#122

PISA in Focus

How are education systems integrating creative thinking in schools?

Programme for International Student Assessment

OECD
BETTER POLICIES FOR BETTER LIVES

How are education systems integrating creative thinking in schools?

- Creative thinking, or related terms such as innovation, are present in the curricula of virtually all PISA 2022-participating jurisdictions. They are most referenced in arts and language subjects.
- However, only 24% of jurisdictions reported having system-level guidelines or evaluations in place that describe what creative thinking is and how it is learnt.
- An overcrowded curriculum, a lack of assessment focus on creativity, and not enough related teacher training and resources are the main challenges to integrating creative thinking in education.

Creative thinking is the ability to generate, evaluate and improve ideas that can lead to original and effective solutions, advances in knowledge, and impactful expressions of imagination, according to PISA's definition. This focuses on the cognitive processes and outcomes associated with everyday creativity that can be developed through practice and honed through education. Examples of this kind of creative thinking include drawing a vignette to explain something to your child, rearranging a text at work to communicate an idea more effectively, or finding a solution to a complex scheduling problem.

Thinking creatively – including in school – is critical for several reasons. It helps students to reflect upon and interpret experiences and information in novel and meaningful ways. Teaching practices that engage with student creativity can also motivate them to learn. And creative thinking is highly valued post-education; consistently named among the top skills that employers value.

Creative thinking is present in virtually all system-level curricula or learning standards

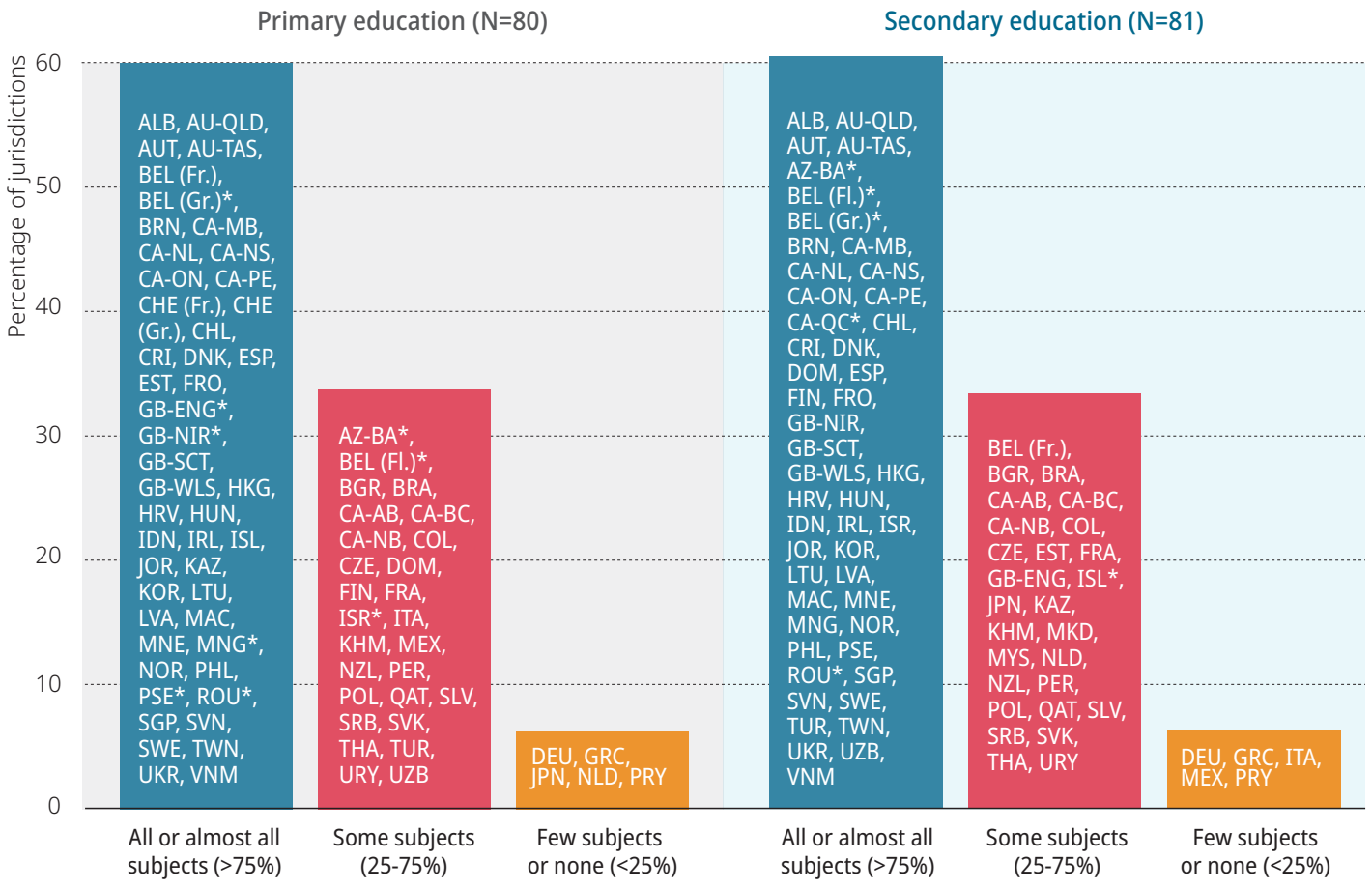
Although creative thought draws upon domain-specific knowledge and skills, experts agree that creative thinking can emerge and be taught in all school subjects. Different "everyday" forms of creative work are possible in school. Students' creative thinking can manifest as they explore issues in a group, engage in finding multiple solutions to different kinds of problems, and as they express their imagination, for example through writing, drawing or dancing.

In 2022, PISA asked participating jurisdictions which subjects or domains in the curricula or learning standards of their education systems referred to creative thinking or related terms such as innovation. Survey responses show that 60% of jurisdictions include references to creative thinking in all or almost all curricular subjects for primary education (>75% of curricular subjects), 34% in some subjects (between 25% and 75% of subjects) and only 6% of jurisdictions refer to creative thinking in few curricular subjects or none (<25% of subjects). Similar patterns are observed in secondary education curricula.

In terms of the distribution of such references across subjects, most primary education curricula refer to creative thinking in the domains of visual arts (93% of jurisdictions), performance arts (92%), and reading, writing and literature in the native language (86%). In secondary education, creative thinking is also more present in relation to the visual and performance arts (90% and 88% of jurisdictions, respectively) as well as technology (88%) and reading, writing and literature (86%). In contrast, references to creative thinking are less common in physical education (60% of jurisdictions for primary education curricula, 64% for secondary education), history (59% and 62%) and citizenship (56% and 58%).

Creative thinking in curricula

Number of jurisdictions in which curricula or learning standards for primary and secondary education refer to creative thinking, by share of curricular subjects referring to creative thinking, 2022



* Jurisdictions for which the share of subjects referring to creative thinking is calculated over a number of subjects with information available equal or lower than 6.

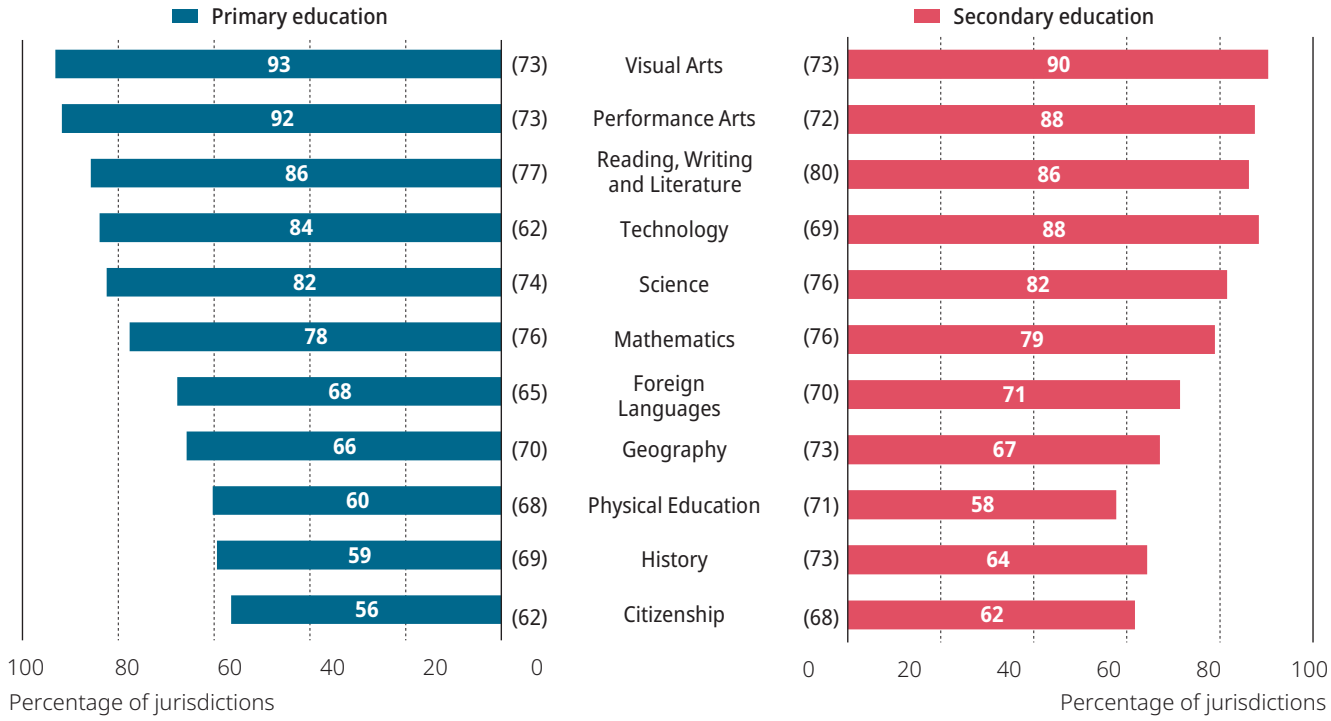
Notes: The Figure reports the percentage of jurisdictions in which curricula or learning standards for primary (left-hand side) and secondary education (right-hand side) refer to creative thinking, by the share of curricular subjects that include such reference. The percentage of jurisdictions is calculated over the number of responses that include information on at least one curricular subject (see N reported in brackets next to the education level label). The share of curricular subjects referring to creative thinking is calculated over the number of subjects for which information was provided by each jurisdiction.

In the Figure, 'primary education' refers to ISCED level 1, and 'secondary education' to ISCED levels 2 and 3. In some jurisdictions, the curricula or standards documents for primary (ISCED level 1) and lower secondary education (ISCED level 2) are integrated. In these cases, 'primary education' refers to both primary and lower secondary education (ISCED levels 1 and 2) and 'secondary education' refers to upper secondary education (ISCED level 3).

Source: OECD, PISA 2022 System-Level Questionnaire on Creative Thinking.

Creativity across curricular domains/school subjects

Percentage of jurisdictions where the following domains/school subjects refer to creativity in system-level curricula or learning standards, by level of education, 2022



Notes: For each subject, the percentage in the bar chart is based on the number of jurisdictions that reported the subject containing a reference to creative thinking or related terms, over the number of valid responses for the subject (see N reported in brackets in the Figure). Note that survey responses that indicated that it was not possible to establish whether the subject made reference to creative thinking were counted as missing responses and thus not included in the valid response count.

In the Figure, 'primary education' refers to ISCED level 1, and 'secondary education' to ISCED levels 2 and 3. However, in jurisdictions where the curricula or standards documents for primary (ISCED level 1) and lower secondary education (ISCED level 2) are integrated, 'primary education' refers to both primary and lower secondary education (ISCED levels 1 and 2) and 'secondary education' refers to upper secondary education (ISCED levels 3).

Source: OECD, PISA 2022 System-Level Questionnaire on Creative Thinking.

Overcoming the challenges to integrating creative thinking

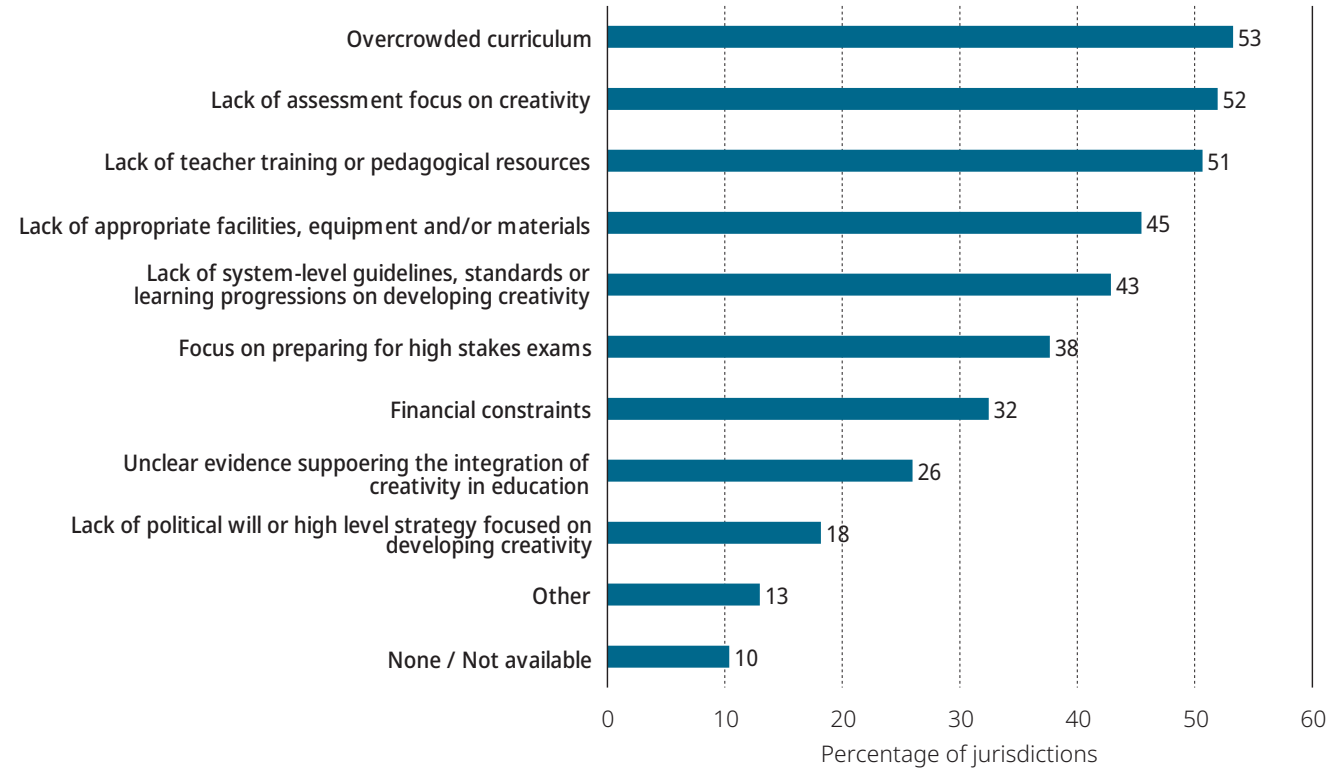
Previous attempts to embed creative thinking in schools show that changing curricula alone is not enough to systematically recognise, promote, and reward student creativity effectively and consistently. In fact, the systematic integration of creative thinking into everyday practices faces many challenges.

PISA 2022 asked participating jurisdictions which issues challenge their capacity to develop student creativity. Survey responses flagged overcrowded curricula and insufficient teaching time (53% of jurisdictions), a lack of assessment focus on creativity (52%), and a lack of teacher training or pedagogical resources (51%) as main barriers.

A broad set of policies is needed to promote creative thinking, in particular the provision of initial teacher education and professional development opportunities, and the alignment of the whole evaluation and assessment framework. Without aligning these two policy areas with curricular goals, teachers may not have capacity to teach the new curriculum and lack incentives to experiment with and employ related practices.

Challenges facing the integration of creative thinking in education

Percentage of jurisdictions reporting the following challenges to integrate creative thinking in their education system, 2022



Note: For each type of perceived challenge, the reported share is based on the number of jurisdictions that selected that challenge as a response, over the total number of valid responses received on this question (N=77). Cases in which no response options were selected (i.e., 'None / Not applicable' was not selected, either) were treated as missing data and thus not counted as valid responses.

Source: OECD, PISA 2022 System-Level Questionnaire on Creative Thinking.

Empowering teachers

Teachers can play a central role in fostering student creativity by using teaching practices that encourage students to explore, generate and reflect upon ideas. Teacher education and training can provide clear frameworks of what creative thinking is and how it can be taught across subjects. It can also help to address typical misconceptions, such as views of creative thinking as a competency that only a few talented students can develop, or one pertaining solely to arts subjects.

PISA 2022 also asked participating jurisdictions whether guidelines or requirements governing initial teacher education and training exist in their education system, and if they explicitly refer to developing students' creativity. Survey responses show that teacher qualifications and training guidelines/requirements refer to developing students' creativity in less than 70% of jurisdictions with data available (68% for guidelines/requirements for primary education teachers, and 61% for secondary education teachers). References to assessing student creativity are less common, and only present in 44% and 40% of jurisdictions' guidelines/requirements for primary and secondary education teachers, respectively.

Taking a whole-of-system approach: A snapshot of jurisdictional progress [1/3]

Existence of system-level teacher qualifications and training requirements referring to creativity, by level of education, and of system-level guidelines (e.g., learning progressions, rubrics) or evaluations of creativity, 2022

Yes | No | Currently in development | Not applicable | Missing data

	System-level formal guidelines or requirements related to the contents of initial teacher training refer to...				Existence of system-level guidelines (e.g. learning progressions, rubrics) or evaluations related to students' creativity
	...developing students' creativity		...assessing students' creativity		
	Primary	Secondary	Primary	Secondary	
Albania	●	●	●	●	●
Alberta (Canada)	●	●	●	●	●
Australian Capital Territory (Australia)	○	○	○	○	●
Austria	●	●	●	●	●
Baku (Azerbaijan)	○	○	○	○	●
Brazil	●	●	●	●	●
British Columbia (Canada)	●	●	●	●	●
Brunei Darussalam	●	●	●	●	●
Bulgaria	●	○	●	○	●
Cambodia	●	●	●	●	●
Chile	●	●	●	●	●
Colombia	●	●	●	●	●
Costa Rica	○	○	○	○	●
Croatia	●	●	●	●	●
Czech Republic	●	●	●	●	●
Denmark	●	●	●	●	●
Dominican Republic	●	●	●	●	●
El Salvador	●	●	●	●	●
England (United Kingdom)	●	●	●	●	●
Estonia	●	●	●	●	●
Færøerne Islands (Denmark)	●	●	●	●	●
Finland	●	●	●	●	●
Flemish community (Belgium)	●	●	●	●	●
France	●	●	●	●	●
French Community (Belgium)	●	●	●	●	●
French-speaking cantons (Switzerland)	○	○	○	○	●
German-speaking cantons (Switzerland)	○	○	○	○	●
German-speaking Community (Belgium)	●	○	●	○	●
Germany	●	●	●	●	●
Greece	○	●	○	●	●
Hong Kong (China)	○	○	○	○	●
Hungary	●	●	●	●	●
Iceland	●	●	●	●	●
Indonesia	●	●	●	●	●
Ireland	●	●	●	●	●

Taking a whole-of-system approach: A snapshot of jurisdictional progress [2/3]

Existence of system-level teacher qualifications and training requirements referring to creativity, by level of education, and of system-level guidelines (e.g., learning progressions, rubrics) or evaluations of creativity, 2022

Yes | No | Currently in development | Not applicable | Missing data

	System-level formal guidelines or requirements related to the contents of initial teacher training refer to...				Existence of system-level guidelines (e.g. learning progressions, rubrics) or evaluations related to students' creativity
	...developing students' creativity		...assessing students' creativity		
	Primary	Secondary	Primary	Secondary	
Israel	No	No	No	No	No
Italy	Yes	Yes	No	No	No
Jamaica	Not applicable	Yes	Not applicable	Yes	Yes
Japan	Yes	Yes	Yes	Yes	Yes
Jordan	Yes	Yes	Yes	Yes	Currently in development
Kazakhstan	No	No	No	No	No
Korea	No	No	No	No	No
Latvia	Yes	Yes	Yes	Yes	Yes
Lithuania	Not applicable	Missing data	Not applicable	Missing data	No
Macao (China)	No	No	No	No	Yes
Malaysia	Yes	Yes	Yes	Yes	No
Manitoba (Canada)	No	No	No	No	Currently in development
Mexico	Yes	No	No	No	No
Mongolia	Yes	Yes	Yes	Yes	Currently in development
Montenegro	Not applicable	Yes	Not applicable	Missing data	Yes
Netherlands	No	No	No	No	No
New Brunswick (Canada)	No	No	No	No	No
New South Wales (Australia)	No	No	No	No	Missing data
New Zealand	Not applicable	No	Not applicable	No	No
Newfoundland and Labrador (Canada)	No	No	No	No	No
North Macedonia	Yes	No	No	No	No
Northern Ireland (United Kingdom)	Yes	Yes	Yes	Yes	Yes
Northern Territory (Australia)	Not applicable	Missing data	Not applicable	Missing data	No
Norway	Yes	Yes	Yes	Yes	No
Nova Scotia (Canada)	No	No	No	No	No
Ontario (Canada)	Yes	Yes	Yes	Yes	Yes
Palestinian Authority	Not applicable	No	Not applicable	No	No
Panama	Not applicable	Not applicable	Not applicable	Not applicable	No
Paraguay	No	No	No	No	No
Peru	Yes	Yes	No	No	No
Philippines	Yes	Yes	Yes	Yes	Yes
Poland	Yes	Yes	No	No	No
Portugal	No	No	No	No	No
Prince Edward Island (Canada)	Not applicable	Not applicable	Not applicable	Not applicable	No
Qatar	Yes	Yes	Yes	Yes	Currently in development

Taking a whole-of-system approach: A snapshot of jurisdictional progress [3/3]

Existence of system-level teacher qualifications and training requirements referring to creativity, by level of education, and of system-level guidelines (e.g., learning progressions, rubrics) or evaluations of creativity, 2022

Yes | No | Currently in development | Not applicable | Missing data

	System-level formal guidelines or requirements related to the contents of initial teacher training refer to...				Existence of system-level guidelines (e.g. learning progressions, rubrics) or evaluations related to students' creativity
	...developing students' creativity		...assessing students' creativity		
	Primary	Secondary	Primary	Secondary	
Quebec (Canada)	Yes	Yes	Yes	Yes	No
Queensland (Australia)	Not applicable	Not applicable	Not applicable	Not applicable	Yes
Romania	No	No	No	No	No
Saskatchewan (Canada)	Missing data	Missing data	Missing data	Missing data	No
Scotland (United Kingdom)	No	No	No	No	Yes
Serbia	Not applicable	Not applicable	Not applicable	Not applicable	No
Singapore	Yes	Yes	Yes	Yes	No
Slovak Republic	Not applicable	Not applicable	Not applicable	Not applicable	No
Slovenia	Not applicable	Not applicable	Not applicable	Not applicable	No
Spain	Yes	Yes	Yes	Yes	Yes
Sweden	Missing data	Missing data	Missing data	Missing data	No
Chinese Taipei	Not applicable	Yes	Not applicable	No	No
Tasmania (Australia)	Not applicable	Not applicable	Not applicable	Not applicable	No
Thailand	Not applicable	No	Not applicable	No	No
Türkiye	Yes	Yes	Yes	Yes	No
Ukraine	Yes	Yes	No	No	Currently in development
Uruguay	Missing data	Missing data	No	No	Currently in development
Uzbekistan	Not applicable	Not applicable	Not applicable	Not applicable	No
Viet Nam	Yes	Yes	Yes	Yes	Yes
Wales (United Kingdom)	Yes	Yes	Yes	Yes	Yes

Notes: OECD countries are shown in black. Regions of OECD countries are shown in black italics. Partner countries and economies are shown in blue. *Jurisdictions are ranked in alphabetical order.*
Source: OECD, PISA 2022 System-Level Questionnaire on Creative Thinking.

The key role of assessment

Research-based learning progressions describe how students move through different stages in their learning. These can be used alongside specific criteria to assess performance, such as scoring rubrics. Used together, these are important sources of intelligence informing the formative decisions of teachers in the classroom.

Student assessments based on these learning progressions also constitute a reference point for educators to identify key aspects to focus on during instruction. Student assessments have a constraining effect on creativity education when they fail to evaluate creative thinking. For instance, assessments that focus on the reproduction of pre-defined knowledge as opposed to original thought. Or, when some facets of creative work more commonly associated with certain disciplines, like visual expression and arts learning, are neglected in assessments that focus on some subjects at the expense of others (e.g. testing mathematics but not visual arts).

Although clear definitions, examples of performance and system-level student evaluations are commonly available for traditional school subjects (e.g. mathematics) in most jurisdictions, this is less often the case for complex competencies like creative thinking. In 2022, only 24% of PISA-participating jurisdictions reported the existence of system-level guidelines (e.g. learning progressions, rubrics) or evaluations on creative thinking in their education systems. In 10% of jurisdictions, such guidelines and evaluations were reported as being under development.

The bottom line

Creative thinking is a key competency that young people need for the future. Virtually all curricula internationally formally recognise the role that education can play in supporting its development. However, changing the curricula alone is not enough to ensure that all learners can develop their creative thinking skills as part of their schooling experience. More is needed to make sure that curricula, teacher education and training, and assessment and evaluation frameworks are aligned for new curricular goals to translate into supportive educational practices.

List of abbreviations

ALB	Albania	HUN	Hungary
AU-ACT	*Australian Capital Territory (Australia)*	IDN	Indonesia
AU-NSW	*New South Wales (Australia)*	IRL	Ireland
AU-NT	*Northern Territory (Australia)*	ISL	Iceland
AU-QLD	*Queensland (Australia)*	ISR	Israel
AU-TAS	*Tasmania (Australia)*	ITA	Italy
AUT	Austria	JAM	Jamaica
AZ-BA	*Baku (Azerbaijan)*	JOR	Jordan
BEL (Fl.)	*Flemish Community (Belgium)*	JPN	Japan
BEL (Fr.)	*French Community (Belgium)*	KAZ	Kazakhstan
BEL (Gr.)	*German-speaking Community (Belgium)*	KHM	Cambodia
BGR	Bulgaria	KOR	Korea
BRA	Brazil	LTU	Lithuania
BRN	Brunei Darussalam	LVA	Latvia
CA-AB	*Alberta (Canada)*	MAC	Macao (China)
CA-BC	*British Columbia (Canada)*	MEX	Mexico
CA-MB	*Manitoba (Canada)*	MKD	North Macedonia
CA-NB	*New Brunswick (Canada)*	MNE	Montenegro
CA-NL	*Newfoundland and Labrador (Canada)*	MNG	Mongolia
CA-NS	*Nova Scotia (Canada)*	MYS	Malaysia
CA-ON	*Ontario (Canada)*	NLD	Netherlands
CA-PE	*Prince Edward Island (Canada)*	NOR	Norway
CA-QC	*Quebec (Canada)*	NZL	New Zealand
CA-SK	*Saskatchewan (Canada)*	PAN	Panama
CHE (Fr.)	*French-speaking cantons (Switzerland)*	PER	Peru
CHE (Gr.)	*German-speaking cantons (Switzerland)*	PHL	Philippines
CHL	Chile	POL	Poland
COL	Colombia	PRT	Portugal
CRI	Costa Rica	PRY	Paraguay
CZE	Czech Republic	PSE	Palestinian Authority
DEU	Germany	QAT	Qatar
DNK	Denmark	ROU	Romania
DOM	Dominican Republic	SGP	Singapore
ESP	Spain	SLV	El Salvador
EST	Estonia	SRB	Serbia
FIN	Finland	SVK	Slovak Republic
FRA	France	SVN	Slovenia
FRO	*Færøerne Islands (Denmark)*	SWE	Sweden
GB-ENG	*England (United Kingdom)*	THA	Thailand
GB-NIR	*Northern Ireland (United Kingdom)*	TUR	Türkiye
GB-SCT	*Scotland (United Kingdom)*	TWN	Chinese Taipei
GB-WLS	*Wales (United Kingdom)*	UKR	Ukraine
GRC	Greece	URY	Uruguay
HKG	Hong Kong (China)	UZB	Uzbekistan
HRV	Croatia	VNM	Viet Nam

For more information

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