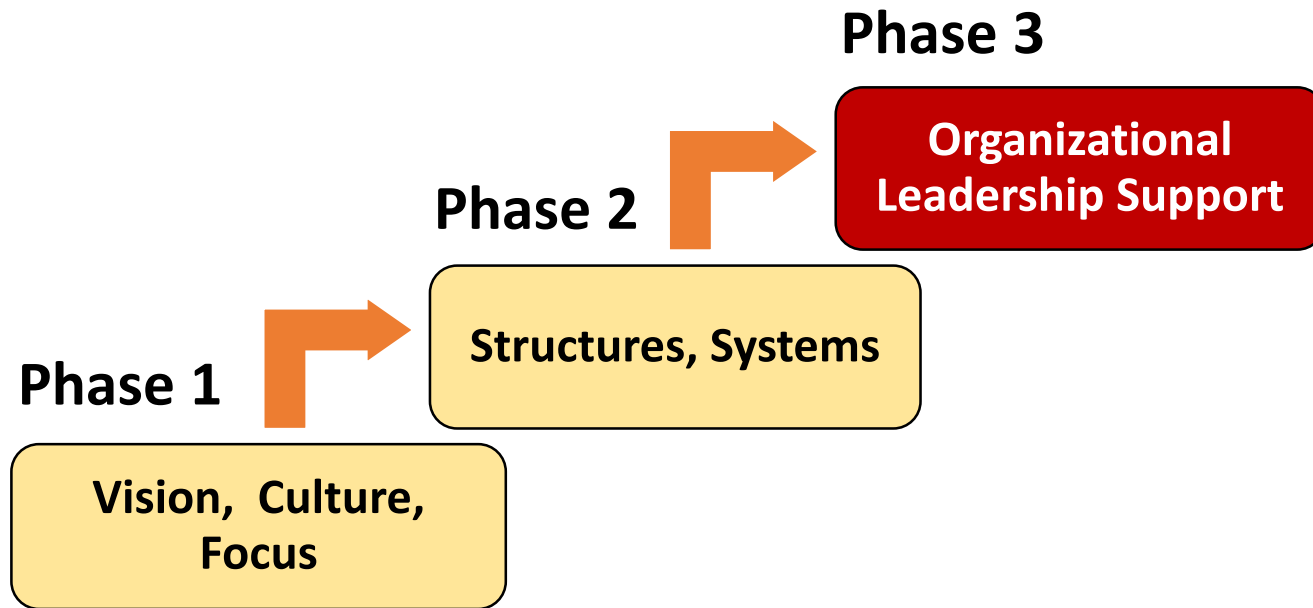
Phase 1

**Vision, Culture,
Focus**

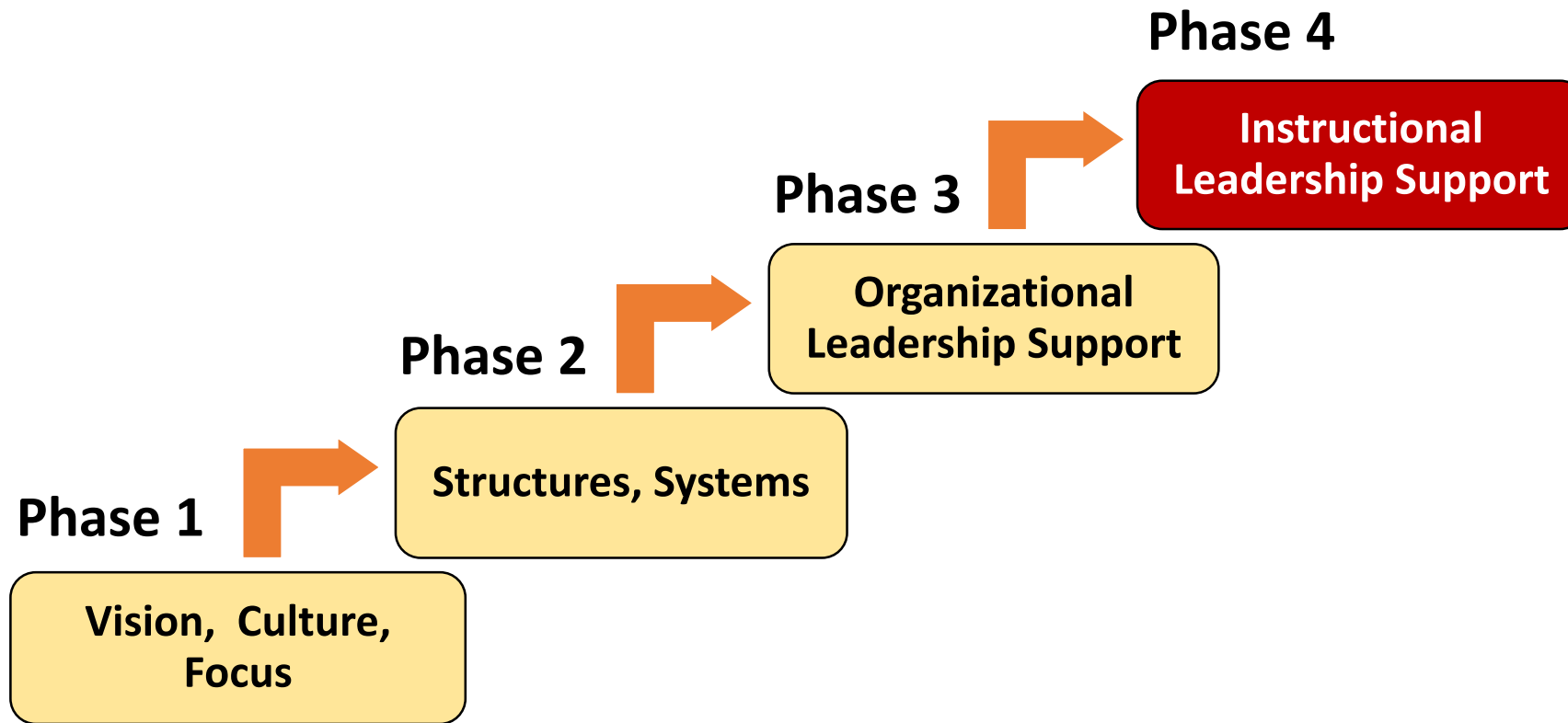
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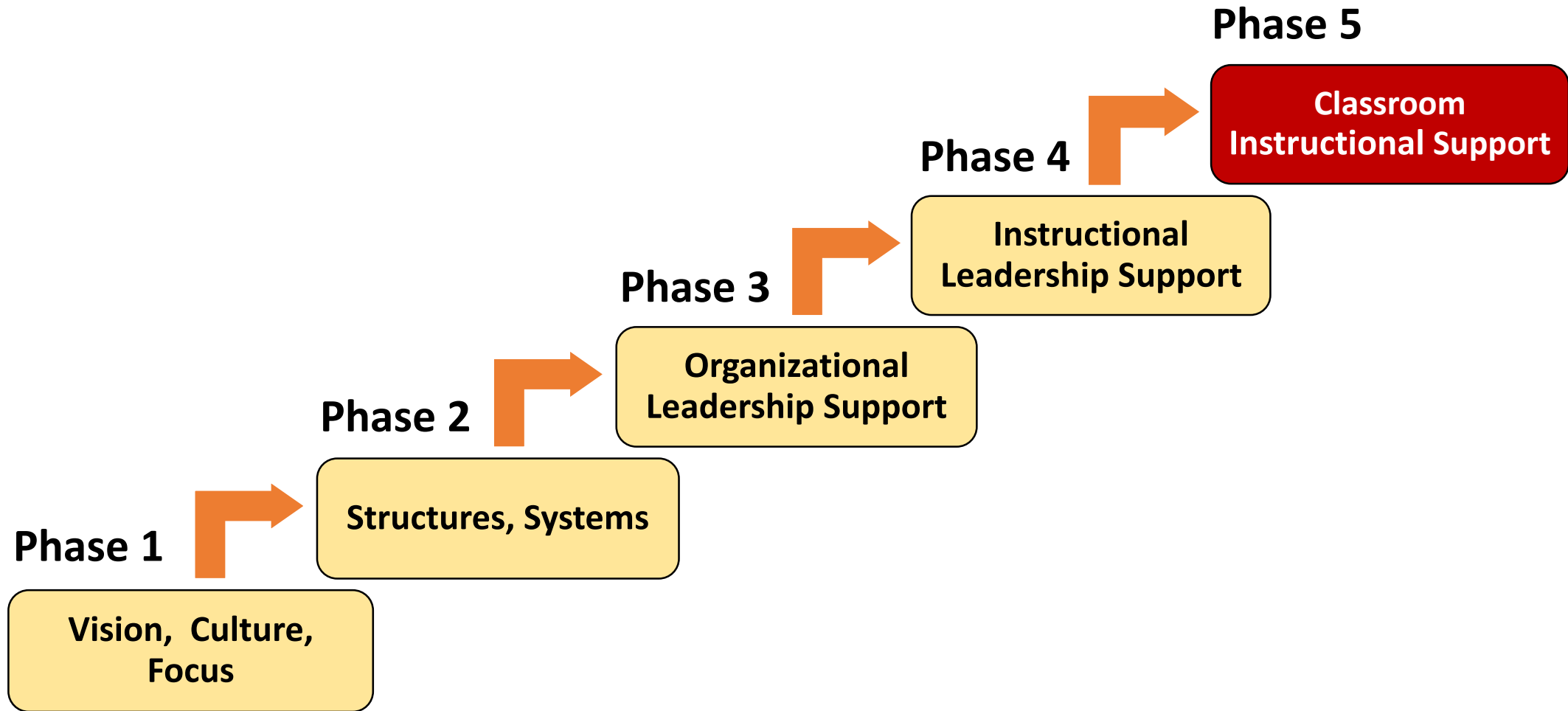
HOW to Transform a School System



HOW to Transform a School System



HOW to Transform a School System



HOW to Transform a School System

Phase 1

**Vision, Culture,
Focus**

Recent Challenges

- Chronic Absenteeism
- Poor Work Ethic
- Mental Health Challenges
- Employee Pipeline
- Post-COVID Loss

Transformation Requires ...

56 foundational skills that will help citizens thrive in the future of work.

56 DELTAS across 13 skill groups and four categories

Cognitive		Interpersonal	
Critical thinking <ul style="list-style-type: none"> ● Structured problem solving ● Logical reasoning ● Understanding biases ● Seeking relevant information 	Planning and ways of working <ul style="list-style-type: none"> ● Work-plan development ● Time management and prioritization ● Agile thinking 	Mobilizing systems <ul style="list-style-type: none"> ● Role modeling ● Win-win negotiations ● Crafting an inspiring vision ● Organizational awareness 	Developing relationships <ul style="list-style-type: none"> ● Empathy ● Inspiring trust ● Humility ● Sociability
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Self-leadership		Digital	
Self-awareness and self-management <ul style="list-style-type: none"> ● Understanding own emotions and triggers ● Self-control and regulation ● Understanding own strengths ● Integrity ● Self-motivation and wellness ● Self-confidence 		Digital fluency and citizenship <ul style="list-style-type: none"> ● Digital literacy ● Digital learning ● Digital collaboration ● Digital ethics 	
Entrepreneurship <ul style="list-style-type: none"> ● Courage and risk-taking ● Driving change and innovation ● Energy, passion, and optimism ● Breaking orthodoxies 		Software use and development <ul style="list-style-type: none"> ● Programming literacy ● Data analysis and statistics ● Computational and algorithmic thinking 	
Goals achievement <ul style="list-style-type: none"> ● Ownership and decisiveness ● Achievement orientation ● Grit and persistence ● Coping with uncertainty ● Self-development 		Understanding digital systems <ul style="list-style-type: none"> ● Data literacy ● Smart systems ● Cybersecurity literacy ● Tech translation and enablement 	

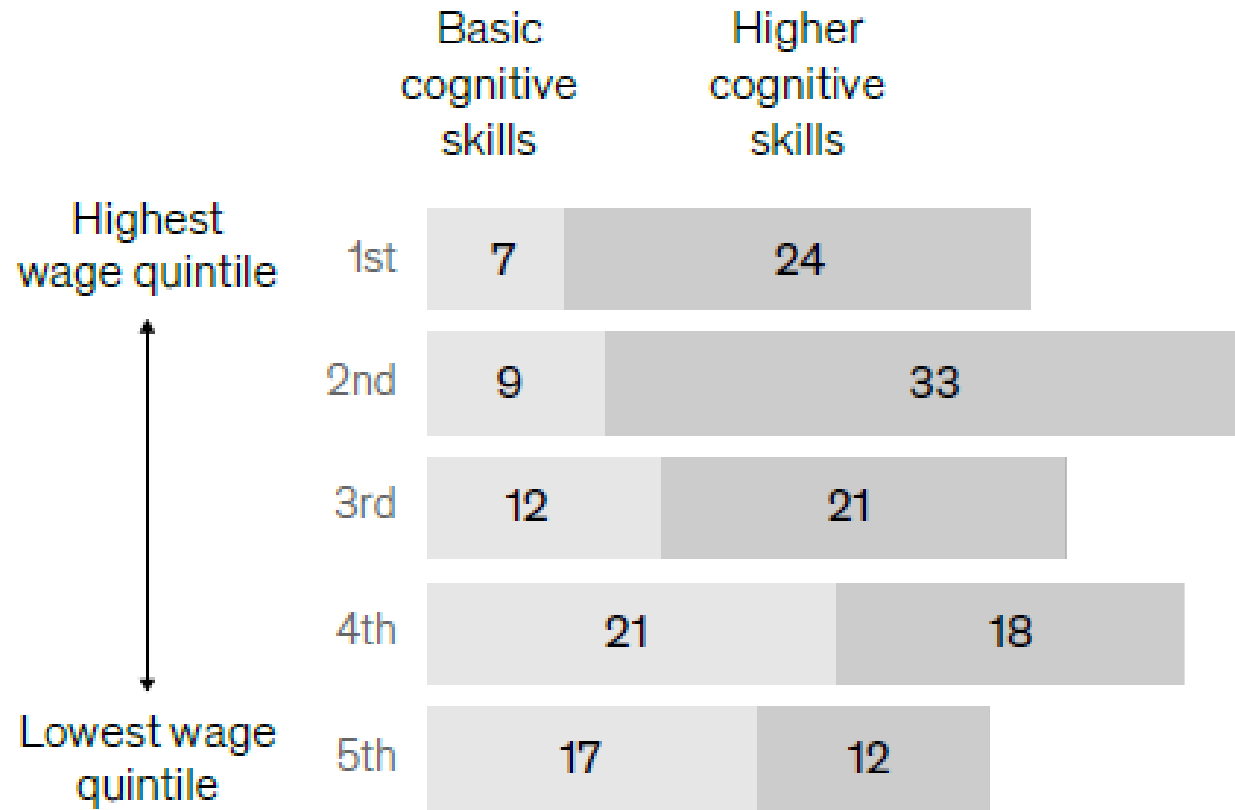
SOURCE: Marco Dondi, Julia Klier, Frederic Panier, and Jorg Schubert; *Defining the skills citizens will need in the future world of work*; McKinsey & Company, June 2021

Some work and therefore skills will
of course be specialized

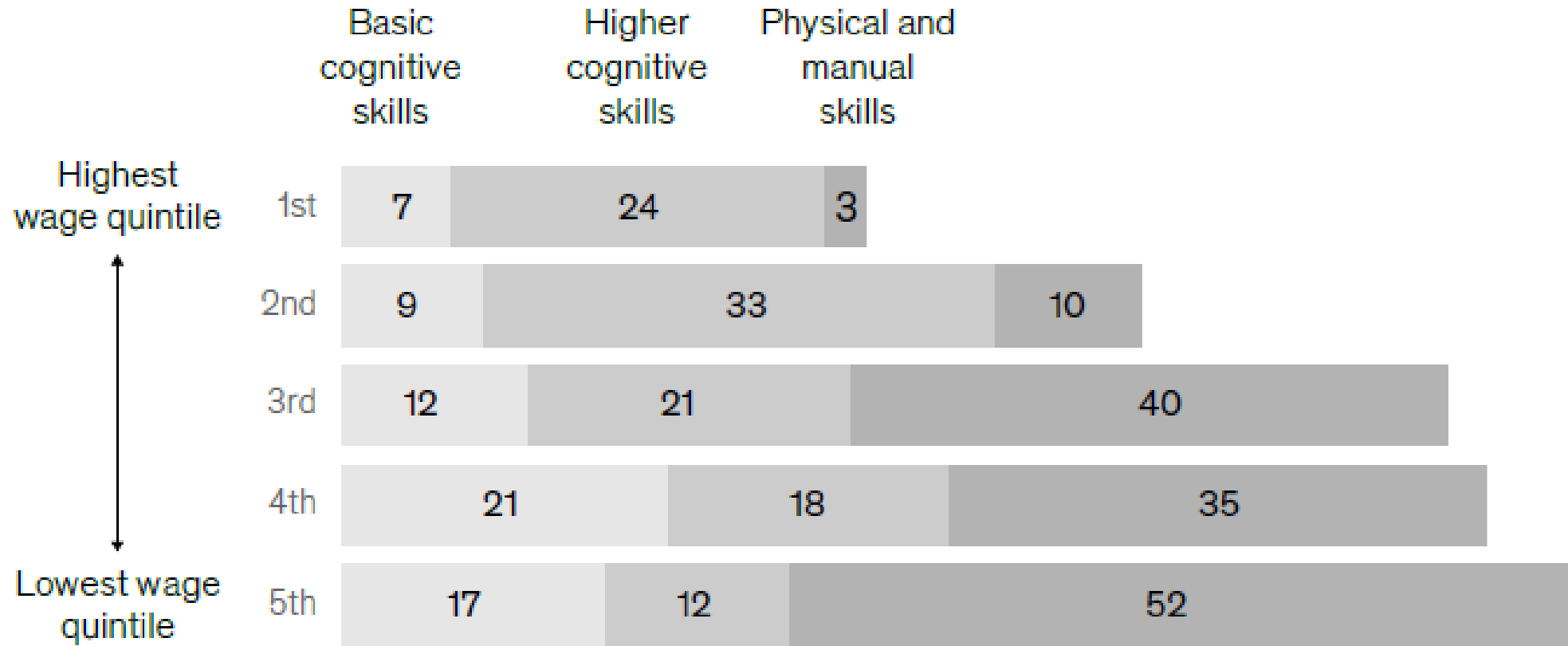
Percent of Time Spent Using Various Skills



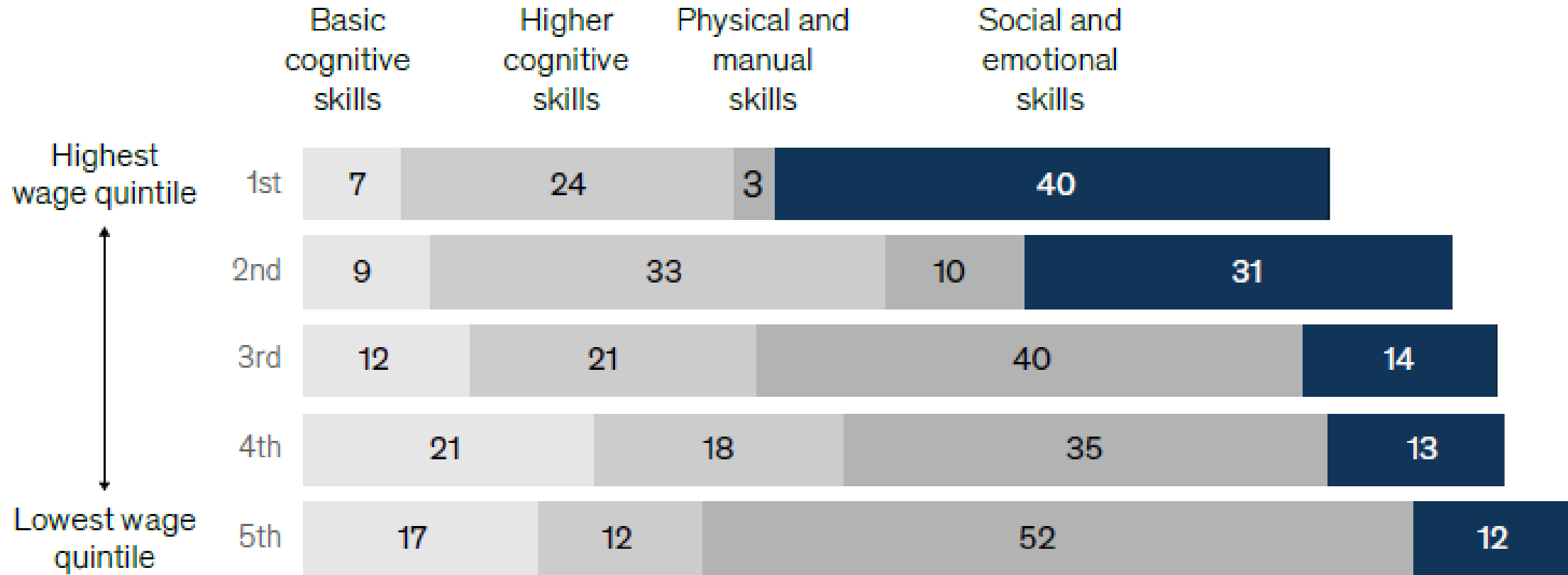
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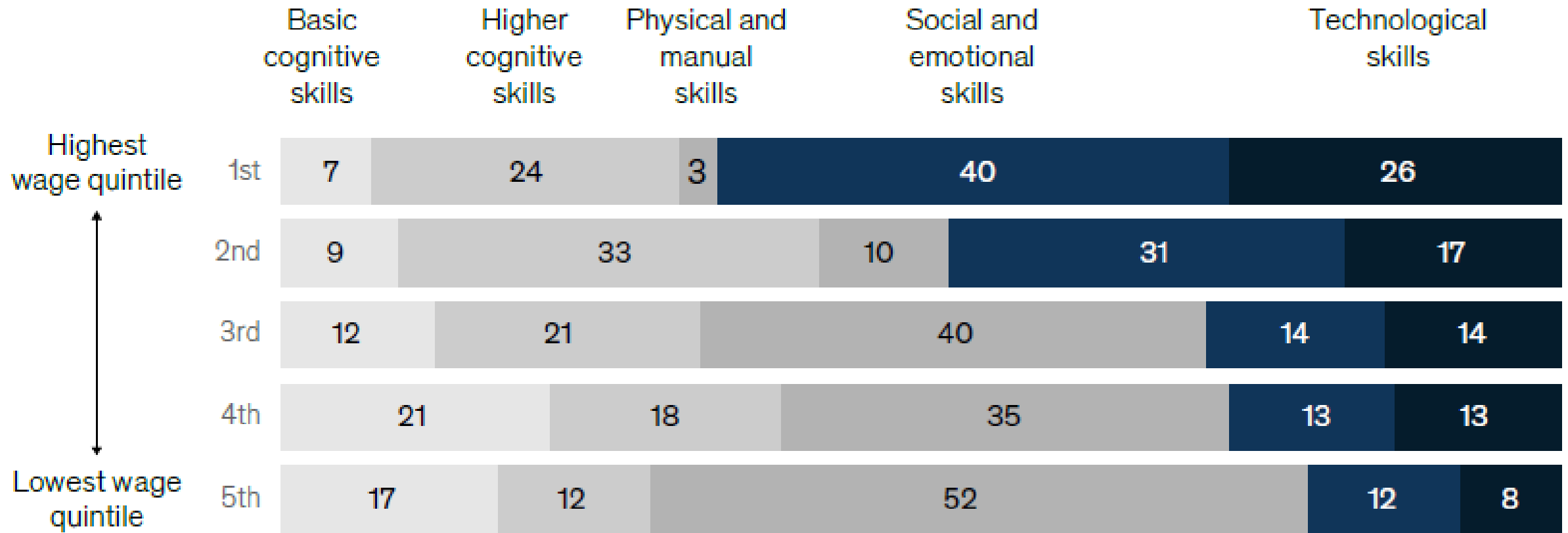
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Percent of Time Spent Using Various Skills



Shift from Content

Shift from Content to **Skills**.

Content moves from
Being the objective
to
Being the enabling objective

Skills become the objective

Workforce Trends

“Employers will need to hire for skills and competencies rather than credentials”

Impact of A.I. on Schools

- Block Use
- Personal Assistant
- Student Cheating

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- Block Use
- Personal Assistant
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RECOVERY

Impact of A.I. on Business

- Efficiency
- Effectiveness
- Cost Savings
- Staffing Patterns

Impact of A.I. on Business

- Efficiency
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TRANSFORMATION

Recovery leads us back to
doubling down on **Content**

Recovery leads us back to
doubling down on **Content**

Transformation requires us to
focus on **Skills**

AI will:

- Replace some jobs

AI will:

- Replace some jobs
- Fundamentally change many jobs

Jobs at Risk by AI

- Computer programmers
- Coders
- Software developers and engineers
- Content creators
- Technical writers
- Journalist
- Advertisers
- Para legals

Jobs at Risk by AI

- Court reporters
- Legal secretaries
- Medical secretaries
- Data entry clerks
- Medical assistants
- Medical records personnel
- Market researchers
- Financial analysts

Jobs at Risk by AI

- Data managers
- Traders
- Insurance agents
- Graphic designers
- Accountants
- Bookkeepers
- Customer service agents
- Web designers

Co-Counsel

ChatGPT applications in legal profession

➤ Conduct legal research

ChatGPT applications in legal profession

- Conduct legal research
- Summarize court opinions and filings

ChatGPT applications in legal profession

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- Summarize court opinions and filings
- Assemble, analyze and create redline version of contracts

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- All communications

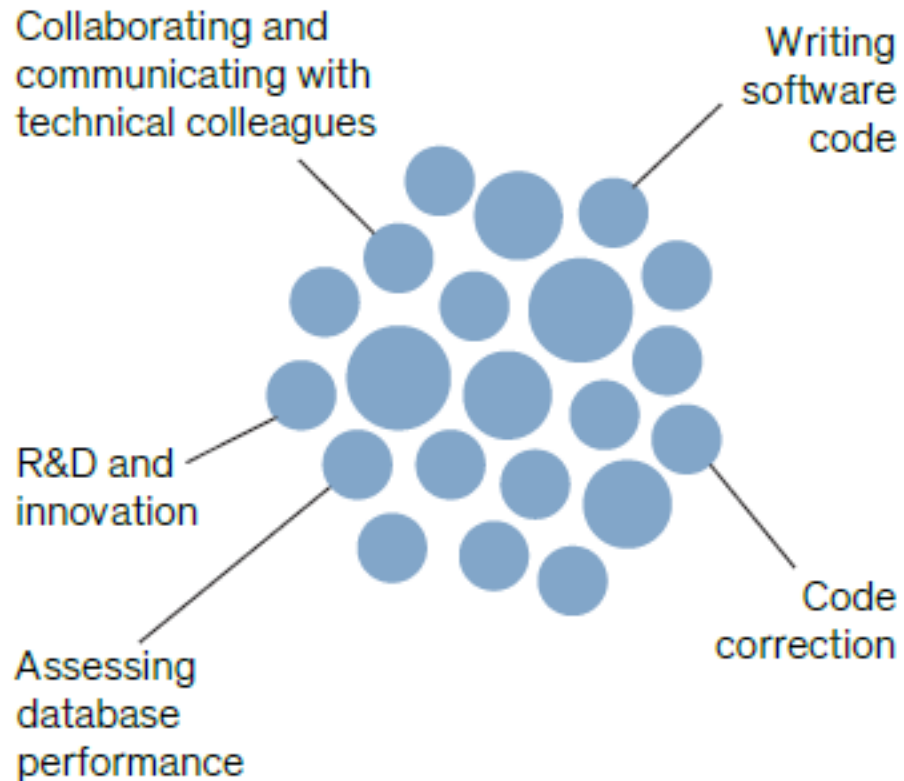
What ATMs did to banking,
self-service checkout will
increasingly do to retail.

Walmart, Amazon and Target use AI to sort incoming merchandise at the warehouse, select merchandise orders and then track the orders until delivery.

Software Developer's Job

Software Developer's Job

Mix of Activities a year ago



New Mix of Activities

Some tasks expand, such as communicating and collaborating with colleagues across the organization

Some tasks are automated, such as writing initial drafts of code

R&D and innovation

Assessing database performance

Code correction

Some new tasks are created, such as establishing and aligning data privacy and security protocols and developing for edge computing that enables real-time decision making.

AI will:

- Replace some jobs
- Fundamentally change many jobs
- Create new jobs

Most workers will not be replaced
by AI.

Most workers will not be replaced
by AI.

They will be replaced by a person
with skills that AI does not
possess.

Shift in U.S. Workforce by 2030

Occupational Category	Net Change in Labor Demand, 2022-30
Health professionals	+ 30%
Health aides	+ 30%
Care Workers	+30%
STEM professionals	+ 23%
Construction / Builders	+12%
Customer Service	- 13%
Sales	- 13%
Office Support	-18%

Shift in U.S. Workforce by 2030

Two lowest wage quintiles

Lose 1.1 million jobs

Highest wage quintile

Grow by 3.8 million jobs

Shift in U.S. Workforce by 2030

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Worker will need to:

- Develop skills not easily replicated by AI
- Be able to work in an AI environment
- Be resilient and adaptable

Transformation Requires ...

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56 DELTAS across 13 skill groups and four categories

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SOURCE: Marco Dondi, Julia Klier, Frederic Panier, and Jorg Schubert; *Defining the skills citizens will need in the future world of work*; McKinsey & Company, June 2021

McKinsey and Company Research



4 Categories

- Cognitive

- Interpersonal

- Self-leadership

- Digital

Transformation Requires ...

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McKinsey and Company Research

- 4 Categories
 - Cognitive
 - Interpersonal
 - Self-leadership
 - Digital
- 13 Skill groups

Cognitive skill groups

- Critical thinking
- Planning and ways of working
- Communication
- Mental flexibility

Interpersonal skill groups

- Mobilizing systems
- Developing relationships
- Teamwork effectiveness

Self-leadership skill groups

- Self-awareness and self-management
- Entrepreneurship
- Goals achievement

Digital skill groups

- Digital fluency and citizenship
- Software use and development
- Understanding digital systems

Transformation Requires ...

<h2>Cognitive</h2>		<h2>Interpersonal</h2>	
Critical thinking <ul style="list-style-type: none"> ● Structured problem solving ● Logical reasoning ● Understanding biases ● Seeking relevant information 	Planning and ways of working <ul style="list-style-type: none"> ● Work-plan development ● Time management and prioritization ● Agile thinking 	Mobilizing systems <ul style="list-style-type: none"> ● Role modeling ● Win-win negotiations ● Crafting an inspiring vision ● Organizational awareness 	Developing relationships <ul style="list-style-type: none"> ● Empathy ● Inspiring trust ● Humility ● Sociability
Communication <ul style="list-style-type: none"> ● Storytelling and public speaking ● Asking the right questions ● Synthesizing messages ● Active listening 	Mental flexibility <ul style="list-style-type: none"> ● Creativity and imagination ● Translating knowledge to different contexts ● Adopting a different perspective ● Adaptability ● Ability to learn 	Teamwork effectiveness <ul style="list-style-type: none"> ● Fostering inclusiveness ● Motivating different personalities ● Resolving conflicts ● Collaboration ● Coaching ● Empowering 	
<h2>Self-leadership</h2>		<h2>Digital</h2>	
Self-awareness and self-management <ul style="list-style-type: none"> ● Understanding own emotions and triggers ● Self-control and regulation ● Understanding own strengths ● Integrity ● Self-motivation and wellness ● Self-confidence 		Digital fluency and citizenship <ul style="list-style-type: none"> ● Digital literacy ● Digital learning ● Digital collaboration ● Digital ethics 	
Entrepreneurship <ul style="list-style-type: none"> ● Courage and risk-taking ● Driving change and innovation ● Energy, passion, and optimism ● Breaking orthodoxies 		Software use and development <ul style="list-style-type: none"> ● Programming literacy ● Data analysis and statistics ● Computational and algorithmic thinking 	
Goals achievement <ul style="list-style-type: none"> ● Ownership and decisiveness ● Achievement orientation ● Grit and persistence ● Coping with uncertainty ● Self-development 		Understanding digital systems <ul style="list-style-type: none"> ● Data literacy ● Smart systems ● Cybersecurity literacy ● Tech translation and enablement 	

McKinsey and Company Research

- 4 Categories
 - Cognitive
 - Interpersonal
 - Self-leadership
 - Digital
- 13 Skill groups
- 56 Skills

Cognitive skill groups

- Critical thinking
- Planning and ways of working
- Communication
- Mental flexibility

Transformation Requires ...

Cognitive	
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Critical Thinking

- Logical reasoning
- Seeking relevant information
- Structured problem solving
- Understanding biases

Critical Thinking

- Logical reasoning
- Seeking relevant information
- Structured problem solving
- Understanding biases

Logical Reasoning

➤ Definition

The ability to draw logical conclusions base on facts, statements, or arguments and to identify the strengths and weaknesses of those arguments.

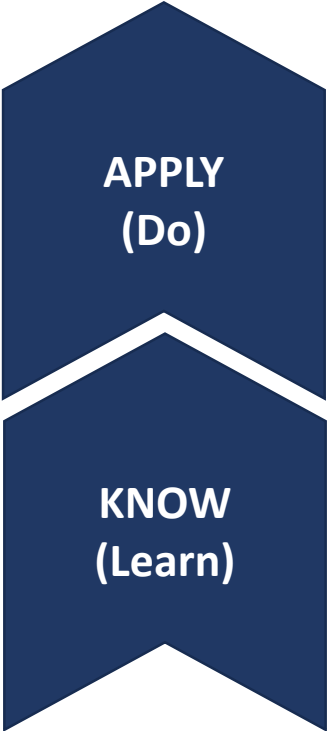
➤ Desired proficiency level

Individuals are able to draw sound conclusions from facts and assess the strength of other' arguments

Future Focused Instructional Design Process



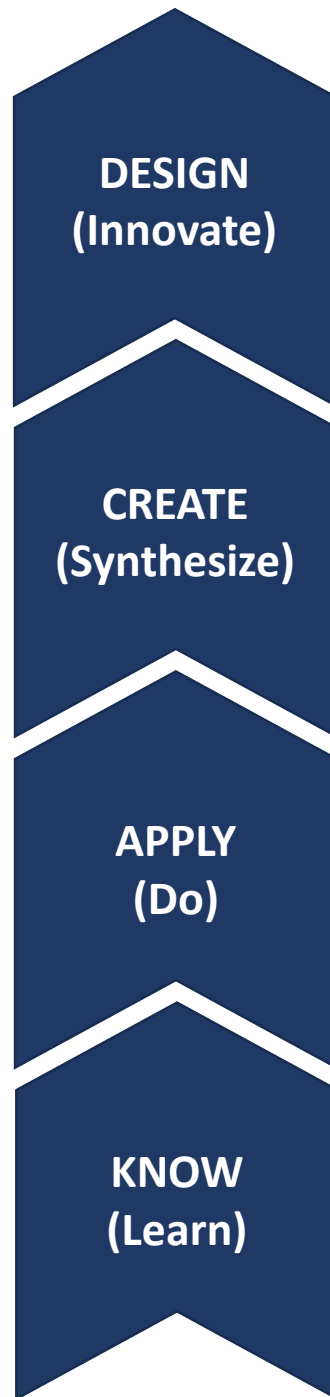
Future Focused Instructional Design Process



Future Focused Instructional Design Process



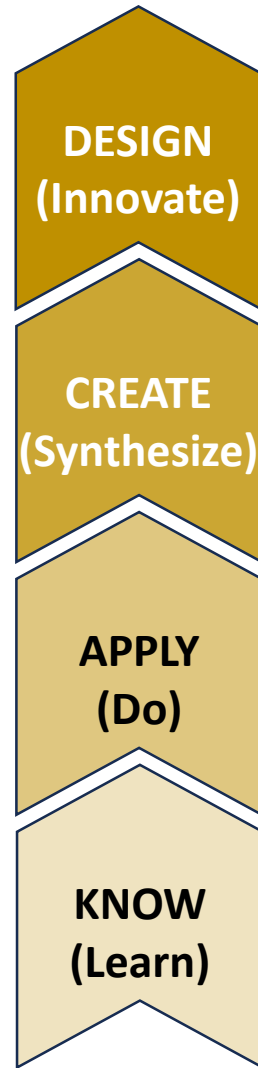
Future Focused Instructional Design Process



Future Focused Instructional Design Process



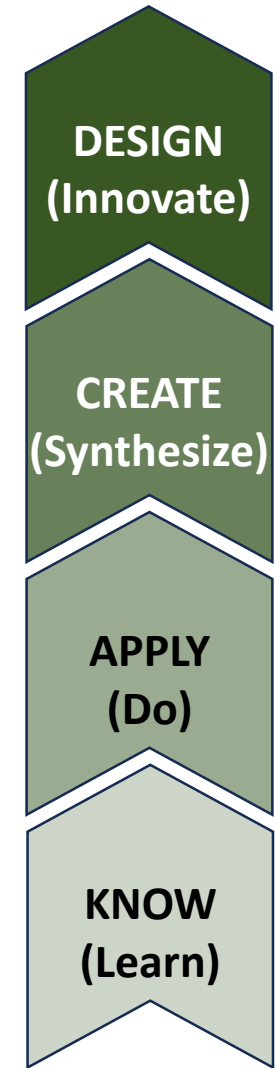
**COGNITIVE
& ACADEMIC**



**INTER-
PERSONAL**



**SELF-
LEADERSHIP**



**DIGITAL &
TECHNOLOGICAL**

Future Focused Instructional Design Process

Future Focused
For a school to be future focused, the indicators and skills required for proficiency must continue to be relevant for the future. They must be aimed at preparing students to be successful in their lives beyond school. The school/ district has adopted a practice of annually reviewing and revising their curriculum and assessments to ensure the skills of the future are included, and teachers are trained to provide appropriate instruction in those practices.

Proficient
Evidence of a particular indicator occur consistently at the school and are systematically and intentionally cultivated. Instances of a particular indicator in action demonstrate rigor in instruction and in student mastery. Teachers and students are aware of the indicator and implement with fidelity. It is part of the school culture.

Developing
Instances of a particular indicator are occurring at the school although not consistently. Evidence of the indicator goes beyond isolated occurrences and does appear in multiple classes by different teachers. It is the result of intentional school practices.

Beginning
There is limited evidence of a particular indicator in practice. It does not yet appear to exist at the school in an intentionally cultivated way. Isolated examples of the indicator appear to happen in spite of, rather than as a result of, intentional school practices.

**DESIGN
(Innovate)**

**CREATE
(Synthesize)**

**APPLY
(Do)**

**KNOW
(Learn)**

Domain:

Digital & Technological

Skill Group:

Digital fluency and citizenship

Element:

Digital collaboration

Definition:

The ability to collaborate effectively through digital channels, including email, videoconference, file-sharing platforms, and other messaging applications

Proficiency level:

Individuals use various digital channels to work with colleagues and are capable of picking the most suitable ones.

Future Focused Instructional Design Process

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Cognitive

Critical thinking

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- Logical reasoning
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Planning and ways of working

- Work-plan development
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Communication

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Mental flexibility

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Interpersonal

Mobilizing systems

- Role modeling
- Win-win negotiations
- Crafting an inspiring vision
- Organizational awareness

Developing relationships

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- Inspiring trust
- Humility
- Sociability

Teamwork effectiveness

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Digital

Digital fluency and citizenship

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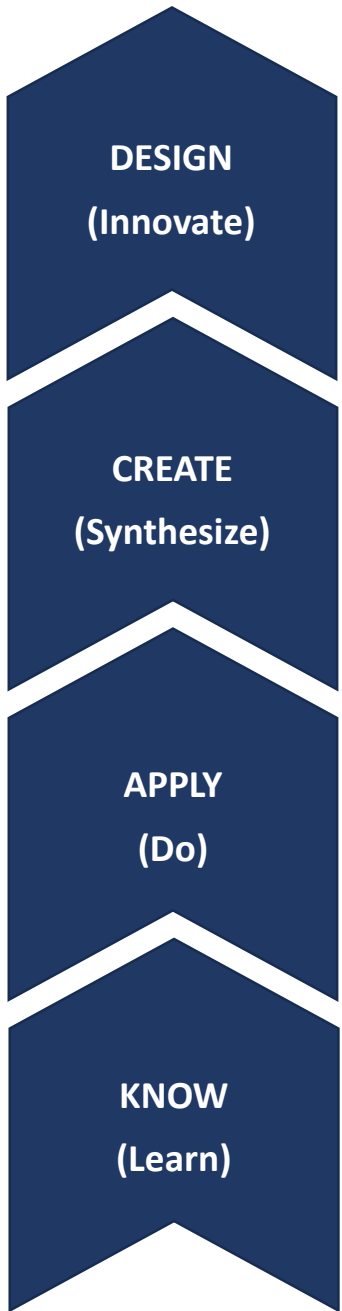
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56 DELTAs (Core Skills)

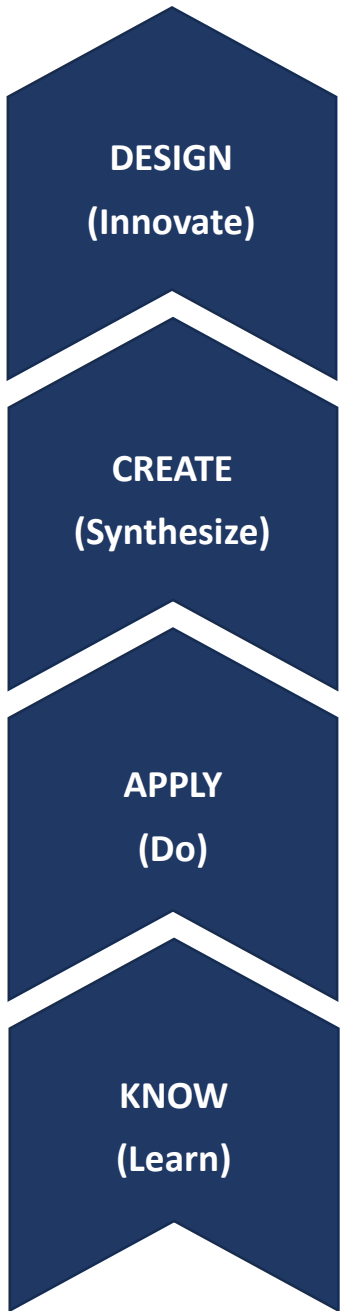
13 Skill Groups

4 Categories



Definition

**Desired
Proficiency Level**

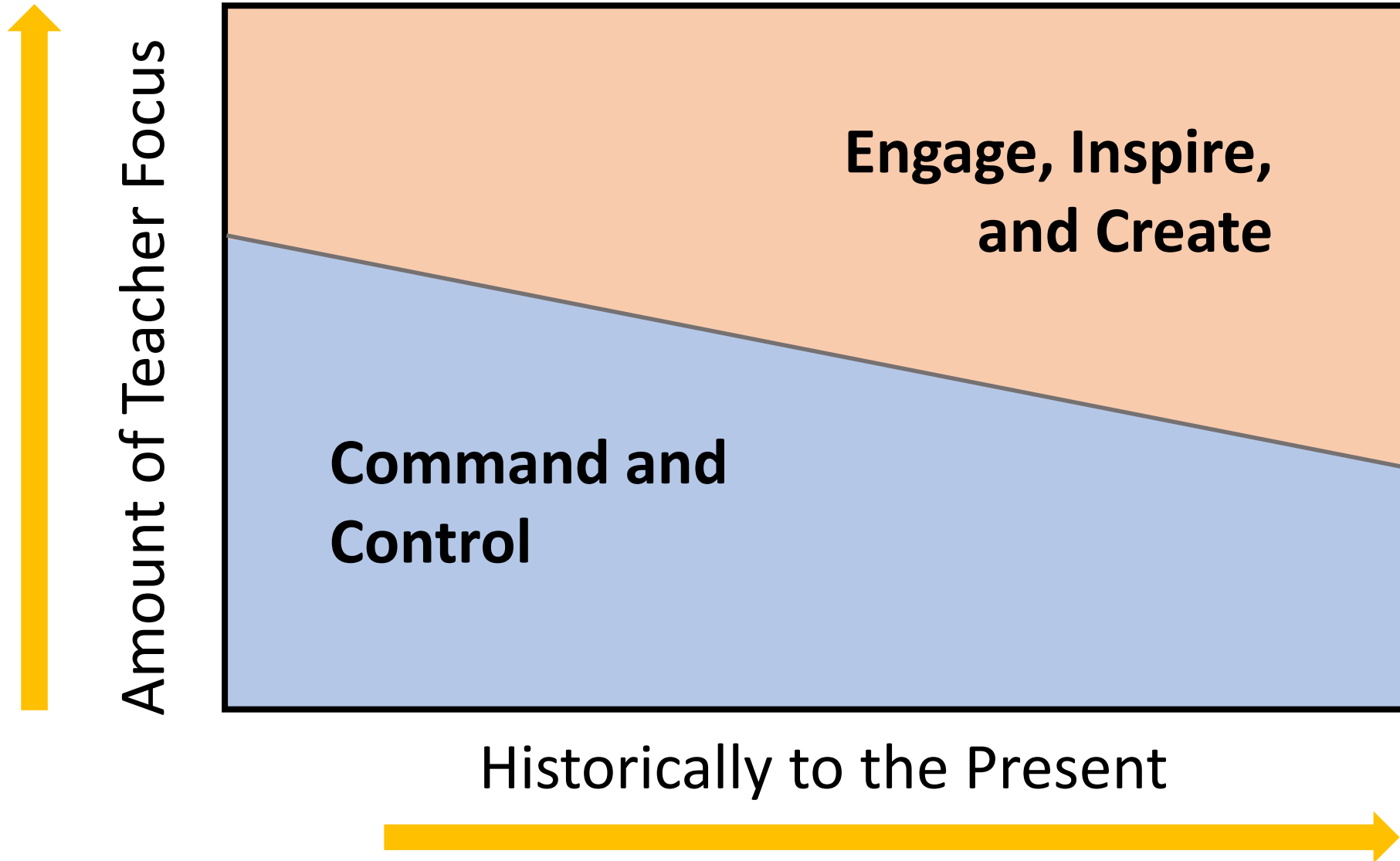


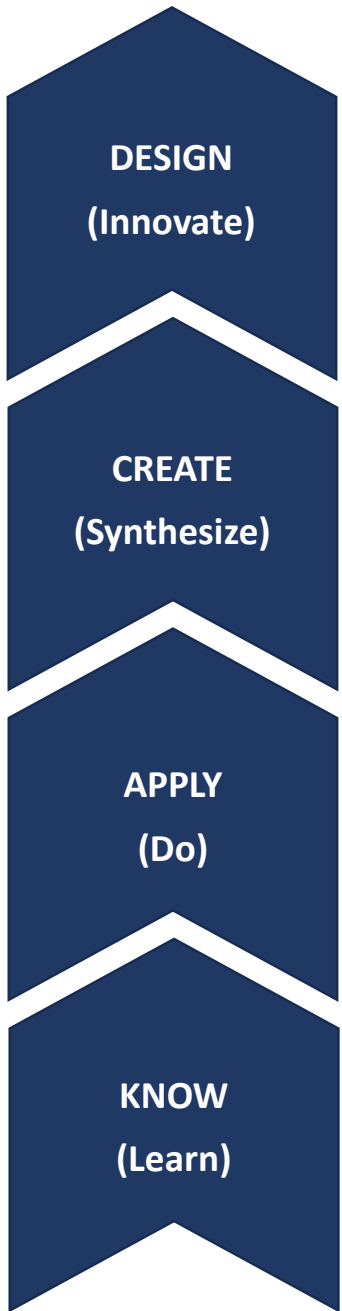
Definition

**Desired
Proficiency Level**

**Instructional
Practices tied to
Curriculum and
13 Skill Groups**

A Shifting Environment





Definition

**Desired
Proficiency Level**

**Instructional
Practices tied to
Curriculum and
13 Skill Groups**

**Assessments
tied to
13 Skill Groups**

How well does your curriculum,
instructional practices and
assessments align to needed skills,
knowledge and attributes?

Consideration needs to be given to
skill based certificates.

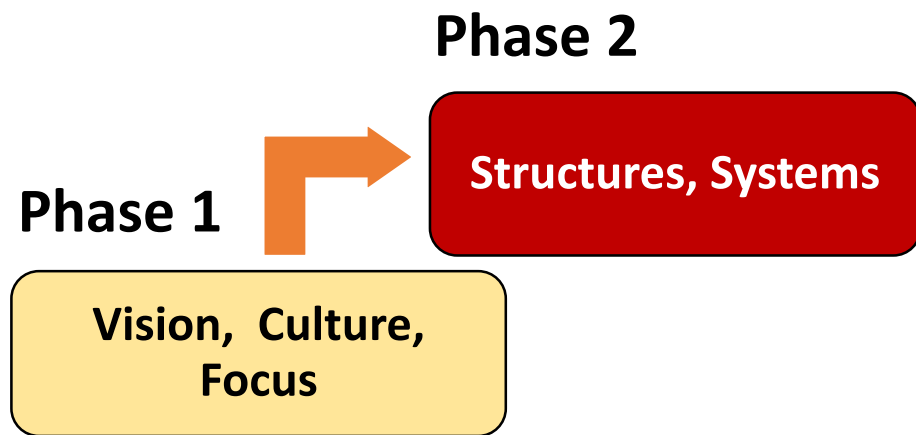
HOW to Transform a School System

Phase 1

**Vision, Culture,
Focus**

Culture Trumps Strategy

HOW to Transform a School System



Future Focused Instructional Design Process

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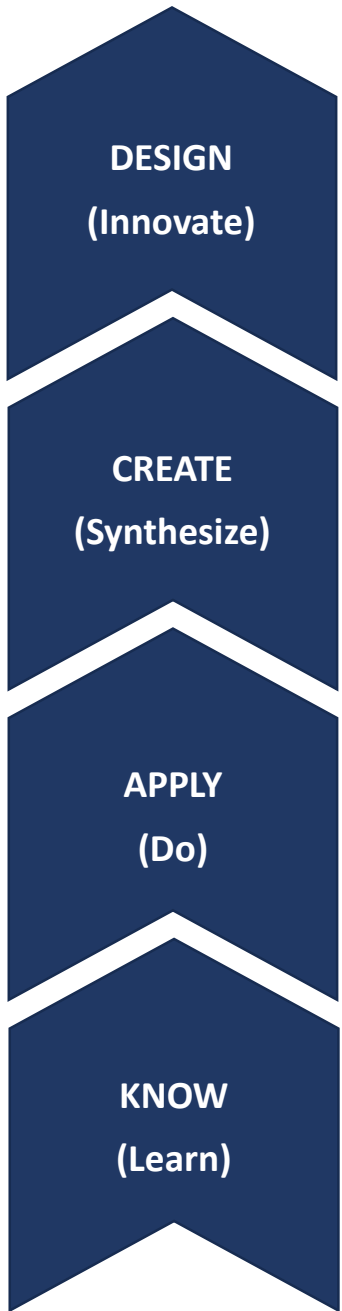
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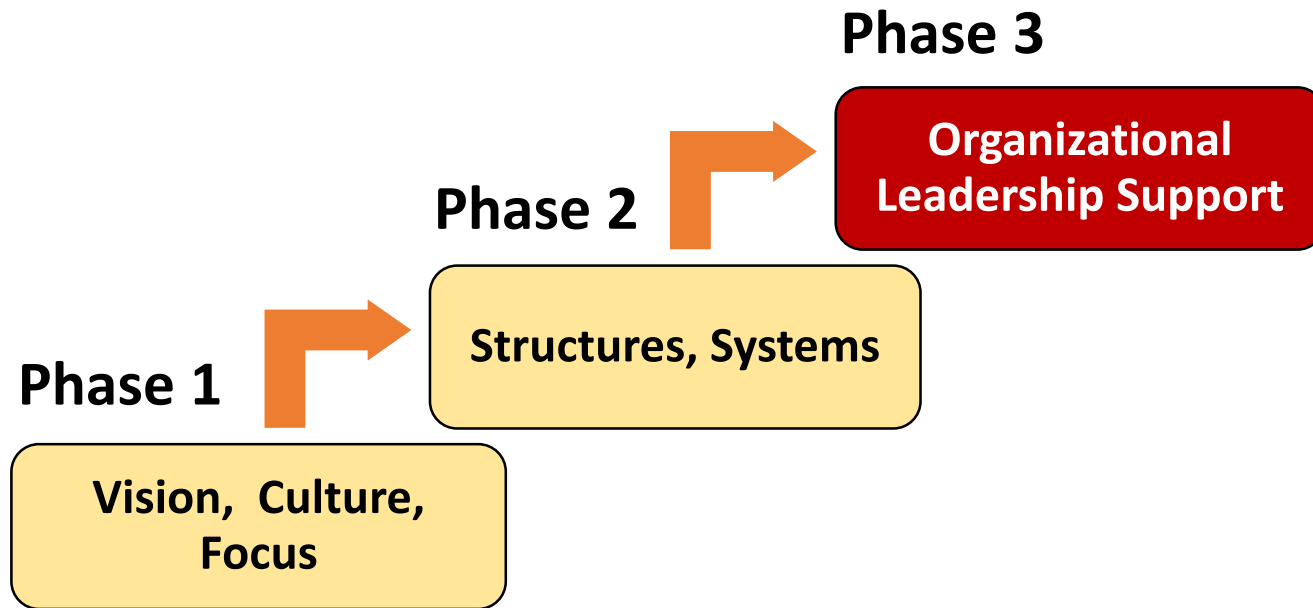
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HOW to Transform a School System



We have ...

➤ an **Instructional Design** Issue

We have ...

- an Instructional Design Issue
- a **Workforce Design** Issue

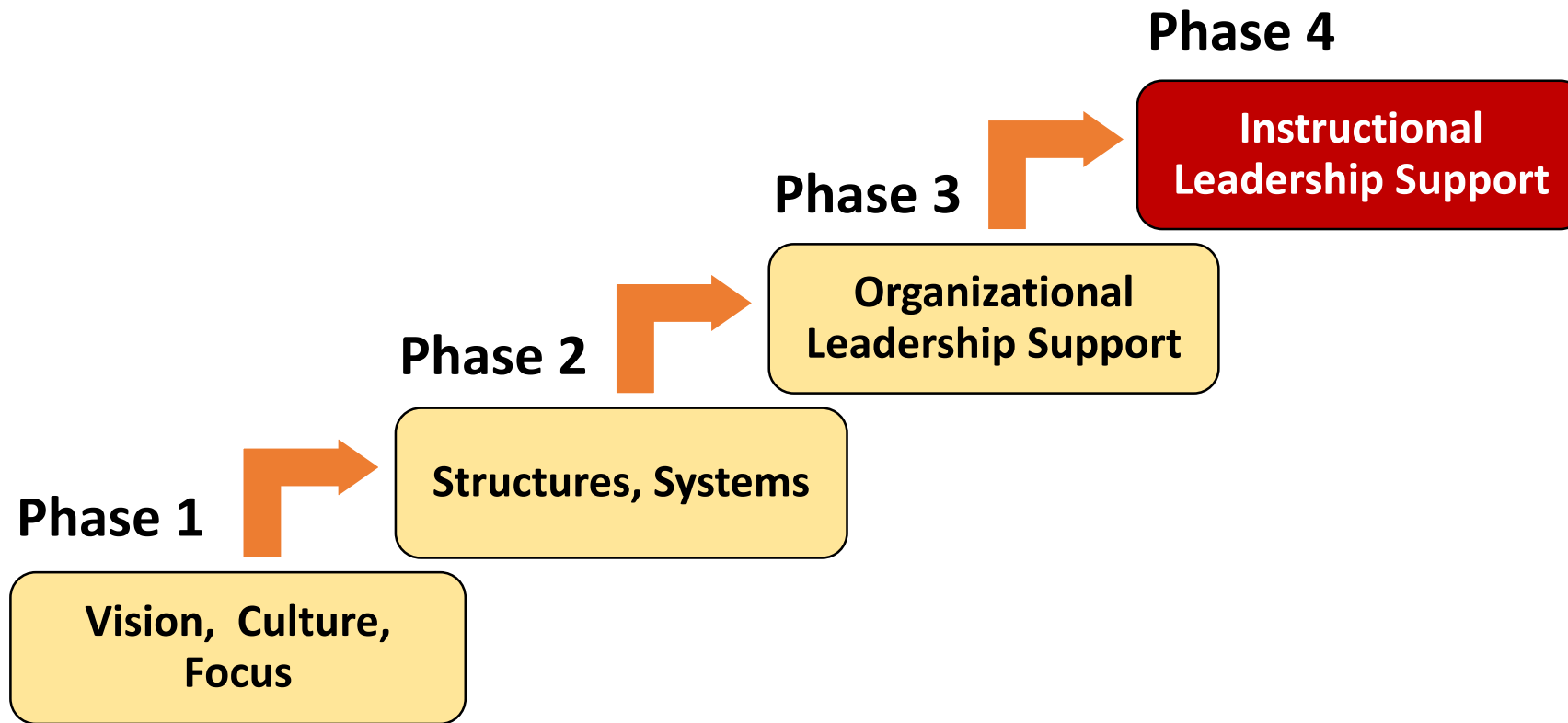
We have ...

- an Instructional Design Issue
- a Workforce Design Issue
- a **Learning Space** Issue

We have ...

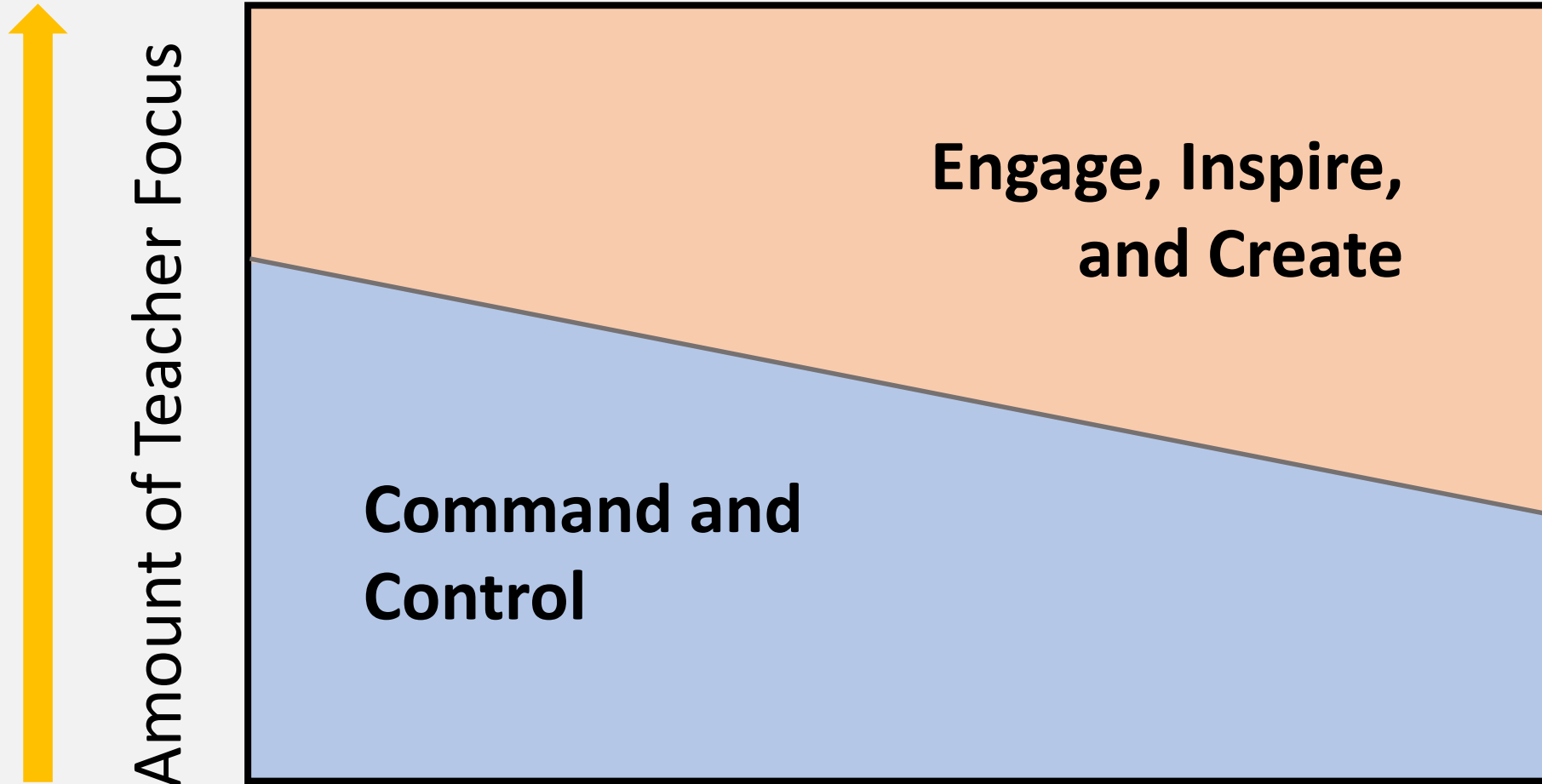
- an Instructional Design Issue
- a Workforce Design Issue
- a **Learning Space** Issue
- an Assessment Issue

HOW to Transform a School System



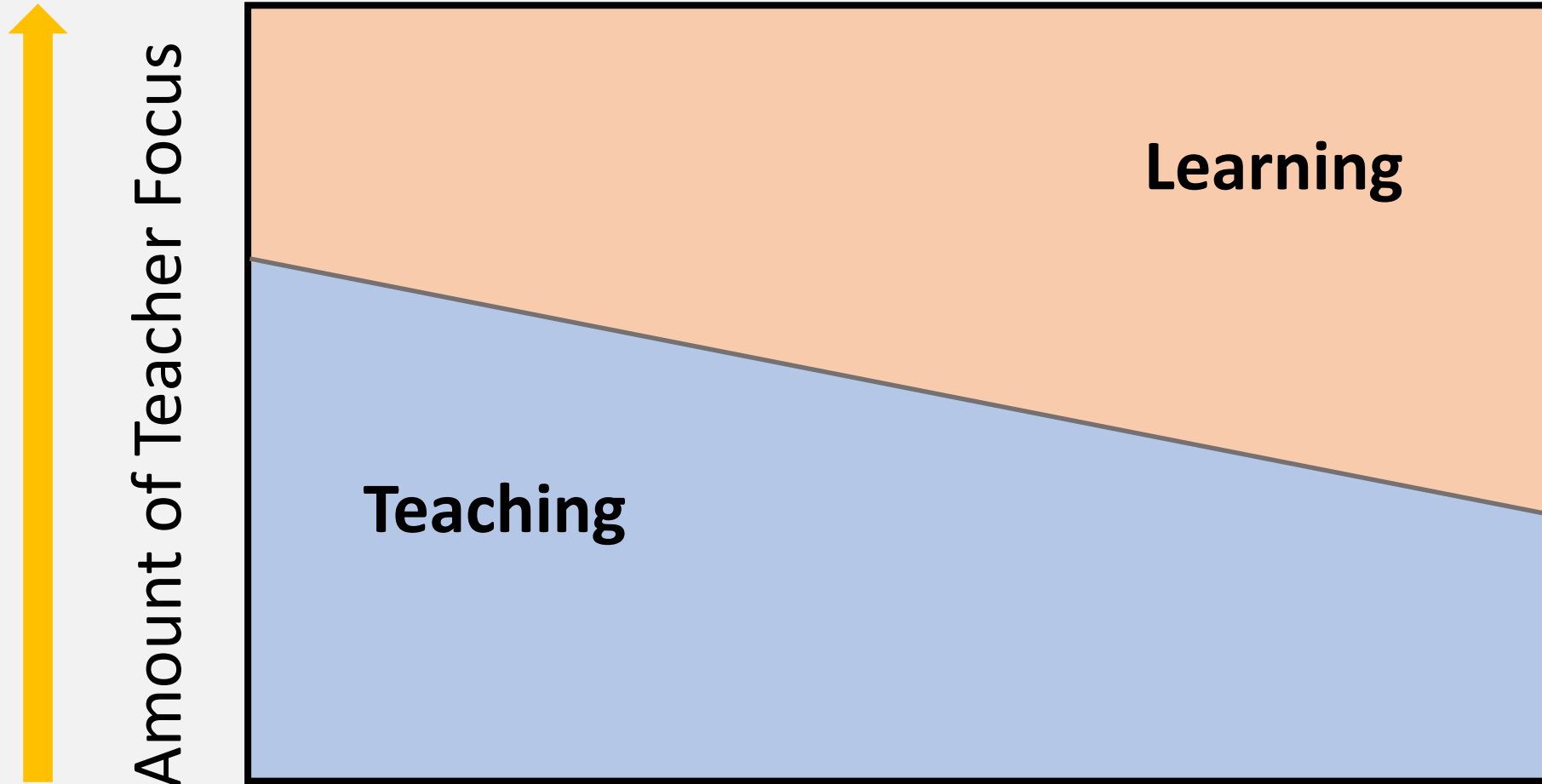
Shift in Instructional Practices

A Shifting Environment



Historically to the Present

A Shifting Environment

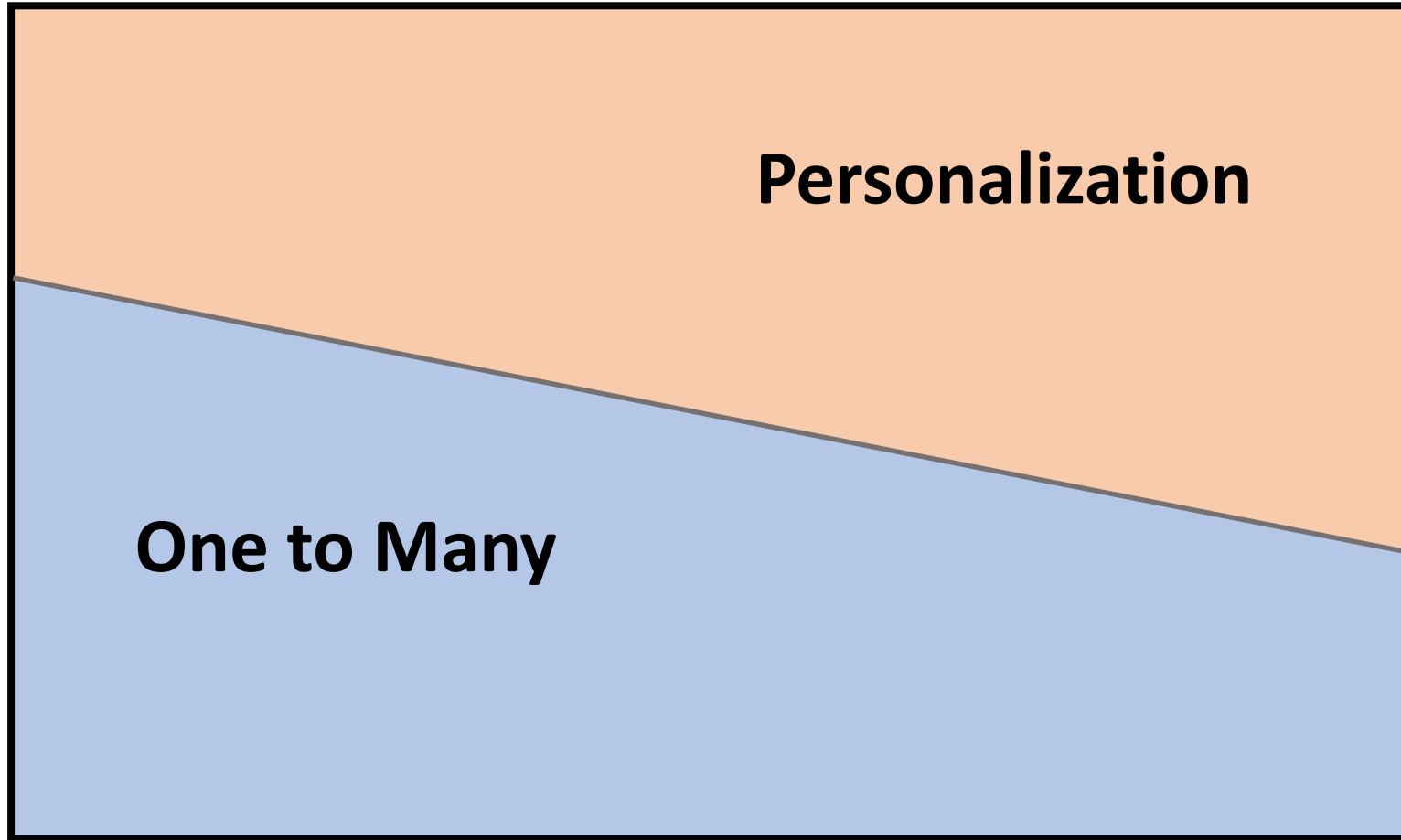


Historically to the Present

A Shifting Environment



Amount of Teacher Focus



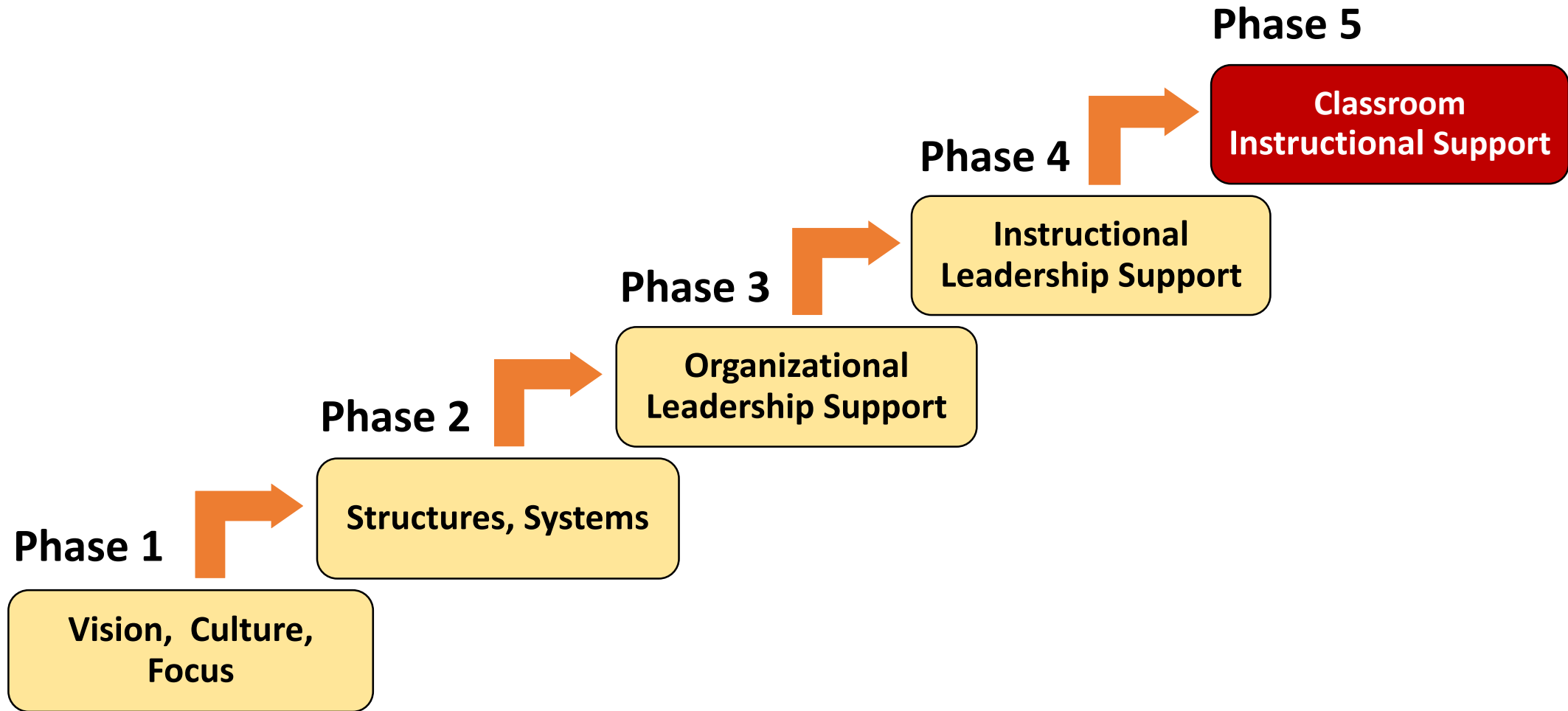
One to Many

Personalization


Historically to the Present



HOW to Transform a School System





 Learn More!



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