MARCH 2018 UNITED STATES

CREATIVE PROBLEM SOLVING IN SCHOOLS

Essential Skills Today's Students Need for Jobs in Tomorrow's Age of Automation

A study fielded by Adobe

Why creative problem solving? Why now?

Creativity is essential. Adobe's own and third party research shows that tomorrow's jobs will demand creative problem solving skills.

Adobe conducted a new study to understand how educators, policymakers & influencers define creative problem solving skills, how critical they view these skills to future jobs and how they are currently being nurtured in schools today.

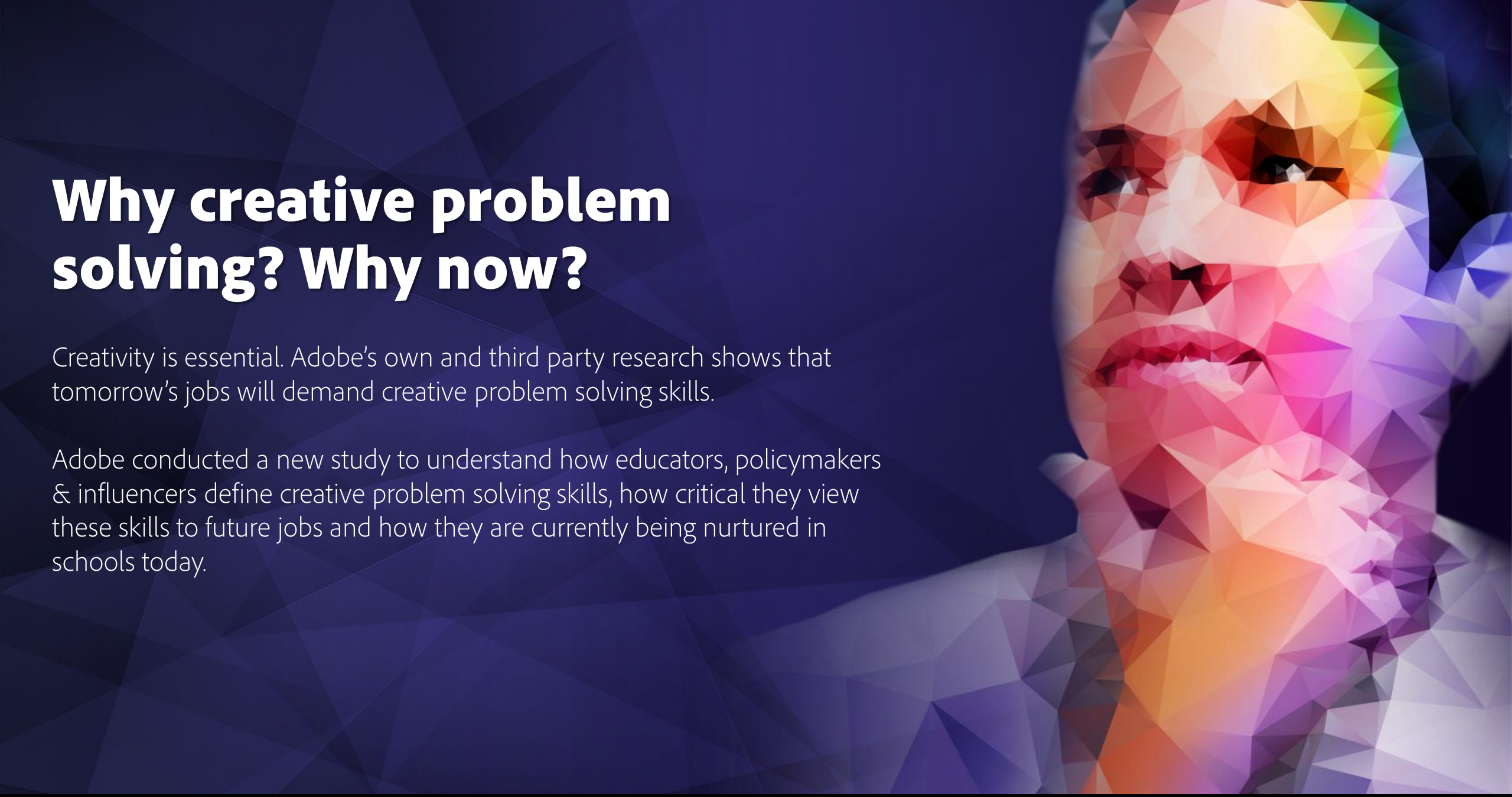


Table of Contents

Methodology

How	Who	How Many	When
IN-DEPTH INTERVIEWS & AN IN-PERSON FOCUS GROUP	**CREATIVE PROBLEM SOLVING STAKEHOLDERS** Including Adobe education leaders, educators & administrators, policymakers & influencers, HR leaders and creative problem solving professionals	n=31	July-Aug 2017
ONLINE SURVEY	**EDUCATORS** Grades 6-12 and higher education teachers, instructors and professors in the US	n=400, MOE = +/- 4.9% (Split n=200 Grades 6-12 and n=200 Higher Education)	Sept-Oct 2017
	POLICYMAKERS & INFLUENCERS Those working in roles that directly or indirectly influence education policy in the US	n=100, MOE = +/- 9.8%	

EDUCATORS

POLICYMAKERS & INFLUENCERS

Executive Summary

Defining Creative Problem Solving

In the survey, we asked educators, policymakers & influencers to talk to us about creative problem solving based upon the following definition:

Creative problem solving is the process of redefining problems and opportunities, coming up with new, innovative responses and solutions, and then taking action

Adobe

INSIGHT 1

Creative problem solving is critical to students' future career success in an age of automation

- Studies from several third parties, including the US Department of Education, World Economic Forum and Bloomberg show that tomorrow's jobs will demand creative problem solving skills
- Educators, policymakers & influencers and HR leaders feel creative problem solving is very important for students to learn to prepare them for higher-earning job opportunities in the future that are less likely to be impacted by automation
- In the United States, the most important creative problem solving skills for students to learn in school today are:

1. Learning through success & failure
2. Working within diverse teams
3. Independent learning
4. Accepting challenges & taking risks
5. Processing & investigation
6. Innovative thinking
7. Persistence, grit & entrepreneurial spirit

INSIGHT 2

However, creative problem solving is not emphasized enough in schools today

- Educators, policymakers & influencers agree that there is not enough emphasis on creative problem solving in today's curricula
- Both audiences believe that creative problem solving should be integrated across all courses; however, it currently does not play a frequent role in the classroom
- There is a lack of emphasis on all of the most important creative problem solving skills in curricula today

INSIGHT 3

The barriers to teaching creative problem solving in schools today are wide-ranging – from budgets to outdated testing requirements

- When asked what the main barriers were to nurturing creative problem solving skills in the classroom, educators cited several, including a lack of time to create and outdated standardized testing requirements
- School budget restrictions, lack of time to learn new tools and a lack of educator training and professional development opportunities also keep educators from getting the knowledge and training they need to develop students' creative problem solving skills
- Many educators do not have the tools, knowledge and training they need to nurture creative problem solving – especially in Grades 6-12

INSIGHT 4

Current policies are also not always working in favor of educators and students

- Educators, policymakers & influencers think current education policies hurt more than help educators' ability to nurture creative problem solving
- In fact, both audiences feel that education policies for nurturing creative problem solving have not improved over the past five years
- Education audiences say we need to both integrate creative problem solving into current curricula and reform curricula to better nurture these skills

INSIGHT 5

There are many ways – small and large – to nurture creative problem solving, from new projects to structural changes

School administrations and all levels of government can play a role in enhancing creative problem solving in today's classrooms:

REVISITING STANDARDS

Revisiting standardized testing and Common Core requirements

REFOCUSING CONTROL

Encouraging more local control of curriculum and educator control over lessons

INCREASING TRAINING

Providing more educator training and professional development opportunities

FUNDING TECHNOLOGY

Allocating budget to ensure access to technology at school and at home

BRIDGING THE GAPS

While technology alone is not the answer, it plays a key role. Adobe is committed to working with educators, policymakers and the broader industry to help students develop the critical skills to prepare for the future workforce

- Educators are interested in various potential Adobe Education initiatives to help foster creative problem solving, such as offering discounted pricing for students and free lesson plans and "case studies" for educators
- Educators believe that Adobe Creative Cloud could help nurture creative problem solving inside and outside the classroom
- Specifically, educators say that Creative Cloud would be effective in helping students develop each of the most important creative problem solving skills
- Compared to educators overall, those who have used Creative Cloud report that their students are more prepared to use creative problem solving skills in their future jobs

> *"Creative Cloud could encourage students to be more independent and help them learn more important skills that could help them build a great career."*
> – Educator, Higher Ed

Creative problem solving is critical in the age of automation

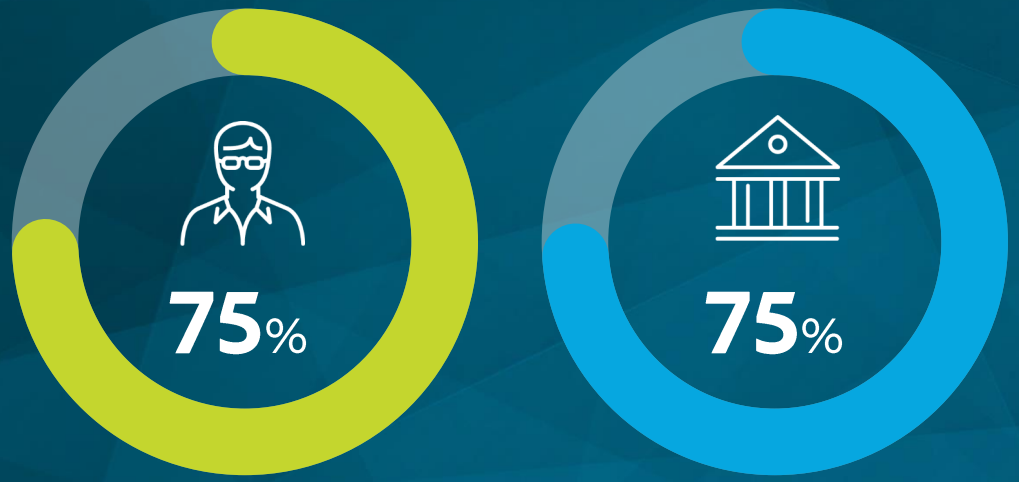
Educators, policymakers & influencers agree that creative problem solving is very important for students to learn in school

It is **VERY IMPORTANT** for students to learn creative problem solving skills in school

Q1: How important is it for students to learn creative problem solving skills in school? Shown: Top Box Only (Very Important)

Educators say today's students need to develop creative problem solving skills to prepare for careers in the age of automation

Professions that require creative problem solving are **LESS LIKELY TO BE IMPACTED BY AUTOMATION** in the future



EDUCATORS

POLICYMAKERS & INFLUENCERS

> *We need to train teachers on how to solve problems in different ways. We also need to allow students more time to problem solve. In addition, we need to change the mindset of students by working on these 'soft skills' instead of all of the testing.*
>
> – Educator, Grades 6-12

> *Let them think for themselves. We have become so obsessed with grades we are just feeding students what we want them to learn for testing purposes that they NEVER do anything on their own to fail and learn from their experiences.*
>
> – Educator, Higher Ed

Q7: What more can we be doing to better nurture creative problem solving skills and prepare students for the future workforce? (Open end)
Q8: How much do you agree or disagree with the following statements? Shown: Top 2 Box (Agree)

HR leader perspective

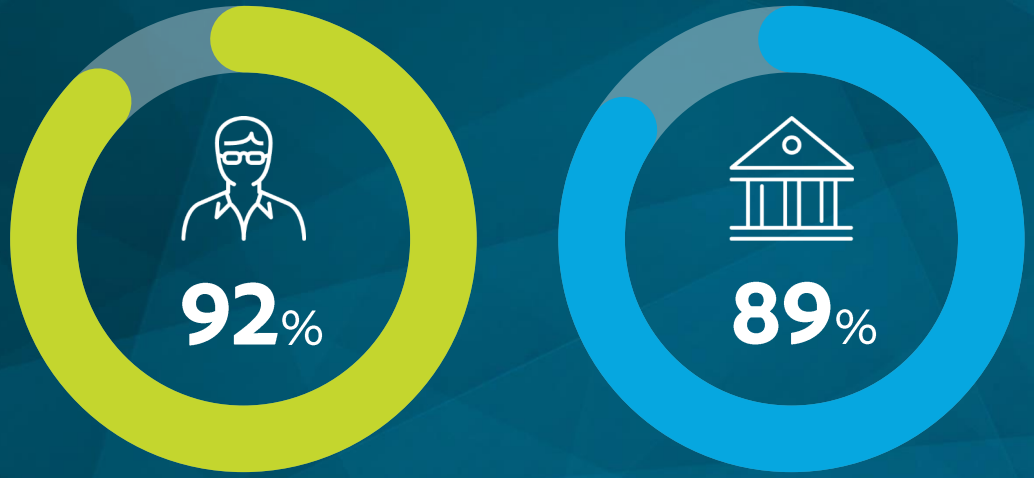
> *Work is slowly being disrupted by technology in the sense that computers or machines are taking over some types of jobs, and more and more we will need to solve creative problems that only collaborative humans can solve together.*
>
> – HR Leader

> *We often have quantitative goals with no defined path of how we're going to accomplish those ... [Job candidates] need to be able to think creatively about what the right path is to achieve those objectives and how their goals fit into the broader goals of the company.*
>
> – HR Leader

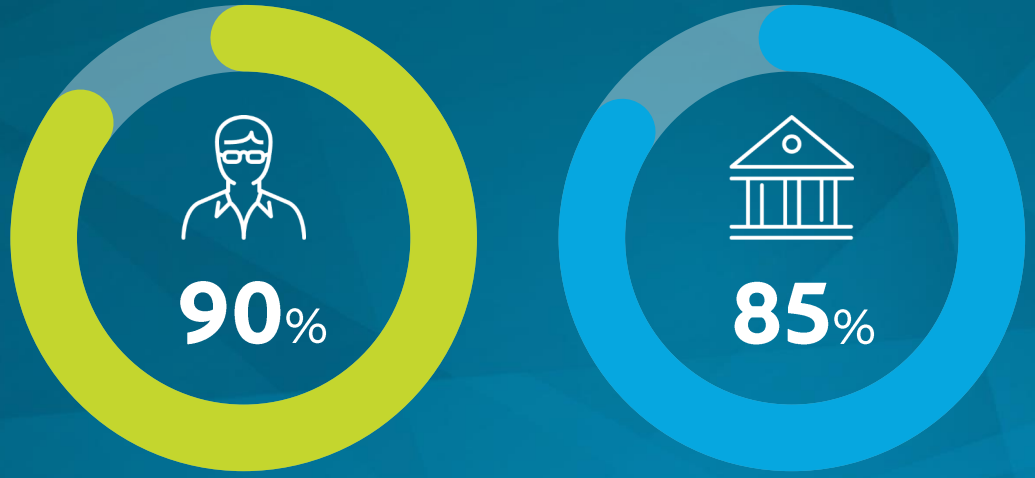
Quotes from HR executives from the 2017 Edelman Intelligence Creative Problem Solving Qualitative Report

Creative problem solving skills have tangible benefits for students' career success after school

Students who excel at creative problem solving will have **HIGHER-EARNING JOB OPPORTUNITIES** in the future



Creative problem solving skills are in high demand by today's employers for **SENIOR LEVEL/HIGHER-PAYING CAREERS**



EDUCATORS **POLICYMAKERS & INFLUENCERS**

Q8: How much do you agree or disagree with the following statements? Shown: Top 2 Box (Agree)

HR leader perspective

> *The more an employee can showcase creative problem solving skills, the more valuable it'll be for them, as a professional, and for us, as the employer.*
>
> – HR Leader

> *[Creative problem solving skills are] critical, especially for employees who want to make a difference and progress in their career. There are plodders and they show up for work, do the job, and go home and that's it; but the leaders of tomorrow will be highly motivated to consider different or unique solutions to conventional problems.*
>
> – HR Leader

Quotes from HR executives from the 2017 Edelman Intelligence Creative Problem Solving Qualitative Report

Resourcefulness, analytic and abstract thinking, and collaboration skills are critical to creative problem solving

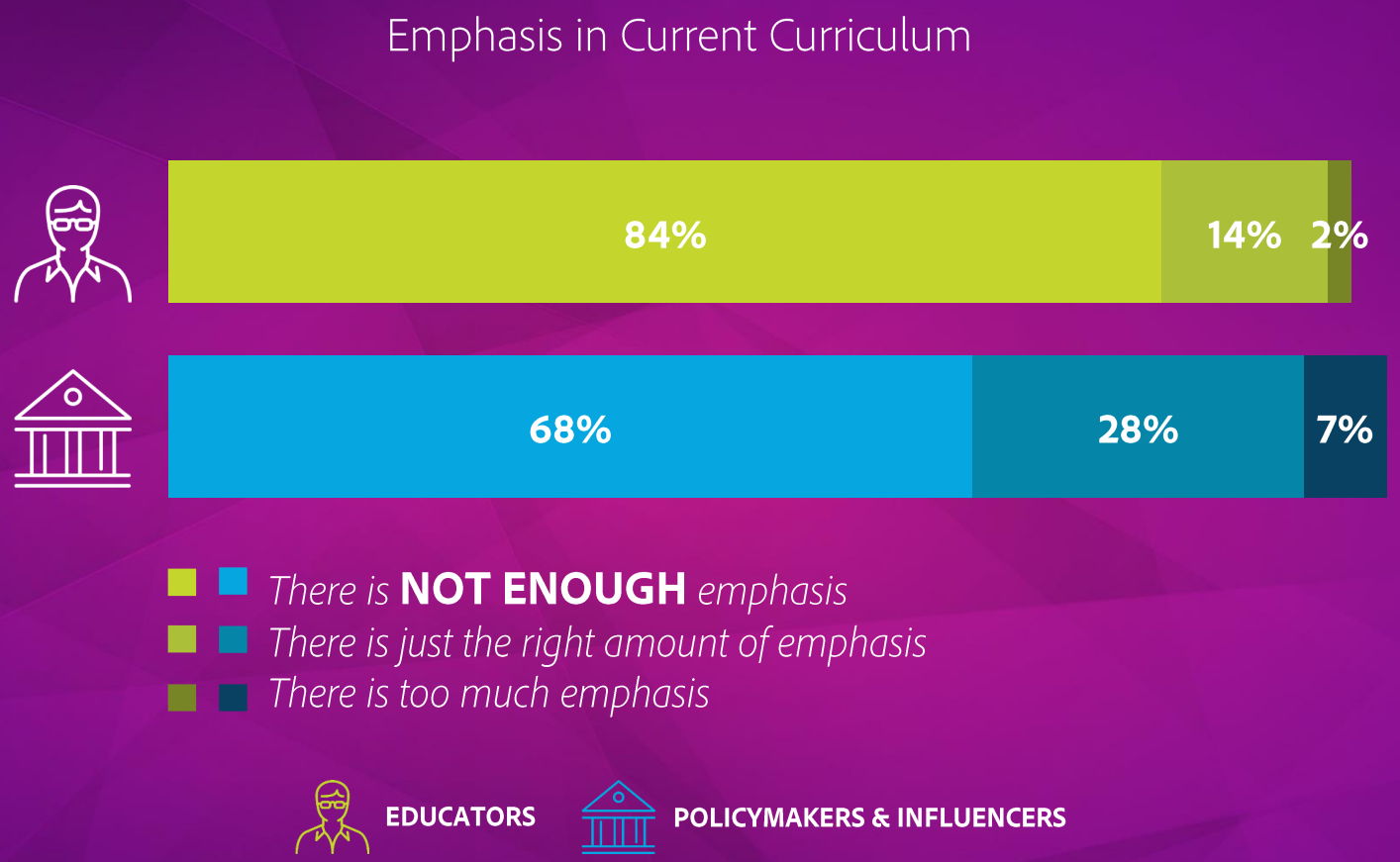
Most important skills to learn in school

		EDUCATORS	POLICYMAKERS & INFLUENCERS
1	Learning through success & failure	76%	76%
2	Working within diverse teams	73%	65%
3	Independent learning	71%	68%
4	Accepting challenges & taking risks	70%	64%
5	Processing & investigation	69%	73%
6	Innovative thinking	69%	72%
7	Persistence, grit & entrepreneurial spirit	66%	67%

Q4: How important is it for students to learn each of the following skills in school today? Shown: Rank Top 8, Top Box Only (Very Important)
NOTE: Top 8 skills determined by ranking the average score of each skill among educators and policymakers & influencers; Top skills are shown ranked in order of educators scores

Creative problem solving is not being nurtured in schools today

Both educators, policymakers & influencers agree that there is not enough emphasis on creative problem solving in today's curricula

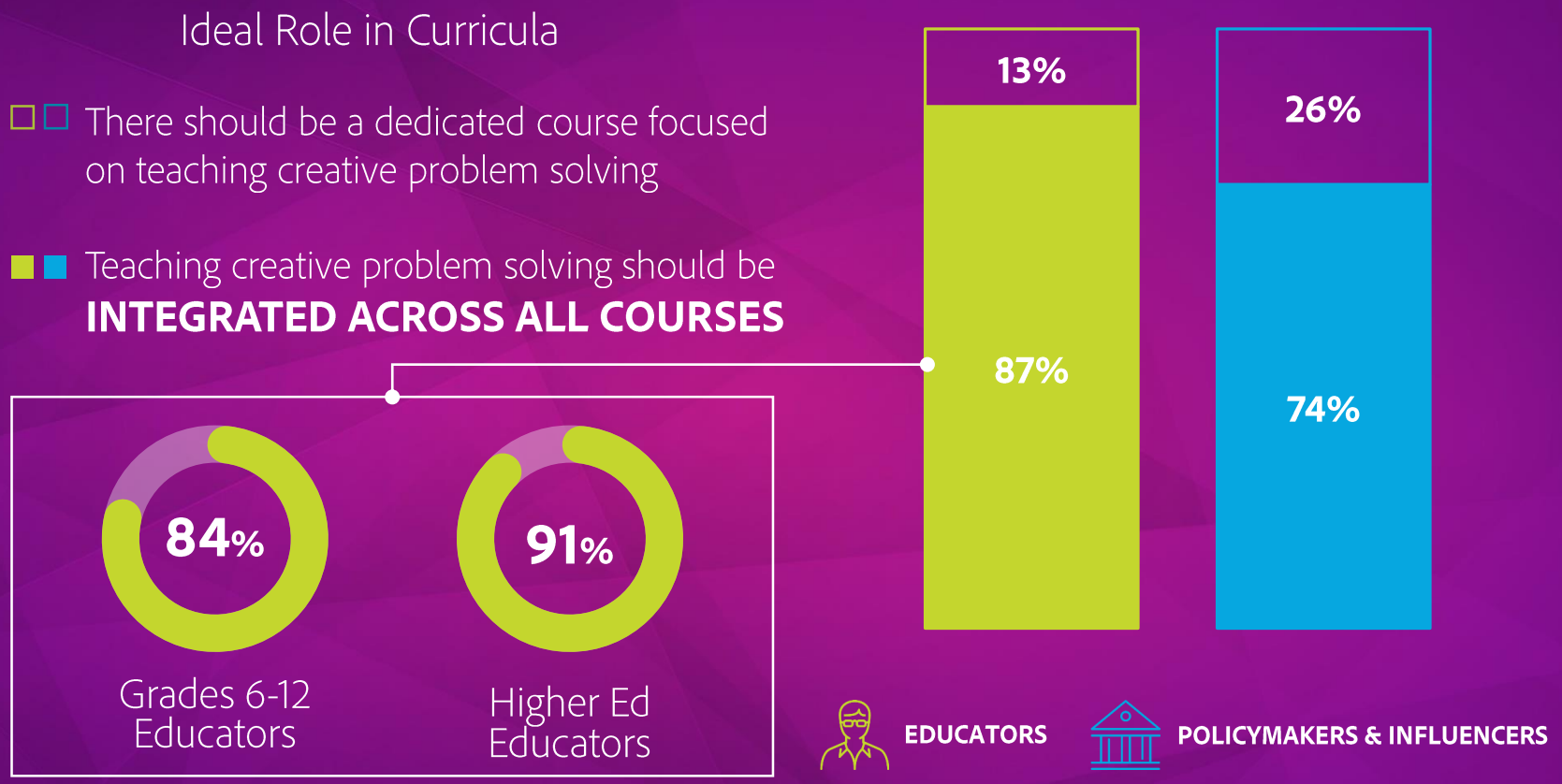


Q9: Which of the following best describes your feelings on the emphasis today's school curriculums place on creative problem solving?

Policymaker & influencer perspective

> *Curriculums in schools today are too focused on strictly abiding by the guidelines that they leave no room for changing with the times. Guidelines strongly need to be refreshed and updated.*
>
> –Policymaker & Influencer

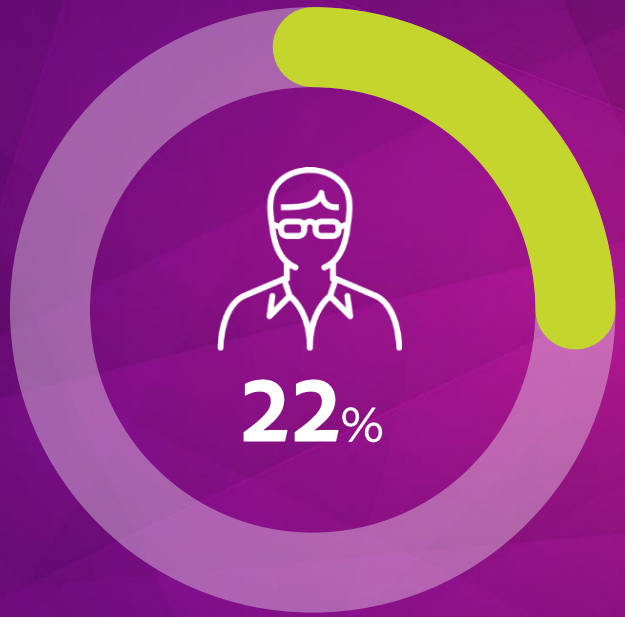
Both audiences believe creative problem solving should be integrated across all subjects



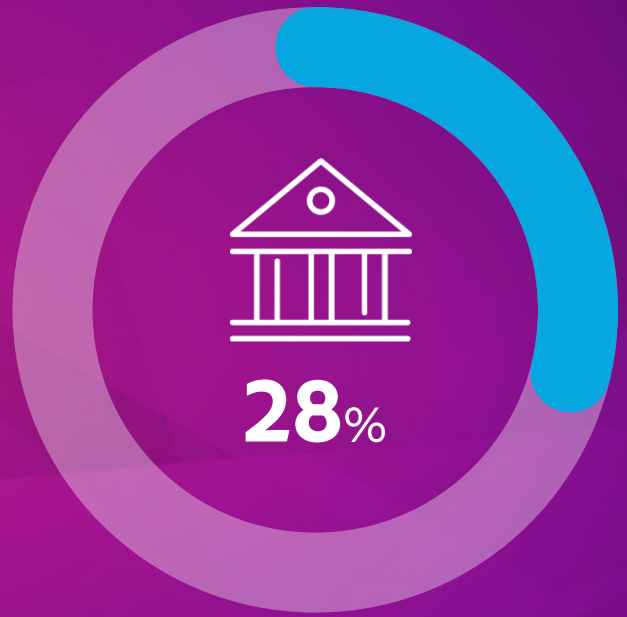
Q8B: Which statement comes closest to your opinion?

However, creative problem solving does not frequently play a role in the curricula

Current Role in Curricula



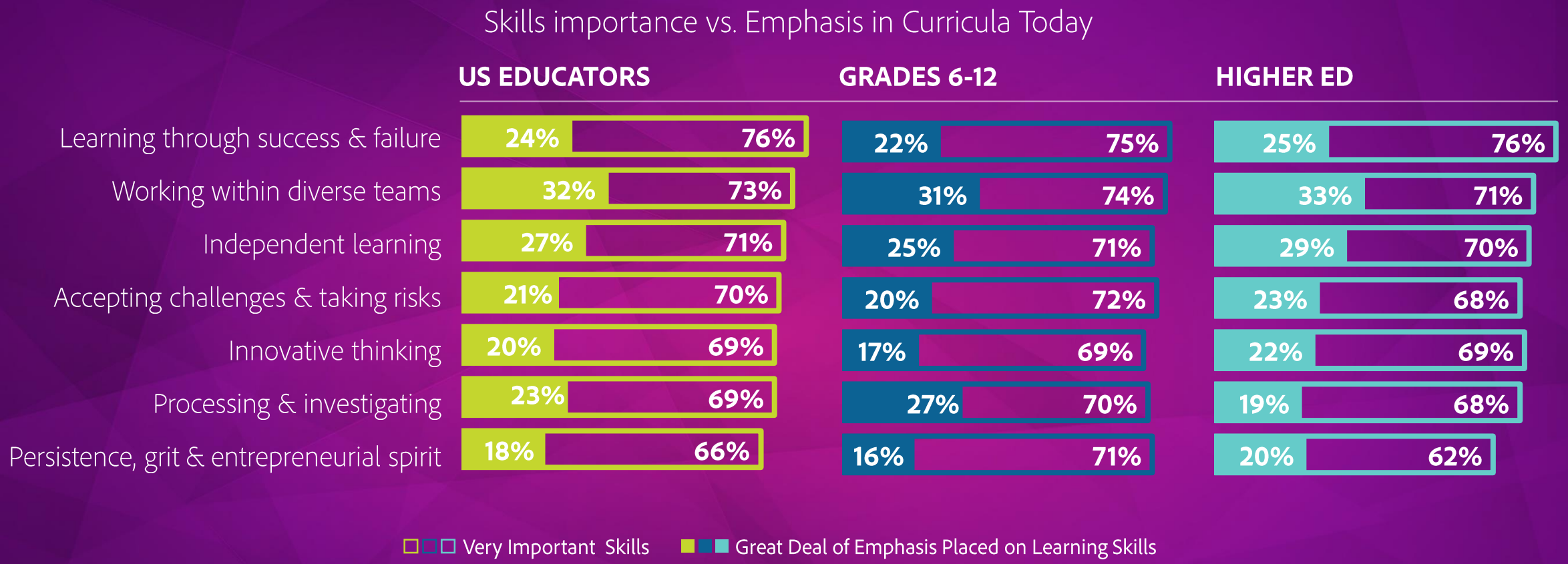
Creative problem solving **OFTEN** plays a role in most school curricula



EDUCATORS **POLICYMAKERS & INFLUENCERS**

Q2: How much of a role do you feel creative problem solving plays in most school curricula? Shown: Top Box Only (Often)

There is a lack of emphasis on the most important creative problem solving skills in the classroom

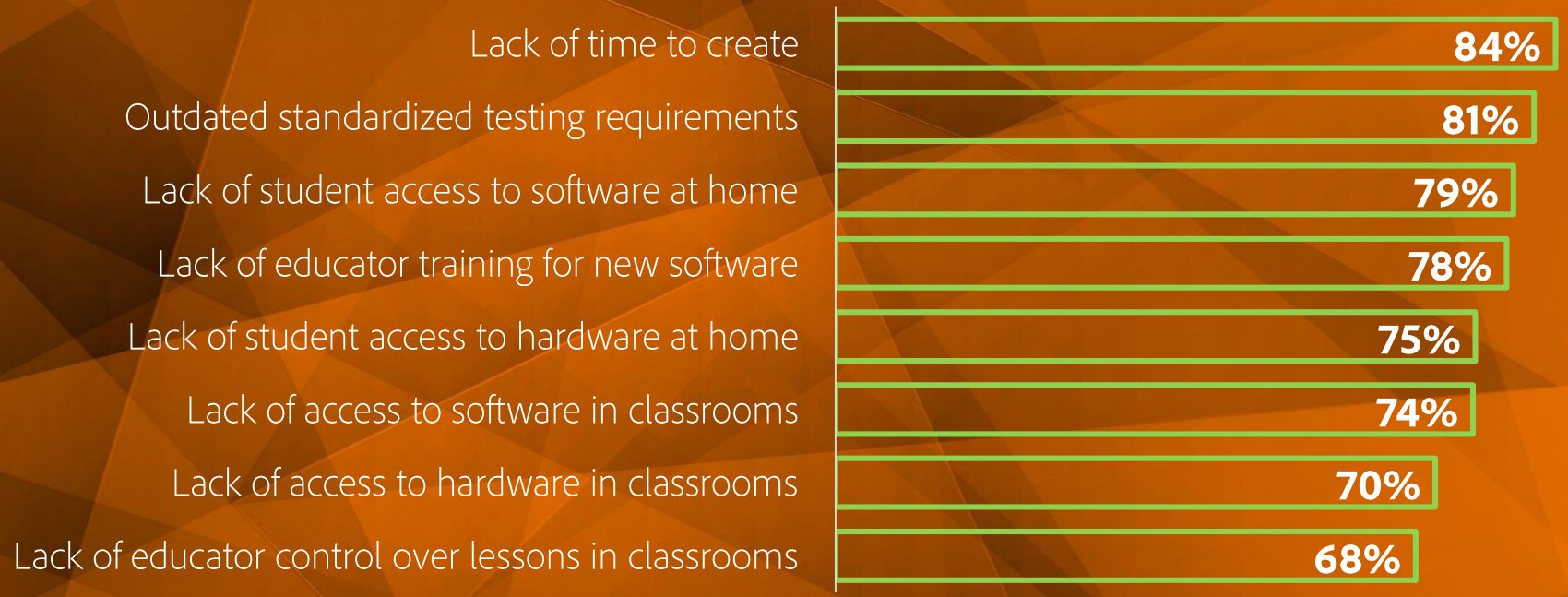


Q4: How important is it for students to learn each of the following skills in school today? Q6: And how much of an emphasis is there on each of the following skills in school curricula today? Shown: Top Box Only (Very Important, Great Deal of Emphasis), Educators

Understanding the many barriers to nurturing these skills

Lack of time to create, educator training, access to technology and outdated testing requirements limit creative problem solving

Limiting Barriers to Nurturing Creative Problem Solving



GRADES 6-12	HIGHER ED
91%	77%
88%	75%
85%	73%
82%	75%
82%	67%
78%	70%
75%	65%
71%	64%

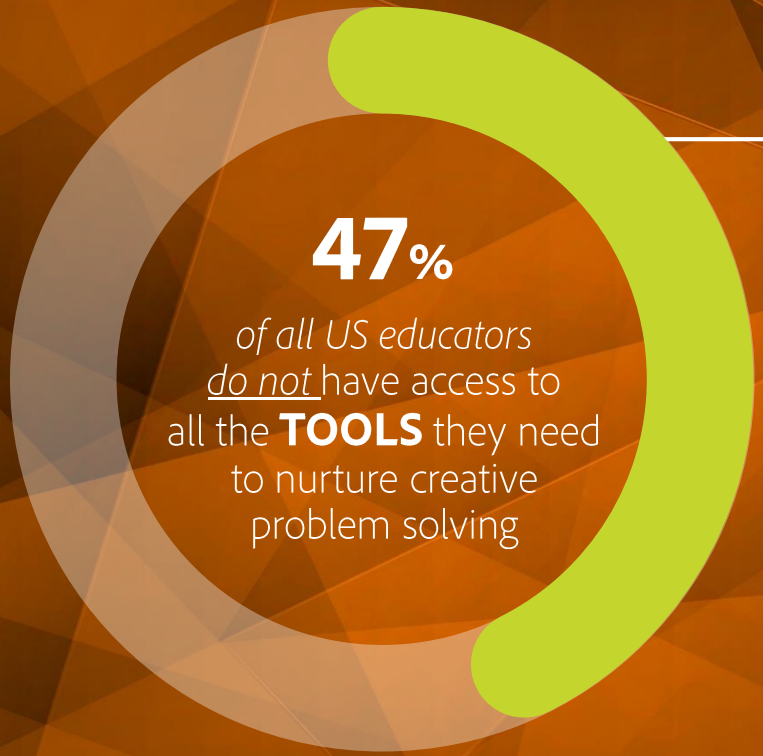
Q36: How limiting are the following barriers to nurturing creative problem solving? Shown: Top 2 Box (Limiting), Educators

Educator perspective

> *We as teachers are expected to teach standards and academic skills, and every once in awhile some character building, and we are asked to provide engaging lessons that will motivate students and provide them what they need, but we get little to no training.*
>
> –Educator, Grades 6-12

Half of educators do not have access to the tools and training they need to nurture creative problem solving

Barriers to Nurturing Creative Problem Solving



47%

of all US educators <u>*do not*</u> have access to all the **TOOLS** they need to nurture creative problem solving

54% Grades 6-12

40% Higher Ed

46%

of all US educators <u>*do not*</u> have access to all the **KNOWLEDGE & TRAINING** they need to nurture creative problem solving

54% Grades 6-12

38% Higher Ed

Q26: How much do you agree or disagree with the following statements? Shown: Bottom 2 Box (Disagree), Educators

School budget restraints and a lack of time and training opportunities keep educators from getting the knowledge they need

Barriers to Knowledge and Training

	GRADES 6-12 (n=109)	HIGHER ED (n=76)
School budget restraints prevent access to it	60%	51%
Lack of teacher training or personal development opportunities	49%	38%
Lack of time to learn new tools	43%	43%
Limited availability of technology in my classroom	43%	30%
Lack of understanding of what new tools are out there today	28%	21%

Q27: Which of the following reasons explains why you do not have access to all the knowledge and training that you need to nurture creative problem solving? (Asked if do not have access to knowledge and training needed) Shown: Rank Top 6 among Educators Without Knowledge & Training (n=185)

Today's education policies are also a barrier

Both audiences feel that today's national education policies hurt more than help educators' ability to nurture creative problem solving

Impact of Current National Education Policies

Current national education policies **MOSTLY HURT** Educators' ability to nurture creative problem solving

*Current national education policies mostly **HURT** educators' ability to nurture creative problem solving*

*Current national education policies mostly **HELP** educators' ability to nurture creative problem solving*

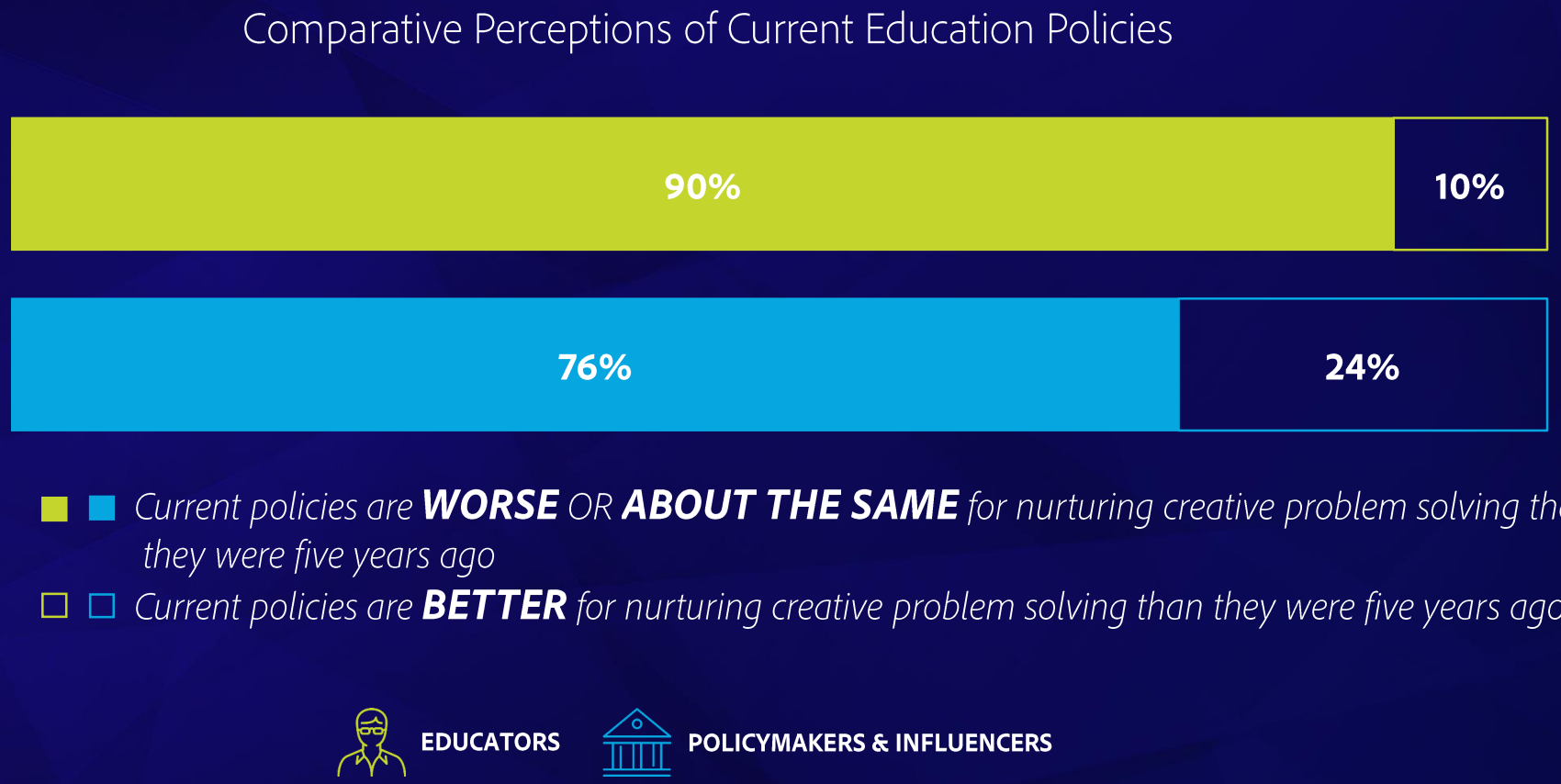
EDUCATORS **POLICYMAKERS & INFLUENCERS**

Q11: Which statement comes closest to your opinion?

Educator perspective

> *With standardized testing and learning objective protocol that most primary and secondary schools in the public sector are legally bound to, it doesn't leave time or freedom for new teachers that are being taught innovative learning strategies to incorporate them into the classroom.*
>
> –Educator, Higher Ed

Both audiences feel that education policies have not improved over the past five years for nurturing creative problem solving



Q14: Compared to five years ago, which of the following best describes the state of education policy today?

Policymaker & influencer and educator perspectives

> *Creative problem solving and our current education policies to me are both the same as they were 5 years ago as it is hard to come up with legislation and proposed bills that Congress will pass.*
> –Policymaker & Influencer

> *I still teach the same curriculum and prepare students for standardized tests rather than teaching topics and ideas outside the box.*
> –Educator, Grades 6-12

> *Five years ago there seemed to be much more flexibility as to what teachers were allowed to implement into their curriculum. There weren't negative repercussions for being creative like there is today.*
> –Policymaker & Influencer

> *The whole education system has been in a downward spiral since NCLB was implemented and it took a turn for the worse with Common Core.*
> –Educator, Higher Ed

Q15: What makes you say that current education policies are better/worse for nurturing creative problem solving than they were five years ago? (Open end)

While policymakers and influencers value creative problem solving, there is a gap in understanding the realities of the classroom

Difficulty of Integrating Curriculum Changes to Nurture Creative Problem Solving

Today's Student Preparedness to Use Creative Problem Solving in Future Workforce

EDUCATORS POLICYMAKERS & INFLUENCERS

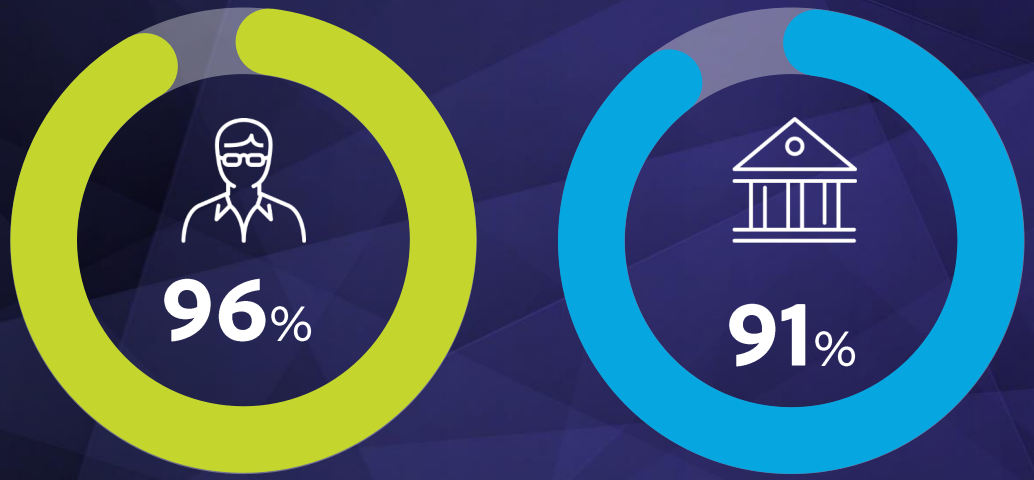
Q17: How difficult is it for teachers today to integrate each of the following into the classroom? Shown: Top 2 Box (Difficult)
Q3: How prepared do you think today's students in general will be to use creative problem solving skills in the future workforce after they finish school? Shown: Top 2 Box (Prepared)

What it will take to bridge the skills gap

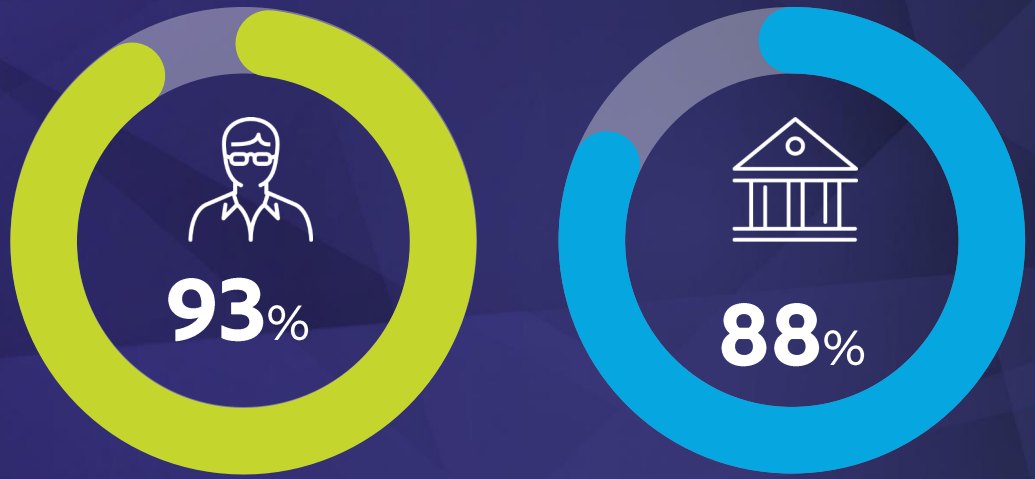
There is consensus that we need to both reform curricula and find ways to integrate creative problem solving into the classroom today

Means to Better Nurture Creative Problem Solving in the Classroom

We need to find ways to better **INTEGRATE** creative problem solving into **EXISTING SCHOOL CURRICULA**



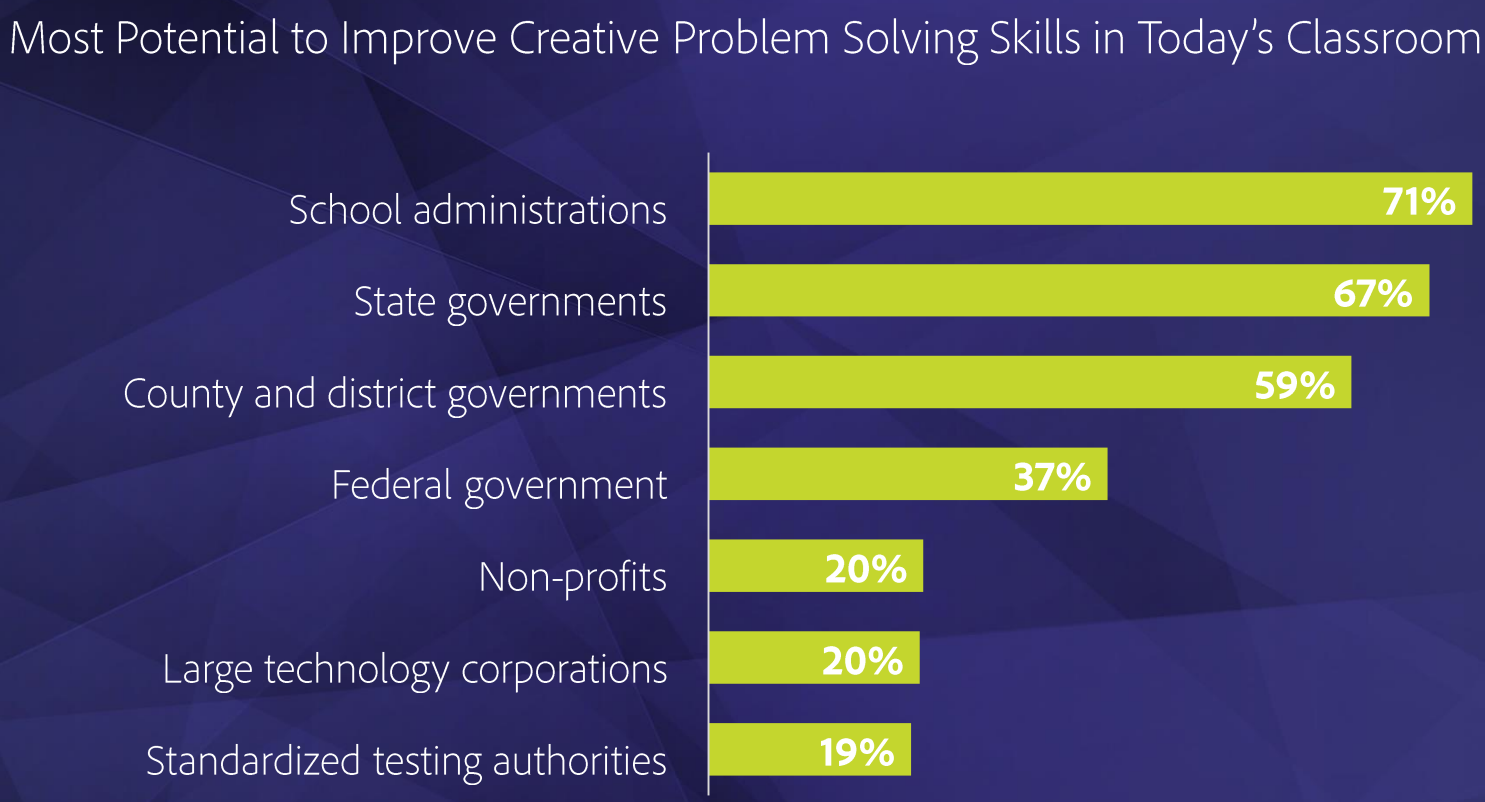
We need to find ways to **REFORM THE CURRENT CURRICULA** to better nurture creative problem solving in the classroom



EDUCATORS **POLICYMAKERS & INFLUENCERS**

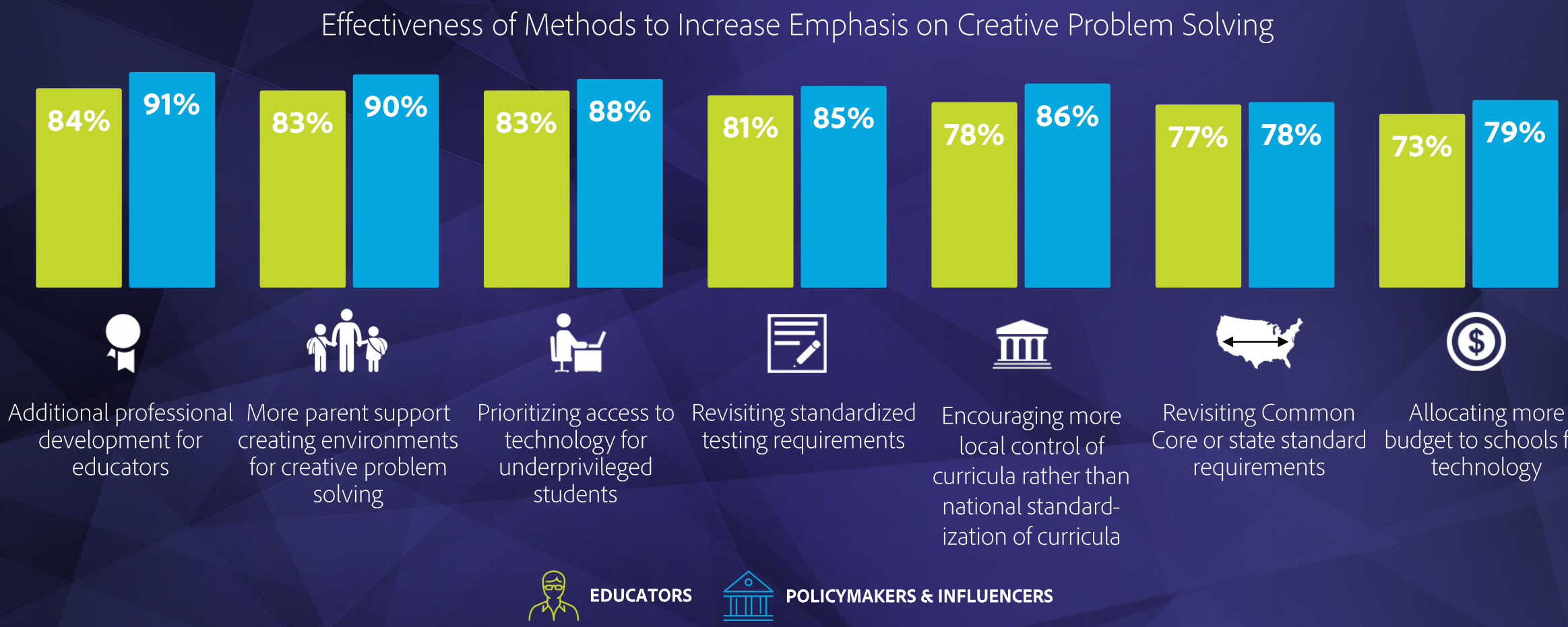
Q18: How much do you agree or disagree with the following statements? Shown: Top 2 Box (Agree)

School administrations and local governments are considered most influential for bringing about change in today's classrooms



Q21: Please rank the following in terms of their potential to improve creative problem solving skills in today's classrooms. Shown: % Ranked Top 3, Educators

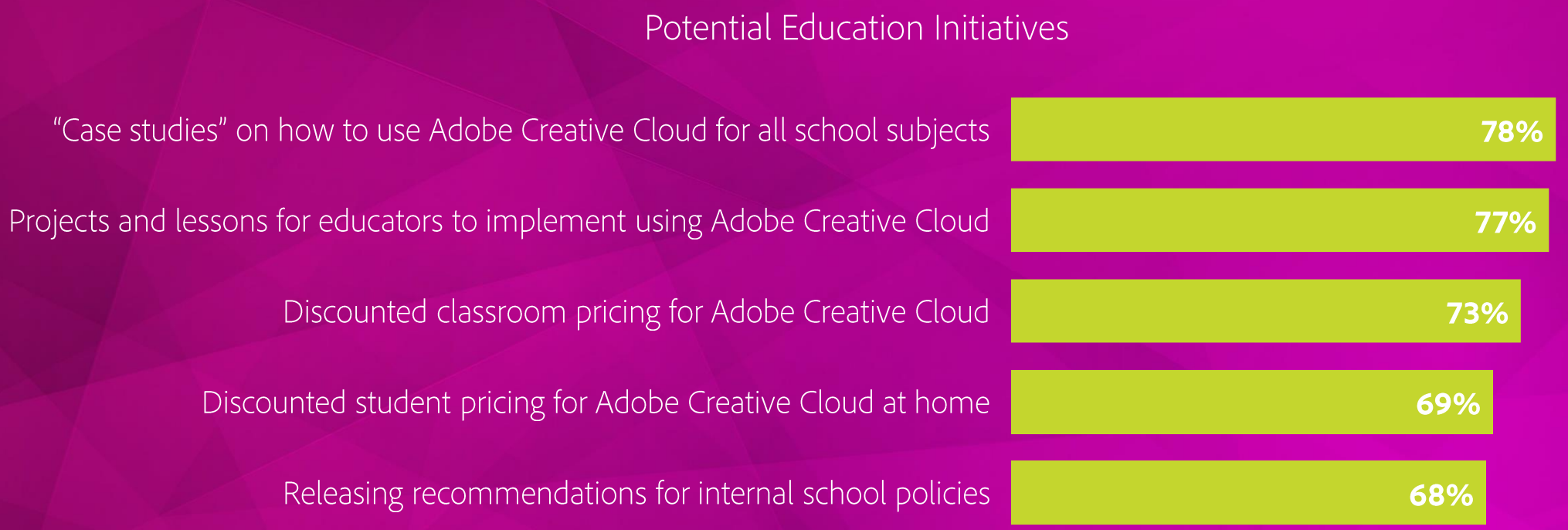
Educators, policymakers and influencers alike believe it will take a variety of solutions to better nurture creative problem solving



Q19: How effective would each of the following be in increasing the emphasis on creative problem solving skills in the classroom? Shown: Rank Top 7, Top 2 Box (Effective)

Technologies like Creative Cloud can give students an advantage

Educators are highly interested in education offerings and support from Adobe, especially free lesson plans and case studies



Q35: Below is a list of different things that Adobe could do to help teachers nurture creative problem solving in the classroom. How interested would you be in each of the following? (Shown: % Interested)

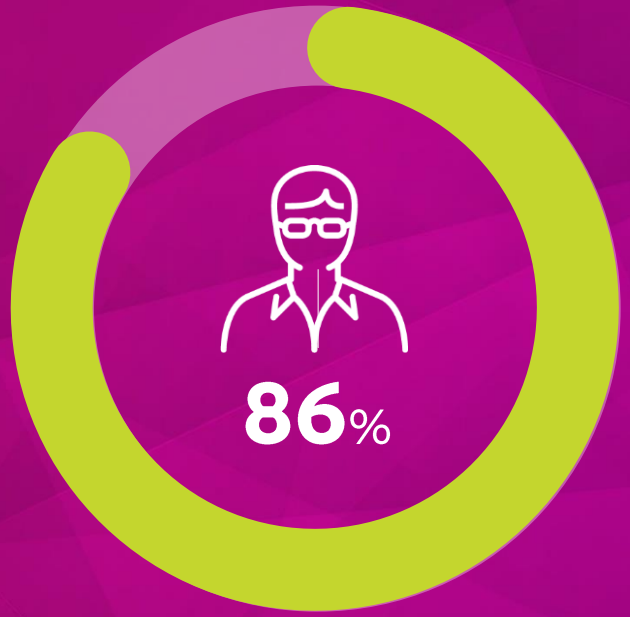
HR leader perspective

> *[Adobe Creative Cloud] is a great tool to help future employees… If someone showed examples of the projects they worked on using Creative Cloud and it was accompanied by some explanation as to what the problem was, how they creatively solved it, who they worked with, etc., that would be very helpful.*
>
> – HR Leader

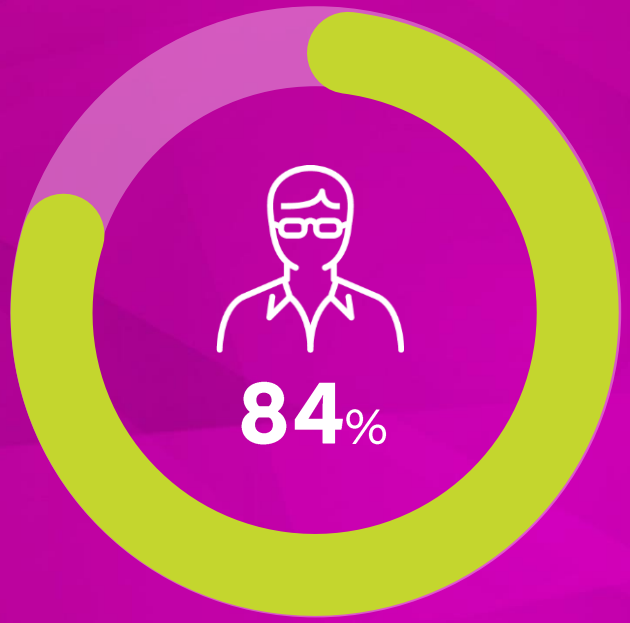
Quotes from HR executives from the 2017 Edelman Intelligence Creative Problem Solving Qualitative Report

Technologies like those in Adobe Creative Cloud can help develop students' creative problem solving skills

Creative Cloud could help develop students' creative problem solving skills **IN THE CLASSROOM**



It could help develop students' creative problem solving skills **OUTSIDE THE CLASSROOM**

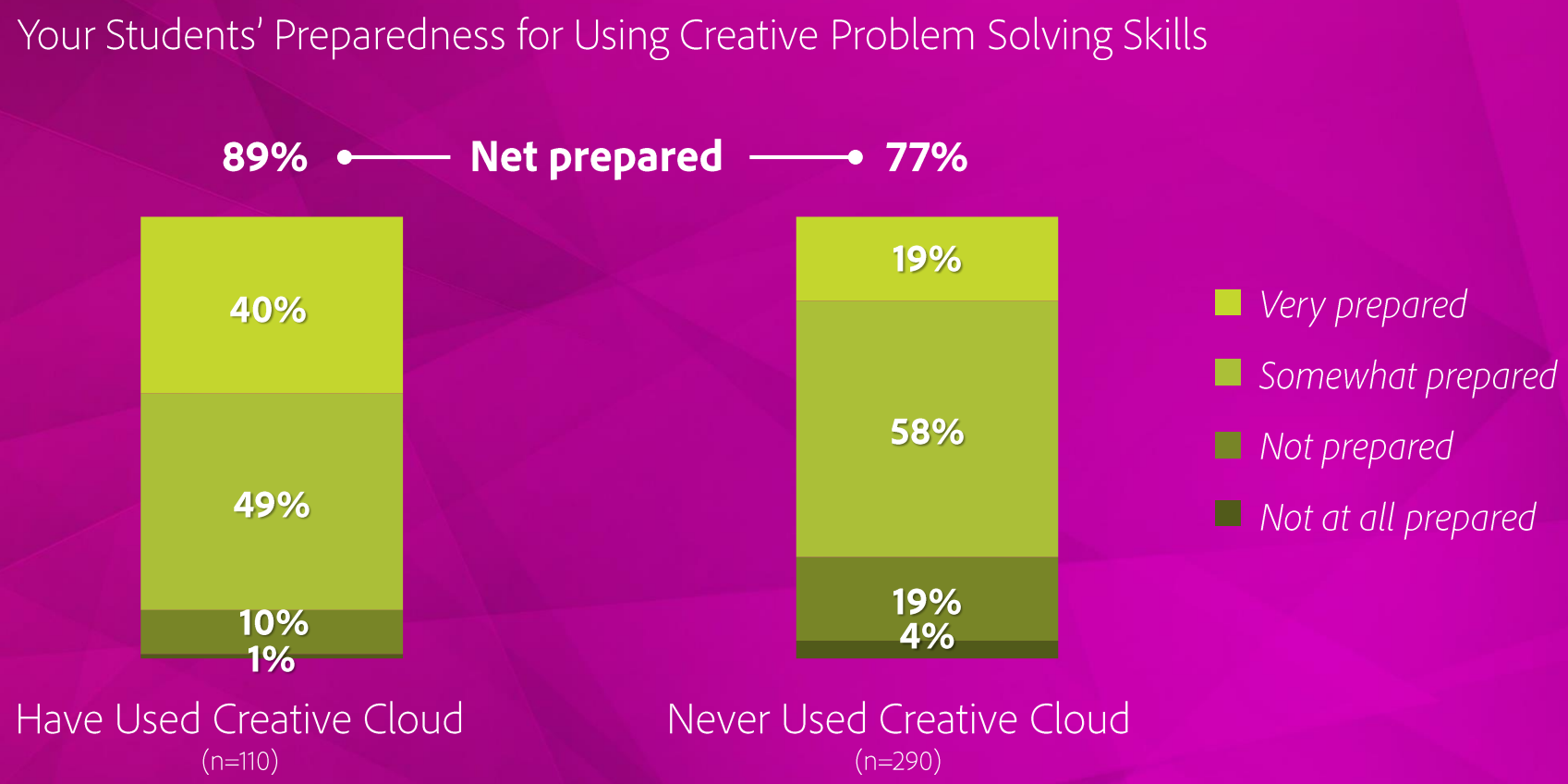


Q32: How much do you agree or disagree with the following statements about what Adobe Creative Cloud for education could do? Shown: Top 2 Box (Agree), Among Educators Aware of Creative Cloud (n=228)

Educator perspective

> *Creative Cloud allows students to create probably the most visually stunning and polished outputs that any software could today. Students would learn … how to visualize what they are presenting and consider how an audience would receive it. This is all incredibly valuable for a student in addition to whatever subject matter they are learning about.*
>
> – Educator, Grades 6-12

Educators that have used Adobe Creative Cloud say creative problem solving often plays a role in school curricula and their students are more prepared

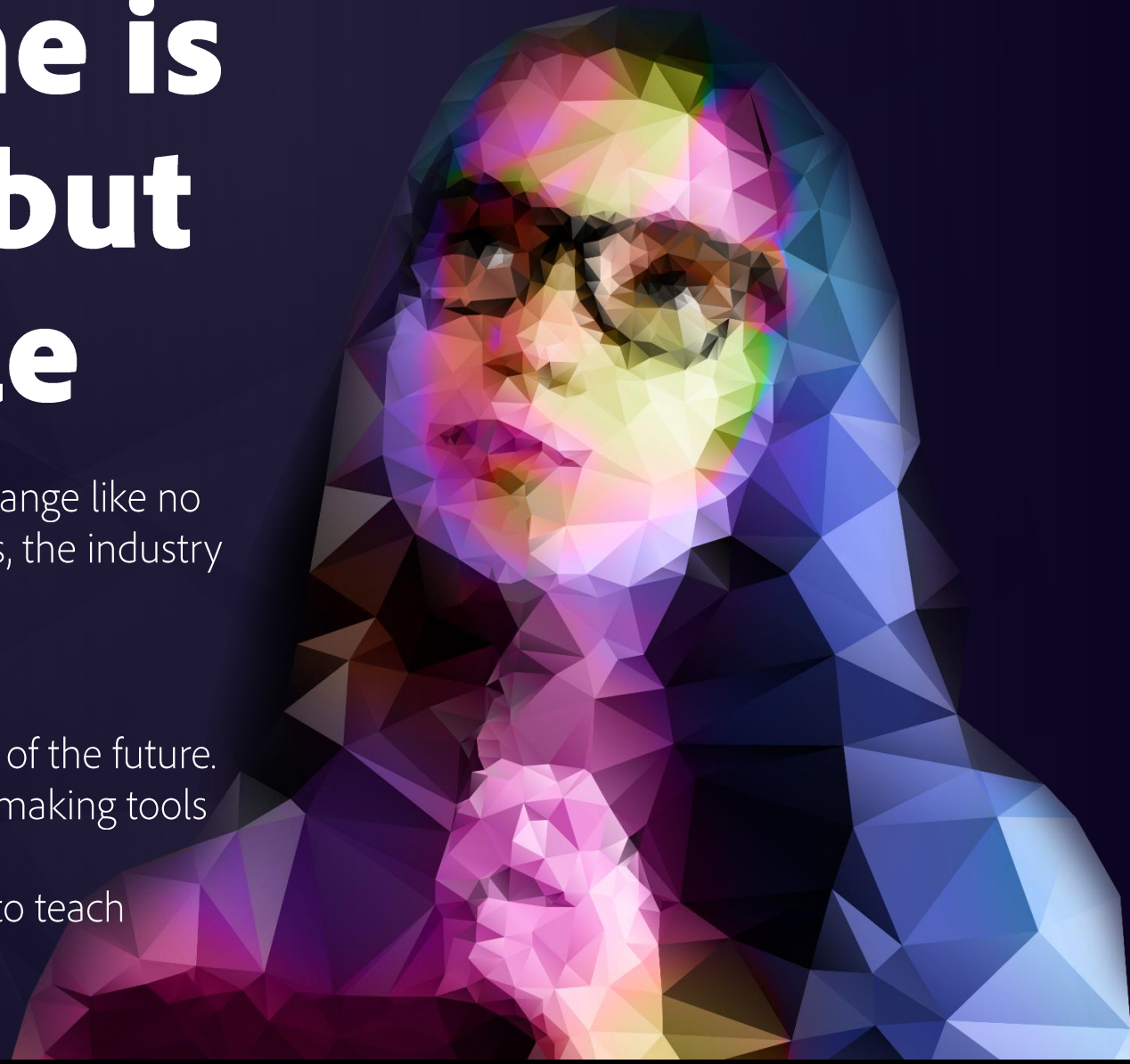


Q3: How prepared do you think your students will be to use creative problem solving skills in the future workforce after they finish school? Shown: Educators

Educators believe Adobe Creative Cloud could help students develop all the most important creative problem solving skills

Q34: How effective would Adobe Creative Cloud for education be at helping students develop each of the following skills? Shown: Top 2 Box (Effective), Among Educators Aware of Creative Cloud (n=228)

Technology alone is not the answer, but it plays a key role



Today's students and tomorrow's workforce are facing a sea change like no other, and Adobe is answering the call. Working with educators, the industry and students to help them develop these essential skills.

To learn more about:

- Why creative problem solving skills are so important to jobs of the future.
- How Adobe is supporting educators, inspiring students and making tools more accessible.
- Hear directly from educators successfully using technology to teach creative problem solving skills in their classrooms.

PLEASE VISIT CPS.ADOBEEDUCATE.COM

Thank you

Adobe

Appendix: Demographics

Demographics: Policymakers and Influencers

CATEGORY	SUBCATEGORY	%
Gender	Male	48%
	Female	52%
Age	18-34	46%
	35-44	40%
	45+	15%
Region	Northeast	17%
	South	39%
	Midwest	19%
	West	25%
Education	4-year college degree	47%
	Postgraduate degree	53%

CATEGORY	SUBCATEGORY	%
Industry Experience*	Nonprofit association	52%
	Regional/Local government body	33%
	Law firm	24%
	Political consulting firm	24%
	Federal government body	21%
	Political action committee	15%
	Congress	13%
	Think tank	13%
	Nongovernmental/Multilateral org.	11%
	Lobbying firm	10%
	Trade association	9%
	White House/Executive Branch	6%
	Supreme Court/Judicial Branch	6%
	Paid member of political campaign/party	6%

CATEGORY	SUBCATEGORY	%
Policy Responsibilities*	Researching policy	75%
	Writing/drafting policy	34%
	Advising on policy	54%
	Lobbying for policy	29%
Policy Level*	Local	58%
	State	60%
	Federal	34%

NOTE: Some total values may not add up exactly to 100% due to rounding
*This category allowed multiple responses and will not add up to 100%

Demographics: Educators

CATEGORY	SUBCATEGORY	%
Gender	**Male**	**44%**
	Female	56%
Age	18-34	33%
	35-44	27%
	45+	39%
Region	Northeast	20%
	South	35%
	Midwest	25%
	West	20%
Education	4-year college degree	31%
	Postgraduate degree	69%

CATEGORY	SUBCATEGORY	%
Subject Areas Taught*	English	26%
	Math	24%
	Social Sciences	22%
	Natural sciences	14%
	Business/Marketing	9%
	Arts & sciences/Liberal arts	9%
	Performing arts	6%
	Computer science/IT	6%
	Communications	6%
	Physical education/Health	4%
	Economics	4%
	Visual arts	3%
	Journalism	3%
	Engineering	3%
	Photography	2%
	Design	1%
	Architecture	1%

CATEGORY	SUBCATEGORY	%
Education Level Taught	Grades 6-12	50%
	Higher Education	50%
Length of Time in Education	Less than 6 years	25%
	6-10 years	24%
	11-20 years	27%
	More than 20 years	25%

NOTE: Some total values may not add up exactly to 100% due to rounding
*This category allowed multiple responses and will not add up to 100%