



JANUARY 2018 GERMANY

# CREATIVE PROBLEM **SOLVING** IN SCHOOLS

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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.



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# Methodology

How	Who	How Many	When
<p><b>ONLINE SURVEY</b></p>	<p><b>EDUCATORS</b>                      Primary/Secondary (students ages 11-18) and Post-Secondary teachers, instructors and professors in Germany</p>	<p>n=400, MOE = +/- 4.9%                      (Split n=200 Primary/Secondary (students ages 11-18) and n=200 Post-Secondary)</p>	<p>Oct 2017</p>
	<p><b>POLICYMAKERS and INFLUENCERS</b>                      Those working in roles that directly or indirectly influence education policy in in Germany</p>	<p>n=100, MOE = +/- 9.8%</p>	



**EDUCATORS**



**POLICYMAKERS & INFLUENCERS**



# **Executive Summary**



# Defining creative problem solving

We asked German 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**





# 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 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.
- The most important creative problem solving skills for students to learn in school today are:
  1. Independent learning
  2. Self-expression & dialogue
  3. Working within diverse teams
  4. Conflict management & argumentation
  5. Learning through success & failure
  6. Persistence, grit & entrepreneurial spirit
  7. Innovative thinking
  8. Accepting challenges & taking risks



# 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 at the primary/secondary level.

# 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 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 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 Adobe 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 Adobe Creative Cloud report that their students are more prepared to use creative problem solving skills in their future jobs.

“

*Adobe could help students develop certain skills and opportunities that are not sufficiently promoted in school.*

*– Educator, Primary/Secondary*

”

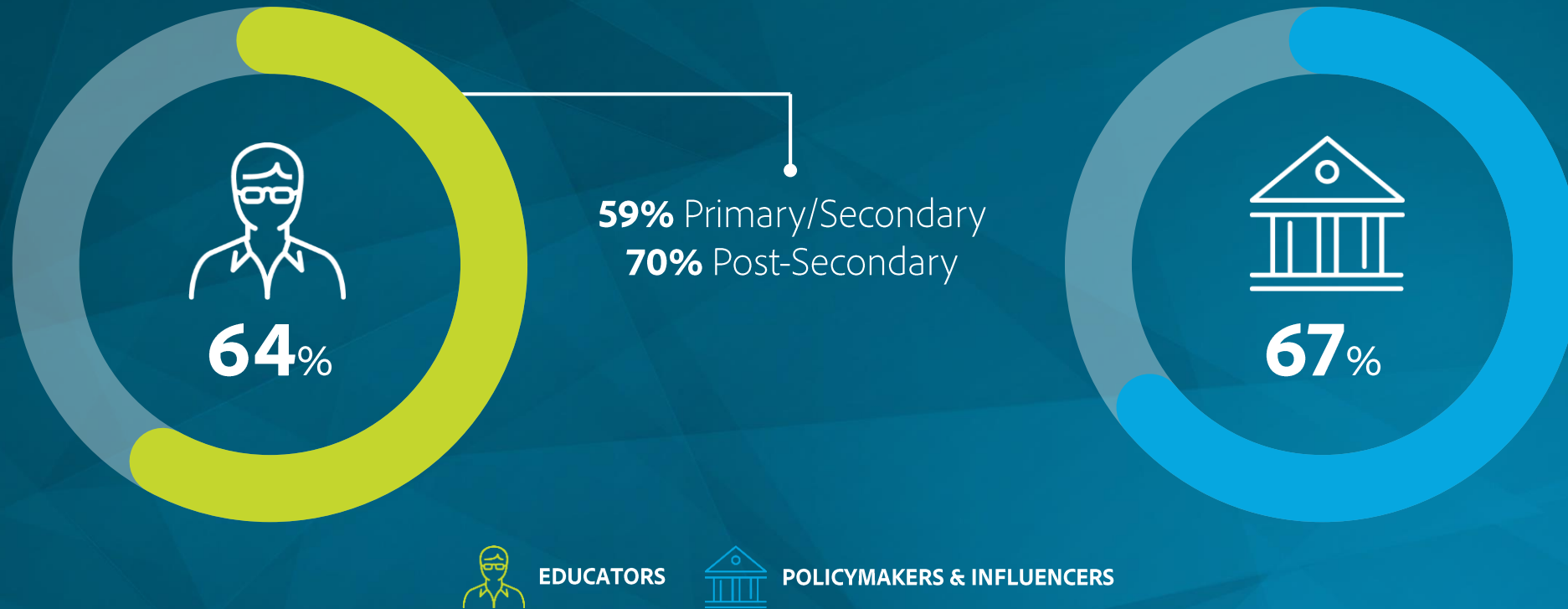
**Creative problem  
solving is critical  
in the age of  
automation**





# 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

“

*Give the student more freedom and, for example, introduce a creative subject, where you can develop something yourself and there are no uniform evaluation criteria.*

– Educator, Secondary

”

“

*First of all, you should demonstrate the possibilities of creative problem-solving on very different examples and then ask the students corresponding tasks and gradually increase the complexity.*

– Educator, Secondary

”

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



EDUCATORS



POLICYMAKERS & INFLUENCERS

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)

# 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)



# Resourcefulness, communication, collaboration and abstract thinking are critical to creative problem solving

Most important skills to learn in school

GLOBAL		EDUCATORS	POLICYMAKERS and INFLUENCERS
1	Independent learning	72%	60%
2	Self-expression & dialogue	62%	59%
3	Working within diverse teams	60%	51%
4	Conflict management & argumentation	54%	60%
5	Learning through success & failure	49%	48%
6	Persistence, grit & entrepreneurial spirit	48%	34%
7	Innovative thinking	44%	51%
8	Accepting challenges & taking risks	41%	40%

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)

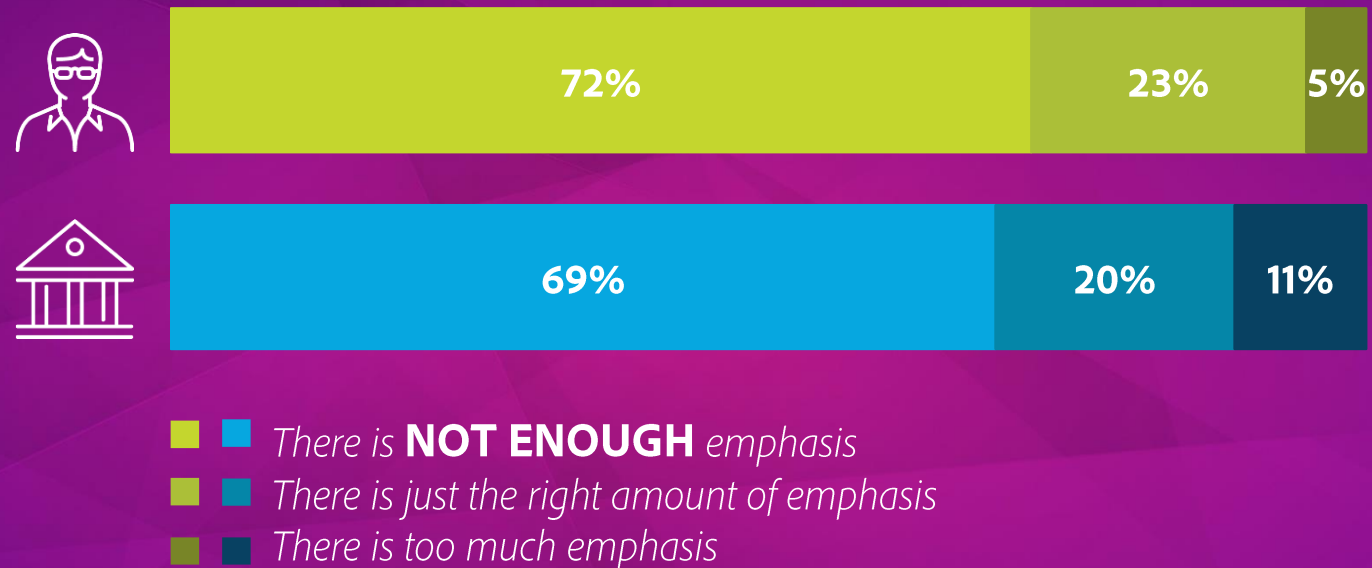
NOTE: Top 8 skills determined by ranking the average score of each skill among educators, policymakers & influencers; Top skills are shown ranked in order of educators scores

**Creative problem  
solving skills are  
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

Emphasis in Current Curriculum



EDUCATORS



POLICYMAKERS & INFLUENCERS

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



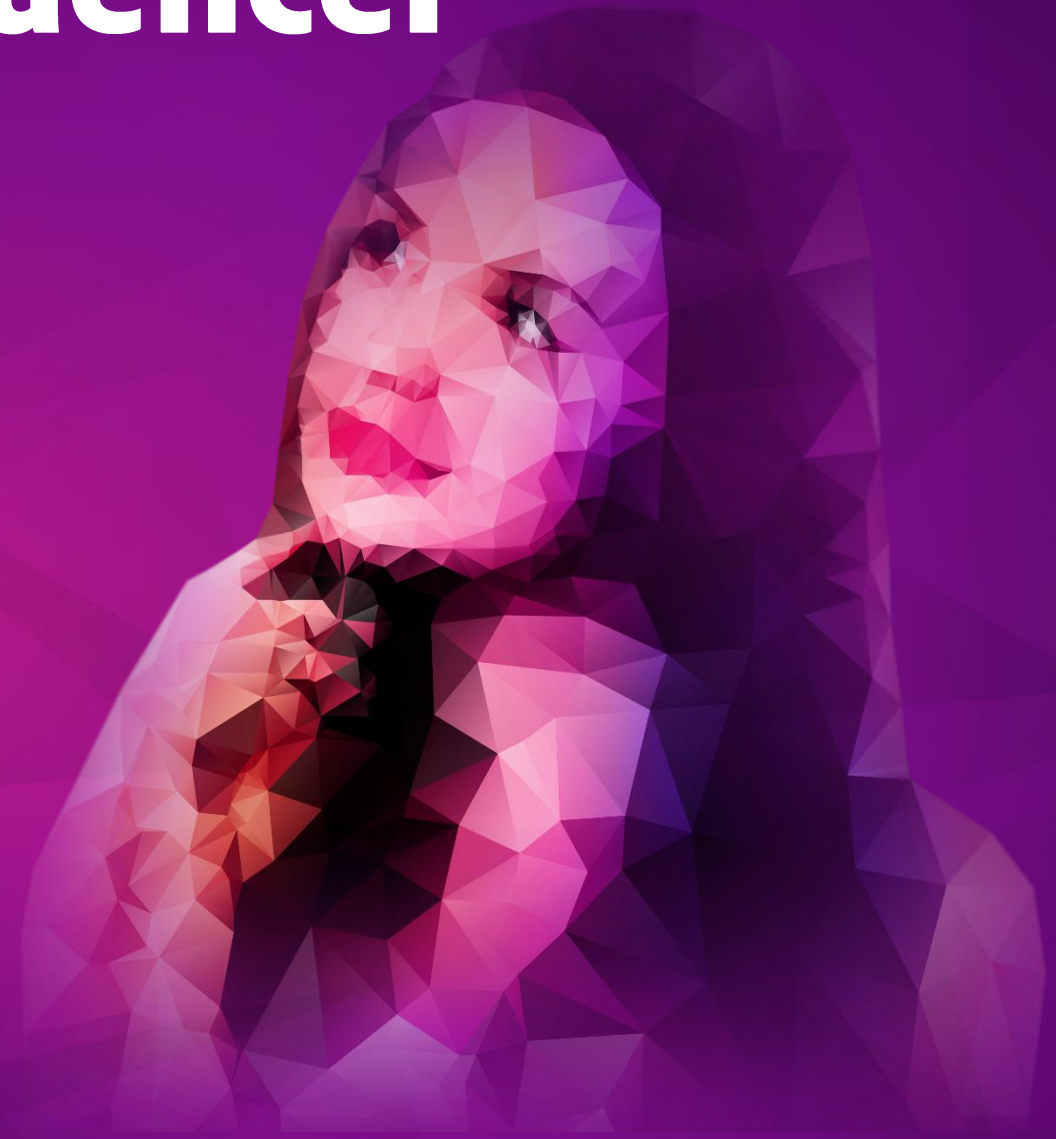
# Polycymaker & Influencer perspective

“

*In schools today are tasks, but no value is placed on creative solutions – only on the fact that the tasks are executed correctly. Creative problem solving and more independent work would have to be integrated into the curriculum for all subjects at an early stage.*

–Polycymaker & Influencer

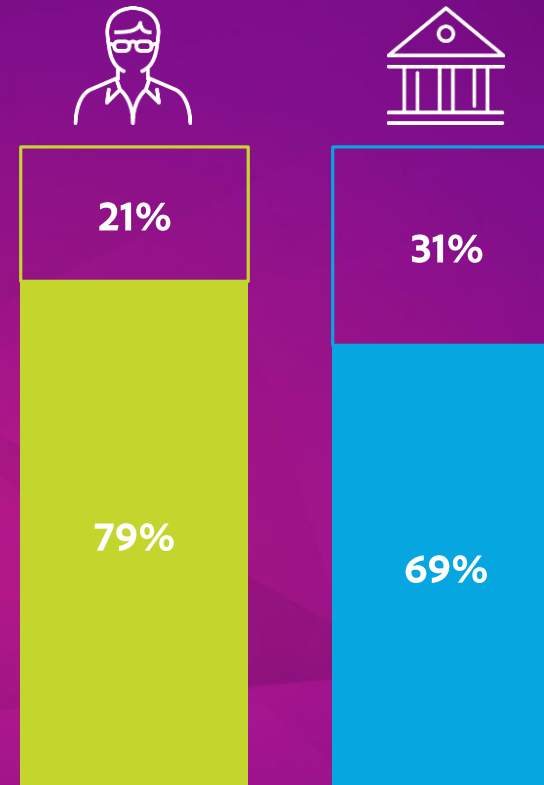
”



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

## Ideal Role in Curricula

- □ There should be a dedicated course focused on teaching creative problem solving
- ■ Teaching creative problem solving should be **INTEGRATED ACROSS ALL COURSES**



EDUCATORS



POLICYMAKERS & INFLUENCERS

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



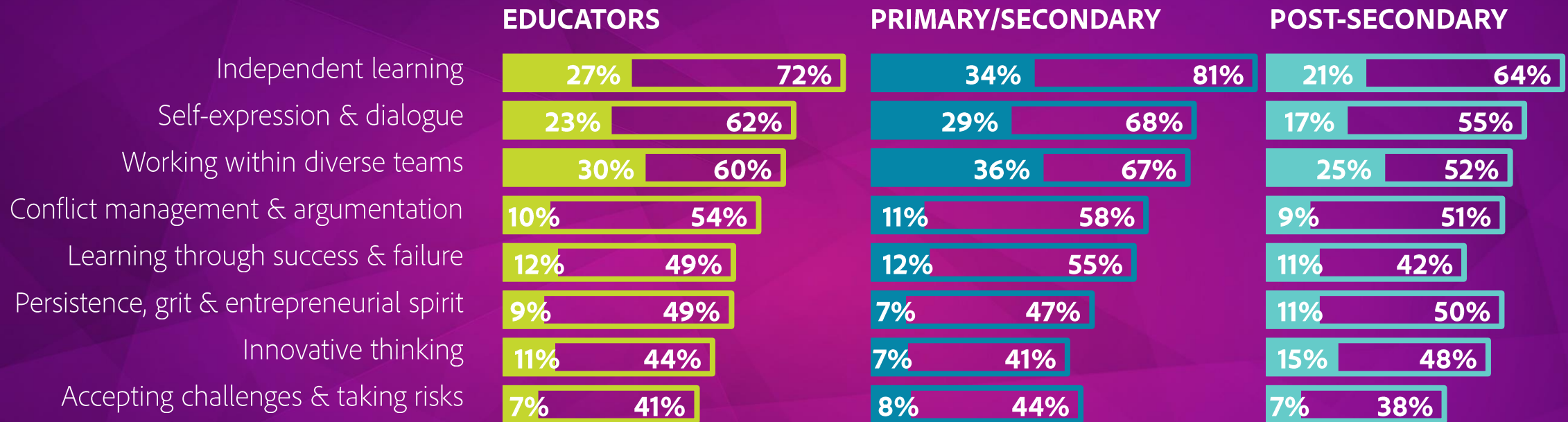
POLICYMAKERS & INFLUENCERS

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

Skills importance vs. Emphasis in Curricula Today



■ ■ ■ Great Deal of Emphasis Placed on Learning Skills    □ □ □ Very Important Skills

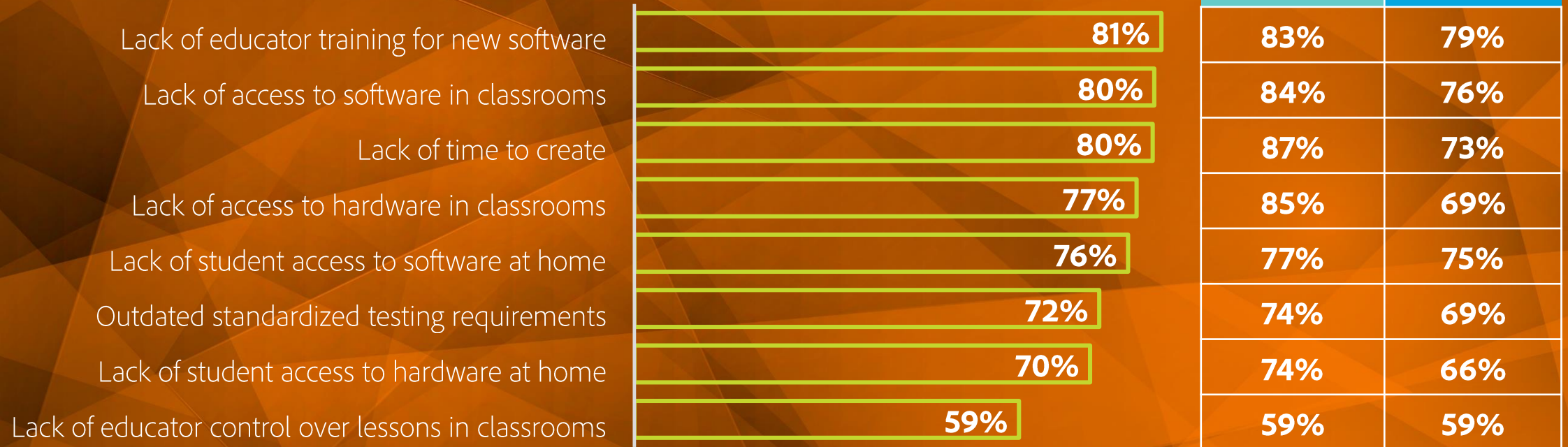
Q4: How important is it for students to learn each of the following skills in school today? Q6: And how much of an emphasis is there on each of the following skills in school curricula today? Shown: Top Box Only (Very Important, Great Deal of Emphasis), Educators

**Understanding  
the many barriers  
to nurturing these  
skills**



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

## Limiting Barriers to Nurturing Creative Problem Solving



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



# Educator perspective

“*The budget for the school is not enough, we have the worst, outdated technology [in school] and no technology at home for the students.*  
– Educator, Primary/Secondary

”

“*We're limited by a need for] teacher training and equipment for the schools (software). Also, mandatory measures affect curricula and exams.*

– Educator, Post-Secondary

”



# Today, 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

53%

*do not* have access to all the **TOOLS** they need to nurture creative problem solving

65% Primary/Secondary  
41% Post-Secondary

49%

*do not* have access to all the **KNOWLEDGE & TRAINING** they need to nurture creative problem solving

58% Primary/Secondary  
41% Post-Secondary

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 technology, training and time keep educators from getting the knowledge they need

## Barriers to Knowledge and Training



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=198)



**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** teachers' 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



“

*The curricula are strictly defined so that there is little room for maneuver for individual teaching methods in which the possibilities of creative problem solving can be adequately trained and worked out.*

–Educator, Secondary

”

“

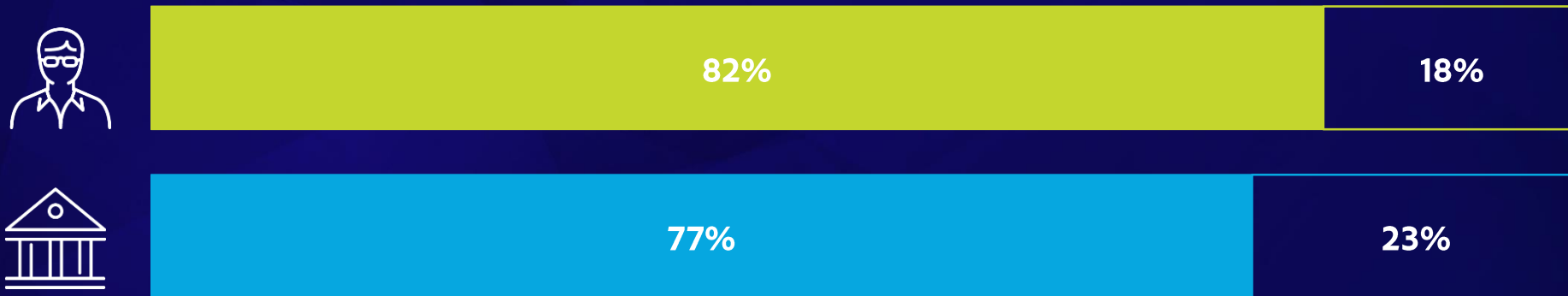
*Today's courses are more oriented toward standardized knowledge that can be tested well. However, this teaching leaves less room for developing creative solutions.*

–Educator, Post-Secondary

”

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

## Comparative Perceptions of Current Education Policies



- ■ Current policies are *WORSE OR ABOUT THE SAME* for nurturing creative problem solving than they were five years ago
- □ Current policies are *BETTER* for nurturing creative problem solving than they were five years ago



EDUCATORS



POLICYMAKERS & INFLUENCERS

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

# Polycymaker and educator perspectives

“

*In many federal states, education policy has not yet woken up, opening up to new concepts only slowly and sluggishly.*

–Policymaker

”

“

*G8, larger classes, less teachers, new concepts without money for the implementation, poor equipment of the schools.*

–Educator, Secondary

”

“

*Education policy has not changed much regarding creative problem solving.*

–Policymaker

”

“

*Education policy in general is desolate. All problems are passed on to the school, without providing adequate equipment. There are not even enough teachers in some subjects.*

–Educator, Post-Secondary

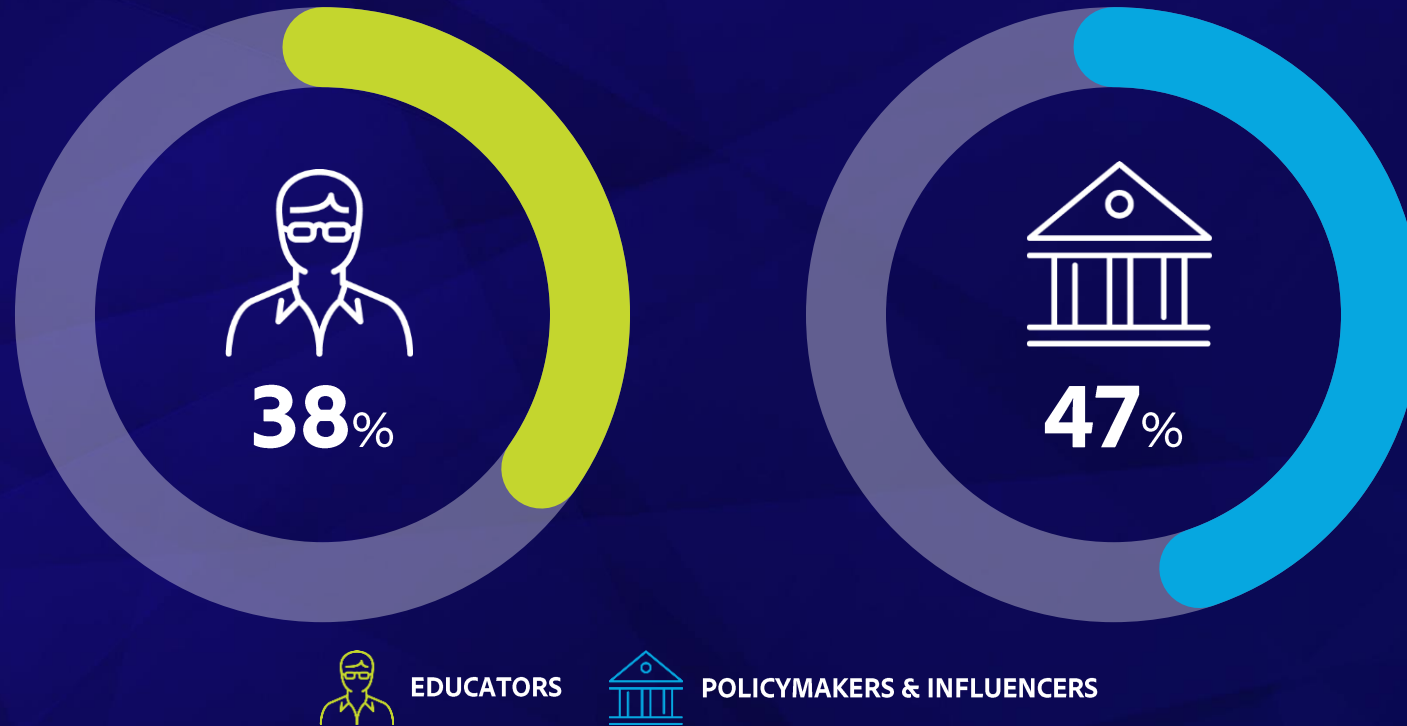
”

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 student preparedness

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



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



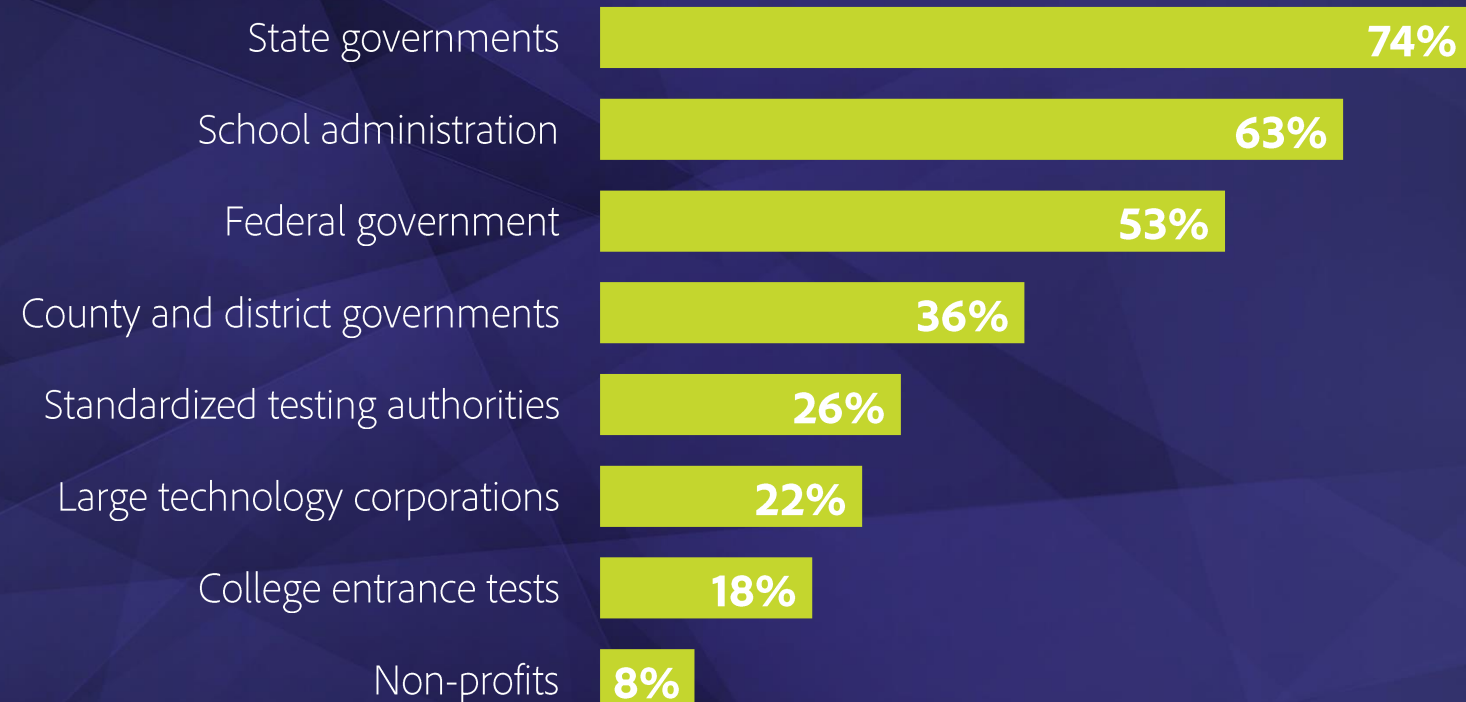
POLICYMAKERS & INFLUENCERS

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



# Governments and school administrations are considered most influential for bringing about change in today's classrooms

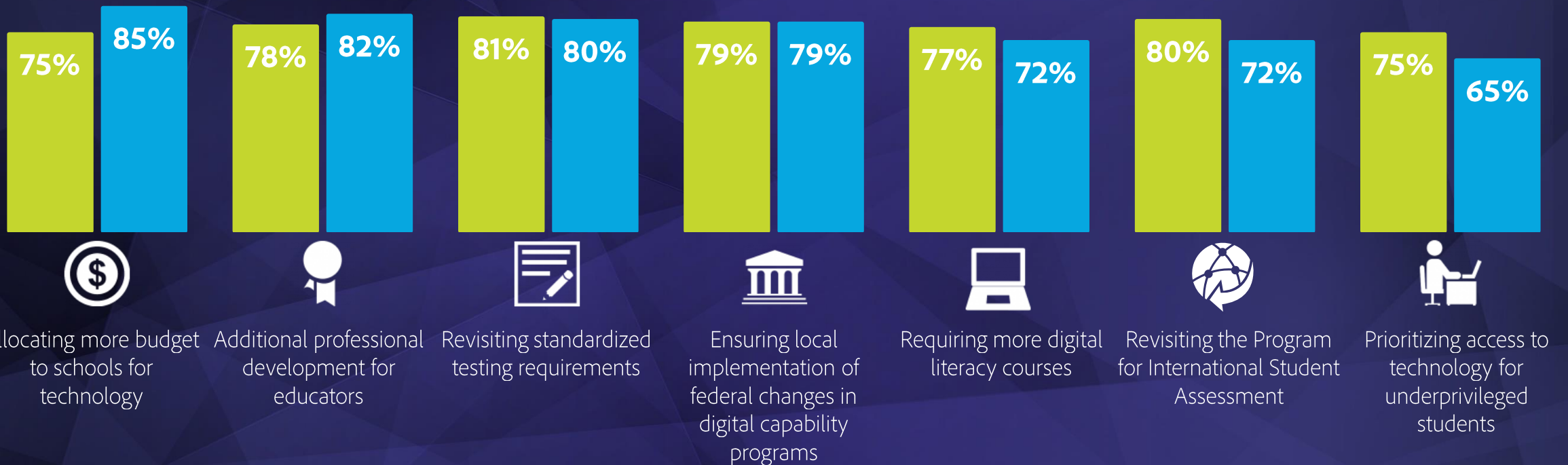
Most Potential to Improve Creative Problem Solving Skills in Today's Classroom



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

Effectiveness of methods to increase emphasis on creative problem solving



**EDUCATORS**



**POLICYMAKERS & INFLUENCERS**

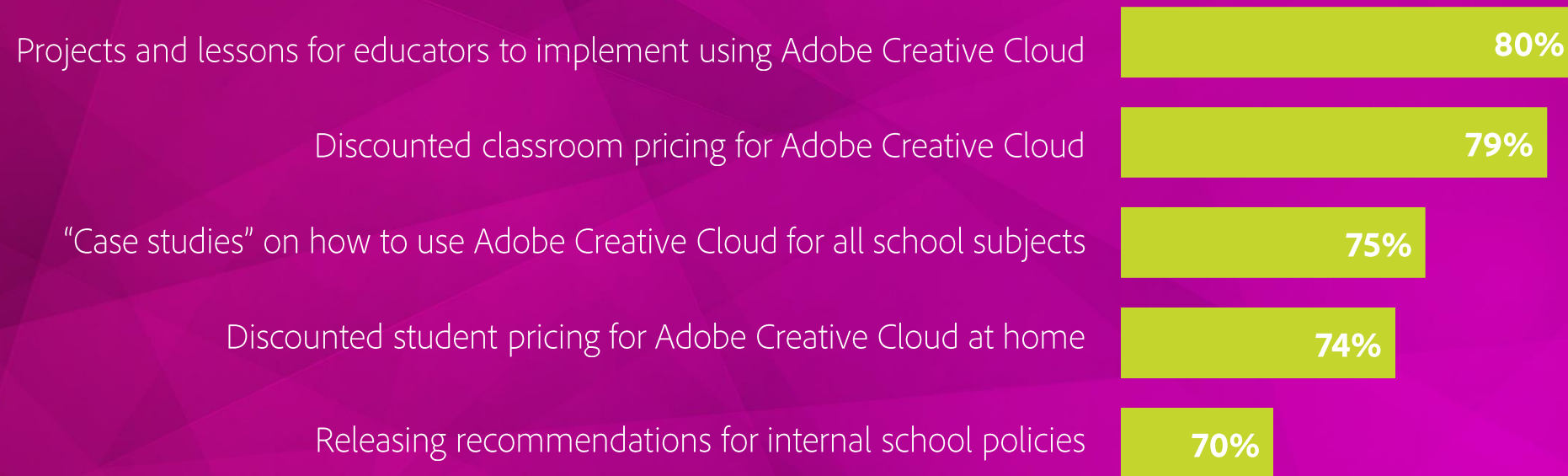
Q19: How effective would each of the following be in increasing the emphasis on creative problem solving skills in the classroom? Shown: Rank Top 7, Top 2 Box (Effective)

**Technologies like  
Adobe Creative Cloud  
can give students an  
advantage**



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

## Adobe Education Initiatives



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: Top 2 Box (Interested), Educators

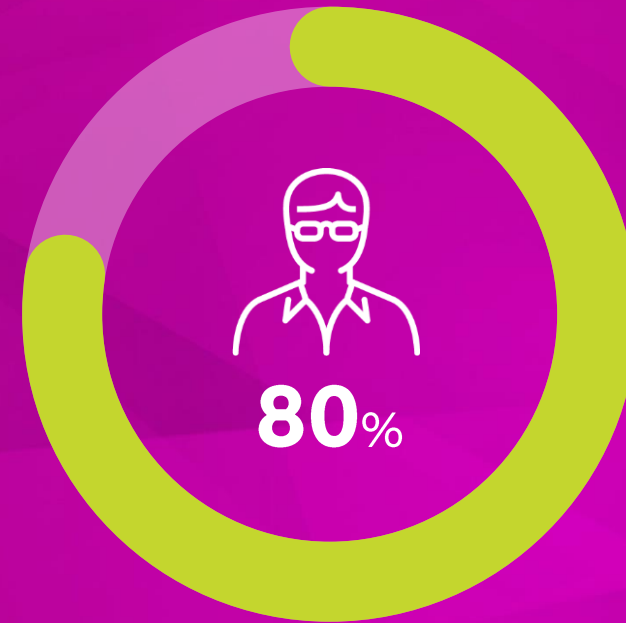


# Technology like Adobe Creative Cloud can help develop students' creative problem solving skills

Adobe 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=223)

# Educator perspective

“

*With Adobe programs you can learn  
intuitively and creatively!*  
- Educator, Secondary

”

“

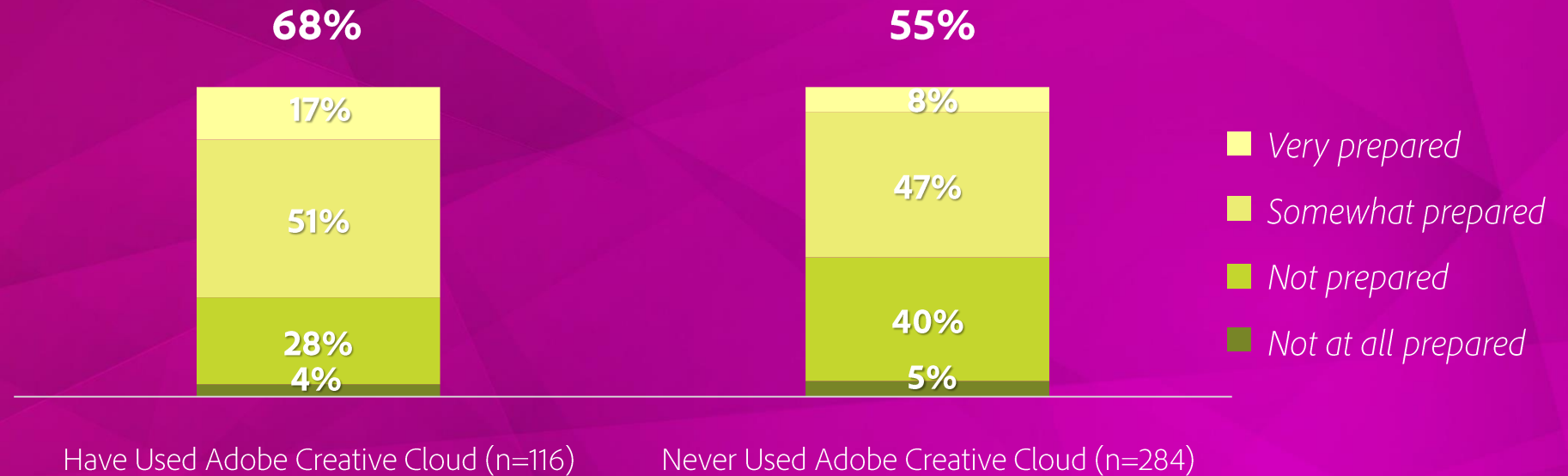
*[Adobe helps students] learn skills and  
collaborate in teams.*  
Educator, Post-Secondary

”



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

Your Students' Preparedness for Using Creative Problem Solving Skills



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

## Effectiveness of Adobe Creative Cloud in skill development



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 Adobe Creative Cloud (n=223)



# 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](https://cps.adobeeducate.com)**

# Bridging the Gaps

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 how Adobe is working to get much-needed technology into the hands of students and educators, support educators in teaching creative problem solving skills and inspire students to learn creative problem solving skills, please visit <http://cps.adobeeducate.com/>.

## **Support educators teaching creative problem solving**

- ✓ Highlight educators sharing how they teach creative problem solving across the curriculum
- ✓ Provide free professional development, projects and lessons to develop creative problem solving skills

## **Get technology into the hands of schools and students**

- ✓ For the first time, student under the age of 13 can be granted access to Creative Cloud services
- ✓ Offer discounted classroom and school pricing for Adobe Creative Cloud
- ✓ Offer discounted student pricing for Adobe Creative Cloud at home
- ✓ Deliver free Spark storytelling tools

## **Inspire students**

- ✓ Challenge students to create for positive social impact with [Project1324](#)



# Thank you



# Appendix: Demographics







# Demographics: Policymakers and influencers

CATEGORY	SUBCATEGORY	%
Gender	Male	68%
	Female	32%
Age	18-34	41%
	35-44	31%
	45+	29%
Region	Baden-württemberg	9%
	Bayern	15%
	Berlin	15%
	Brandenburg	4%
	Bremen	0%
	Hamburg	4%
	Hessen	7%
	Mecklenburg-vorpommern	2%
	Niedersachsen	10%
	Nordrhein-Westfalen	24%
	Rheinland-Pfalz	3%
	Saarland	3%
	Sachsen	2%
Sachsen-anhalt	1%	
Schleswig-Holstein	1%	
Thüringen	1%	

CATEGORY	SUBCATEGORY	%
Experience	Regional or Local government body	34%
	Non-profit association	24%
	Federal government body	23%
	Trade association	19%
	Political action committee	18%
	Political consulting firm	18%
	Law firm	14%
	Paid member of a political campaign or party	12%
	Non-governmental, multi-lateral org.	11%
	Think tank	8%
	Lobbying firm	8%
	Other government body	8%

CATEGORY	SUBCATEGORY	%
Policy Responsibilities*	Researching policy	58%
	Writing policy	45%
	Advising on policy	49%
	Lobbying for policy	32%
Policy Level*	Local	44%
	State	47%
	Federal	25%
Education	University Degree, Honours degree	63%
	Post-graduate degree	38%

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	50%
	Female	50%
Age	18-34	38%
	35-44	25%
	45+	37%
Region	Baden-württemberg	10%
	Bayern	15%
	Berlin	8%
	Brandenburg	3%
	Bremen	1%
	Hamburg	3%
	Hessen	9%
	Mecklenburg-vorpommern	3%
	Niedersachsen	7%
	Nordrhein-Westfalen	17%
	Rheinland-Pfalz	5%
	Saarland	4%
	Sachsen	7%
	Sachsen-anhalt	2%
Schleswig-Holstein	3%	
Thüringen	0%	

CATEGORY	SUBCATEGORY	%
Subject Areas Taught*	Visual arts	6%
	Performing arts	5%
	Architecture	3%
	Photography	4%
	Design	5%
	Communications	10%
	Journalism	4%
	Business/Marketing	6%
	Computer science/IT	18%
	English	23%
	Engineering	11%
	Economics	20%
	Social Sciences	29%
	Math	28%
	Natural sciences	29%
	Arts & sciences/Liberal arts	12%
	Physical education/Health	13%
	German	27%

CATEGORY	SUBCATEGORY	%
Education Level Taught	Primary/Secondary	50%
	Post-Secondary	50%
Length of Time in Education	Less than 6 years	32%
	6-10 years	22%
	11-20 years	25%
	More than 20 years	21%
Education	University Degree, Honours degree	62%
	Post-graduate degree	38%

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%