EDUCATIONAL RESEARCH AND INNOVATION

Supporting Teachers to Foster Creativity and Critical Thinking:

A draft professional learning framework for teachers and leaders

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A PROFESSIONAL LEARNING FRAMEWORK FOR FOSTERING AND ASSESSING CREATIVITY AND CRITICAL THINKING

This professional learning framework is intended to support the implementation of teaching and learning that fosters and assesses creativity and critical thinking internationally. It is an output of the OECD Centre for Educational Research and Innovation (CERI) project on Fostering and Assessing Creativity and Critical Thinking. The project has worked with teachers, university professors, teacher educators and experts in 21 countries to develop and trial approaches to supporting student creativity and critical thinking in subject teaching across levels of education.

The importance of creativity and critical thinking for students, societies, and economies has become almost consensual. Helping students to develop these skills is a key responsibility of education systems. Yet, a common barrier is that teachers do not have enough opportunities and resources to develop professional knowledge on what supporting student creativity and critical thinking involves and how it can be done in their context. This framework is addressed to that need.

This document provides a description of the overall framework, a number of suggested activities divided into eight modules or cycles of learning for teachers plus an additional two modules, one for institutional leaders and one for policy-makers respectively. It also includes guidance on different possible pathways through the material and on facilitation. It can be implemented in any number of ways, but there is some core content which should form the backbone of any professional learning that uses this framework. Beyond this, the framework is designed to be adapted by local facilitators to suit a variety of contexts, needs and interests around teaching and assessing creativity and critical thinking.

The framework is based on the principle that professional learning should not only be evidence-based but also embedded in teacher practice, integrated with the broader curriculum or learning standards and responsive to student needs, and that teachers should have as much agency and autonomy as possible in relation to their professional learning. The intention is, where possible, to make the learning intentional, applied, authentic, experiential, active and cooperative and to emphasise the importance of professional dialogue and peer support throughout (Darling-Hammond, Burns and Campbell, 2017[2]; Boeskens, 2020[3]). However, the framework is designed to be flexible, and the implemented version will depend on how it is integrated into schools and systems with differing teaching traditions and cultures around professional learning.

Description

How can teachers help students nurture their creativity and critical thinking and improve their learning? What does this look like in the classroom in different teaching subjects? What instructional practices can be effective and what do they require of teachers, learners, and learning environments? This professional

learning framework aims to help teachers develop engaging and equitable teaching and learning strategies to embed student creativity and critical thinking in the curriculum in their contexts. Participants will design learning activities that provide space for student creativity and critical thinking as part of subject knowledge learning outcomes. They will discuss the challenges and constraints that they face in fostering student creativity and critical thinking as well as what can support them to address these constraints. They will engage closely with questions about how these skills can be assessed in education. The framework is based around discussion and practical activities and supports a structured engagement with the resources available on the OECD-CERI web application, www.oecdcericct.com. Participants are encouraged to discuss and apply their learning in their everyday practice, and develop their own learning networks, resources and plans to support continuing development and effectiveness in fostering and assessing creativity / critical thinking. The framework has different tracks depending on the role and interests of participants; it can be implemented to focus on either creativity or critical thinking or on both. One module is aimed primarily at institutional leaders and there is another for policymakers.

Learning outcomes

On completion, participants will be able to:

- Communicate an in-depth understanding of why student creativity / critical thinking is important and what creativity / critical thinking look like in the classroom in their discipline.
- Recognise the importance of culture and language in cultivating creativity / critical thinking.
- Identify opportunities to support student creativity / critical thinking in their teaching
- Integrate creativity / critical thinking into planning, learning design, delivery and assessment.
- Be familiar with and apply a broad range of teaching and assessment strategies to support student creativity / critical thinking.
- Monitor student learning and progression in creativity / critical thinking and formulate effective feedback to support creativity / critical thinking.
- Articulate their values and beliefs around creativity / critical thinking and show awareness of how these might affect their practice and develop and nurture their own creativity / critical thinking as practitioners.
- Demonstrate a commitment to reflective practice and to developing learning networks and other measures to support their continuous learning around creativity / critical thinking.

For institutional leaders and policymakers:

- Develop strategies to support the development of student creativity and critical thinking within schools and systems and monitor their implementation.

Modules overview

This professional learning framework consists of four modules for creativity and four modules for critical thinking. Additional modules are provided for institutional leaders and policymakers:

Creativity	Critical thinking
Module 1: Introduction to creativity	Module 5: Introduction to critical thinking
Module 2: Planning and learning design for student creativity	Module 6: Planning and learning design for student critical thinking
Module 3: Teaching and delivery for student creativity	Module 7: Teaching and delivery for student critical thinking

Module 4: Assessment and student creativity	Module 8: Assessment and student critical thinking
Module 9: Institution-wide creativity / critical thinking (primarily for institutional leaders)	
Module 10: System-wide creativity / critical thinking (primarily for policy-makers)	

The creativity and critical thinking modules resemble one other; activities are mostly similar in format, although the focus of discussion and application is different. The similarity across creativity and critical thinking modules ensures that participants that only take creativity or critical thinking modules have access to the same opportunities for learning. If both creativity and critical thinking modules are offered, they will build upon one another to allow participants to deepen their thinking as they repeat certain activities but apply them to a different skill. Alternative activities can also be chosen from each respective module to vary the learning experience (for example activity 1.1 could be offered from the introduction to creativity module and activity 1.2 could be offered from the introduction to critical thinking module).

Mode of delivery

This professional learning framework will be adapted and delivered in-person by local facilitators, the details of each activity are also available on www.oecdcericct.com where individuals can undertake them individually or use them to facilitate workshops in their own contexts. Components of the framework document may also be used in open-access online courses.

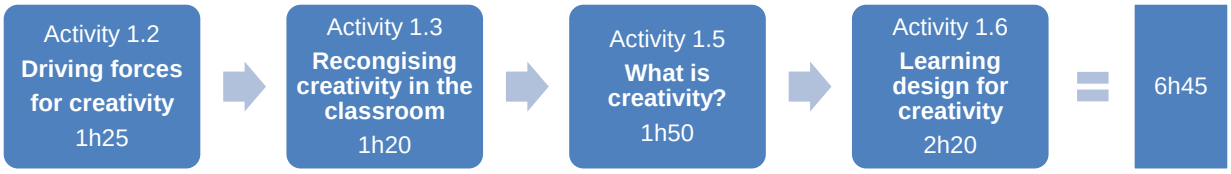
Learning pathways

This framework document contains a broad modular toolkit that can be tailored to the needs of a variety of contexts. It is possible to implement all creativity and critical thinking modules and activities in this framework document in sequence for a total of 99 professional learning hours, which could be divided over several weeks or months. As most contexts will have more limited time available for professional learning, an accelerated (approx. 1 day) version of each module is provided (see intro to each module for more details). Individual activities can also be used in a stand-alone manner and integrated into existing professional learning and workshops. Below are some possible learning pathways, that draw on all of the modules, and that can be used within different timeframes. Activities 1.5 and 5.4 are important in creating a shared understanding of what is meant by creativity and critical thinking. If these activities are not offered as part of the learning pathway, then the offered activities will need to start by establishing a definition of the skills before discussing them more widely.

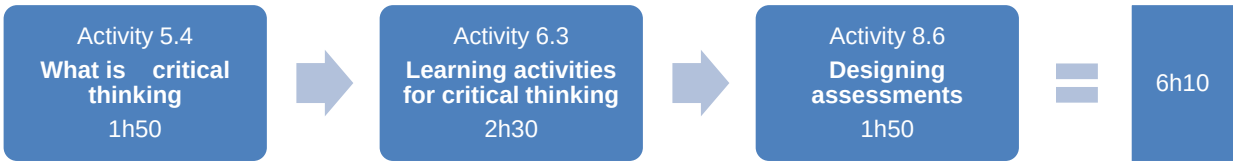
1. Approximately one day to cover both creativity and critical thinking:

It is possible to adapt individual activities so that they look at both creativity and critical thinking. The facilitator will need to review and combine both activities and adjust the timings according to their needs.

2. Approximately one day available for creativity:



3. Approximately one day available for critical thinking:



Although these accelerated versions provide a less in-depth encounter with teaching and learning for creativity and critical thinking, they nonetheless provide valuable learning opportunities.

It should be noted that all timings given in this framework document are approximate and can be adjusted according to the numbers in group, and the needs of the participants, facilitator and context.

Monitoring and assessment of participant learning

The details of assessment will be adapted to suit the local context. Regular personalised facilitator and peer feedback should be provided throughout modules, as well as on each assessment task. Below are four suggested assessment tasks, each of which could be evaluated on a pass/fail basis. One possibility is that participants could be required to submit and receive a passing grade for at least two out of the four tasks below to successfully complete the professional learning.

LEARNING JOURNAL: The aim of the learning journal is to make the participant's growth and learning around this topic more explicit and visible to both participant and facilitator. It is made up of three components:

1. Opening and closing reflections: Before their first module, participants write a 1-page reflection on the role of creativity / critical thinking in teaching and learning in their context and their feelings about creativity / critical thinking in their own practice. At the end of their final module, participants write a 2-3 page reflection on how their approach to teaching and learning for student creativity / critical thinking has changed, what they have learned, and how they plan to continue learning about supporting these skills and integrating them into their teaching and leadership
2. Responses to selected reflection questions offered throughout this framework document, prompting awareness and insight around teaching and learning for student creativity and critical thinking or their own professional creativity and critical thinking.
3. Module reflections: After each module, participants write a 1-page reflection on their learning during the module, their goals for the next module, and how to evaluate progress.

The purpose of the learning journal is to help participants build their awareness of the learning and insights they are developing around fostering and assessing creativity / critical thinking.

TEACHING PORTFOLIO: Participants develop a teaching portfolio to document their teaching activities around supporting student creativity and critical thinking. The portfolio is made up of at least:

1. A statement of teaching philosophy, goals, methods and strategies related to creativity (module 1) / critical thinking (module 5).
2. A summary plan of their approach to integrating creativity (module 2) or critical thinking (module 6) into their teaching.
3. Videos or reports on the episodes of microteaching that participants are asked to film before module 3 and 4 for creativity and before module 7 and 8 for critical thinking.

It may also include other relevant documents. The aim of the teaching portfolio is to showcase the participant's approach to teaching and learning for student creativity and critical thinking and create evidence which may be useful for career advancement.

STUDENT PORTFOLIOS: Just as each teacher participant develops a portfolio to document their teaching activities, so it will be helpful if the students they teach gather examples of their work demonstrating creativity / critical thinking across different subjects and in the wider community. This may provide opportunities for participants to discuss creativity / critical thinking with colleagues and if the student work can be shared, it can also provide a helpful bank of examples of student creativity / critical thinking to be used in discussions about what this can look like in the classroom, and how to support progress.

LEARNING RESOURCES: Throughout the modules, participants will develop learning resources, including lesson plans (modules 2 and 6), prompts (modules 3 and 7), assessments and rubrics (modules 4 and 8). The purpose of the learning resources is to build a personal bank of materials to be used in future practice. As appropriate, the facilitator can make the bank of learning resources developed as part of the professional learning programme available for the use of all participants.

Adaptation

When adapting this framework for implementation in a local context, facilitators may need to consider:

- Translating materials into the local language and using reading, materials, evidence, and examples from the country or local context.
- Adding or altering activities to be more relevant to the local curriculum or learning standards for particular disciplines.
- Adjusting activities to be more or less didactic and providing more or less structure for activities, depending on the needs of participants. This could include lengthening or shortening activities or aspects of activities, as needed.
- Helping participants identify relevant local partners, networks, mentors, coaches, researchers or other actors and opportunities that could help sustain their learning around creativity / critical thinking and embed it in real school contexts.
- Addressing issues of equity and inclusion of particular relevance to the local context.

When adapting this framework document to the local context, a key issue for facilitators and participants will be the degree to which creativity / critical thinking is explicitly part of the curriculum of the jurisdiction in question, and whether there is central guidance provided. If so, activities can be adapted to directly address curriculum documents and guidance.

Disciplines and educational levels

The activities and materials in this professional learning framework are designed to be adaptable and applicable to a range of disciplines and education levels. It is not possible for this document to provide specific content for every discipline across primary and secondary education. However, most activities ask participants to consider examples either from their own practice or from the OECD app, www.oecdcericct.com. The app includes lesson plans in science, mathematics, language arts, visual arts, music, climate education and more, covering both primary and secondary education. The activities and reflection questions can therefore be applied to teaching and learning in a wide range of subjects.

Participants in professional learning groups may come from a range of disciplines and educational levels. If all participants are from the same discipline, setting, education system or level, this may provide opportunities for more in-depth discussion of how creativity / critical thinking can be embedded in that specific context. Where participants are from different contexts, this can facilitate learning through comparisons. The local facilitator will need to adapt the content so that it is appropriate to the group they are facilitating.

Facilitation guides

Facilitation guides are provided in the annex which give more information about how to implement this framework. It will be important for the facilitator to encourage participants to reflect on their own learning experiences as part of this professional learning framework and what they can take away to inform their own teaching.

Monitoring and evaluation

In order to monitor the quality and impact of this professional learning, participants complete a survey before and after the professional learning (this survey will be available on www.oecdcericct.com). Local facilitators could also consider following-up with participants after a set time to see how they have been applying their learning, how they perceive the impact and what plans they have for continuing learning. Following country implementation, the monitoring and evaluation information collected may be used to revise subsequent versions of this framework document, as needed.

Recommended materials

The OECD creativity and critical thinking app: www.oecdcericct.com

Vincent-Lancrin, S. et al. (2019[4]), *Fostering Students' Creativity and Critical Thinking: What it means in school*, OECD Publishing, Paris, https://doi.org/10.1787/62212c37-en.

Additional reading is provided for specific activities and modules.

Acknowledgements

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Module 1: Introduction to creativity

Overview

This module introduces creativity in education. Creativity is a commonly used but often mis-understood word. It can arouse a range of emotional responses. Some aspire to be more creative. Some are a little scared of the idea of creativity. Some mistakenly see creativity as something for the arts or for personal life but not for education or for mathematics or science lessons, for example. This first module invites participants to think further about creativity in education: What is it? Why is it important? What does it look like in particular school subjects? What does it have to do with you, your students and your teaching?

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Communicate an in-depth understanding of why creativity is important to students and societies and relate that importance to students in their own contexts.	• Identify the strengths and limitations of definitions, models and rubrics for creativity, along with related assumptions and uncertainties.
• Clearly articulate what student creativity does and does not look like in the classroom in their discipline.	• Come up with multiple ideas for ways students could generate 'personal novelty' in one or more teaching subjects.
• Identify effective ways to use the OECD rubrics for creativity in practice and understand their relation to other models, skills and approaches to creativity.	• Reflect on their own experiences and approach to creativity inside and outside of education contexts.
• Recognise the relation between creativity, subject knowledge and learning and apply this to future planning and teaching for creativity.	

Preparatory work

Learning journal: Before starting the reading for this module, participants write a short definition of creativity. They should not spend too long on this, just write down their first thoughts – what creativity means to them may change throughout the programme, so it is useful to have a record of their starting place.

If this is the first module, participants take the initial course survey and write a 1-page starting reflection on their current approach to teaching and learning and the role, if any, of creativity within it (and critical thinking if they are taking all tracks). This will form part of their learning journal (see assessment).

Reading: Extracts from chapter 1 and 2 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com);

Watch: *Essential skills for the future* video on www.oecdcericct.com (under my library)

Additional learning after the module

Learning journal: Participants explore the app (www.oecdcericct.com) which has curated a number of useful resources on creativity. They identify 2-3 resources that interest them and are invited to have at least one conversation with colleagues before the next module about the importance of creativity and what it looks like in educational contexts, informed by the resources and material covered in this module, as appropriate. A reflection on these conversations could be included in their learning journal.

Participants create a 500-word entry for their learning journal, explaining at least 3 key insights they will take away from the module.

Teaching portfolio: Participants write a statement of teaching philosophy and goals related to creativity in 500 words. This could include an analogy for their current approach and / or feelings about creativity in education. Participants can update this statement at the end of the professional learning and include it in their teaching portfolio.

The final quiz allows participants to monitor their own learning. It is targeted to aspects of creativity that have the potential to cause confusion. It is important participants read the answer key carefully as it provides key explanations of common misconceptions.

Summary of opportunities for monitoring and assessing participant learning

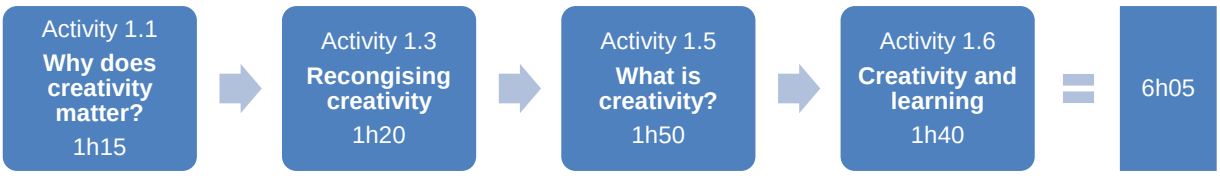
Learning journal: Opening and closing reflection and responses to reflection questions.

Teaching portfolio: Statement of teaching philosophy related to creativity and related analogy

Learning resources: Visual representation of students exercising creativity (activity 1.4)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (12h40 in total for module 1). However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 6h05 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of their context.



Additional reading

Vincent-Lancrin, S. (2021[5]) *Skills for Life: Fostering Creativity*. Inter-American Development Bank

Lucas, B. (2019[6]) *Why we need to stop talking about twenty-first century skills.* Melbourne: Centre for Strategic Education.

ACTIVITY 1.1: Why does creativity matter to students, to me and society?

Time required: 1h15

Objective: To support participants to explore their aspirations for their students and how they link to creativity.

Description:

Working individually, participants quickly draw a simple stickperson representation of a student in the middle of a piece of paper and write their aspirations for their students around the outside (10').

They add words representing the knowledge, attributes, capacities, behaviours, and opportunities they associate with being able to "come up with new ideas and solutions" (the facilitator explains that this is the definition of creativity used in the module, and it will be further discussed in future activities) (10').

Annotated drawings are compared and discussed in small groups. Was there any overlap between the initial aspirations and the words related to creativity? (30'). Following discussion, participants amend the annotations around their stickperson if they wish. They are challenged to try to come up with 1-2 words more unusual words or ideas for their drawing that have not yet been shared (10').

A plenary discussion or facilitator presentation (15') draws out multiple reasons that creativity is valued, including innovation skills, changing labour markets, AI and the digital age, the green transition, and personal and social well-being. As a closing, participants post one important insight they are taking away from the activity on a collaborative white board. They are also invited to consider whether the aspirations for students discussed in this activity are reflected in their statement of teaching philosophy and values (written in preparation for this module).

Reflection questions:

- What assumptions are you making about your students / creativity / society and how would you justify or question these assumptions?
- What are your aspirations for your students and how are they related to creativity?
- How might cultural background, race, gender etc. be affecting the aspirations you have for your students and how you are seeing any barriers to success? How could your thinking be challenged?

Rationale, alternatives and extensions:

The aim of having a stickperson "student" in the centre of the page is to keep the discussion learner-focussed. Participants can be encouraged to reflect if they are unintentionally centring their analysis around students with particular backgrounds or mobilising unhelpful stereotypes as they picture this student and

their competencies. This can help centre equity and inclusion as key considerations, both for this discussion and for the professional learning programme as a whole.

As an extension, participants could make additional versions, for example, showing creativity competencies in the subject they teach or students in different contexts or faced with particular challenges and to discuss the differences between them. Activity 1.1 and activity 1.2 have similar objectives and could be substituted for one another.

In this activity, participants are exercising elements of creativity (e.g., making connections, generating unusual ideas, and creating a simple creative output). This provides opportunities for them to discuss how they were creative in their responses and any characteristics of their current learning experience that could inform how they support their own students in similar activities.

References and acknowledgements:

This activity is adapted from Payton and Hague (2010[7])

ACTIVITY 1.2: Driving forces for creativity

Time required: 1h15.

Objective: To support participants to identify the driving forces and restraints for supporting creativity in their contexts and internationally.

Description:

In small groups, participants draw a T on a large piece of paper and populate one side of the T with factors *driving* the need to support student creativity. They populate the other side of the T with factors that may *restrain* the development of creativity or make it more difficult, both in their specific context and more widely (30').

In a plenary discussion, groups share their ideas and the facilitator draws out multiple driving forces for developing creativity, including the need for innovation skills, preparing students for changing labour markets, AI and the digital age, the green transition, and personal and social well-being (30'). This can be supplemented with discussion of any constraining forces that make fostering creativity more challenging. Groups have the opportunity to add to or alter their driving and restraining forces (15').

Reflection questions:

- How might your own experiences with creativity affect your view of the opportunities and restraints around creativity?
- Do you think your group made any assumptions when completing the activity and how would you question or justify those assumptions? you identify any biases in your own thinking that you might need to challenge?
- What is currently restraining you from developing creativity in your context and what is one small step you could take towards overcoming one of these restraints?

Rationale, alternatives and extensions:

The purpose of this activity is to get participants thinking about a range of drivers and constraints. These could have 'positive' connotations (e.g., facilitating democratic participation), 'negative' connotations (e.g., guarding against automation), or be economic (e.g., need for innovation skills), context-specific (e.g., introduction of competency curricula), international (e.g., finding responses to global health crises) or personal (e.g., the teacher's values). It may be useful to return to this driving forces map at the end of the modules to see if participants have changed their views. One possible extension is to ask participants to represent the information in a way that could be presented to students to help explain to them the importance of creativity in their teaching subject.

Activity 1.1 and activity 1.2 have similar objectives and could be substituted for one another.

References and acknowledgements:

Developed from an activity in (Caroselli, 2009[8]) More information can be found here.

ACTIVITY 1.3: Recognising creativity in the classroom

Time required: 1h20

Objective: To support participants to explore what creativity looks like in the classroom and to ground their exploration of creativity in the context of real examples from practice.

Description:

Participants think of times they have seen or supported student creativity in the classroom (if needed the facilitator reminds the group of the simple definition of creativity as "coming up with new ideas and solutions"). They share examples in small groups, describing the student creativity involved. If participants do not have experience of supporting creativity, the group looks at provided case studies. Participants may find it helpful to consider the 4Ps (Rhodes, 1961) People, Products. Processes and Places to help them structure their observations (30').

The same small groups choose two of the examples or cases and discuss any common characteristics they share and any differences. What were the novel ideas students were generating or working with? (30') Selected groups share their thinking with emerging themes being noted centrally (20').

Reflection questions:

- How would you describe the creativity involved? Is it different or the same to examples of creativity you have encountered outside of education settings (or your own creativity)? How so?
- Were there differences between the examples shared and what might explain those differences?
- What would have made the examples more creative?
- Is there anything that surprised you about the examples or the discussion and why?

Rationale, alternatives and extensions:

In order to fully understand what creativity in the classroom can look like, it is important for participants to start with examples from practice rather than theoretical definitions. However, the facilitator can provide

the simple definition of creativity as “coming up with new ideas and solutions” to provide a common reference point for participants.

If possible, examples are drawn from participants’ own practice to ensure discussions are relevant and firmly embedded in the context of real schools, especially as future activities will also draw on these examples. Examples could focus on teaching and learning with digital technologies if this is an area of interest. Participants can be invited to have a similar discussion with their colleagues at a staff meeting or specially organised session.

As an extension, groups can look at drawings done by students and discuss which, if any, demonstrate creativity and why? What could have been added or changed to make them more creative? Or groups can discuss vignettes describing ‘creative’ people. In either or both cases, a guided plenary discussion draws out the characteristics of creativity involved and the implications for education.

Useful resources:

Global Institute for Creative Thinking case study platform, student drawings, and vignettes as required.

Additional reading:

Rhodes, M. (1961[9]) *An analysis of creativity*. Phi Delta Kappan, 42, 305–310.

References and acknowledgements:

Extensions to this activity are adapted from activities developed by Todd Lubart, Department of Psychology, Université Paris Descartes, France and Paul Sowden, Department of Psychology, University of Winchester, UK.

ACTIVITY 1.4: What’s new? Exploring personal novelty

Time required: 1h30, plus an optional additional 40 minutes.

Objective: To explore the concept of personal novelty and generate ideas about possible ways it could manifest in the classroom.

Description:

Small groups discuss the ideas students were generating in the examples in activity 1.3. What could students reasonably be expected to know about those ideas and what was likely to be new to them? (30’)

Facilitator indicates that creativity involves producing something that knowledgeable people (e.g., teachers) in a domain recognise as original and appropriate for students of a certain age in a certain context (i.e., it does not have to be new to the world). Creativity is relative and involves students coming up with ideas that are novel in relation to what they can be reasonably expected to be familiar with. This is what is meant by the term “personally novel” (20’).

Small groups think of as many examples as possible of when students might produce ‘personal novelty’ in the classroom (e.g. suggesting solutions to problems, producing an artefact that is daring and original for them), and examples where students would be unlikely to produce personal novelty (e.g. memorising a

poem, following a specified protocol, inventing a new maths theorem). They try to include examples that represent both routine and unusual activities. (20').

If the time for this activity can be extended, participants visually represent some examples involving personal novelty (e.g., they could create a poster, cartoon, or collection of images). This can be finished at home and potentially used as a teaching resource to help explain what is involved in creativity to students. Participants consider what is personally novel about their own output (40). Selected examples are shared and discussed in plenary, along with the reasons for how they have been categorised (e.g., a student-invented maths theorem may be novel but is unlikely to be meaningful) (20').

Reflection questions:

- How would you explain personal novelty to your students, colleagues or school leaders?
- When have you yourself generated ideas that are personally novel to you?
- What is 'personally novel' might differ across different students with different backgrounds. What are the implications of this in the classroom?
- Thinking about the examples shared (both personally novel and not), what value would they have to student learning?

Rationale, alternatives and extensions:

When considering creativity in the classroom, teachers often wonder "creative in relation to what?". This activity seeks to address this (and is also preparation for the discussion in activity 1.5 of the OECD rubrics, which include the term personal novelty). If needed, the facilitator can clarify that activities can have high value to student learning, whether or not they involve personal novelty.

In this activity, participants brainstorm ideas and produce a small creative output. This provides opportunities to discuss what has been useful to supporting their creative process and what this means for how they can support the creative processes of their students.

Useful resources:

The next activity discusses the OECD rubrics for creativity and critical thinking in more detail, but they can also be a useful resource here.

ACTIVITY 1.5: What is creativity? Exploring conceptual rubrics

Time required: 1h50

Objective: To introduce and explore the OECD conceptual rubrics for creativity.

Description:

The activity begins with an explanation of creativity as "coming up with new ideas and solutions," involving inquiring, imagining, doing, and reflecting. The OECD has produced a set of "conceptual rubrics" in different disciplines as a tool to support teachers to picture what creativity involves and discuss this with students. The conceptual rubrics are intended to support planning and pedagogy rather than to assess students

(although they can also be used to help students and teachers recognise and discuss what counts as creativity). They are designed to be complementary to other creativity models, such as five habits of mind or the APT model (see additional reading) (20').

After reading the rubrics, small groups of participants return to the examples shared in activity 1.3 and discuss the extent to which they involved students inquiring, imagining, doing, and reflecting. What could have been added to the examples to strengthen those dimensions? (40')

The same small groups look at a set of OECD comics that illustrate creativity. They are tasked with coming up with 1-3 unusual ways they could use the rubrics and comics in practice to help students understand and experience creativity, and any limitations to this. (30') Small groups volunteer to share their ideas with the wider group (20')

Reflection questions:

- What assumptions do the OECD rubrics make about creativity / students / classrooms and how can they be justified and/or questioned?
- What are the core elements of creativity in education according to the rubrics? What would be some alternative ways to think about it?
- How could you use the rubrics in practice in your context? How could students use them? How could they support discussions of creativity with students or colleagues?

Rationale, alternatives and extensions:

The discussion of how the rubrics can be used in teaching is important. They are designed with the idea that teachers and students use their expertise and judgment to implement the rubrics in a way that suits their context and needs. The rubrics offer a shared vocabulary to describe the characteristics of creative processes but are not supposed to be prescriptive or reductive. The four sub-dimensions may happen in any sequence and the rubrics can be used to invite and organise a multitude of types of tasks and activities. This means they can be viewed as providing a shared understanding as a starting place for discussion and co-creation rather than a set of standards to be enacted.

Participants can also compare and contrast the OECD and any alternative models or rubrics related to creativity available in their context.

It may be helpful to discuss what is meant by making connections in the rubrics. All learning involves making connections, but the sorts of connections made as part of a creative process may not be pre-planned by the teacher and may be unusual or radical. This could be supported by a discussion of the sorts of connections that participants were making when they were coming up with creative ways to use the comics and rubrics in practice.

Required resources:

OECD rubrics, examples of practice / case studies from activity 1.3, OECD comics, alternative rubrics.

Further reading:

Lucas, B. (2016[10]). A five-dimensional model of creativity and its assessment in schools. *Applied Measurement in Education, 29*(4), 278-290.

Kaufman, J. C., Beghetto, R. A., Baer, J., & Ivcevic, Z. (2010[11]). *Creativity polymathy: What Benjamin Franklin can teach your kindergartener*. Learning and Individual Differences, 20(4), 380-387.

ACTIVITY 1.6: Creativity and learning

Time required: 1h40

Objective: To clarify the relationship between creativity, subject knowledge, and learning.

Description:

Facilitator asks small groups to consider examples from activity 1.3 or 1.4 and what knowledge students would be using in each case (20').

The facilitator presents and reviews evidence and research suggesting that creativity is domain-specific (e.g., Baer, (2016[1])). Students need to understand the ideas and solutions they propose and what makes them meaningful, meaning that creativity can be acquired and experienced as part of subject learning. Creativity can also be a "habit of mind" that students can apply in different ways in multiple disciplines (20').

Participants position themselves physically between two contrasting extremes. At one side of the room are those that believe that spending classroom time supporting student creativity distracts from time needed to develop subject knowledge. At the other end are those who believe spending classroom time supporting student creativity helps teachers deepen subject knowledge (10').

Participants form a pair with someone who has a different position, and each member of the pair attempts to justify their position. If everyone is positioned in the middle, the facilitator invites each member of the pair to argue for an opposing position (even if it is not their own position) (20').

In a plenary discussion, participants feedback on their discussions and share what they learned about the relation between exercising creativity and developing subject knowledge, contributing thoughts and noting any common themes. Finally, the facilitator asks participants to consider whether they would now alter their original position (30').

Reflection questions:

- What, if anything, about your experience of creativity or your teaching context might affect your view of the relationship between creativity and learning subject knowledge?
- Do you have any examples of when your students learned whilst also being creative?
- Thinking back on the discussion you had during this module, did you see any differences in the way people were discussing creativity?

Rationale, alternatives and extensions:

The purpose of having participants position themselves physically is to help them see how their position compares to their colleagues. It can be emphasised to participants that they are taking a provisional position, which may change, and students can be reassured that they will not be judged for the position they take. The continuum can also be between different extremes (e.g., creativity is domain-specific versus creativity is not domain-specific or creativity can be taught versus creativity cannot be taught).

In practice this is not about adopting an 'either/or' position but encourages participants to consider the ways in which creativity may look and feel in different contexts and to challenge their own assumptions about creativity and learning. It will also invite them to consider the degree to which some creative skills are transferable across disciplines and contexts.

Useful resources

Beghetto, R. A., Kaufman, J. C., & Baer, J. (2014[12]) *Teaching for creativity in the common core classroom*. Teachers College Press.

ACTIVITY 1.7: Creative competencies and dispositions

Time required: 1h50

Objective: To support participants to develop their understanding of creativity and its relation to broader competencies and dispositions and make visible any changes in their views of creativity.

Description:

A facilitator presentation discusses the relation between creativity, self-regulation and other behavioural, social and emotional skills (e.g., openness, self-confidence, perseverance, flexibility, collaboration, communication etc.) (20').

In pairs, participants create a concept map showing their view of how these different competencies differ and connect to one other. They consider more than one way of structuring their concept map, including ways that could be regarded as unusual. Concept maps are displayed in a place visible to all (e.g., on the walls) so participants can compare and contrast different approaches and perspectives (40').

In different pairs, participants discuss how creativity is framed in their own contexts and share and discuss their pre-written definitions of creativity. What, if anything, would they change about their definitions, given everything that's been discussed so far? Facilitator asks for a few volunteers to share what has changed so far in their definitions of creativity and why (40').

If they did activity 1.1, participants return to their drawing of a student annotated with competencies, reflect on what has been discussed, and decide if they want to add or change their annotations (10').

Reflection questions:

- How is creativity referred to in your teaching context and why? Does this view of creativity bring any challenges or opportunities to your practice?
- Has your view of creativity changed? How so and why?
- Has your view of a 'creative' person changed? How so and why? What does that mean for how you think about your own creativity and the creativity of your students?

Rationale, alternatives and extensions:

This activity begins with a facilitator presentation to ensure that the later discussions are grounded in a good knowledge of related research and evidence. The presentation could also be pre-recorded and viewed prior to the activity.

Whether creativity is a cognitive skill, a competency or a disposition, or all three, is disputed. The facilitator could also ask participants to research and present different positions on this question and reflect on the implications for developing creativity in an equitable and inclusive manner. In general, educational jurisdictions which frame their curricula in terms of competences or dispositions tend to be more intentional in their identification of creativity as an explicit learning outcome.

The discussion of participant definitions aims to make any changes in beliefs about creativity more explicit and support participants to identify and question any assumptions and misconceptions they feel were present in their original view of creativity.

Required resources:

Participants' initial definitions of creativity, and annotated drawing from activity 1.1.

ACTIVITY 1.8: Progressing in creativity

Time required: 1h55

Objective: To support participants to start thinking about what progression looks like in creativity in the classroom.

Description:

Small groups of participants choose an example of supporting creativity that has already been shared. This could be an example from their own practice or an OECD lesson plan from www.oecdcericct.com in a discipline of interest. They describe briefly what the student creativity could look like (15').

The facilitator introduces research on what "getting better" at creativity involves, looking at increasing the strength, breadth and depth of creative endeavours (10').

Participants discuss how the creativity in the examples explored earlier could change 1) at a higher or lower level of achievement and 2) for an older or younger student (30'). Selected groups feedback some key points from their discussions and any emerging themes are noted centrally (15').

Participants are introduced to the OECD 'granular' assessment rubric for creativity, which provides descriptions of 4 levels of proficiency for inquiring, imagining, doing and reflecting (15').

Participants discuss their previous descriptions of progression, how they compare to the language of the rubrics, and how they could be strengthened. Participants share insights and any remaining uncertainty about describing creativity in the classroom and reflect on what they will take away from the module (30').

Reflection questions:

- What does it look like in your discipline when a student gets better at creativity?

- How might “personal novelty” in your discipline differ in primary school as opposed to lower or upper secondary? What would it look like at your teaching level for a beginning student versus a very advanced student?
- What insights are you taking away from this module?

Rationale, alternatives and extensions:

Although this activity introduces assessment rubrics, the purpose is not to discuss whether and how creativity can be assessed but instead to deepen the discussion of the concept of creativity and what it looks like in the classroom. Module 4 discusses assessment in greater depth.

In the final discussion, participants can also be asked to reflect (in writing or orally) on their own journey and attitudes around creativity. For example, one activity to support this is asking participants to consider one of their hobbies and have them describe why they are interested in this hobby and what it teaches them. Participants reflect on any similarities and differences between their approach to their hobby and how they approach creativity in education.

It may also be important to facilitate a discussion about how participants see their own progression with creativity and whether they would like to change anything about the statement of teaching philosophy and values that they produced in preparation for this module.

Required resources:

OECD ‘granular’ assessment rubric for creativity, examples from practice or OECD lesson plans

Additional reading:

OECD (2019[13]) *Framework for the Assessment of Creative Thinking in PISA 2022* (third draft). Paris, OECD.

Module 2: Planning and learning design for creativity

Overview

This module supports participants to consider how to plan and design learning experiences that support student creativity. Participants plan and design activities and lessons that can foster both creativity and subject knowledge and that can be embedded in their own teaching contexts. They will share any prior experiences of learning design for creativity and discuss how to consciously plan creative processes and products for students in their upcoming teaching period. They will be introduced to design criteria for student creativity and reflect on how they could use a range of signature pedagogies to support student creativity, as well as exploring the role of alignment and co-design.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Understand and clearly articulate the importance of learning design when fostering student creativity.	• Identify a range of teaching techniques that support student creativity and create opportunities for creativity in existing lesson plans, some of which may be personally novel.
• Identify opportunities to support student creativity in current teaching and integrate student creativity into planning going forward.	• Design lesson plans that foster both subject knowledge and student creativity in engaging and meaningful ways.
• Be familiar with a range of materials and techniques to support student creativity, including design criteria, signature pedagogies, and co-design and try them in their own planning, as appropriate.	• Consider several perspectives and provide meaningful peer feedback on the strengths and limits of planned teaching for student creativity.
• Ensure alignment when planning teaching for student creativity and demonstrate commitment to reflective practice.	• Identify and question assumptions in common claims about pedagogy and materials to support student creativity.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for creativity. If they have taken previous activities, these will already be familiar to them.

Reading:

Extracts from chapter 1 and 2 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com).

Participants come to the module with an existing teaching plan (annual or for a particular unit), lesson plan or teaching activity into which they'd like to integrate more student creativity.

Additional learning after the module

Teaching portfolio: microteaching 1: Participants film a 10-minute extract of a teaching and learning episode related to creativity (if needed, they can be reminded to ensure students do not appear in the video)

Learning journal: Participants create a 500-word entry for their learning journal, explaining at least 3 key insights they will take away from this module.

Summary of opportunities for monitoring and assessment of participant learning

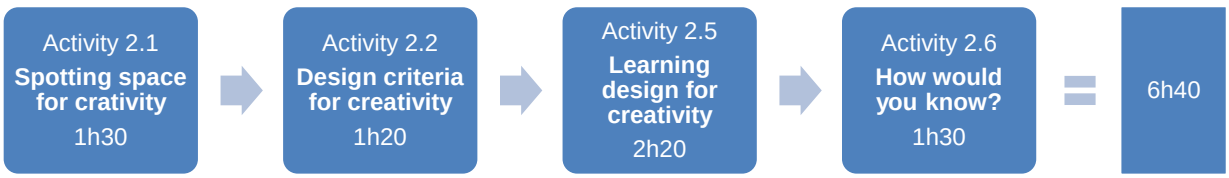
Learning Journal: Responses to reflection questions and final reflection

Learning resources: Professional learning resource on activities and pedagogies (activity 2.3); Lesson plan for creativity (activity 2.5); Empathy map (activity 2.8)

Teaching portfolio: Mapping of teaching against creativity (activity 2.4); Visual representation of alignment for creativity (activity 2.7)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (15h05 in total for module 2). However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 6h40 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or length individual activities according to participant needs.



Additional reading

For those interested in learning more about this subject:

Beghetto, R., Baer, J. and Kaufman, J. (2014[12]) *Teaching for creativity in the common core classroom,* Teachers College Press.

ACTIVITY 2.1: Spotting space for creativity

Time required: 1h30 (plus an optional additional 1h)

Objective: To support participants to identify space for creativity when planning lessons

Description:

In small groups, participants reflect on and share their key takeaways from previous activities and their experiences of discussing creativity within their contexts (which they have been asked to do as preparation for this activity) (20').

The same small groups select a lesson plan from www.oecdcericct.com in a discipline and educational level of interest to them. They identify areas of the lesson plan where students' creativity would be fostered and why and discuss ideas for strengthening this. If time allows, they respond to the same questions for a second lesson plan from the app (45'). Volunteers report key elements of their discussion with the facilitator providing further input as needed (25').

If there is time to extend the activity, groups consider another lesson plan that does *not* explicitly focus on creativity – ideally, this would be from their own teaching context How could the lesson be changed to foster creativity whilst still delivering the same subject knowledge outcomes? (40') Groups identify 1-3 opportunities or amendments and share with the wider group (20').

Reflection questions:

- How is the support for creativity in each lesson plan structured over time?
- How easy or challenging was it to adapt an existing lesson plan so that it has more space for creativity and why?
- What equity and inclusion issues needed to be considered as you completed this activity?

Rationale, alternatives and extensions:

Ideally, each group should discuss a different lesson plan, so creating a larger bank of examples for further discussions to draw on.

At this stage, participants are simply identifying and discussing where there could be space for creativity. They do not need to actually re-write any lesson plans. If participants feel there is no space for creativity in any of the lesson plans, they should discuss why that might be.

Groups can also compare the lesson plans they have discussed to examples from their own practice (E.g., those shared in activity 1.3) and discuss any similarities and differences.

Required resources:

OECD lesson plans, lesson plans from participants' own practice without focus on creativity.

ACTIVITY 2.2: Design criteria for creativity

Time required: 1h20 (plus an optional additional 50 minutes)

Objective: To introduce participants to the OECD design criteria.

Description:

Facilitator leads a whole-group discussion about any common features of the lesson plans that emphasise student creativity from activity 2.1. What were students doing or producing? What sorts of questions were they responding to? What room was there for curiosity and student autonomy? (20').

The facilitator presents (20') the OECD design criteria for activities that foster creativity and critical thinking, along with relevant supporting evidence. The criteria were produced to guide teachers in designing learning experiences for creativity. They cover the importance of creating students' interest to learn, being challenging, developing clear technical knowledge in one or more curriculum domains, including the development of a visible product or artefact, having students co-design part of the product or solution, dealing with problems that can be looked at from different perspectives, leaving room for the unexpected, and including time and space for students to reflect and give and receive feedback.

Small groups are assigned a criterion and discuss why it is important to creativity specifically (and what evidence supports this) and any alternative perspectives that might exist on this (they can conduct online research to support this discussion as needed). They record key points from their discussion in a location that other groups can later view (e.g. a flipchart or collaborative digital whiteboard) (40').

If the activity can be extended, groups return to the example lesson plan or examples of practice from previous activities and discuss whether and how they demonstrate the design criteria and whether and how this could be strengthened (30'). Volunteers report back about their selected lesson plan to the larger group (20').

Reflection questions:

- How common is it that lessons in your own context demonstrate these design criteria?
- What are the challenges you face in your context?
- What are the strengths and limitations of the design criteria for supporting planning for creativity?

Rationale, alternatives and extensions

Alternatively, participants could be asked to research the evidence surrounding a particular design criterion prior to the activity and report back on their research for other students during the activity. They could also consider their own discipline and teaching level and discuss any alterations or additions that could be made to the criteria to make them more applicable to that subject or level, especially in relation to key issues such as equity and inclusion. If participants generate ideas for criteria, they can also reflect on what is creative about their responses, what supported that creativity, and whether there are any lessons they can learn for supporting student creativity in their own practice. Future activities revisit some of these design criteria and look at them in greater detail.

Required resources:

OECD design criteria, Lesson plans from www.oecdcericct.com or examples from participants' own contexts.

ACTIVITY 2.3: Learning activities and signature pedagogies for creativity

Time required: 2h30

Objective: To explore on learning activities and signature pedagogies for creativity.

Description:

In a whole-group discussion (20'), participants consider previously discussed examples of practice and lesson plans. Using these examples as a base, they brainstorm activities that require student creativity and that are relevant to their teaching discipline and level (e.g., problem-solving, brainstorming, role-playing, improving, designing, combining or re-purposing artefacts, imagining counterfactuals, generating problems, producing 3D models, designing experiments or research projects etc.). The facilitator adds ideas (e.g. from handout A) so that the group builds up a good list of possible techniques and activities. They try to think of some activities that may be unusual or radical in their context but could meaningfully be used to support student creativity.

The facilitator gives two 20' presentations, each on one of the following: project-based learning, dialogical teaching, design thinking, metacognitive pedagogy, research-based learning, or another relevant pedagogical approaches. Each presentation is followed by a 20' small group discussion sharing experiences of using the pedagogy and any evidence regarding how to use it effectively (80').

In small groups, participants create a professional learning resource for their colleagues focussing on 1-2 of the identified activities or pedagogies, covering why and how it can be used for creativity, what its limitations are, and one example of what it could look like in teaching a particular school subject (40'). Participants can freely choose the format of the learning resource according to what they judge to be most appropriate for the task. It could be a short audio file, video, PowerPoint, handout, website or in another format. Selected small groups report back to the larger group in no more than 2-3 minutes (10').

Reflection questions:

- What experiences, if any, do you have of these sorts of learning tasks and signature pedagogies? Have those experiences felt positive or negative and why? What would you like to try out in your own teaching and what steps could you take towards this?
- What are the opportunities and challenges you experience or anticipate in your teaching context around integrating these tasks and pedagogies into your teaching?
- What would need to be considered to implement these learning activities and signature pedagogies in an equitable and inclusive manner?

Rationale, alternatives and extensions:

The timings are approximate and will need to be changed, depending on how many groups report their discussions. The facilitator presentation should focus on signature pedagogies that might be particularly

relevant to the context and include reflection on how these pedagogies can be implemented equitably. Presentations can reference how digital technologies can be used to support these pedagogies, as appropriate. Alternatively, participants can be asked to come to the activity having already researched one signature pedagogy and the evidence that supports it and presentations could be delivered by participants.

Participants are exercising their own creativity when producing their professional learning resource. Not only can they be encouraged to identify a way to use this learning resource back at school, they can also reflect on what was creative about their output, what supported that creativity, and what they can learn for their own practice of fostering student creativity.

Required resources:

Examples of practice from participants' own context, definitions of signature pedagogies (see facilitation guide); handout A

ACTIVITY 2.4: Mapping teaching against creativity

Time required: 2h30

Objective: To enable participants to reflect on their current teaching plans and identify space, and associated learning outcomes, to support student creativity.

Description:

Individually, participants consider their annual teaching plan (or a smaller upcoming teaching unit) and identify opportunities to support student creativity (drawing on the OECD rubrics, design criteria, and previous discussions as appropriate). As just one example, in secondary science, they might identify opportunities for students to make and compare models of the phenomena they are learning about (30'). In pairs, participants discuss why they think these areas of their teaching plan could provide space for student creativity (20').

Individually, participants map their planned teaching against the OECD creativity conceptual rubric (i.e., they record where in the upcoming teaching period, there is room for attention to creative inquiring, imagining, doing and reflecting) (30'). In pairs, they compare their approaches and discuss what additional learning outcomes could be possible around creativity for each of their teaching units (40'). Participants report key points of their discussion to the wider group and identify any challenges and opportunities they encounter (20').

Reflection questions:

- How easy or challenging was it to identify areas for student creativity in your teaching and why?

Rationale, alternatives and extensions:

Most participants will have planned elements of teaching to discuss (they should previously have been asked to bring these with them). If this is not the case, discussions can focus on a relevant area of the curriculum in that context. Participants can again consider the 4Ps – products, processes, people, places – to help them identify opportunities for creativity they might otherwise miss. The facilitator can visit

participants as they work individually to discuss any challenges and provide input. They can remind participants to consider where in their teaching there would be room to include lessons that demonstrate the design criteria, learning activities, and signature pedagogies covered in previous activities. Participants can also be reminded that generating ideas for connecting their teaching syllabi to creativity is itself a creative task and the facilitator can highlight any particularly creative approaches. Participants can consider adding a summary of the mapping to their teaching portfolio.

Required resources:

OECD rubric mapping, participant planning documents.

ACTIVITY 2.5: Learning design for creativity

Time required: 2h20

Objective: To support participants to engage in learning design for creativity by designing a lesson plan

Description:

Participants identify one area of their upcoming teaching to focus on and in pairs (if possible from the same discipline and teaching level), they do some 'quick fire planning'' for how they could integrate attention to student creativity (understood as "coming up with new ideas and solutions", as described in the OECD conceptual rubric). Pairs quickly sketch out 1-3 activities that could be integrated into each of their upcoming teaching units to foster student creativity (20').

Participants work in small groups to pick one of the groups' quick-fire ideas and start designing a fuller lesson plan, including learning outcomes, using the blank template from www.oecdcericct.com (45'). After working on their lesson plan for an initial period, half of each group visits another group to briefly present the plan, hear about another plan, and receive and give feedback (15').

They return to their group and report on the feedback they have received before continuing with the task (60').

Reflection questions:

- How easy or challenging was it to design a lesson plan that provides space for student creativity as well as developing subject knowledge and why? What were the major considerations? What attention did you give to equity and inclusion?
- What learning activities and / or signature pedagogies did you draw on? Was there any room for use of digital tools to support the pedagogy in this case? Why/why not? To what extent did you draw on our own creativity for this task?

Rationale, alternatives and extensions:

The time required for this activity may vary by context. Participants can also be asked to finish their lesson plans at home. It can be helpful to make all lesson plans developed as part of this activity available on a shared platform for the benefit of all participants.

Participants can be asked to provide peer feedback on the lesson plans at home after the activity. They may also use elements of the lesson they design in this activity for the micro-teaching episode they undertake as additional learning for this module.

Required resources:

Blank lesson plan. OECD rubrics, OECD design criteria

ACTIVITY 2.6: How would you know? Observing the classroom

Time required: 1h30, plus an optional additional 30 minutes.

Objective: To support participants to consider how they can monitor student learning for creativity and ensure equity and inclusivity.

Description:

The facilitator explains that in this activity, participants will consider the initial signs of a lesson that is working well to nurture creativity. This will be supplemented by further consideration of how formative and summative assessment techniques can be used to produce evidence of learning in later activities.

Small groups consider how they would know if the lesson they designed in the previous activity was nurturing student creativity. What would they be looking for in the classroom (e.g., what might students and teacher be doing, seeing, saying, hearing, writing etc.)? How would they monitor student learning?

Groups make and illustrate a list of approx. 10 signs they might expect to see at key moments if the lesson was 'working well' (e.g. students asking questions, students helping each other, a 'buzz' in the classroom, students coming up with many ideas, students absorbed in quiet concentration etc.), and some initial ideas for ways they could check (e.g., exit tickets, posing questions, reflection activities etc.). They also consider what signs and checks they could use to help assess if the lesson is equitable and inclusive (e.g. a respectful class climate, everyone participating, learning materials that connect to student experiences etc.) (40').

If the time for this activity can be extended, they address the same questions for an example lesson plan from www.oecdcericct.com and compare their responses (30').

In a final plenary discussion, the facilitator invites groups to share their ideas, noting any common themes and differences. They emphasise the importance of considering how to monitor student learning when designing lessons and using the results to inform future iterations of the learning design, including measures to ensure equity and inclusiveness. This discussion can be furthered in the activities that address assessment directly (20').

Reflection questions:

- How do you currently monitor student learning and how does that inform the way you design lessons?
- What tools and processes could help monitor student learning for creativity? How could you assess if learning around creativity is equitable and inclusive?

Rationale, alternatives and extensions:

This activity seeks to introduce the importance of considering how to monitor student learning and creativity when designing lessons. Other activities look more closely at the range of assessment methods available to teachers to assess different elements of creativity. The conversation here is more focussed on how teachers can recognise an effective lesson and how they can build student monitoring into design.

Participants can work in the same groups they worked on in activity 2.5. An alternative is that they work in different groups and discuss a lesson plan that they did not necessarily design (this can help expose them to different ways of fostering creativity identified by fellow groups).

This activity is primarily addressed to monitoring everyday student learning, but the facilitator could also discuss how working with researchers to trial and monitor teaching and learning practices can be a valuable professional learning opportunity in this area.

Required resources:

Designed lesson plan from activity 2.5.

ACTIVITY 2.7: The power of alignment for creativity

Time required: 1h10

Objective: To support participants to consider alignment when planning and designing for student creativity.

Description:

Participants individually consider the lesson plan they designed in activity 2.5. What are the end goals or outcomes of the lesson plan in terms of creativity and subject knowledge? How can they "backwards plan" from these outcomes so that all aspects of teaching support them? In what elements of the lesson would students practice the process, behaviour or thinking associated with that outcome? How would the teacher make their expectations and the purpose of the learning clear and make sure their words and actions supported each other? (20')

In pairs they discuss and compare their responses and produce a way of representing and checking alignment for creativity visually. This could be as simple as a colour coded table or chart with columns showing the relation between learning outcomes, teaching and learning activities, formative assessment, summative assessment etc (see resources). They might also consider if there is room to involve students in completing the chart (30')

In a final plenary discussion, the facilitator invites participants to share their outputs and key points from their discussions, and highlights research showing the relationship between greater alignment and better learning outcomes (e.g., Cohen, 1987) (20').

Reflection questions:

- What do you like about the approaches your colleagues have been adopting? How might you adapt and use these?

- How challenging do you think it might be to implement such a lesson plan in your context? How could you ensure alignment and what might restrain this?

Rationale, alternatives and extensions:

Participants could also discuss whether and how they could align teaching and assessment etc. if they were to implement an example lesson plan from www.oecdcericct.com.

Required resources:

Lesson plan designed in activity 2.5.

ACTIVITY 2.8: Co-design for creativity

Time required: 2h15

Objective: To support participants to reflect on how they can create space for co-design and reflection when planning their next steps for developing their teaching for student creativity.

Description:

The facilitator discusses the value of co-design in supporting collaboration with colleagues, professional learning experiences, teacher leadership, and the development of both creative practice and opportunities to support student creativity.

In small groups, participants acknowledge and discuss briefly any constraints around co-design in their own context, for example, the need for senior leaders to provide time and support for co-design (15').

Small groups of ~three identify and discuss at least one opportunity for co-design for creativity with colleagues from the same or other teaching subjects (e.g., creating new curricula materials, tools, or inter-disciplinary themes). Alternatively, these possibilities could be suggested by the facilitator. Small groups discuss what processes would be involved and identify one action each they can take back at school to initiate such a process. The facilitator provides input and ideas as needed (45').

The same small groups read a case study which involves co-design with students. They discuss the case study and build an empathy map of what students could be doing, feeling, seeing, hearing, saying and thinking as they engaged in co-design. Would this be the same for everyone or would there be room for differentiation? (45') Empathy maps are displayed centrally on a wall or collaborative whiteboard for others to view and compare. The facilitator reflects on how such empathy maps can support teachers to consider issues of equity and inclusion when facilitating co-design for creativity (10').

The module closes with a reflective small-group discussion on participants' next steps for creativity and how they can protect time for reflecting regularly on their planning and learning design for creativity (20').

Reflection questions:

- How could you create regular opportunities for co-design with colleagues and students? What issues of equity and inclusion need to be considered when facilitating co-design?

- What have you learned during this module? What, if any, remaining uncertainties do you still have about planning and learning design for creativity?
- How are you planning to take what you have learned back to your own teaching context?

Rationale, alternatives and extensions:

Building an empathy maps is a technique used in design thinking. As an alternative, this activity could draw from other design thinking techniques, such as problem statements, worst possible idea, pain points, and user journey maps.

If time allows, this activity can be extended with a small group discussion in which participants share their experiences, if any, of co-design with colleagues and / or students and discuss the challenges of benefits.

Useful resources:

Yang, A., “Designing Learning Using an Empathy Map” https://alisonyang.com/teacher-empathy-map/
Case studies of co-design.

Module 3: Teaching and delivery for student creativity

Overview

This module is dedicated to considering issues of delivery. It supports participants to consider what it takes to explicitly emphasise student creativity in the classroom at different stages of teaching and learning. Participants share and consider any experiences of teaching for creativity and subject knowledge, what pedagogical techniques can be adopted, and what challenges might arise. Specifically, the module discusses how to build curiosity, challenge, motivation and trust for creativity, how to use the learning environment flexibly, how to work with creative partners and how creative processes can be modelled, rehearsed, debriefed and reflected upon.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Apply a range of techniques for building trust and engagement when asking students to exercise creativity.	• Generate personally novel ideas for how to increase engagement and challenge and how the learning environment could be used flexibly in teaching that aims to foster creativity.
• Effectively prompt, model, rehearse and debrief creative processes.	• Explain both strengths and limitations of a chose technique or learning environment justified on logical, ethical or aesthetic criteria and identify and question assumptions made about students, pedagogy, and creativity.
• Identify and respond to the challenges that might arise when fostering creativity in teaching.	• Integrate reflection into everyday teaching and learning.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for creativity. If they have taken previous activities, these will already be familiar to them.

Reading: Extracts from chapter 3 and 4 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com).

Watch: Participants use www.oecdcericct.com to identify and view/read at least one resource related to teaching for creativity (the my library and my conference sections provide some useful examples). They write down at least one key take-away and one thing they would question, or think could be further elaborated in the resource.

They think of a time when they underwent a creative process (this could be as simple as generating ideas for an essay) and reflect on what supported them in this process? What could have been helpful? They come to the module ready to share their experiences.

Additional learning after the module

Teaching portfolio: microteaching 2: Participants film another 10-15 minute extract of a teaching and learning episode related to creativity that incorporates some of the thinking about delivery discussed in module 3 (if needed, participants should be reminded to ensure that students do not appear in the video)

Learning journal: Participants create a 500-word entry for your learning journal, explaining at least 3 key insights they will take away from module 3.

It is useful to ask participants to identify a future date to rate their own self-efficacy around teaching practices to support student creativity.

Summary of opportunities for monitoring and assessment of participant learning

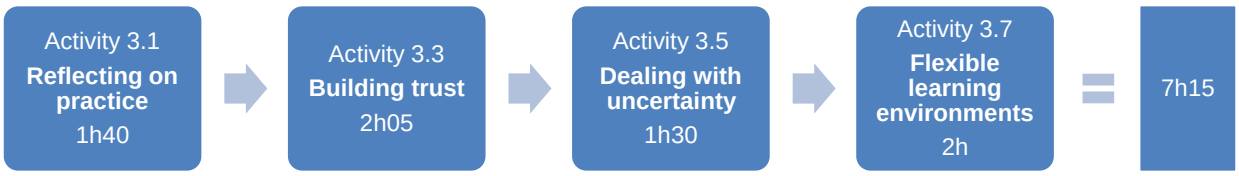
Learning journal: Opening and closing reflection and responses to reflection questions

Learning resources: List of potential prompts for student creativity (activity 3.4)

Teaching portfolio: Microteaching video/reflection (set as additional learning after previous module); Summary of methods of kindling student curiosity for creativity (activity 3.2), plan for bringing learning to life (activity 3.8)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (14h10 in total for module 3. However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 7h15 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or length individual activities according to participant needs.



Additional reading

For those interested in learning more about this subject:

Jefferson, M., & Anderson, M. (2021[14]) *Transforming education: Reimagining learning, pedagogy and curriculum.* London: Bloomsbury Publishing.

Lucas, B., & Spencer, E. (2017[15])*Teaching Creative Thinking: Developing learners who generate ideas and can think critically (Pedagogy for a Changing World series)*. Crown House Publishing Ltd.

ACTIVITY 3.1: Reflecting on student creativity in practice: successes and challenges

Time required: 1h40

Objective: To ground the module in participant experiences of teaching for creativity in their own context and understand the sorts of challenges that might occur.

Description:

The activity begins with a whole-group reflective discussion on what participants have taken away from previous activities and the resources they engaged with as preparatory work. Participants can also be reminded of the OECD rubrics for creativity. (30').

Individually, participants rate (privately) how confident they feel about supporting creativity in their teaching (see question below). They are encouraged to reflect throughout their professional learning activities on practical measures they could take to further build confidence around teaching to support student creativity in their own contexts (10').

If participants completed a micro-teaching episode after a previous activity, they debrief their experiences in small groups (of around 3) and give each other advice. What were the successes and challenges? What could they do differently next time? With the help of the group, each individual identifies 1-3 things to try in future teaching (these could be relatively small adjustments such as asking different kinds of questions, asking students to contribute ideas, providing examples, including additional modelling etc.) (45').

Different small groups brainstorm as many challenges as possible they have encountered or could imagine encountering in teaching that aims to foster student creativity (e.g., building trust, managing products, building student confidence etc.) and groups them into themes (e.g. equity and inclusion, classroom management etc). They record their thinking somewhere visible to the rest of the group (20'). The whole group moves around the room (or digital whiteboard) viewing the results of each group's brainstorm. They can briefly discuss some possible responses to those challenges, but future activities will be addressed to this (15').

Reflection questions:

- What were the successes and challenges you encountered in your micro-teaching experience and what did you learn from them?
- How would you describe your current level of comfort with teaching for creativity (from 1 to 10)… and why so?

Rationale, alternatives and extensions:

Starting the module with attention to possible challenges in teaching for student creativity is a good way to ground future activities in the concerns of participants and enable them to use future activities to build up a toolbox of techniques and approaches to respond to the challenges they anticipate. It may also be helpful to discuss how comfortable participants feel with using digital technologies to support student creativity.

Facilitator could also provide details of several reflection structures (e.g. rose, bud, thorn, what, so what now what? Red light, amber light, green light) and have participants use, compare and discuss these techniques or participants could create written personal reflections on a chosen challenge related to their discipline and level. If the facilitator would like to take a project-based learning approach to this module, they suggest that participants take the question of "how can student creativity be better supported in my practice and context?" to be their guiding "inquiry question" for the module.

ACTIVITY 3.2: Kindling curiosity and challenge for creativity

Time required: 1h20

Objective: To share and discuss methods of kindling student curiosity and challenge for creativity

Description:

Ahead of time, participants view videos related to curiosity and creativity (e.g. see useful resources for videos on heightening anticipation with students and the importance of asking questions). A facilitator presentation explains why curiosity and challenge are central to creativity and their link to helping students want to learn. Participants think of as many questions as they can around the role of curiosity and challenge in fostering creativity (20').

In small groups, participants choose an example lesson plan from www.oecdcericct.com in a discipline of interest (or they could work with the lesson plan they designed in activity 2.5 or an example of practice previously discussed). They discuss how they would engage students and support their curiosity if they were the teacher (e.g. posing a driving question, setting a puzzle, giving a mission, connecting to a problem or issue students experience in their real everyday life, stimulating a real-life situation, an off-site visit etc.) They discuss what could be done differently to increase or decrease the level of challenge in the lesson. Participants consider what assumptions they are making when coming up with proposals and how these assumptions can be justified or questioned (40').

The facilitator invites selected small groups to report back, contributes their own ideas and notes emerging themes centrally (20').

Reflection questions:

- Why are curiosity and challenge important to fostering creativity?
- What methods discussed today could you implement in your own teaching and how would you need to adapt them?

Rationale, alternatives and extensions:

It is also important to discuss kindling curiosity and challenge in diverse classrooms and for students with different levels of confidence around creativity, along with what issues of equity and inclusion need to be considered. As alternate activities, participants could make a resource for colleagues on supporting student curiosity and engagement in a format of their choice or develop a puzzling question that they could use to introduce students to the content of their upcoming teaching period.

Required and useful resources:

Example lesson plans from www.oecdcericcet.org or examples of practice, facilitator video

The Power of Curiosity and Asking Questions video – Creative Thinking Course, Heightening Anticipation – Teacher Tips video.

ACTIVITY 3.3: Building trust for creativity

Time required: 2h05

Objective: To explore methods of building trust in teaching that aims to foster student creativity.

Description:

Facilitator presents research on the importance of building student trust for creative processes. For example, they might cover the idea that creative processes involve taking risks, encountering setbacks, trying things that do not work, being uncertain about the best course of action etc... This can be uncomfortable for some students especially those worried about their grades or who lack confidence. Students' background and prior experiences may also affect how much they trust teaching staff and fellow students (20').

In small groups, participants brainstorm possible ways of building trust in the classroom and creating a learning environment that invites and is respectful of differing ideas. (For example, ice-breakers, class agreements, class circles, problem-solving relays in which each students adds a possible solution step (e.g. in science or maths), gratitude circles in which students say one thing they are grateful for, being consistent and transparent as a teacher, having students document mistakes or changes in approach etc.) (15'). Groups compare the potential effectiveness of different ideas/techniques, whether this might differ across different domains and educational levels (if relevant), any assumptions they are making and any issues of equity or inclusion raised by the technique The facilitator offers ideas and input as needed (30').

Groups choose one technique and role-play the sorts of discussions it could involve and how students might respond. If needed, they can imagine that such discussions are taking place during an example lesson plan from www.oecdcericct.com, which can help provide content for the role-play. (40').

The facilitator leads a whole group debrief of participant experiences of the role-play and what they learned that they could put into practice (20').

Reflection questions:

- Why is trust important when fostering creativity?
- What methods have you previously used to build student trust? Have these been effective across diverse classrooms?

- What methods discussed today could you use in your own teaching? How would you need to adapt them?

Rationale, alternatives and extensions

The initial presentation could also be provided as a video for participants to watch before the activity. The final debrief also provides an opportunity for a 'meta' discussion about participant experiences of the debrief discussion itself and what it models that could be helpful in building trust with students. It may also be relevant to discuss participant's trust in their own creativity, how this has developed over time and what has supported that process.

Required resources:

Example lesson plans from OECD app or examples from practice.

ACTIVITY 3.4: Prompting, modelling and rehearsing creativity

Time required: 2h10

Objective: To discuss and practice prompting, modelling and rehearsing for student creativity.

Description:

In pairs, participants reflect on a creative process they themselves have undergone (they have been asked to identify this process as preparation for the module. It could be a process they have undergone as part of this professional learning). They each sketch out a storyline (using drawings, text, digital tools as they wish and as time allows) representing the process and the emotions, uncertainties, questions, challenges, successes etc. they experienced at each stage. They pay particular attention to how the process was or was not prompted and modelled and whether they had previously been given the opportunity to try out elements of the process. They consider what was helpful and not so helpful about these factors. They imagine what could have better supported this process and complete a second storyline. They reflect on what they learned and what they could have learned in the second scenario and what they can take away from this to apply in their own classroom (45').

The facilitator presents on the importance of modelling, prompting and rehearsing creative processes, drawing on the research literature (20'). Small groups read the prompts in *handout B* and discuss the characteristics of a good prompt for creativity. They imagine brief scenarios in which they could use these prompts in practice (30').

They discuss a lesson plan from *www.oecdcericct.com* they have been working with in previous activities and generate ideas for visual, spoken or written prompts that could be provided to students at each stage, drawing on the provided list or designing their own prompts as appropriate. They consider if there is room to model or rehearse the student creativity involved. They note their ideas in a place visible to all (e.g. flipchart or digital whiteboard) so other participants can later view them (30'). Participants move around viewing ideas of other groups (5').

In an exit ticket, participants write one insight they are taking away from the activity to apply to their own practice.

Reflection questions:

- Why might prompting, modelling and rehearsing be important to fostering creativity?
- What could you take from the discussion to implement in your own teaching?

Rationale, alternatives and extensions:

The facilitator can also ask participants to consider when during this programme they have had experiences of modelling, prompting, and rehearsing creative processes and what was helpful and not so helpful about these. This "meta" discussion provides opportunities to discuss how their own learning experience in this professional learning mirrors some of the discussed techniques and how they can apply this in their own teaching. Imagining alternative "what if" scenarios for a better supported creative process can also be used as an opportunity to discuss what it creative about the task and help participants recognise their own creativity. If the group is cross-disciplinary, it might be useful to compare any similarities and differences between participant suggestions in different disciplines or at different education levels. Presentations can also be recorded and provided for students to view online.

ACTIVITY 3.5: Dealing with uncertainty and staying open to new ideas

Time required: 1h30

Objective: To support participants to reflect on how to navigate uncertainty and stay open to new ideas during teaching for creativity and how to support students to do the same.

Description:

The facilitator presents on the role of uncertainty in creativity and how it is important to leave room for the unexpected when fostering student creativity as creative processes do not always follow pre-planned trajectories. This can be a challenge because in most contexts, teachers spend a lot of time planning what should happen when during a lesson. Going "off track" can feel scary or uncomfortable for both teachers and students. Equally, when students engage in creative tasks, they may need to rethink their plan and stay open to new ideas and perspectives, even if this means re-doing or aspects of their prior work. The facilitator discusses a number of ways to help students navigate these feelings (e.g.. asking students to reflect on their pre-conceptions, modelling a process of seeing challenges as opportunities, having students document stumbling points as a way of demonstrating their creativity etc.). They may also discuss how it is often important for there to be certain constraints or boundaries in place in order for creativity to flourish. (20').

In small groups, participants engage in some lesson "unplanning". They take a lesson plan from www.oecdcericct.com and identify where there might be room to take out a planned element and replace it with something to be determined, probably by students. Then they discuss and compare different methods of navigating uncertainty (e.g. those above or those found in the Beghetto resource below). They identify 1-3 key actions they could integrate into the lesson plan (or into their teaching back at school) to help students navigate uncertainty (45'). Volunteers share their ideas with the whole group (25')

Reflection questions:

- How does the idea of "inviting uncertainty into the classroom" make you feel and why?

- What could you take from this activity to support your own practice back at school?

Rationale, alternatives and extensions

Participants could also share their own experiences of navigating uncertainty in a creative process or in their own teaching practice. The facilitator could share their own feelings about facilitating this professional learning course and any uncertainty or unexpected elements they have encountered. Participants could plan an "unplanning workshop" for fellow teachers, making sure that their workshop plan itself leaves room for the unexpected.

Useful resources:

"Keep open – Creative Thinking Tuesday" video

Beghetto, R (2017[16]) "Inviting uncertainty into the classroom" https://www.ascd.org/el/articles/inviting-uncertainty-into-the-classroom

ACTIVITY 3.6: Debriefing, reflecting, and building student autonomy for creativity

Time required: 1h45, plus an optional additional 1h

Objective: To support participants to consider how to debrief creative processes with students and support reflection and student autonomy for creativity.

Description:

In small groups, participants work on a selected lesson plan from www.oecdcericct.com or example from practice (this could be the same lesson plan they have worked on in previous activities). They discuss whether there are opportunities for students to take more ownership of parts of the processes that they are undertaking or products they are producing. The group comes up with 2-3 ways student autonomy could be increased in the lesson (30').

Groups select one of these and discuss whether and how this could be scaffolded or structured over time? How could a teacher carefully reduce the support given to students, so they are progressively able to accomplish more of the task independently (Collins & Kapur, 2006)? How would each stage of the process be debriefed to support systematisation of learning? How would student reflection take place? Groups can ask other groups for advice and the facilitator makes suggestions as necessary (30').

Groups share their thinking and the whole group discusses the challenges and opportunities involved in increasing student autonomy around creativity. For example, finding an appropriate balance between structure and openness in teaching, managing behaviour, any equity issues that might arise, managing students working at different paces etc. (45').

If the time for the activity can be extended, the same small groups role-play debriefing a creative process that has involved challenges (basing this role-play on a lesson plan from www.oecdcericct.com if necessary). They reflect on how they can use this as an opportunity to build students' growth mindset around their creativity (40'). The facilitator and participants debrief experiences of the role-play (20')

Reflection questions:

- How much student autonomy currently exists in your teaching / teaching context and what might explain that? What are the challenges and opportunities of supporting student autonomy?
- What role can reflection and debriefing play in supporting student creativity?
- What could you take away from the discussions to apply to your own practice when supporting student creativity in the classroom?

Rationale, alternatives and extensions

Depending on the context, it may be necessary to provide some examples of providing autonomy to students and some further explanation of what this can involve. It will be important to acknowledge different cultural traditions with respect to the degree of autonomy students have in schools. Case studies could also be provided featuring student autonomy and participants could be asked to identify ways to extend or better support that autonomy.

The term scaffolding will be familiar to many practitioners, but, if necessary, the facilitator can explain that it can be thought of as providing a temporary support for learning to help students reach understanding or ability in an area, with the aim that once they have understood and practiced, they can later reach that same level independently and autonomously. Examples could include breaking a task up into manageable chunks, modelling a key component, stepping in with a prompt at a crucial moment to help a student figure out what to do next (Puntambekar, 2022[17]).

Useful resources:

Example lesson plans from the OECD app or examples from practice. More information on storyboarding can be found here.

ACTIVITY 3.7: Building a creative and flexible learning environment

Time required: 2h

Objective: To support participants to consider how they can use the learning environment flexibly when supporting student creativity.

Description:

In small groups, participants discus an example from their teaching which involved students undertaking a creative process to produce an output and discuss how both students and teachers used the learning environment in the example (30'). Volunteers share some key points of their discussion with the whole group (20').

The same small groups characterise the learning environment they have experienced in this professional learning and how it promotes creativity (or not). They define the characteristics of a flexible and inclusive learning environment and how this might differ according to the size of the class (number of students and physical space). (40').

Small groups return to the example lesson plan they have been working with in previous activities and discuss how the space and materials would be used in that lesson, including how any artefacts could be managed (30').

They share their experiences of classroom routines that can support using the learning environment in a flexible but managed manner as appropriate to context (e.g., having students move to different areas of the space for different tasks, having students rearrange furniture, using a timer for transitions, the use of digital technologies, scheduled walkabouts etc.) (20")

Groups share the highlights of their discussion (20')

Reflection questions:

- How do you generally use the learning environment in your teaching and why?
- What kinds of spaces do you find cultivate creativity most helpfully? Why do you think this is the case?
- How do you generally use digital technologies in your teaching and why?
- Why do you think flexible use of the learning environment is emphasised in research around supporting student creativity in the classroom?
- What can you take from the discussions you have had today to apply to your own teaching in your context?

Rationale, alternatives and extensions:

If participants do not have any examples from their own teaching to share, this step could be skipped, or the facilitator could share an example from their own practice. As this is a discussion about the flexible use of the learning environment, it might be useful also to ask participants to reflect on how the learning environment has been used during these professional learning activities.

If time allows, an alternative activity is to ask participants to make and discuss possible 3D models or "sound scapes" imagining what a flexible creative learning environment might look and sound like (see sounds of my school lesson which draws on activities developed by Paul Collard). Participants could also work with students to do this back at school and reflect on the role of creativity within the exercise.

Required resources:

Example lesson plans from the OECD app or examples form practice.

ACTIVITY 3.8: Bringing learning to life: creativity outside of the classroom walls

Time required: 1h40

Objective: To support participants to consider how they could link to students' out-of-school creative endeavours and / or to identify creative partners that could support student learning and creativity, inside and outside of the school.

Description:

In small groups, participants brainstorm as many ways as possible that their students might currently be developing and using their creativity outside of school (15').

They brainstorm as many potential creative partners as they can think of from outside of the school community in their context (for example, artists, community groups, businesses and so on) (15')

Individually, participants plan 2-3 ways they could extend students' learning with creativity outside of the classroom walls or bring creative partners into the school to support greater creativity and reflect on what the benefits would be (e.g., lessons in the school grounds, site visits, a specific service learning project, bringing professionals in for specific projects etc). The facilitator invites participants to consider proposing ideas that might be unusual or even radical or novel within their context or that can link to student's out-of-school creativity. In small groups, participants share some of their ideas and discuss the related challenges and opportunities (40').

In a whole-group discussion, the facilitator elicits examples and notes them centrally (30').

Reflection questions:

- What are the challenges and opportunities of extending students' learning for creativity outside of the classroom walls or using creative partners to support student creativity?
- What are the challenges and opportunities associated with making links between student's in and out-of-school creativity?
- How familiar or novel would such approaches be in your context?
- What can you take away from the discussion to apply to your own teaching?

Rationale, alternatives and extensions

There are several elements to this activity (i.e., extending learning outside of the classroom walls (lessons or projects that take place outside of the classroom), bringing creative partners into school (e.g., artists) and linking to student's out-of-school interests (e.g., students may be creating video and other content for social media outside of school). Depending on the needs of the context, the facilitator may want to separate discussion of these three elements or focus on only one of them.

Useful resources:

Creativity, Culture Education Case Studies https://www.creativityculturеeducation.org/case-studies/

"Helping you take your teaching beyond the classroom" https://www.lotc.org.uk/

Module 4: Assessment and student creativity

Overview

This module supports participants to consider the role of assessment in supporting student creativity. Some teaches have doubts about assessment and creativity. Just 54% of teachers involved in the OECD-CERI project agreed that student creativity can be reliably assessed (Vincent-Lancrin, 2019). Some teachers worry that, if not done carefully, assessment practices can constrain rather than enable student creativity (because students may conform to what they think the teacher expects rather than taking creative risks or trying new things). Others wonder whether creativity can truly be measured or quantified and if so, in relation to what.

In this module, participants explore assessment as a vital part of supporting student creativity. They look at assessment as creativity, assessment for creativity, and assessment of creativity, exploring how these could look in their own teaching contexts and with their own students. They build their assessment literacy around creativity by exploring not only how to design assessments to recognise student progression in creativity but also how to use regular facilitator and peer feedback and self-reflection activities to monitor learning and support student creativity.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Apply a range of assessment practices around creativity and consider how they can be adjusted for their own context.	• Design and appraise assessments, rubrics and criteria for assessing subject knowledge and student creativity.
• Build knowledge of assessment rubrics and criteria for creativity and identify and trial possible uses in their own teaching.	• Consider several perspectives and provide meaningful peer feedback on the strengths and limitations of planned assessments and criteria for student creativity.
• Recognise and communicate what progress looks like in creativity and construct effective feedback to support student creativity.	• Identify and question assumptions in common claims about assessment and creativity and in proposed assessments and assessment criteria.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for creativity. If they have taken previous activities, these will already be familiar to them.

Reading: Lucas, Bill. (2022[18]). *A field guide to assessing creative thinking in schools*. 10.13140/RG.2.2.24010.03529.

Watch: Participants use www.oecdcericct.com to identify and view/read at least one resource related to assessment and creativity (the “my library” and “my conference” sections provide some useful examples). Participants write down at least one key take-away and one thing they would question, or think could be further elaborated in the resource.

Additional learning after the module

Learning journal: Participants create a 500-word entry for their learning journal, explaining at least 3 key insights you they take away from module 3.

Summary of opportunities for monitoring and assessment of participant learning

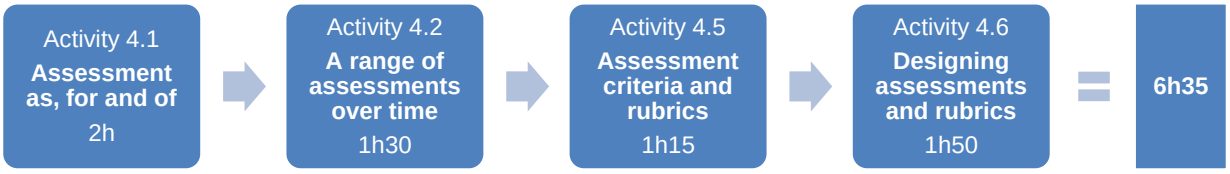
Learning journal: Opening and closing reflection and responses to reflection questions

Learning resources: Assessments and assessment rubrics (activity 4.6); exam question or task that can be used to demonstrate student creativity and subject knowledge (activity 4.3)

Teaching portfolio: Second microteaching video/reflection (set as additional learning after the previous module); table with assessments of, for and as learning for creativity (activities 4.1 and 4.2)

Suggested pathways

The Module activities can take place in the listed sequence with all modules offered (12h50 in total for module 4. However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 6h35 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or length individual activities according to participant needs.



Additional reading

For those interested in learning more about this subject:

Lucas, B., Claxton, G. and Spencer, E. (2013[19]) *Progression in Student Creativity in School: First steps towards new forms of formative assessments.* OECD Education Working Papers No. 85. Paris: OECD.

ACTIVITY 4.1: Examples of assessment as, for, and of creativity

Time required: 2h

Objective: To understand participants' existing experiences of assessment and student creativity and explore the concepts of assessment of/for/as learning in relation to creativity.

Description:

If participants have undertaken a micro-teaching episode as part of previous activities, they reflect on this in pairs, highlighting successes and any challenges and identifying 1-2 things they could do differently next time (30').

In different pairs, participants any experiences and / or doubts they have about assessment and student creativity (20'). The facilitator presents some background information and research on assessment and creativity showing that it is possible and useful to assess creativity and that this usually involves looking at both creative products and creative processes (which are sometimes less visible). They present the concepts of assessment of/for/as learning and provide examples of assessment. Participants share ideas about which kind of assessment is involved in each example, noting this in a table with for/as/of columns (30').

In small groups, participants select one of the lesson plans on www.oecdcericct.com and discuss what opportunities exist or could be created in the lesson plan for assessment of/for/as creativity. They continue to add to their table with examples in each category (30'). Selected participants volunteer to feed back to the larger group and the facilitator provides further thoughts as needed (10'). Groups will return to a more in-depth consideration of the lesson plan in future activities.

Reflection questions:

- What previous experiences do you have related to assessment and creativity? How do they shape your feelings about assessing student creativity?
- What assumptions about assessment and creativity did you notice in the discussions?
- How useful do you find the concepts of assessment for/of/as learning when thinking about assessment and student creativity and why?
- What are the challenges for teachers wishing to assess creativity?

Rationale, alternatives and extensions:

Timings for this activity are approximate and can be changed depending on the needs of the context and participants.

If participants have no experiences of assessment around creativity, the second discussion can be skipped, or the facilitator can share their own experiences.

Required resources:

Example lesson plans from the OECD app.

ACTIVITY 4.2: Using a range of types of assessments for creativity over time

Time required: 1h30

Objective: To support participants to consider a wide range of assessment practices for creativity.

Description:

The whole group brainstorms as many types of products and processes as possible in their discipline and education level that could be used or adapted to demonstrate and assess student creativity, either for individual students or as part of group work. The facilitator adds ideas where required. For example, portfolios or learner profiles, 2D, 3D and digital models, analogies, videos, blog posts, podcasts, exhibitions, projects, performances, quizzes, standardised tests, learning journals, improvements, adaptations, combinations or applications of ideas and solutions, etc. (15').

Small groups choose one type of assessment product or process (for example, they might choose to focus on portfolios / learner profiles) and have a discussion, guided by the following questions. How and why would it demonstrate creativity? How and why would it demonstrate subject knowledge? What are its strengths and limitations and how it could be strengthened? For example, is there any room to co-develop assessment criteria with students? To supplement the assessment with reflective writing? Or other modes of expression (audio, visual etc)? How could it make the creative process visible to both students and teachers? For example, does it involve students explaining the choices they made and the ideas they did not pursue and why? How could you use this assessment in your own practice? How would the teacher communicate to students what is valued in the assessment? Does the assessment raise any equity or inclusion issues and how could these be addressed? What moderation processes would be needed to enhance reliability? Participants are encouraged to pay attention to any assumptions they make or encounter (e.g., about what creativity is or how it can be demonstrated or measured) and whether those assumptions can be justified or questioned. Throughout, they can also share any experiences they have of using this type of product or process for assessment (50'). Small groups report back on their discussions and the facilitator notes emerging themes and discusses the importance of using a range of assessment methods over time (25').

Reflection questions:

- What could you take from the discussion to apply to your own teaching and assessment?

Rationale, alternatives and extensions

The initial brainstorm seeks to expand participant ideas of what can count as assessment and provide a large bank of ideas. Participants can be given a record of the brainstorm. Depending on the make-up of the group it may be useful to discuss differences and similarities across disciplines and educational levels. Discussion could also take place about the relative strengths and limitations of each idea and its relation to assessment as/for/of creativity.

Participants could also research a chosen type of assessment before the activity and use the in-activity time to report back to the whole-group on the evidence that supports its use. The facilitator can make participants aware that the guiding questions for that discussion are deliberately numerous in order to draw attention to the range of salient issues around assessment. In some contexts it may be more appropriate for the facilitator to present responses to the questions posed about a particular assessment and the

evidence that supports its use rather than rely on group discussion. Groups could also choose an OECD lesson plan with example assessments and focus their discussion on these examples.

Useful resources:

Lesson plans from the OECD app with example assessments.

"Building a Learning Profile" https://rethinkingassessment.com/learner-profile/

ACTIVITY 4.3: Creativity in exams

Time required: 2h40

Objective: To support participants to consider how creativity can be integrated into exams

Description:

In many contexts, exams are a central part of assessment culture. If these contexts in order to introduce creativity into teaching and learning in a coherent manner, it is important to consider how exams can be designed so they can be used to demonstrate student creativity. Whilst teachers may have little influence over standardised tests, they may have some autonomy over teacher-set exams and quizzes. Small groups briefly discuss the role of exams in their context and share any experiences of integrating creativity into examinations or quizzes (25').

Facilitator presents on integrating student creativity into different types of exams, and the benefits, challenges and considerations involved. For example, they share information on the importance of open questions for creativity and moving beyond single right-answer marking schemes. They highlight the existence of the PISA 2022 creative thinking domain and other standardised tests for creativity. If available, they share some sample exam questions or tasks from their context (25').

Participants pick one or two sample questions or tasks and attempt them themselves. In pairs, they discuss their experiences. Did they need creativity to respond and why? If so, how would they rate their own level of creativity in response? What do they think are the strengths and limits of the question or task as a test of creativity and of subject knowledge? (45')

Participants work in small groups to come up with an exam question or task – or a way of altering an existing exam question – that could assess student creativity and discuss its strengths and limitations (45').Volunteers share their exam questions / tasks and key points of their discussion with the whole group (20').

Reflection questions:

- What role do exams play in your teaching context? How much control do you have over the content and format of those exams? What role could there be for creativity in those exams?

Rationale, alternatives and extensions:

In some contexts, exams are an important part of school life. This activity seeks to help participants consider whether and how these exams could be altered to make more space for creativity. If no sample

exam questions are available, participants could be asked to discuss an imagined exam question such as "Identify and explain an analogy for the role of creativity in exams in your teaching context".

Useful resources:

Sample exam questions.

OECD (2023[20]) *Thinking Outside the Box: The PISA 2022 Creative Thinking Assessment* https://www.oecd.org/pisa/innovation/creative-thinking/

ACTIVITY 4.4: Facilitating productive failure

Time required: 1h55

Objective: To explore how productive failure can be supported and communicated to students.

Description:

Participants work in small groups. They are given 10-15 minutes to produce a poster that presents an analogy or catch-phrase representing and promoting the role of creativity in education (20').

Inevitably, groups won't be as successful in this task as they wish, given the time limitation. The facilitator guides a debrief about participant experiences, including successes or frustrations and what each group feels they could have done differently. Did they learn anything to support their long-term growth even if they weren't as successful as they wished in the short term? What have they learned from the experience that would help them engage and persist the next time they are faced with a creative challenge? (30')

Participants reflect individually on whether they ever give students credit for being creative despite inaccurate responses, unfinished tasks, or incorrect answers that involve original thinking and why / why not (10'). In pairs, participants discuss what counts as success and failure in creativity and how this can be communicated to students (20').

Facilitator invites volunteers to share their discussions and introduces and explains research on productive failure, and what factors might be important in helping students learn from adversity. The group discusses what sort of feedback can support productive failure (25'). Finally, the facilitator leads the group in a quick brainstorming session to think of as many ways as possible to help students persevere and learn from setbacks (10').

Reflection questions:

- What role do you think productive failure plays in fostering creativity and how much room to facilitate productive failure do you see in your teaching and why?
- Are there any examples from your personal or professional life when you have experienced productive failure and what, if anything, supported you to see these experiences as opportunities for growth?

Rationale:

Participants may be frustrated that they were not given more time. The point of the activity is to explore how a growth mindset for creativity can be facilitated despite challenges and frustrations and to understand that dead ends are sometimes a necessary part of the creative process. Giving participants the opportunity to experience productive failure can provide useful 'meta' moments in which the group considers how they could facilitate similar discussions and experiences with their own students.

Participants can begin with any activity that is likely to be challenging and may involve some level of "failure". For example, they could be assigned a problem with local relevance that has no easy solution.

Further reading:

If you're not failing, you're not learning, interview with Manu Kapur Edutopia.

ACTIVITY 4.5: Assessment criteria and rubrics for creativity

Time required: 1h15, plus an optional additional 45 minutes.

Objective: To introduce the OECD assessment rubrics for creativity and consider how they could be used in participants' teaching contexts.

Description:

The facilitator presents the set of OECD assessment rubrics for creativity for process and product and their background, noting that an important principle of assessing creativity is looking at both the process (which means the process needs to be visible in some way to the educator) and the end result. They explain that the OECD assessment rubrics are primarily designed as a tool to support regular formative feedback and reflection on progress (assessment for and as learning) (15').

Participants read short vignettes describing student responses to an assessment task involving creativity. Individually, they use the OECD assessment rubrics to decide what level of proficiency in creativity is demonstrated in the student response and what feedback they would give to the student/s (30'). In pairs, they discuss any challenges associated with the task and any differences in how they assessed the students, before volunteers share key points of their discussion with the group (30').

If the time for the activity can be extended, small groups discuss the assessment rubrics reflecting on their strengths and limits and how they could further be used in practice, including in unusual or radical ways (45'). The facilitator invites participants to reflect on how their experiences and views about assessment might be informing the discussion and to acknowledge any alternative perspectives or uncertainties.

Reflection questions:

- Would the OECD assessment rubrics for creativity be appropriate for use in your context and why? How would you use them? How could you make sure that they enable student creativity rather than constrain it?

Rationale, alternatives and extensions:

The activity involves participants experiencing one use of the rubrics, but this is not the only possible use of the rubrics. They can also be used to co-develop assessment criteria with students, for example. If time

allows, the facilitator could facilitate discussion about alternative methods of using assessment rubrics. Participants could also compare the OECD rubrics to other assessment rubrics that they currently use within their context and discuss in what ways they are compatible.

If available, examples of student work could be used instead of vignettes or groups could use the assessment criteria to assess their product from the productive failure activity (if they have done activity 4.4). If appropriate and in contexts where access to generative AI tools such as ChatGPT is possible, the facilitator or participants could use generative AI to generate vignettes or examples of student work for participants to assess with the rubrics. This should be supplemented with careful discussion of risks and benefits of using generative AI.

Required resources:

OECD assessment rubrics, vignettes describing student work.

ACTIVITY 4.6: Designing assessments and assessment rubrics for creativity

Time required: 1h50, plus an optional additional 1h10 mins

Objective: To support participants to design assessments and assessment rubrics for creativity.

Description:

Participants work in small groups to design as assessment around creativity in a discipline of their choice that would fit into the context of their teaching, or for an example lesson plan (or the lesson plan they designed in module 2) (90'). They are encouraged to set out a clear purpose and learning outcomes for their assessment.

The facilitator circulates giving input and feedback as needed. For example, they might suggest that students are given time to revise their work after receiving teacher or peer feedback or that students document the creative process to make it more visible. About halfway through, groups receive and give feedback to one other group (20')

If the time for this activity can be extended, the same groups design an assessment rubric for their assessment (if participants are unable to finish this task, they can be invited to complete it at home) (70').

Reflection questions:

- What were the successes and challenges of designing an assessment and assessment rubric? What was the rationale behind the choices you made?
- How does the assessment you designed make the student creative process and / or product visible to both teacher and student? How does it support student learning?
- What range of students would it be appropriate for? Is there anything that might unintentionally lead to unequal outcomes? What would a teacher need to consider to make sure it was implemented equitably?
- How would it support student motivation and well-being?

- How would it be similar or different to other assessments that students experience?
- What makes the assessment valid and reliable? Is there any risk of plagiarism and how could this be addressed? Are there concerns or opportunities around students using generative AI, such as Chat GPT for this assessment? How might the concerns be mitigated or addressed?
- How would you communicate the purposes and expectations of the assessment to students?
- What do you think characterises a quality assessment targeted at student creativity? How might your pre-existing ideas and values around assessment and creativity be affecting your response?

Rationale, alternatives and extensions:

Ideally, participants should already have done activities that introduce them to the concept of creativity (e.g. 1.5) and to the different types of assessments possible (e.g. 4.1 and 4.2). If this is not the case, the activity can begin with a facilitator presentation covering what is meant by creativity and discussing different methods of assessment for different purposes.

It will be important to provide support and iterative guidance to participants for this task and the time can be extended or shortened depending on the level of familiarity and comfort of participants with the task. They can be made aware that lots of reflection questions are offered because there are several important issues to be considered in designing assessments for creativity.

Instead of designing an assessment, participants could be asked to improve an existing assessment or an assessment generated by generative AI (if this is possible and appropriate in the context). If appropriate and in contexts where access to generative AI tools such as ChatGPT is possible, participants could use generative AI to produce a first version of the assessment or associated assessment rubric, which they then improve. This should be supplemented with careful discussion of risks and benefits of using generative AI.

Required resources:

Examples of practice or example lesson plans from the OECD app, assessment rubrics.

ACTIVITY 4.7: Thinking more about feedback and progression

Time required: 1h, plus an optional additional 1h15

Objective: To enable participants to reflect further on what progression looks like in creativity and what sort of feedback can support it.

Description:

In small groups, participants consider some example feedback on a student creative product or process (see handout C as an example). What is useful about the feedback and not so useful about the feedback for student creativity given everything discussed in previous activities? How could it be improved and communicated to help students progress in their creativity? (40') Groups feedback their suggestions to the wider group (20').

If the time for this activity can be extended, participants work in pairs to choose an example assessment, the assessment they have just designed, or an assessment that they themselves use. They write vignettes

describing student work at different levels of proficiency for this assessment, drawing on the language of the OECD rubrics, other rubrics used in their context, and/or any rubrics designed in activity 4.6 as appropriate. What would they expect to change or be different in student work at different levels of proficiency – and as students progress through school? (45').

The facilitator asks for volunteers to share their experiences and facilitates a whole-group discussion about whether participants would change anything about the rubrics as a result of their experiences of using them in this way (30').

Reflection questions:

- What would you expect to be different about a student's creative work at different levels of achievement and schooling? How might a teacher track student progress over a year? From early tasks to end of year tasks?
- What do you think characterises helpful feedback to support student creativity?

Rationale, alternatives and extensions:

The purpose of the second optional part of this activity is both to think further about how to recognise and characterise progression in creativity and to deepen participant engagement with the assessment rubrics. If a rubric that is specific to the assessment task is available, this should be used. Participants could also improve a set of given vignettes instead of creating their own. If appropriate and in contexts where the use of generative AI is possible, additional example feedback and vignettes could be produced by generative AI.

Required resources:

Example feedback on a student creative process (e.g. Handout C), example assessment, assessment rubrics.

ACTIVITY 4.8: Assessment cultures and final reflection

Time required: 1h30

Objective: To enable participants to reflect on assessment culture and assessment literacy within their own teaching contexts, particularly in relation to assessment and creativity.

Description:

In pairs, participants discuss the assessment culture in their own teaching context. What role does assessment play? How much focus is there on creating regular opportunities to monitor student learning? How much room is there for alternative assessments or using open-ended questions and tasks in assessment? How can they find room for creativity within this culture/context? (30')

In small groups, participants consider how the examples and types of assessments discussed in previous activities would fit with the assessment culture and schemes in their context. What would need to change about the culture or the assessments to create a better fit? (30'). Small groups create 2-3 "what if…" statements, describing their vision of an ideal assessment culture that contains space for creativity and

identify 2-3 actions that they can take to contribute to making that vision a reality. Participants consider if they would like to add to or change their statement of teaching philosophy and values, if they have prepared one as part of this professional learning.

In a final whole group discussion, the facilitator invites volunteers to share key points from their discussions and to reflect on what they have learned around assessment and creativity (30')

Reflection questions:

- How would you characterise the current assessment culture in your context? What role does assessment play? How does it fit in with the school's priorities, mission, and values etc.?
- Is there much dialogue around assessment practices in your teaching context? How can you create more opportunities with colleagues for dialogue?
- How do students, teachers, and school leaders understand assessment in your teaching context? What discussion of equity and inclusion issues take place in relation to assessment?
- How much room is there for creativity in the assessment culture in your context? How could this be expanded?

Rationale, alternatives and extensions

As this is a final reflective activity, the exact content of the discussion might depend on what has come up in previous activities. Participants can be invited to have similar discussions with their colleagues following the module.

Required resources:

Examples of assessments from previous activities.

Module 5: Introduction to critical thinking

Overview

Whilst almost everyone agrees that critical thinking is important, there is often uncertainty about how best to describe and articulate what critical thinking involves and create a shared understanding of it in the classroom. Is it just the ability to recognise unreliable information or justify an argument or is it something more than this? This module invites participants to think further about critical thinking in education in all its forms: What are the elements of critical thinking? Why is it important? What does it look like in particular school subjects? What role does it have to play for your students and in your teaching?

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Communicate an in-depth understanding of why critical thinking is important to students and societies and relate that importance to students in your own context.	• Identify the strengths and limitations of definitions and rubrics for critical thinking, along with related assumptions and uncertainties.
• Clearly articulate what student critical thinking does and does not look like in the classroom in their discipline.	• Generate multiple ideas for ways students could exercise critical thinking in one or more teaching subject(s).
• Identify effective ways to use the OECD rubrics for critical thinking in practice and understand their relation to other models, skills and approaches to critical thinking.	• Reflect on their own experiences of critical thinking, inside and outside of education contexts, and how this affects their approach to critical thinking in the classroom.
• Recognise the relation between critical thinking, subject knowledge and learning and apply this to future planning and teaching for critical thinking.	

Preparatory work

Before completing the reading, participants write a short definition of critical thinking. They should not spend too long on this, just write down their first thoughts – what critical thinking means to participants is likely to change as they are introduced to the definition used in activities, so it is good to have a record of their starting place.

If this is their first module, participants take the initial course survey and write a 1-page starting reflection on their current approach to teaching and learning and the role, if any of critical thinking within it (and

creativity if they will also take the creativity modules). This will form part of their learning journal (see assessment).

Reading:

Extracts from chapter 1 and 2 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com).

Watch:

Essential skills for the future video on the app.

Additional learning after the module

Learning journal: Participants explore the app (www.oecdcericct.com) which has curated a number of useful resources on critical thinking. They identify 2-3 resources that interest them and are invited to have at least one conversation with colleagues before the next module about the importance of critical thinking and what it looks like in educational contexts, informed by the resources and material covered in this module, as appropriate. A reflection on these conversations could be included in their learning journal.

Participants create a 500-word entry for their learning journal, explaining at least 3 key insights they will take away from the module.

Teaching portfolio: Participants produce a statement of teaching philosophy and goals related to critical thinking in 500 words. This could include an analogy for their current approach to critical thinking in education. Participants can update this statement at the end of the module and include it in their teaching portfolio.

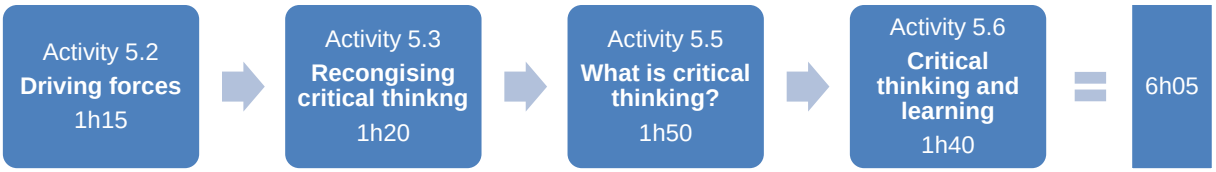
Summary of opportunities for monitoring and assessment of participant learning

Learning journal: Opening and closing reflection and responses to reflection questions.

Teaching portfolio: Statement of teaching philosophy related to creativity and related analogy. Statement on critical thinking (activity 5.5)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (12h35 in total for module 5. However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 6h05 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context.



Additional reading

Vincent-Lancrin, S. (2021[21]). *Skills for Life: Fostering Critical Thinking*. Inter-American Development Bank

ACTIVITY 5.1: Why does critical thinking matter to students, to me and society?

Time required: 1h15

Objective: To support participants to explore their aspirations for their students and how they link to critical thinking.

Description:

Working individually, participants quickly draw a simple stickperson representation of a student in the middle of a piece of paper and write their aspirations for their students around the outside (10').

They add additional words representing the knowledge, attributes, capacities, aspirations, behaviours, and opportunities they associate with being able to "question and evaluate ideas and solutions" (the facilitator explains that this is the definition of critical thinking used in the module, and it will be further discussed in future activities) (10').

Annotated drawings are compared and discussed in small groups. Was there any overlap between the initial aspirations and the words related to critical thinking? What are the differences and similarities between the drawings of different participants? Participants reflect on any possible bias in their own perspectives (30').

A plenary discussion or facilitator presentation (15') draws out multiple reasons that critical thinking is valued, including making better decisions and solutions, tackling disinformation, responding to artificial intelligence and the digital age, and supporting personal, social and civic well-being. Following discussion, participants amend or add to the words around their stickperson if they wish (10'). As a closing, participants post one important insight they are taking away from the activity on a collaborative white board and consider if they would like to add anything to the statement of teaching philosophy and values they wrote as preparation for this module.

Reflection questions:

- What assumptions are you making about your students / critical thinking / society and how would you justify or question those assumptions? Are there any biases that might be affecting your thinking that you need to identify and challenge?
- What are your aspirations for your students and how are they related to critical thinking?

Rationale, alternatives and suggestions for going deeper:

The aim of having a stickperson "student" in the centre of the page is to keep the discussion learner-focussed. Participants can be encouraged to reflect on whether they are unintentionally centring their analysis around students with particular backgrounds or mobilising unhelpful stereotypes as they picture this student and their competencies. This can help centre equity and inclusion as important parts of the discussion.

As an extension, participants could make additional versions of their annotated drawing showing critical thinking competencies in the specific subject they teach or showing students in different contexts or faced with particular challenges and discuss the differences between them. Instead of simply reflecting on assumptions made, they could produce an "assumptions inventory", which is a more systematic written collection of possible assumptions. Activity 1.1 and activity 1.2 have similar objectives and could be substituted for one another.

In this activity, participants are experiencing elements of critical thinking e.g., identifying assumptions and bias and comparing perspectives. This can bring opportunities to discuss what aspects of their work featured critical thinking and any characteristics of their learning experience that could inform how they support their own students' critical thinking.

Additional reading

Cignetti, M. and M. Fuster Rabella (2023[22]), "How are education systems integrating creative thinking in schools?", PISA in Focus, No. 122, OECD Publishing, Paris, https://doi.org/10.1787/f01158fb-en

References and acknowledgements:

This activity is adapted from an activity in Payton and Hague (2010[7])

ACTIVITY 5.2: Driving forces for critical thinking

Time required: 1h15

Objective: To support participants to identify the driving forces and restraints for supporting critical thinking in their contexts and internationally.

Description:

In small groups, participants draw a T on a large piece of paper and populate one side of the T with factors *driving* the need to support student critical thinking. They populate the other side of the T with factors that may restrain the development of critical thinking or make it more difficult, both in their specific context and more widely (30').

In a plenary discussion, groups share their ideas and the facilitator draws out multiple driving forces for developing critical thinking, including the need for innovation skills, preparing students for changing labour markets, combatting disinformation and personal, social and civic well-being (30'). This can be supplemented with discussion of any constraining forces that make fostering creativity more challenging. Groups have the opportunity to add to or alter their driving and restraining forces (15')

Reflection questions:

- How do you think your own experiences with critical thinking might be affecting your view of the opportunities and restraints around creativity?
- Do you think your group made any assumptions when completing the activity and how would you question or justify those assumptions? Can you identify any biases in your own thinking that you might need to challenge?
- What is currently restraining you from developing critical thinking in your context and what is one small step you could take towards overcoming one of these restraints?

Rationale, alternatives and extensions:

If this is the first activity, it can be helpful to begin with introductions and icebreakers and ask the group to set intentions for the professional learning programme and for this module in particular.

The purpose of this activity is to get participants thinking about a range of drivers and constraints. These could have 'positive' connotations (e.g., facilitating democratic participation), 'negative' connotations (e.g., guarding against automation), or they could be economic (e.g., need for innovation skills), context-specific (e.g., introduction of competency curricula), international (e.g., finding responses to global health crises) or personal (e.g., the teacher's values). It may be useful to return to this driving forces map at the end of the modules to see if participants views have changed.

Activity 1.1 and activity 1.2 have similar objectives and could be substituted for one another.

References and acknowledgements:

Developed from an activity in (Caroselli, 2009[8]) More information can be found here.

ACTIVITY 5.3: Recognising critical thinking in the classroom.

Time required: 1h20

Objective: To support participants explore what critical thinking looks like in the classroom and to ground their exploration of critical thinking in the context of real examples from practice.

Description:

Participants think of times they feel they have seen or supported student critical thinking in the classroom (if needed the facilitator reminds the group of the simple definition of critical thinking as "questioning and evaluating ideas and solutions"). They share examples in small groups, describing the student critical thinking involved. If participants do not have experience of supporting critical thinking, the group looks at provided case studies (30').

The same small groups choose two of the examples or cases and discuss any common characteristics they share and any differences. How were students questioning and evaluating ideas? What did the process look like? What did any product or output look like? (30'). Groups share their thinking in plenary and a volunteer notes any relevant vocabulary (20').

Reflection questions:

- How would you describe the critical thinking involved? Is it different or the same to examples of critical thinking you have encountered outside of education settings (or your own critical thinking)? How so?
- Were there differences between the examples shared and what might explain those differences?
- What would have made the examples more critical?
- Is there anything that surprised you about the examples or the discussion and why?

Rationale, alternatives and extensions:

This activity starts by examining examples from practice rather than theoretical definitions in order to make it easier for participants to recognise what critical thinking in the classroom can look like. However, the facilitator can provide the simple definition of critical thinking as "coming up with new ideas and solutions" to provide a common reference point for participants.

If possible, examples should be drawn from participants' own practice to ensure discussions are relevant and firmly embedded in the context of real schools. Future activities draw on examples shared in this activity. Participants can be invited to have similar discussions with their colleagues at a staff meeting or specially organised session.

Required resources:

Case studies.

ACTIVITY 5.4: What is critical thinking? Exploring conceptual rubrics

Time required: 1h50.

Objective: To introduce and discuss the OECD conceptual rubrics for critical thinking.

Description:

The activity begins with an explanation of the OECD definition of critical thinking as "questioning and evaluating ideas and solutions," involving inquiring, imagining, doing, and reflecting. They introduce the OECD rubrics for critical thinking, which set out what is involved in critical thinking in different disciplines. The rubrics are a tool to support teachers to picture what critical thinking involves and discuss this with students. They are intended to support planning and pedagogy rather than to assess students (although they can also be used to help students and teachers recognise and discuss what counts as critical thinking) (20').

After reading the rubrics, participants return to the examples shared in activity 5.3 and discuss the extent to which they involved students inquiring, imagining, doing, and reflecting. What could have been added to the examples to strengthen those dimensions? (40')

Different small groups discuss the strengths and limitations of the rubrics according to different criteria (30'). Facilitator asks for volunteers to feed back to the whole group and guides a discussion of how the rubrics could be used in practice (20')

Reflection questions:

- What assumptions do the OECD rubrics make about critical thinking / students / classrooms and how can they be justified and/or questioned?
- What are the core elements of critical thinking in education according to the rubrics? What would be some alternative ways to think about it?
- How could you use the rubrics in practice in your context? How could students use them? How could they support discussions of critical thinking with students or colleagues?

Rationale, alternatives and extensions:

The discussion of how the rubrics can be used in teaching is important. They are designed with the idea that teachers and students use their expertise and judgment to implement the rubrics in a way that suits their context and needs. The rubrics offer a shared vocabulary to describe the characteristics of critical processes but are not supposed to be prescriptive or reductive. The four sub-dimensions may happen in any sequence and the rubrics can be used to invite and organise a multitude of types of tasks and activities. This means they can be viewed as providing a shared understanding as a starting place for discussion and co-creation rather than a set of standards to be enacted.

Participants can also compare and contrast the OECD and any alternative rubrics related to critical thinking available in their context.

Required resources:

OECD rubrics, examples of practice / case studies from activity 5.3.

ACTIVITY 5.5: What is "critical"? Exploring questioning, assumptions, bias and uncertainty.

Time required: 1h30, plus an optional additional 1h.

Objective: To explore the role of questioning, assumptions, bias and uncertainty and generate ideas about possible ways they could manifest in the classroom.

Description:

Small groups discuss the examples from activity 5.3 (or an example OECD lesson plan from www.oecdcericct.com). Did the examples involve students identifying or questioning commonly accepted ideas and practices? Were students recognising when they or others were making assumptions? Were they expressing any uncertainty or doubt or discussing the limits of what they know? Was there any discussion of bias? How could these aspects have been strengthened? (30')

Facilitator further develops the previous discussion of critical thinking, highlighting that critical thinking can involve questioning generally accepted ideas and practices or assumptions and acknowledging the uncertainty or limits and bias of positions (20').

Small groups think of as many examples as possible of when students might need critical thinking (or one of these related concepts) in the classroom (e.g. when carefully considering alternative ideas or theories,

considering what is and is not in the textbook and why), and examples which would not be an expression of critical thinking (e.g. repeating theories from a textbook without further consideration) (20').

If the time for the activity can be extended, the same groups prepare a critical thinking statement or "manifesto" that explains their view on the importance of identifying and questioning assumptions and bias and navigating uncertainty in teaching and learning in their discipline, using some of the examples they have just generated. This is produced in a format of their choice (e.g. a written statement, a short video or audio recording). If time allows, groups provide some peer feedback on their neighbouring group's text. Groups consider how they have demonstrated critical thinking in developing their output (40). Selected examples and outputs are shared and further discussed in plenary (20').

Reflection questions:

- How would you explain the importance of questioning, assumptions, and / or uncertainty to your students, colleagues or school leaders? How could you adjust this for students at different levels?
- When have you yourself questioned ideas, identified assumptions or acknowledged bias or uncertainty? What were the challenges and successes involved?
- What equity issues might arise when asking students to identify and question assumptions and bias and how can these be addressed?
- Thinking about the examples shared, what value would they have to student learning?

Rationale, alternatives and extensions:

Questioning, assumptions and uncertainty may be less of a focus currently in many educational contexts, even when other aspects of critical thinking are present such as identifying trust-worthy information or justifying why you are making an argument. This activity seeks to help participants explore these aspects of critical thinking (and also supports a deeper engagement with the OECD rubrics, which include these terms). If needed, the facilitator can clarify that activities can have high value to student learning, whether or not they involve critical thinking.

Required resources:

The next activity discusses the OECD rubrics in more detail, but they can also be a useful resource here.

ACTIVITY 5.6: Critical thinking and learning

Time required: 1h40

Objective: To clarify the relationship between critical thinking, subject knowledge, and learning.

Description:

Facilitator asks small groups to consider some of the examples from either activity 5.3 or 5.4 and what knowledge students would be using in each case. (20').

The facilitator presents and reviews evidence and research suggesting that critical thinking is domain specific. In order to think critically in a domain, students need knowledge of that domain. They need to understand the ideas and solutions they evaluate, meaning that critical thinking can be acquired and

experienced as part of subject learning. Although critical thinking can be applied in multiple disciplines, the way it is applied, and its content and context might look quite different across disciplines (20').

Participants position themselves physically between two contrasting extremes. At one side of the room are those that believe that spending classroom time supporting student critical thinking distracts from time needed to develop subject knowledge. At the other end are those who believe spending classroom time supporting student critical thinking helps teachers deepen subject knowledge (10').

Participants form a pair with someone who has a different position, and each member of the pair attempts to justify their position, taking care to specify the criteria they are using for this justification and any assumptions they are making. If everyone has positioned themselves in the middle, the facilitator invites each member of the pair to argue for an opposing position (even if it is not their own position) (20').

In a plenary discussion, participants feedback on their discussions and share their perspectives on the relation between exercising critical thinking and developing subject knowledge, noting any common themes that emerge. Participants are invited to share how and their partner used elements of critical thinking in the discussion. Finally, the facilitator can give participants the opportunity to alter their position if they wish to (30').

Reflection questions:

- What, if anything, about your experience of critical thinking or your teaching context might affect your view of the relationship between critical thinking and subject knowledge? Did you have to challenge any of your own assumptions about critical thinking during this activity?
- Do you have any examples of when your students have learned whilst also being critical?
- Thinking back on the discussion you had during this module, did you see any differences in the way people were discussing critical thinking?

Rationale, alternatives and extensions:

The purpose of having students position themselves physically is to help them see how their position compares to their colleagues. It can be emphasised to participants that they are taking a provisional position, which may change, and students can be reassured that they will not be judged for the position they take.

The continuum can also be between different extremes (e.g., critical thinking is domain-specific versus critical thinking is not domain-specific).

In practice this is not about adopting an 'either/or' position but encourages participants to consider the ways in which critical thinking may look and feel in different contexts and to challenge their own assumptions about critical thinking and learning. It will also invite them to consider the degree to which some critical thinking skills are or are not transferable across disciplines and contexts.

ACTIVITY 5.7: Critical thinking and other skills, competencies and dispositions

Time required: 1h50

Objective: To support participants to develop their understanding of the relation between critical thinking and broader competencies and dispositions and make visible any changes in their view of critical thinking.

Description:

Facilitator presents connections and differences between critical thinking and a range of related but different skills, competencies and dispositions. E.g., “independent thinking”, “problem-solving”. self-regulation and other behavioural, social and emotional skills (e.g., openness, self-confidence, perseverance, flexibility, collaboration, communication etc.) (20’).

In pairs, participants create a concept map showing their view of how these different competencies differ and connect to each other. They consider more than one way of structuring their concept map, paying attention to what is centred/peripheral in each and why (40’).

In different pairs, participants discuss how critical thinking is framed in their own contexts. For example, is it discussed as independent thinking, problem-solving, a habit of mind or spoken about in its own right? They share and discuss their pre-written definitions of critical thinking. Given everything that’s been discussed so far, what, if anything, would they change about their definitions? Facilitator asks for a few volunteers to share what has changed so far in their definitions of critical thinking and why (40’).

If they completed activity 5.1, participants return to their drawing of a student annotated with competencies, reflect on what has been discussed since, and decide if they want to add or change anything about the annotations (10’).

Reflection questions:

- How is critical thinking referred to in your teaching context and why? Does this framing of critical thinking bring any opportunities or challenges to your practice?
- Has your view of critical thinking and/or its importance changed? How so and why?

Rationale, alternatives and extensions:

This activity begins with a facilitator presentation to ensure that the later discussions are grounded in a good knowledge of some of the related research and evidence. The presentation could also be recorded so that students could view it before the start of the activity.

The definition of critical thinking is often contested, with different traditions emphasising different elements. Participants could also research and present different positions on critical thinking. In some contexts, the term is not used at all but falls under broader models. The purpose of this activity is to enable participants to link the vocabulary and models used in their own context with critical thinking as it is described in the OECD rubrics.

The discussion of participant definitions aims to make any changes in beliefs about critical thinking more explicit and support participants to identify and question any assumptions and misconceptions they feel were present in their original view of critical thinking.

Participants reflect on how they used critical thinking when preparing their concept maps and discussing their definitions. This can help to make participant’s own critical thinking more visible to them.

Required resources:

Participants’ initial definitions of critical thinking, and annotated drawing from activity 5.1.

ACTIVITY 5.8: Progressing in critical thinking

Time required: 1h55

Objective: To support participants to start thinking about what progression looks like in critical thinking in the classroom.

Description:

Small groups choose an already shared example, an example from their own practice or a lesson plan from www.oecdcericct.com in a discipline of interest. They describe what the critical thinking involved might look like (15'). The facilitator discusses increases in the strength, breadth and depth of critical endeavours (10'). Small groups discuss how the critical thinking would change 1) at a higher or lower level of achievement and 2) for an older or younger student, being careful to note any assumptions they are making (30'). Groups feedback some key points from their discussions and any emerging themes are noted centrally (15').

Participants are introduced to the OECD 'granular' assessment rubric for critical thinking which provides 4 levels of proficiency for inquiring, imagining, doing and reflecting (the sub-dimensions of the OECD conceptual rubric) (15'). Small groups discuss whether the descriptors in the rubric differ or match how they described different levels of critical thinking in the previous discussion. They share any insights or remaining uncertainty they have about how to describe critical thinking in the classroom and reflect on what they are taking away from this module (30').

Reflection questions:

- What does it look like in your discipline when a student gets better at critical thinking?
- How might, for example, "identifying and questioning assumptions" in your discipline differ in primary school as opposed to lower or upper secondary? What would it look like at your teaching level for a beginning student versus a very advanced student?
- What insights are you taking away from this module and what uncertainties remain for you around critical thinking?

Rationale, alternatives and extensions

Although this activity introduces assessment rubrics, the purpose is not to discuss whether and how critical thinking can be assessed but instead to deepen the discussion of the concept of critical thinking and what it looks like at different levels in the classroom.

In the final discussion, participants can also reflect (in writing or orally) on their own journey and attitudes around critical thinking. For example, one activity to support this is asking participants to consider one of their hobbies and have them describe why they are interested in this hobby and what it teaches them. Participants reflect on any similarities and differences between their journey with their hobby and how they approach critical thinking in education.

It may also be important to facilitate a discussion about how participants see their own progression in critical thinking and whether they would like to change anything about the statement of teaching philosophy and values that they produced in preparation for this module.

Required resources:

OECD ‘’granular” assessment rubric for critical thinking, examples from practice or OECD lesson plans

Module 6: Planning and learning design for critical thinking

Overview

This module supports participants to consider how to plan and design learning experiences that support student critical thinking. Participants plan and design activities and lessons that can foster both critical thinking and subject teaching and that can be embedded in their own teaching contexts. They will share any prior experiences of learning design for critical thinking and discuss how to consciously plan processes and products involving critical thinking in their upcoming teaching period. They will be introduced to design criteria for student critical thinking and reflect on how they could use a range of signature pedagogies to support student critical thinking, as well as exploring the role of alignment and co-design.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Understand and clearly articulate the importance of learning design when fostering student critical thinking.	• Identify a range of teaching techniques that support student creativity and create opportunities for creativity in existing lesson plans, some of which may be personally novel.
• Identify opportunities for student critical thinking in current teaching and integrate critical thinking into planning going forward.	• Design lesson plans that foster both subject knowledge and student critical thinking in engaging and meaningful ways.
• Be familiar with a range of materials and techniques to support student creativity, including design criteria, signature pedagogies, and co-design and try them in their own planning, as appropriate.	• Consider several perspectives and provide meaningful peer feedback on the strengths and limitations of planned teaching for student critical thinking.
• Ensure alignment when planning teaching for student critical thinking and demonstrate commitment to reflective practice.	• Identify and question assumptions in common claims about pedagogy and materials to support student creativity.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for critical thinking. If they have taken previous activities, these will already be familiar to them.

Reading: Read extracts from chapter 1 and 2 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com);

Come to the module with an existing teaching plan (annual or for a particular unit) or lesson plan or teaching activity into which you'd like to integrate more student creativity.

Additional learning after the module

Teaching portfolio: microteaching 3: Film a 10-minute extract of a teaching and learning episode related to critical thinking (if needed, participants should be reminded to ensure students do not appear in the video)

Learning journal: Create a 500-word entry for your learning journal, explaining at least 3 key insights you will take away from this module.

Summary of opportunities for monitoring and assessment of participant learning

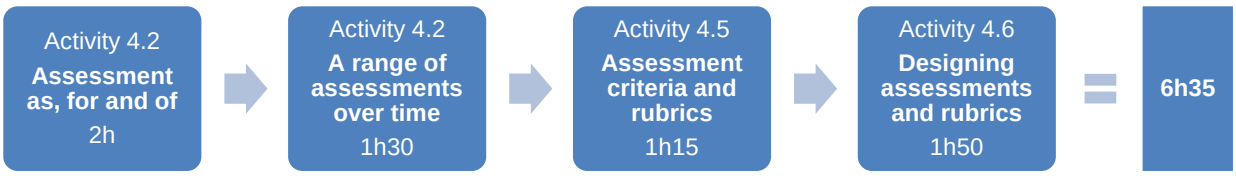
Learning Journal: Responses to reflection questions and final reflection

Learning resources: Lesson plan for critical thinking (activity 6.5); Empathy map (activity 6.8)

Teaching portfolio: Mapping of teaching against critical thinking (activity 6.4); Visual representation of alignment for creativity (activity 6.7)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (14h05 in total for module 8). However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 6h35 for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants together choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or lengthen individual activities according to participant needs.



ACTIVITY 6.1: Spotting space for critical thinking

Time required: 1h30 (plus an optional additional 1h)

Objective: To support participants to identify space for critical thinking when planning lessons

Description:

In small groups, participants reflect on and share their key takeaways from previous activities and their experiences of discussing critical thinking within their contexts (which they have been asked to do as preparation for this activity). Participants are introduced to and read the OECD rubric for critical thinking if they have not taken previous activities. (20').

The same small groups select a lesson plan from www.oecdcericct.com in a discipline and educational level of interest to them. They identify areas of the lesson plan where students' critical thinking would be fostered and why and discuss ideas for strengthening this. If time allows, they respond to the same questions for a second lesson plan from the app (45'). Volunteers report key elements of their discussion with the facilitator providing further input as needed (25'). The facilitator highlights that there is often room to drop small critical thinking tasks, considerations or discussions into regular teaching and learning and that in some cases this can take just a few minutes of teaching time.

If there is time to extend the activity, groups consider another lesson plan that does *not* explicitly focus on critical thinking – ideally, this would be from their own teaching context How could the lesson be changed to foster critical thinking whilst still delivering the same subject knowledge outcomes? (40') Groups identify 1-3 opportunities or amendments and share with the wider group (20')

Reflection questions:

- How is the support for critical thinking in each lesson plan structured and scaffolded over time?
- How easy or challenging was it to adapt an existing lesson plan so that it has more space for critical thinking? What were the strengths and limitations of the adaptations you suggested? On what assumptions were they based?
- What equity and inclusion issues needed to be considered as you completed this activity?

Rationale, alternatives and extensions:

Ideally, each group should discuss a different lesson plan, so creating a larger bank of examples for further discussions to draw on.

At this stage, participants are simply identifying and discussing where there could be space for critical thinking. They do not need to actually re-write any lesson plans. If participants feel there is no space for critical thinking in any of the lesson plans, they should discuss why that might be.

Groups can also compare the lesson plans they have discussed to examples from their own practice (E.g., those shared in activity 5.3) and discuss any similarities and differences.

Required resources:

OECD lesson plans, lesson plans from participants' own practice without focus on critical thinking.

ACTIVITY 6.2: Design criteria for critical thinking

Time required: 1h20 (plus an optional additional 50 minutes)

Objective: To introduce participants to the OECD design criteria.

Description:

Facilitator leads a whole-group discussion about any common features of the lesson plans with a critical thinking focus from activity 2.1. What were students doing or producing? What sorts of questions were they responding to? What room was there for curiosity and student autonomy? (20')

The facilitator presents (20') the OECD design criteria for activities that foster creativity and critical thinking, along with relevant supporting evidence. The criteria were produced to guide teachers in designing learning experiences for creativity. They cover the importance of creating students' interest to learn, being challenging, developing clear technical knowledge in one or more curriculum domains, including the development of a visible product or artefact, having students co-design part of the product or solution, dealing with problems that can be looked at from different perspectives, leaving room for the unexpected, and including time and space for students to reflect and give and receive feedback.

Small groups are assigned a criterion and discuss why it is important to critical thinking (and what evidence supports this) and any alternative perspectives that might exist on this (they can conduct online research to support this discussion as needed). They record key points from their discussion on a flipchart that other groups can later view (40').

If the activity can be extended, groups return to the example lesson plan or examples of practice from previous activities and discuss whether and how they demonstrate the design criteria and whether and how this could be strengthened (30'). Volunteers report back about their selected lesson plan to the larger group (20').

Reflection questions:

- How common is it that lessons in your own context demonstrate these design criteria?
- What are the strengths and limitations of the design criteria for supporting planning for critical thinking?

Rationale, alternatives and extensions

Alternatively, participants can be asked to research the evidence surrounding a particular design criterion prior to the activity and report back on their research for other students during the activity. They could also consider their own discipline and teaching level and discuss any alterations or additions that could be made to the criteria to make them more applicable to that subject or level, especially in relation to key issues such as equity and inclusion. If participants generate ideas for criteria, they can also reflect on what how they have used critical thinking in their responses, what supported that critical thinking, and whether there are any lessons they can learn for supporting student critical thinking in their own practice.

If participants have also taken the equivalent creativity module, they will already be familiar with the design criteria. Future activities revisit some of these design criteria and look at them in greater detail.

Required resources: OECD design criteria, Lesson plans from the OECD app or examples from participants' own contexts.

ACTIVITY 6.3: Learning activities and signature pedagogies for critical thinking

Time required: 2h30

Objective: To explore on learning activities and signature pedagogies for critical thinking.

Description:

In a whole-group discussion (20'), participants consider previously discussed examples of practice and lesson plans. Using these examples as a starting place, they brainstorm activities that require student critical thinking and that are relevant to their teaching discipline and level (e.g., classroom discussion, case studies, simulations, role-plays, problem-based learning, debate and so on). The facilitator adds ideas (e.g. from handout A) so that the group builds up a good list of possible techniques and activities.

In small groups, participants discuss 1-2 of the activities and why and how it can be used for critical thinking. With facilitator support, they try to work out an example of what each activity could look like in teaching a particular school subject. They pay particular attention to understanding the limitations of each chosen activity for developing critical thinking (for example in debates, students might argue for a position which is not supported by evidence, which will not support their critical thinking. Project-based learning might lack guided structured engagement) (40'). Selected small groups report back to the larger group in no more than 2-3 minutes (10').

The facilitator gives two 20' presentations, each following on one of the following: project-based learning, dialogical teaching, design thinking, metacognitive pedagogy, research-based learning, or another relevant pedagogical approaches. Each presentation is followed by a 20' small group discussion sharing experiences of using the pedagogy and any evidence regarding how to use it effectively (80').

Reflection questions:

- What experiences, if any, do you have of these sorts of learning tasks and signature pedagogies? Have those experiences felt positive or negative and why? What would you like to try out in your own teaching and what steps could you take towards this?
- What are the opportunities and challenges you experience or anticipate in your teaching context around integrating these tasks and pedagogies into your teaching?
- What would need to be considered to implement these learning activities and signature pedagogies in an equitable and inclusive manner?

Rationale, alternatives and extensions:

The timings are approximate and will need to be changed, depending on how many groups report their discussions. The facilitator presentation should focus on signature pedagogies that might be particularly relevant to the context and include reflection on how these pedagogies can be implemented equitably. Presentations can reference how digital technologies can be used to support these pedagogies, as appropriate. Alternatively, participants can be asked to come to the activity having already researched one signature pedagogy and the evidence that supports it and presentations could be delivered by participants.

Required resources:

Examples of practice from participants' own context, definitions of signature pedagogies (see facilitation guide); Handout A

ACTIVITY 6.4: Mapping teaching against critical thinking

Time required: 2h30

Objective: To enable participants to reflect on their current teaching plans and identify space, and associated learning outcomes, to support student critical thinking.

Description:

Individually, participants consider their annual teaching plan (or they may choose to focus on a smaller unit of teaching e.g., the upcoming semester or teaching unit) and to identify opportunities to support student critical thinking (drawing on the OECD rubrics, design criteria, and previous discussions of learning tasks and signature pedagogies as appropriate). As just one example, in secondary science, they might identify opportunities for students to compare different perspectives on a scientific problem (e.g. What factors affect human health?) (30'). In pairs, participants discuss why they think these areas of their teaching plan could provide space for student critical thinking (20').

Individually, participants map their planned teaching against the OECD critical thinking conceptual rubric (i.e., they record where in the upcoming teaching period, there is room for attention to critical inquiring, imagining, doing and reflecting) (30'). In pairs, they compare their approaches and discuss what additional learning outcomes could be possible around critical thinking for each of their teaching units (40'). Participants report key points of their discussion to the wider group and identify any challenges and opportunities they encounter (20').

Reflection questions:

- How easy or challenging was it to identify possible areas for student critical thinking in your teaching and why?

Rationale, alternatives and extensions:

Most participants will have planned elements of teaching to discuss (they should previously have been asked to bring these with them). If this is not the case, discussions could focus on a relevant area of the curriculum in that context. The facilitator can visit participants as they work individually to discuss any challenges and provide input. They can remind participants to consider where in their teaching there would be room to include lessons that demonstrate the design criteria, learning activities, and signature pedagogies covered in previous activities. Participants can consider adding a summary of this mapping of their teaching to their teaching portfolio.

Required resources:

OECD rubric mapping, participant planning documents.

ACTIVITY 6.5: Learning design for critical thinking

Time required: 2h20

Objective: To support participants to engage in learning design for critical thinking by designing a lesson plan

Description:

Participants identify one area of their upcoming teaching to focus on and in pairs (if possible from the same discipline and teaching level), they do some 'quick fire planning'' for how they could integrate attention to student critical thinking (understood as "questioning and evaluating ideas and solutions" and involving inquiring, imagining, doing and reflecting, as described in the OECD conceptual rubric). Pairs quickly sketch out 1-3 activities that could be integrated into each of their upcoming teaching units to foster student critical thinking (20').

Participants work in small groups to pick one of the groups' quick-fire ideas and start designing a fuller lesson plan, including learning outcomes, using the blank template from the project app (45'). After working on their lesson plan for an initial period, half of each group visits another group to briefly present the plan, hear about another plan, and receive and give feedback (15').

They return to their group and report on the feedback they have received before continuing with the task (60').

Reflection questions;

- How easy or challenging was it to design a lesson plan that provides space for student critical thinking as well as developing subject knowledge and why? What were the major considerations? What attention did you give to equity and inclusion?
- What learning activities and / or signature pedagogies did you draw on? Was there any room for use of digital tools to support the pedagogy in this case? Why/why not? To what extent did you draw on our own critical thinking for this task?

Rationale, alternatives and extensions:

The time required for this activity may vary by context. Participants can also be asked to finish their lesson plans at home. It can be helpful to make all lesson plans developed as part of this activity available on a shared platform for the benefit of all participants.

Participants can be asked to provide peer feedback on the lesson plans as at home after the activity. If participants, provide peer feedback, it can be useful to debrief the experience and how they needed to draw on their own critical thinking to offer peer feedback. They may also use elements of the lesson they design in this activity for the micro-teaching episode they undertake as additional learning for this module.

Required resources:

Blank lesson plan. OECD rubrics, OECD design criteria.

ACTIVITY 6.6: How would you know? Observing the classroom

Time required: 1h30, plus an optional additional 30 minutes.

Objective: To support participants to consider how they can monitor student learning for critical thinking and ensure equity and inclusivity.

Description:

The facilitator explains that in this activity, participants will consider the initial signs of a lesson that is working well to nurture critical thinking. This will be supplemented by further consideration of how formative and summative assessment techniques can be used to produce evidence of learning in later activities.

Small groups consider how they would know if the lesson they designed in the previous activity was nurturing student critical thinking. What would they be looking for in the classroom (e.g., what might students and teacher be doing, seeing, saying, hearing, writing etc.)? How would they monitor student learning? (30')

Groups make and illustrate a list of approx. 10 signs they might expect to see at key moments if the lesson was 'working well' (e.g. students asking questions, students helping each other, a 'buzz' in the classroom, students coming up with many ideas, students absorbed in quiet concentration etc.), and some initial ideas for ways they could check their assumptions (e.g., exit tickets, posing questions, reflection activities etc.). They also consider what signs and checks could be used to help assess if the lesson is equitable and inclusive (e.g. a respectful class climate, everyone participating, learning materials that connect to student experiences etc.) (40').

If the time for this activity can be extended, they address the same question for an example lesson plan from the app and compare their responses (30').

In a final plenary discussion, the facilitator invites groups to share what they would be looking for, notes common themes and differences and makes their own suggestions. They emphasise the importance of considering how to monitor student learning when designing lessons and using the results to inform future iterations of the learning design, including measures to ensure equity and inclusiveness. This discussion can be furthered in the activities that address assessment directly (20').

Reflection questions:

- What tools and processes could help monitor student learning for critical thinking? How could you assess if learning around critical thinking is equitable and inclusive?

Rationale, alternatives and extensions:

This activity seeks to introduce the importance of considering how to monitor student learning and critical thinking when designing lessons. Other activities look more closely at the range of assessment methods available to teachers to assess different elements of critical thinking. The conversation here is more focussed on how teachers can recognise an effective lesson and how they can build student monitoring into design.

Participants can work in the same groups they worked on in activity 6.5. An alternative is that they work in different groups and discuss a lesson plan that they did not necessarily design (this can help expose them to different ways of fostering creativity identified by fellow groups).

This activity is primarily addressed to monitoring everyday student learning, but the facilitator could also discuss how working with researchers to trial and monitor teaching and learning practices can be a valuable professional learning opportunity in this area.

Required resources:

Designed lesson plan from activity 6.5.

ACTIVITY 6.7: Building alignment for critical thinking

Time required: 1h10

Objective: To support participants to consider alignment when planning and designing for student critical thinking.

Description:

Participants individually consider the lesson plan they designed in activity 6.5. What are the end goals or outcomes of the lesson plan in terms of critical thinking and subject knowledge? How can they "backwards plan" from these outcomes so that all aspects of teaching support them? In what elements of the lesson would students practice the process, behaviour or thinking associated with that outcome? How would the teacher make their expectations and the purpose of the learning clear and make sure their words and actions supported each other? (20')

In pairs they discuss and compare their responses and produce a way of representing and checking alignment for critical thinking visually. This could be as simple as a colour coded table or chart with columns showing the relation between learning outcomes, teaching and learning activities, formative assessment, summative assessment etc (see resources). They might also consider if there is room to involve students in completing the chart (30').

In a final plenary discussion, the facilitator invites participants to share their outputs and key points from their discussions, and highlights research showing the relationship between greater alignment and better learning outcomes (e.g., Cohen, 1987) (20').

Reflection questions:

- What do you like about the approaches your colleagues have been adopting? How might you adapt and use these?
- How challenging do you think it might be to implement such a lesson plan in your context? How could you ensure alignment and what might restrain this?

Rationale, alternatives and extensions:

Participants could also discuss whether and how they could align teaching and assessment etc. if they were to implement an example lesson plan from www.oecdcericct.com.

If participants have already undertaken this activity for creativity, they can start with their already developed visual representations and discuss if anything would change for crucial thinking. Then they could compare

and contrast different approaches to the task before making a second version of their template which combines the strengths of the work they have seen.

Resources:

Lesson plan designed in activity 6.5.

Eikens, A. H. “Alignment in Action: A visual model” https://aaeik.medium.com/alignment-in-action-a-visual-model-to-design-university-courses-5aac5a0f30f6

ACTIVITY 6.8: Co-design for critical thinking

Time required: 2h15

Objective: To support participants to reflect on how they can create space for co-design and reflection when planning their next steps for developing their teaching for student critical thinking.

Description:

A short facilitator presentation provides examples of co-design and discusses the benefits (e.g. collaboration with colleagues, professional learning, making links between diverse areas etc) and challenges (e.g. lack of time and infrastructure).

Small groups identify 2-3 possible opportunities to integrate more co-design with colleagues (from the same or other teaching subjects. For example, around a single theme or simply around critical thinking in different disciplines). Alternatively, these possibilities could be suggested by the facilitator. Small groups identify one step they could take back at school to pursue co-design with colleagues (30’).

The same small groups read a case study which involves co-design with students. They discuss the case study and build an empathy map of what students could be doing, feeling, seeing, hearing, saying and thinking as they engaged in co-design. Would this be the same for everyone or would there be differences? (45’) Empathy maps are displayed centrally on a wall or collaborative whiteboard for others to view and compare. The facilitator reflects on how such empathy maps can support teachers to consider issues of equity and inclusion when facilitating co-design for critical thinking (10’).

The module closes with a reflective small-group discussion on participants’ next steps for critical thinking and how they can protect time for reflecting regularly on their planning and learning design for critical thinking (20’)

Reflection questions:

- What have you learned during this module? What doubts, if any, do you still have about planning and learning design for critical thinking?
- How are you planning to take what you have learned back to your own teaching context?
- How could you create opportunities to co-design teaching and learning for student critical thinking with colleagues and students?

Rationale, alternatives and extensions:

If time allows, this activity can be extended with a small group discussion in which participants share their experiences, if any, of co-design with colleagues and / or students and discuss the challenges of benefits.

Useful resources:

Yang, A., “Designing Learning Using an Empathy Map” https://alisonyang.com/teacher-empathy-map/

Module 7: Teaching and delivery for student critical thinking

Overview

This module is dedicated to considering issues of delivery. It supports participants to consider what it takes to explicitly emphasise student critical thinking in the classroom at different stages of teaching and learning. Participants share and consider any experiences of teaching for critical thinking and subject knowledge, what pedagogical techniques can be adopted, and what challenges might arise. Specifically, the module discusses classroom talk and building trust and autonomy for critical thinking, supporting students to consider multiple perspectives, how learning environments can be used flexibly, tackling the need for critical thinking in and out of school, and the importance of modelling and reflection to supporting student critical thinking.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Apply a range of techniques for building trust and engagement when asking students to exercise critical thinking.	• Generate personally novel ideas for how to increase engagement and challenge and how the learning environment could be used flexibly in teaching that aims to foster critical thinking.
• Effectively prompt, model, rehearse and debrief critical thinking processes and products.	• Explain both strengths and limitations of a chosen technique or learning environment justified on logical, ethical or aesthetic criteria and identify and question assumptions made about students, pedagogy, and critical thinking.
• Identify and respond to the challenges that might arise when fostering critical thinking in teaching.	• Integrate reflection into everyday teaching and learning.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for critical thinking. If they have taken previous activities, these will already be familiar to them.

Reading: Read extracts from chapter 3 and 4 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com).

Watch: Use www.oecdcericct.com to identify and view/read at least one resource related to teaching for critical thinking (the my library and my conference sections provide some useful examples). Write down at

least one key take-away and one thing you would question, or think could be further elaborated in the resource.

Participants think of a time when they underwent a critical thinking process (this could be as simple as evaluating ideas for an essay). They consider what supported them in this process and what could have been helpful? They come to the module ready to share their experiences.

Additional learning after the module

Teaching portfolio: microteaching 4: Film another 10-15 minute extract of a teaching and learning episode related to critical thinking that incorporates some of the thinking about delivery discussed in module 7 (if needed, participants should be reminded to ensure that students do not appear in the video)

Learning journal: Create a 500-word entry for your learning journal, explaining at least 3 key insights you will take away from module 7.

Summary of opportunities for monitoring and assessment of participant learning

Learning journal: Opening and closing reflection and responses to reflection questions

Learning resources: List of potential prompts for student critical thinking (activity 7.4)

Teaching portfolio: Microteaching video/reflection (set as additional learning after the previous module), linguistic profile of teaching (prepared after activity 7.2);

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (14h40 in total for module 7. However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 7h for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or length individual activities according to participant needs.

ACTIVITY 7.1: The challenge of critical thinking

Time required: 1h30 with an optional additional 50 minutes.

Objective: To ground the module in participant experiences of teaching for critical thinking in their own context and understand the sorts of challenges that might be encountered.

Description:

The activity begins with a whole-group reflective discussion about what participants have taken away from previous activities and the resources they engaged with as preparatory work. Participants can also be reminded of the OECD rubrics for critical thinking. (30').

Individually, participants reflect (privately) how confident they feel about supporting critical thinking in their teaching (see question below) and why. They are encouraged to reflect throughout their professional learning activities on practical measures they could take to further build confidence around teaching to support student critical thinking in their own contexts (10').

If participants completed a micro-teaching episode after a previous activity, they debrief their experiences in small groups (of around 3) and give each other advice. What were the successes and what were they challenged by? What could they do differently next time? With the help of the group, each individual identifies 1-3 things to try in future teaching (these could be relatively small adjustments such as asking different kinds of questions, including a small group discussion, providing examples, including additional modelling, using body language differently etc.) (45').

Different small groups brainstorm as many challenges as possible they have encountered or could imagine encountering in teaching that aims to foster student critical thinking (e.g., building trust, dealing with sensitive issues, helping students reserve judgement and consider multiple perspectives before formulating and justifying a position, building student confidence to question ideas etc.) and groups them into themes (e.g. equity and inclusion, power relations in the classroom etc). They record their thinking somewhere visible to the rest of the group(20'). The whole group moves around the room (or digital whiteboard) viewing the results of each group's brainstorm and how they have categorised the ideas. They can briefly discuss some possible responses to those challenges, but future activities will be addressed to this (15').

Reflection questions:

- What were the successes and challenges you encountered in your micro-teaching experience and what did you learn from them?
- How would you describe your current level of comfort with teaching for critical thinking (from 1 to 10)… and why so?

Rationale, alternatives and extensions:

Starting the module with some attention to the possible challenges in teaching for student critical thinking is a good way to ground future activities in the concerns of participants and enable them to use the module to build up a toolbox of techniques and approaches to respond to the challenges they anticipate. Depending on the context, it may also be helpful to discuss how comfortable participants feel with using digital technologies to support student critical thinking.

Facilitator could also provide details of several reflection structures (e.g. rose, bud, thorn, what, so what now what? Red light, amber light, green light) and have participants use, compare and discuss these techniques or participants could create written personal reflections on a chosen challenge related to their discipline and level. If the facilitator would like to take a project-based learning approach to this module,

they suggest that participants take the question of "how can student creativity be better supported in my practice and context?" to be their guiding "inquiry question" for the module.

ACTIVITY 7.2: Classroom talk and critical thinking in the classroom

Time required: 1h35

Objective: To reflect on language and power in the classroom and collaborate with colleagues to create a linguistic profile of their own teaching.

Description:

Facilitator presents (25') on the importance of classroom talk for critical thinking. They summarise research showing that when students articulate and discuss ideas, they are more able to integrate those ideas into their thinking. This sort of learning can require not only changes in the ratio between student and teacher talk in the classroom, but also changes in how students and teachers talk and what they say. For example, instead of asking "What year did the Titanic sink?", a teacher might ask "Why do you think people thought the Titanic was unsinkable?" (Sandling, n.d.[23]). To respond to the second question, students need to make connections between the time period and a range of issues related to, for example, science and engineering, advertising, society and psychology.

Small changes in what the teacher says can have a large impact on how much room students have to explore ideas, feel ownership over them, and critically evaluate them. In many contexts, this can be a significant departure from the status quo. Even in very egalitarian school structures, the hierarchical relationship between teacher and student cannot be denied: the teacher is the responsible adult authority and the student must follow the rules of the classroom or face sanctioned consequences. Often, the teacher defines the learning objective and the student demonstrates they have acquired knowledge by providing the answers required by the teacher. In many hierarchical relationships, the person with more power is expected to speak and the person with less power is expected to listen. It may be confusing for both students and teachers when the teacher is doing more listening and the student is doing more speaking. Or when the student is expected to demonstrate their learning by being able to talk meaningfully about the subject in a way that is not pre-determined by the teacher.

In pairs, participants discuss their response to the ideas the facilitator has shared and any assumptions involved. Do they agree or disagree about the importance of classroom talk and why? What is the balance between student and teacher talk in their own teaching? Does it change for different lessons/students etc. and what might explain that? What are the advantages and disadvantages of talking less and listening more in teaching? They also consider the role of talk in this professional learning course. Have they, as participants, spoken more or less than they expected? How has this affected their learning experience? (25')

In small groups, participants discuss how they could make a "linguistic profile"" of their teaching and how they could use the results. For example, they could ask a teaching assistant, colleague, or student to count how many statements, questions, and commands they use over two short periods of teaching in different circumstances. Alternatively, they could video themselves teaching two different lessons and count how many open- and close-ended questions they use in each. They could also make a list of open-ended questions related to their discipline they have used or plan to use in the next teaching period. The group creates a plan and template they could use to create and respond to their linguistic profile. The group is encouraged to implement the plan back at school and identify a future date to meet with fellow participants (e.g., a virtual call) to discuss the results and how they can be used in future teaching (45').

Reflection questions:

- What is one small change you could make to talk less and listen more in your teaching? How could that play a role in supporting student critical thinking?

Rationale, alternatives and extensions:

The initial presentation could also be recorded so that in-person time can be reserved for discussion. This can also provide an opportunity for meta-reflection on teaching practice. The activity starts with the facilitator talking in part to emphasise that students do need content and ideas to engage with, elaborate on and apply. It can be useful to facilitate a discussion on how students receive content when there is less emphasis on teacher talk in the classroom and whether participants would have preferred to have the presentation in-person, as a pre-video, or as a peer teaching exercise (e.g., presentations from other participants) and why. Classroom talk can reinforce or challenge exclusionary practices and it may be important to explicitly address opportunities and challenges for inclusion and equity.

Useful resources:

"Classroom Talk: What the research tells us" https://www.jct.ie/perch/resources/english/classroomtalk-whattheresearchsays.pdf

Sandling, Jonathan, "Open and closed questions for teachers" https://jonathansandling.com/open-and-closed-questions-for-teachers/

Gast, Ged. "Effective questioning and Classroom Talk" https://www.liberty.k12.ga.us/pdf/TandL/Effective_Questioning_Talk.pdf.

ACTIVITY 7.3: Building trust and autonomy for critical thinking

Time required: 2h30

Objective: To explore methods of building trust and autonomy when fostering student critical thinking.

Description:

Small groups discuss why it is important to build trust when fostering critical thinking (e.g., to help students feel more comfortable questioning the ideas of others or having their ideas questioned, to lessen the likelihood of social desirability bias whereby students simply say what they think others want to hear etc.) and facilitator presents related research (30').

In small groups, participants brainstorm possible ways of building trust in the classroom and creating a learning environment that invites and is respectful of differing ideas (e.g. talking explicitly about trust, using specific trust-building exercises, being consistent and transparent about expectations, setting up classroom agreements, modelling or being open about one's own experiences of questioning ideas etc.) (15'). Groups compare the potential effectiveness of different ideas/techniques, whether this might differ across different domains and educational levels (if relevant), any assumptions they are making and any issues of equity or inclusion raised by the technique. The facilitator offers ideas and input as needed (30').

Small groups work on a selected lesson plan from www.oecdcericct.com and come up with 2-3 ways student autonomy could be increased at different points of the lesson. They also consider what methods of establishing trust could be integrated into the lesson and how this might change as students move on to more challenging tasks. Finally, they consider what could go wrong with increasing student autonomy (e.g., students feeling lost and not asking for help, a lack of clear guidance from the teacher, students not having the knowledge they need, students being distracted or discipline issues) and share techniques for how to manage these issues (60'). Volunteers share key points of their discussion with the whole group (15').

Reflection questions:

- Why are trust and autonomy important when fostering critical thinking?
- What methods have you previously used to build student trust?
- How much student autonomy currently exists in your teaching / teaching context and what might explain that?
- What small or large steps could you take to integrate more trust and autonomy in your teaching with the aim of helping students to develop their critical thinking?

Rationale, alternatives and extensions:

Depending on the context, the facilitator may also choose to focus on either trust or autonomy. Groups could also choose one technique and role-play the sorts of discussions it could involve with students and how students might respond. If needed, they can imagine such discussions are taking place in the context of an example lesson plan from www.oecdcericct.com, which can help provide content for the role-play.

Required resources: Example lesson plans or examples from practice.

ACTIVITY 7.4: Modelling and prompting critical thinking

Time required: 1h45

Objective: To discuss and practice modelling and prompting for student critical thinking.

Description:

In small groups, participants reflect on a time they themselves underwent a critical thinking process (they have been asked to identify this process as preparation for the module. It could be a process they have undergone as part of this professional learning). Was the process scaffolded or modelled to them in any way? What was helpful and not so helpful about this? How was it prompted e.g. what was the task or questions posed? (20')

Facilitator guides the whole group in discussing a topic from the news and relating it to a teaching subject in a discipline of interest. They model critical thinking and ask a variety of prompting questions. They aim to give examples of prompts about assumptions, implications, uncertainties, strengths, and limits, why, who, what, where and how questions and metacognitive prompts (prompts about the critical thinking process) (20').

Small groups look at the prompts from handout B and discuss the characteristics of a good prompt for critical thinking (30').

They discuss a lesson plan from www.oecdcericct.com, possibly one they worked with in previous activities, and generate ideas for visual, spoken or written prompts that could be provided to students at each stage. They consider if there is room to model the student critical thinking involved. They note their ideas in a place visible to all (e.g. flipchart, digital whiteboard) so that other participants can later view them (30'). Participants move around viewing and discussing the suggested ideas of other groups (5')

In an exit ticket, participants write one insight they are taking away from the activity to apply to their own practice.

Reflection questions:

- Why are modelling and prompting important to fostering critical thinking?
- What methods discussed today could you implement in your own teaching and how would you need to adapt them?

Rationale, alternatives and extensions

The facilitator can also ask participants to consider when during this programme they have had experiences of modelling and prompting and what was helpful and not so helpful about these. This "meta" discussion provides opportunities to discuss how their own learning experience in this professional learning mirrors some of the discussed techniques and how they can apply this in their own teaching.

The term scaffolding will be familiar to many practitioners, but if necessary, the facilitator can explain that it can be thought of as providing a temporary support for learning to help students reach understanding or ability in an area, with the aim that once they have understood and practiced, they can later reach that same level independently and autonomously. Examples could include breaking a task into manageable chunks, modelling a key component, stepping in with a prompt at a crucial moment to help a student work out what to do next (Puntambekar, 2022[17]).

ACTIVITY 7.5: Supporting students to consider multiple perspectives

Time required: 1h40

Objective: To support participants to consider how to help students reserve judgment and consider multiple perspectives before formulating and justifying a critical position

Description:

Facilitator gives a short presentation on perspective-taking and how students can be supported to consider multiple perspectives. For example, they might start with the importance of identifying problems that can reasonably be looked at from more than one perspective (from the OECD design criteria). For some problems in science, for example, the evidence is established enough that it does not make sense to look at different perspectives on the problem. Whereas for other problems, there may be a lack of consensus amongst scientists or there may be trade-offs to make between different types of benefits, which require scientific knowledge to understand but on which perspectives might differ. For example, there might be little scientific dispute about how nuclear energy is produced but some disagreement about the best source

of power for a particular area. Students may need help understanding that their perspective on the issues covered in the curriculum might be informed by assumptions they might not have consciously considered or put to question. They might also need help to realise that others might have different but valid perspectives because they are using different criteria to form this perspective. Finally, they might need help seeing that a perspective needs to be grounded in some kind of evidence or reasoning rather than simply opinion (25').

Small groups work on a selected lesson plan from www.oecdcericct.com (in a discipline of interest to them) and discuss whether and why there are multiple valid perspectives on the issue it covers. Then they come up with 2-3 ways students could be supported to consider these multiple perspectives within the lesson. If time allows, they complete the same exercise for a different lesson, possibly from a different discipline (40').

In a plenary discussion, groups share, compare, and discuss ideas, methods and techniques that can help students recognise, understand, and question their own and others' perspectives (e.g. empathy maps, interpreting images, discussing the experiences of different actors in a case study, assumption inventories, creating and comparing criteria, providing templates for discussion e.g. "I acknowledge x is important and I also think there is evidence for y", role-playing debates between stakeholders etc), with the facilitator contributing as necessary (35').

Reflection questions:

- What topics do you teach that can be looked at from different perspectives?
- What small or large steps could you take to help students consider multiple perspectives on these topics?

Rationale, alternatives and extensions

Participants could also create a teaching resource for colleagues on the techniques that they identify. Or they could produce an inventory of topics from their upcoming teaching period where different perspectives could be possible and valid.

Required resources:

Example lesson plans or examples from practice.

ACTIVITY 7.6: Flexible learning environments and critical thinking

Time required: 2h

Objective: To support participants to consider how they can set up a flexible learning environment to support student critical thinking.

Description:

In small groups, participants discus examples from their teaching which involved students undertaking a critical thinking process. They discuss how both students and teachers used the learning environment in the examples (20'). Volunteers share some key points of their discussion with the whole group (10')

The same small groups characterise the learning environment they have experienced in this professional learning and how it promotes critical thinking (or not). They define the characteristics of a flexible learning environment and how this might differ according to the size of the class (number of students and physical space) (40').

In pairs participants discuss what strategies they could adopt to make the learning environment more flexible in their own teaching contexts. If needed, they return to an example lesson plan they have been working with in previous activities and imagine how they would use space and materials in that lesson, including any use of a 'driving question' board (i.e. a board on which students can pin questions and notes about the topic of learning). What opportunities and challenges would this create? Would there be any room for the use of digital technologies? (30'). Groups share the highlights of their discussion (20').

Reflection questions:

- What examples have you seen of flexible learning environments?
- Why might a flexible learning environment help support students' critical thinking?
- What can you take from today to apply to your own teaching in your context?

Rationale, alternatives and extensions:

If participants do not have any examples from their own teaching to share, this step could be skipped, or the facilitator could share an example from their own practice. If participants have already taken activity 3.7 which looks at flexible learning environments in relation to creativity, they can return to the characterisation of a flexible learning environment produced in that activity and discuss if anything would be different when supporting critical thinking. Depending on the context and examples shared, it may be helpful to facilitate a discussion of the use of digital technologies as part of flexible learning environments.

Required resources:

Example lesson plans and examples form practice.

ACTIVITY 7.7: Critical thinking in and out of school

Time required: 2h

Objective: To support participants to consider how they could support student critical thinking outside of the school walls.

Description:

In small groups, participants complete a Venn diagramme showing as many ways as possible their students might currently need or be developing and using critical thinking outside and inside of school and any overlaps between the two, including around their use of digital technologies (30').

In pairs they discuss possible partners for teaching students about critical thinking in their context, from both within the school and outside of it (for example, other teachers, journalists, librarians, non-governmental organisations, local authorities, industry and so on) (20')

The facilitator gives some practical examples of initiatives to help students to learn about critical thinking outside of the school walls (e.g. critical thinking days, hackathons, internships, multidisciplinary projects, using gaming / social media as examples, service learning, bringing professionals in for projects etc.).

Individually, participants think of 2-3 ways they could extend student's learning with critical thinking outside of the classroom walls or bring partners into the school to support greater learning and critical thinking. The facilitator invites participants to also consider proposing ideas that might be unusual or even radical or novel within their context or that can link to student's out-of-school critical thinking. In small groups, participants share some of their ideas and discuss the related challenges and opportunities. (40').

In a whole-group discussion, the facilitator elicits examples and discusses what characteristics would make a good initiative, noting emerging themes centrally (30')

Reflection questions:

- What are the challenges and opportunities of extending student's learning for critical thinking outside of the classroom walls or using partners to support student critical thinking?
- What are the challenges and opportunities associated with making links between student's in and out-of-school critical thinking?
- How familiar or novel would such approaches be in your context?
- What can you take away from the discussion to apply to your own teaching?

Rationale, alternatives and extensions:

There are several elements to this activity (i.e., extending learning outside of the classroom walls (lessons or projects that take place out of the classroom), and linking to student's out-of-school needs and interests (e.g., use of internet and gaming out of school). Depending on the needs of the context, the facilitator may want to separate discussion of these elements or focus on only one of them. The facilitator should be ready to share input on possible partners and how to extent student learning outside of the school.

ACTIVITY 7.8: Supporting reflection

Time required: 1h40.

Objective: To support participants to reflect on the relationship between reflection and critical thinking and how to develop versatility in their practice.

Description:

In pairs, participants discuss their experiences with reflection (it may be helpful to consult their learning journal if they have produced one for this professional learning). How have they got better at reflection over time? What are the crossovers between how they reflect critically on their own practice and how they want students to reflect as part of teaching and learning? (20')

In small groups, participants discuss the strengths and limitations of different methods of supporting student reflection (The facilitator can suggest these methods or participants can share methods they have previously used e.g., metacognitive prompts (that ask students to consider their own thinking process), reflection structures such as rose, bud, thorn, different kinds of reflective writing including student journals

etc.)? What are 2-3 actions they can take back at school to support student reflection in their teaching? (40')

In different pairs, participants come up with 1-3 further actions to help them build their practice for student critical thinking and to develop confidence, versatility and a good teaching repertoire for critical thinking. For example, they could plan co-design or team teaching, further reflection, professional learning, trying new practices, doing further research on the app (for example, using the 'student activity' filter on the app), undertaking action research, facilitating learning workshops, developing a personal learning network etc. (20'). Volunteers share their ideas with the whole group (20')

Reflection questions:

- How do you plan to develop a good teaching repertoire for fostering student critical thinking?
- How have you reflected on your practice as part of this professional learning? Are there any implications for the ways you plan to support student reflection going forward?

Rationale, alternatives and extensions:

The facilitator could also introduce any tools for classroom observation available in their context and discuss some ways they can be used to support reflection on classroom practice and critical thinking.

The facilitator could also explain the benefits of participating in action research, in which teachers, often in partnership with researchers, design innovations in their teaching and then monitor and reflect critically on the result before undergoing another round of design and implementation. Participants could be asked to work in small groups to come up with a number of research questions for a possible action research project.

The final discussion could also focus more narrowly on ways participants plan to support their students to reflect more effectively.

Module 8: Assessment and student critical thinking

Overview

In this module, participants explore assessment as a vital part of supporting student critical thinking. They look at assessment as critical thinking, assessment for critical thinking, and assessment of critical thinking, exploring how these could look in their own teaching contexts and with their own students. They build their assessment literacy around critical thinking by exploring not only how to design assessments to recognise student progression in critical thinking but also how to use regular facilitator and peer feedback and self-reflection activities to monitor learning and support student growth and progression.

Learning outcomes

On completion of this module, participants will be able to:

Subject content and technical/pedagogical skills	Creativity and critical thinking
• Apply a range of assessment practices around critical thinking and consider how they fit within their own context.	• Design and appraise assessments, rubrics and criteria for assessing subject knowledge and student critical thinking.
• Build knowledge of assessment rubrics and criteria for critical thinking and identify and trial possible uses in their own teaching.	• Consider several perspectives and provide meaningful peer feedback on the strengths and limitations of planned assessments and criteria for student critical thinking.
• Recognise and communicate what progress looks like in critical thinking and construct effective feedback to support student critical thinking.	• Identify and question assumptions in common claims about assessment and critical thinking and in proposed assessments and assessment criteria.

Preparatory work

Before the first activity, participants should familiarise themselves with the OECD definition and conceptual rubrics for critical thinking. If they have taken previous activities, these will already be familiar to them.

Reading: extracts from chapter 3 and 4 of *Fostering Students' Creativity and Critical Thinking: what it means in school and* explore the OECD app for creativity and critical thinking (www.oecdcericct.com).

Watch: Use www.oecdcericct.com to identify and view/read at least one resource related to assessment and critical thinking (the my library and my conference sections provide some useful examples). Write down at least one key take-away and one thing you would question, or think could be further elaborated in the resource.

Additional learning after the module

Learning journal: Create a 500-word entry for their learning journal, explaining at least 3 key insights you will take away from module 3.

Summary of opportunities for monitoring and assessment of participant learning

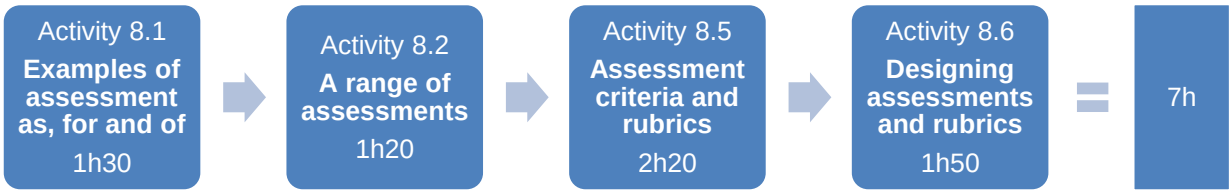
Learning journal: Opening and closing reflection and responses to reflection questions

Learning resources: Assessments and assessment rubrics (activity 8.6) exam question or task that can be used to demonstrate student critical thinking and subject knowledge (activity 8.4)

Teaching portfolio: Microteaching video/reflection (set as additional learning after the previous module). table with assessments of, for and as learning for critical thinking (activities 8.1 and 8.2)

Suggested pathways

Module activities can take place in the listed sequence with all modules offered (14h05 in total for module 8. However, as most contexts will have less time available, an alternative accelerated pathway is offered below (which would require 7 hours for this module). Shorter pathways drawing from activities across all modules are provided in the introduction to this framework document. The best scenario is that the facilitator and participants choose activities and create bespoke learning pathways according to their needs and the needs of the context. It may also be possible to shorten or length individual activities according to participant needs.



ACTIVITY 8.1: Examples of assessment of, for, and as critical thinking

Time required: 2h

Objective: To understand participants' existing experiences of assessment and student critical thinking and explore the concepts of assessment of/for/as learning in relation to critical thinking.

Description:

If participants have undertaken a micro-teaching episode as part of previous activities, they reflect on this in pairs, highlighting successes and any challenges and identifying 1-2 things they could do differently next time (30').

In different pairs, participants any experiences and / or doubts they have about assessment and student critical thinking (20'). The facilitator presents the concepts of assessment of/for/as learning and provides examples of assessment. Participants share ideas about which kind of assessment is involved in each example, noting this in a table with for/as/of columns (30').

In small groups, participants select one of the lesson plans on www.oecdcericct.com and discuss what opportunities exist or could be created in the lesson plan for assessment of/for/as critical thinking. They continue to add to their table with examples in each category (30'). Selected participants volunteer to feed back to the larger group and the facilitator provides further thoughts as needed (10'). Groups will return to a more in-depth consideration of the lesson plan in future activities.

Reflection questions:

- What previous experiences do you have related to assessment and critical thinking? How do they shape your feelings about assessing student critical thinking?
- What assumptions about assessment and critical thinking did you notice in the discussions?
- How useful do you find the concepts of assessment for/of/as learning when thinking about assessment and student critical thinking and why?

Rationale, alternatives and extensions:

Timings for this activity are approximate and can be changed depending on the needs of the context and participants.

If participants have no experiences of assessment around critical thinking, the second discussion can be skipped, or the facilitator can share their own experiences.

Required resources:

Example lesson plans from the OECD app.

ACTIVITY 8.2: Types of assessment for critical thinking

Time required: 1h30

Objective: To support participants to consider a wide range of assessment practices for critical thinking.

Description:

The whole group brainstorms types of products and processes in their discipline and education level that could be used or adapted to demonstrate and assess critical thinking, either for individual students or as part of group work. The facilitator adds ideas where required. For example, presentations, portfolios and learning profiles, essays, peer assessment, self-assessment, projects, documentaries and films, standardised tests, concept maps, criteria, assumption inventories, learning journals etc. (15').

Small groups look at an example assessment and discuss its strengths and limitations for assessing subject knowledge and critical thinking and how it could be strengthened. For example, is there any room to co-develop assessment criteria with students? To supplement the assessment with reflective writing? To ask students to write rationales explaining their reasoning? If they were the teacher, how would they communicate to students what is valued in the assessment? Participants are encouraged to pay attention to any assumptions they make or encounter (e.g., about what critical thinking is or about the purposes of assessment) and whether those assumptions be justified or questioned (50').

Each small group reports back on their discussions and the facilitator notes emerging themes (25').

Reflection questions:

- What could you take away from the discussion to apply to your own teaching and assessment?

Rationale, alternatives and extensions

The initial brainstorm seeks to expand participant ideas of what can count as assessment and provide a large bank of ideas. Participants can be given a record of the brainstorm. Depending on the make-up of the group it may be useful to discuss differences and similarities across disciplines and educational levels. Discussion could also take place about the relative strengths and limitations of each idea and its relation to assessment as/for/of critical thinking.

Participants could also research a chosen type of assessment before the activity and use the in-activity time to report back to the whole-group on the evidence that supports its use. In some contexts it may be more appropriate for the facilitator to present responses to the questions posed about a particular assessment and the evidence that supports its use rather than rely on group discussion. Groups could also choose an OECD lesson plan with example assessments and focus their discussion on these examples.

Useful resources: Lesson plans from the OECD app with example assessments.

ACTIVITY 8.3: Spotlight on peer assessment

Time required: 2h20

Objective: To further explore peer assessment as a way to support and monitor critical thinking.

Description:

Facilitator briefly reviews why peer assessment is important for critical thinking (10')

In small groups, participants share their experiences of facilitating peer assessment and anything they learned from those experiences (30'). Volunteers share key points with the wider group (20')

In pairs, participants share one of their pieces of work from this professional learning experience – For example, a resource they have prepared (individually or in a group) during the activities up to now or a piece from their teaching portfolio. Each partner suggests one strength and one thing that could be compared about their partner's work, specifically in relation to critical thinking (30').

In small groups, participants discuss the experience of peer assessment they have just had. What was helpful or challenging about it? They share their knowledge of how peer assessment can be structured and facilitated to be most effective for supporting student critical thinking, with the facilitator contributing ideas as needed (see suggestions below) (30'). Volunteers report back to the larger group (20')

Reflection questions:

- What role does peer assessment of students play in your current teaching context and in your own practice? What factors can make peer assessment effective or not so effective for supporting critical thinking?
- Do you have any experience of having your own work peer assessed? How might those experiences impact how you approach facilitating peer assessment for your students?
- What small step could you take to integrate more peer assessment in your teaching and assessment practices going forwards?

Rationale, alternatives and extensions:

Depending on the context, the facilitator may need to provide more or less input on the mechanisms involved in different ways of facilitating peer assessment. For example, a discussion could take place around whether peer assessment should be anonymous or open, the use of rubrics and feedback forms, whether peer assessment should determine or simply inform final grades, peer assessment for groups versus individuals, peer assessment online and using digital technologies, how to include diverse perspectives, modelling feedback, supporting students to go beyond the surface in their feedback, debriefing experiences of giving peer feedback and how to help students consider the strengths and limits of the peer feedback they receive and whether or not they should act on the peer feedback and suggestions they receive.

Required resources: Participants will need to share a piece of their work associated with this professional learning framework.

ACTIVITY 8.4: Critical thinking in exams

Time required: 2h40

Objective: To support participants to consider how critical thinking can be integrated into exams.

Description:

In many contexts, exams are a central part of assessment culture. If these contexts in order to introduce critical thinking into teaching and learning in a coherent manner, it is important to consider how exams can be designed so they can be used to demonstrate student critical thinking. Whilst teachers may have little influence over standardised tests, they may have some autonomy over teacher-set exams and quizzes. Small groups briefly discuss the role of exams in their context and share any experiences of integrating critical thinking into examinations or quizzes (25').

Facilitator presents on integrating student critical thinking into different types of exams, and the benefits, challenges and considerations involved. For example, they share information on the importance of open questions for critical thinking. They highlight the existence of standardised tests for critical thinking. If available, they share some sample exam questions or tasks from their context (25').

Participants pick one or two sample questions or tasks and attempt them themselves. In pairs, they discuss their experiences. How would they rate their own level of critical thinking in response? What do they think are the strengths and limits of the question or task as a test of critical thinking and subject knowledge? (45')

Participants work in small groups to come up with an exam question or task – or a way of altering an existing exam – that could assess student critical thinking and discuss its strengths and limitations (45'). Volunteers share their exam questions / tasks and key points of their discussion with the whole group (20').

Reflection questions:

- What role do exams play in your teaching context? How much control do you have over the content and format of those exams? What role could there be for critical thinking in those exams?

Rationale, alternatives and extensions:

In some contexts, exams are an important part of school life. This activity seeks to help participants consider whether and how these exams could be altered to make more space for critical thinking. If participants have no experience of integrating critical thinking into exams, the opening discussion can be omitted.

Required resources: Sample exam questions.

ACTIVITY 8.5: Assessment criteria and rubrics for critical thinking

Time required: 1h15, plus an optional additional 45 minutes.

Objective: To introduce the OECD rubrics for critical thinking and consider how they could be used in participants' teaching contexts.

Description:

The facilitator presents the set of OECD assessment rubrics for critical thinking for process and product and their background, noting that it can be important to assess both the process and the end result. They

explain that the OECD assessment rubrics are primarily designed to support regular formative feedback and reflection on progress (assessment for and as learning) (15').

Participants read short vignettes describing student responses to an assessment task involving critical thinking. Individually, they use the OECD assessment rubrics to decide what level of proficiency in critical thinking is demonstrated in the student response and what feedback they would give to the student/s (30'). In pairs, they discuss any challenges associated with the task and any differences in how they assessed the students, before volunteers share key points of their discussion with the group (30').

If the time for the activity can be extended, small groups discuss the assessment rubrics reflecting on their strengths and limits and how they could further be used in practice (45'). The facilitator encourages them regularly to reflect on how their experiences and views about assessment might be informing the discussion and to acknowledge any alternative perspectives or uncertainties.

Reflection questions:

- Would the OECD assessment rubrics for critical thinking be appropriate for use in your context and why? How would you use them?

Rationale, alternatives and extensions:

The activity involves participants experiencing one use of the rubrics, but this is not the only possible use of the rubrics. They can also be used to co-develop assessment criteria with students, for example. If time allows, the facilitator could facilitate discussion about alternative methods of using assessment rubrics. Participants could also compare the OECD rubrics to other assessment rubrics that they currently use within their context and discuss in what ways they are compatible

If available, examples of student work could be used instead of vignettes. If appropriate and in contexts where access to generative AI tools such as ChatGPT is possible, the facilitator or participants could use generative AI to generate vignettes or examples of student work for participants to assess with the rubrics. This should be supplemented with careful discussion of risks and benefits of using generative AI.

Required resources: OECD assessment rubrics, vignettes describing student work.

ACTIVITY 8.6: Designing assessments and assessment rubrics for critical thinking

Time required: 1h50, plus an optional additional 1h10 mins.

Objective: To support participants to design assessments and assessment rubrics for critical thinking

Description:

Participants work in small groups to design as assessment around critical thinking that would fit into the context of their teaching, or for an example lesson plan (or the lesson plan they designed in module 2) (90'). They are encouraged to set out a clear purpose and learning outcomes for their assessment.

The facilitator circulates giving input and feedback as needed. For example, they might suggest that the participants consider integrating peer feedback in the assessment.. About halfway through, groups receive and give feedback with one other group (20')

If the time for this activity can be extended, the same groups begin to design an assessment rubric for their assessment (if participants are unable to finish this, they are invited to complete at home) (70').

Reflection questions:

- What were the successes and challenges of designing an assessment and assessment rubric? What was the rationale behind the choices you made?
- How does the assessment you designed make the student critical thinking visible to both teacher and student? How does it support student learning?
- What range of students would it be appropriate for? Is there anything that might unintentionally lead to unequal outcomes? What would a teacher need to consider to make sure that it was implemented equitably?
- How would it support student motivation and well-being?
- How would it be similar or different to other assessments that students experience?
- What makes the assessment valid and reliable? Is there any risk of plagiarism and how could this be addressed? Are there concerns or opportunities around students using generative AI, such as Chat GPT for this assessment? How might the concerns be mitigated or addressed?
- How would you communicate the purposes and expectations of the assessment to students?
- What do you think characterises a quality assessment targeted at student critical thinking? How might your pre-existing ideas and values around assessment be affecting your response?

Rationale, alternatives and extensions:

Ideally, participants should already have done activities that introduce them to the concept of critical thinking (e.g. 5.5) and to the different types of assessments possible (e.g. 8.1 and 8.2). If this is not the case, the activity can begin with a facilitator presentation covering what is meant by critical thinking and discussing different methods of assessment for different purposes.

It will be important to provide support and iterative guidance to participants for this task and the time can be extended or shortened depending on the level of familiarity and comfort of participants with the task. They can be made aware that lots of reflection questions are offered because there are several important issues to be considered in designing assessments for critical thinking.

Instead of designing an assessment, participants could be asked to improve an existing assessment or an assessment generated by generative AI (if this is possible and appropriate in the context). If appropriate and in contexts where access to generative AI tools such as ChatGPT is possible, participants could use generative AI to produce a first version of the assessment or associated assessment rubric, which they then improve. This should be supplemented with careful discussion of risks and benefits of using generative AI.

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Required resources:

Examples of practice or example lesson plans, assessment rubrics.

ACTIVITY 8.7: Thinking more about feedback and progression

Time required: 1h, plus an optional additional 1h15

Objective: To enable participants to reflect further on what progression looks like in critical thinking and what sort of feedback can support it.

Description:

In small groups, participants consider some example feedback on a student critical thinking product or process (see handout C as an example). What is useful about the feedback and not so useful about the feedback for student critical thinking given everything discussed in previous activities? How could it be improved and communicated to help students progress in their critical thinking? (40') Groups feedback their suggestions to the wider group (20').

If the time for this activity can be extended, participants work in pairs to choose an example assessment, the assessment they have just designed, or an assessment that they themselves use. They write vignettes describing student work at different levels of proficiency for this assessment, drawing on the language of the OECD rubrics and any rubrics designed in activity 8.6 as appropriate. What would they expect to change or be different in student work at different levels of proficiency – and as students progress through school? (45').

The facilitator asks for volunteers to share their experiences and facilitates a whole-group discussion about whether participants would change anything about the rubrics as a result of their experiences of using them in this way (30').

Reflection questions:

- What would you expect to be different about a student's critical thinking work at different levels of achievement and schooling? How might a teacher track student progress over a year? From early tasks to end of year tasks?
- What do you think characterises helpful feedback to support student critical thinking?

Rationale, alternatives and extensions:

The purpose of the second part of this activity is both to think further about how to recognise and characterise progression in critical thinking and to deepen participant engagement with the rubrics. If a

rubric that is specific to the assessment task is available, this should be used. Participants could also improve a set of given vignettes instead of creating their own. If appropriate and in contexts where the use of generative AI is possible, additional example feedback and vignettes could be produced by generative AI.

Required resources: Example feedback on a student creative process, example assessment, assessment rubrics.

ACTIVITY 8.8: Assessment cultures and final reflection

Time required: 1h30

Objective: To enable participants to reflect on assessment culture and assessment literacy within their own teaching contexts, particularly in relation to assessment and critical thinking.

Description:

In pairs, participants discuss the assessment culture in their own teaching context. How much focus is there on creating regular opportunities to monitor student learning? How can they find space for critical thinking within this culture/context? (30')

In small groups, participants consider how the examples and types of assessments discussed in previous activities would fit with the assessment culture and schemes in their context. What would need to change about the culture or the assessments to create a better fit? (30'). Small groups create 2-3 "what if…" statements, describing their vision of an ideal assessment culture that contains space for critical thinking and identify 2-3 actions that they can take to contribute to making that vision a reality. Participants consider if they would like to add to or change their statement of teaching philosophy and values, if they have prepared one as part of this professional learning.

In a final whole group discussion, the facilitator invites volunteers to share key points from their discussions and to reflect on what they have learned around assessment and critical thinking (30').

Reflection questions:

- How would you characterise the current assessment culture in your context? What role does assessment play? How does it fit in with the school's priorities, mission, and values etc.?
- Is there much dialogue around assessment practices in your teaching context? How could you create more opportunities for dialogue?
- How do students, teachers, and school leaders understand assessment in your teaching context? What discussion of equity and inclusion issues take place in relation to assessment?
- How much room is there for critical thinking in the assessment culture in your context? How could this be expanded?

Rationale, alternatives and extensions

As this is a final reflective activity, the exact content of the discussion might depend on what has come up in previous activities, especially if participants have already participated in the equivalent creativity activity

(activity 4.8). Participants can be invited to have similar discussions with their colleagues following the module.

Required resources: Examples of assessments from previous activities.

Module 9: Institutional-wide creativity and critical thinking

Overview

This module, primarily aimed at institutional leaders, invites participants to consider their school's current approach to creativity and / or critical thinking and their vision for these skills going forward. They consider what role there might be for creativity / critical thinking in the school values as well as how the teaching traditions, learning environment, professional learning, and assessment culture at the school enables of constrains support for student creativity / critical thinking. They reflect on what partnerships could be built around these skills and produce a heat map showing how they are and could be integrated across the school, before designing an initiative to further embed creativity and / or critical thinking in the school ecosystem.

Learning outcomes

Subject content and technical skills	Creativity and critical thinking
• Create a vision for creativity and / or critical thinking across the school and integrate it with school values.	• Identify and appraise potential initiatives and actions, possible unusual or radical, that could support creativity and critical thinking in your institution.
• Consider what needs to change in professional learning cultures, learning environments, pedagogy, and assessment in order to embed creativity and / or critical thinking across the school.	• Identify and question assumptions made when identifying and appraising school-wide initiatives.
• Identify real-world partners and problems that could support approaches to creativity and / or critical thinking across the school.	• Map creativity and critical thinking opportunities across the school, considering multiple perspectives.

Preparatory work

Consider where your school is, as of today, with creativity / critical thinking and what you would like to achieve from this module.

Additional learning after the module

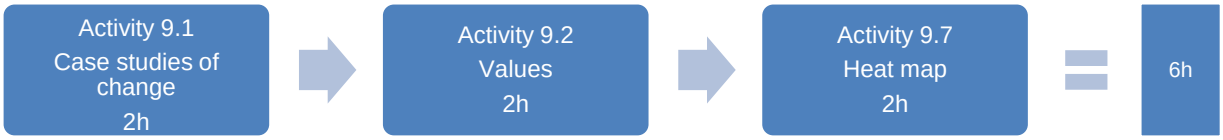
There is no formal work to complete, but participants can consider setting a date to meet again with fellow participants and to discuss how they have moved forward with some of the plans for creativity / critical thinking created during module activities.

Summary of opportunities for monitoring and assessment of participant learning

Learning journal: Opening and closing reflections and responses to reflection questions

Suggested pathways

The module activities can take place in the listed sequence (approx. 17 hours in total) or only some activities can be chosen according to the needs of participants. Below is a one possible pathway for contexts where limited time is available:



Additional reading

For those interested in learning more about this subject:

Lucas, B., Spencer, E., Stoll, L., Fisher-Naylor, D., Richards, N., James, S., & Milne, K. (2023[24]). *Creative Thinking in Schools: A Leadership Playbook*. Crown House Publishing Ltd.

ACTIVITY 9.1: Case studies of change

Time required: 2h

Objective: To learn and take inspiration from case studies of change in other institutions.

Description:

Participants read case studies of the integration of creativity and / or critical thinking across a school context. In pairs, they discuss the case studies and identify 1-3 key learnings from them for others who wish to take similar approaches (30'). The facilitator invites participants to share their key learnings, building up a list in a place that is accessible to all (20').

In small groups, participants share any experiences they have around integrating skills such as creativity and critical thinking or creating whole-school approaches generally. What have been the successes and challenges involved? (30')

The same groups view and discuss videos of students and teachers on what they need in their school contexts to support more student creativity and critical thinking. Participants consider if they would now add anything in addition to the key learnings identified earlier (25'). Volunteers share with the wider group (15').

Reflection questions:

- What was interesting or surprising about the cases and videos? What key learnings did you take away from them?
- How was the context similar or different to your own institution?

Rationale, alternatives and extensions:

This activity aims to ground the module by illustrating what is possible and what has been tried in other schools. Discussions can also focus on how participants might have extended, changed or improved the approach under discussion.

Required resources:

Case studies, videos of student and teacher voice.

ACTIVITY 9.2: Values, visions and learning environments for creativity and critical thinking.

Time required: 2h

Objective: To create a vision for creativity / critical thinking and reflect on how the learning environment can support that vision.

Description:

Participants individually write a paragraph or two reflecting on where their school stands, as of today, on creativity and critical thinking. Is there any attention to these skills in the school values, policies or practices and what does this involve? (15')

They discuss with a partner and set a provisional vision for what they would like to achieve with creativity or critical thinking in the school, as of today. They record the vision in writing so that they can come back and possibly amend it later in the module (30').

The facilitator reviews the OECD design criteria for creativity and critical thinking, some of the characteristics of teaching and learning for creativity ad critical thinking, and the flexible use of the learning environment (20')

With a different partner, participants reflect on what resources are available and how flexible the learning environment is at their school (including use of digital technologies) (20').

Working in small groups, participants identify and share 3 key actions to support a more flexible organisation of school learning environments and volunteers share with the wider group (35')

Reflection questions:

- What is your vision for creativity and / or critical thinking at your school? How does this align with the existing school values and culture?
- What sort of learning environment do you hope is provided at your school? What concrete steps could you take to make it more conducive to teaching and learning for creativity / critical thinking?

Rationale, alternatives, and extensions:

Participants will have taken some previous modules so will be aware of some of the features of learning design and teaching for creativity and critical thinking. The facilitator presentation is simply a reminder.

As an alternative, participants can use the questionnaires in *Measuring Innovation in Education* to consider how open the school is to innovation and new ideas. The facilitator should emphasise the importance of considering and monitoring equity in any plans for change and be ready to make suggestions for how this could be done.

Required resources: OECD design criteria for fostering creativity and critical thinking, innovation questionnaire, if required.

ACTIVITY 9.3: Professional learning cultures for creativity and critical thinking

Time required: 2h

Objective: To support participants to explore their school approach to professional learning and identify key actions that could embed creativity and critical thinking in a strengthened professional learning culture.

Description:

Facilitator presents research on professional learning cultures and supporting teachers to embed creativity and critical thinking in their teaching. For example, TALIS data shows that the more teachers teach together and engage in collaborative professional learning, the greater their sense of self-efficacy (20').

Participants work individually to reflect on the professional learning culture in their context, using some of the reflection questions below (40'):

In pairs, participants select one area they feel they would like to work on to build more capacity in relation to professional learning and creativity and / or critical thinking in their school. They discuss together and come up with a few key actions they plan to take to strengthen professional learning for creativity and critical thinking in their context and how they can be monitored (40').

Facilitator invites volunteers to share key actions and notes suggestions so that they are visible to all (20')

Reflection questions

- COMMITMENT: Do you have a commitment to learning at an institutional level and are you an advocate for professional learning as a leader? Is learning and reflection a part of everyday life at the school? How is it recognised and rewarded and how does it lead to career progression? How much responsibility can teachers take over their continuing professional learning and do they see its value?
- SYSTEMS: What systems, structures, and infrastructures are in place around professional learning and is there any role for creativity and critical thinking within them? To what extent is school funding, time and resources available for professional learning? Is this equitably distributed?
- EXCHANGE: What mechanisms exist to systematically encourage peer dialogue and collaboration? What opportunities exist for exchanging new ideas and practices? Is there room for teachers to create learning networks or teacher-research partnerships around creativity and / or critical thinking?
- IMPACT: How is professional learning evaluated? How much do you know about what impact professional learning has had on teaching practice and ultimately learning outcomes at your school? How much use of research and evidence is embedded into the professional learning culture? How does professional learning get translated into institutional knowledge? What mechanisms are there for this?

Rationale, alternatives and extensions:

The facilitator could suggest that participants plan to meet again after a set time to exchange any changes they have implemented around professional learning and reflect on their effectiveness.

Further reading:

2018 TALIS Results: *Teachers and School Leaders as Lifelong Learners and Valued Professionals* video.

ACTIVITY 9.4: Teaching traditions, teacher time and creativity and critical thinking

Time required: 3h

Objective: To reflect on teaching traditions and the organisation of teacher time in their context and identify concrete actions to embed pedagogical approaches to creativity and / or critical thinking.

Description:

Facilitator presents on pedagogical approaches and signature pedagogies for creativity and critical thinking, emphasising that these skills can be modelled and fostered in a number of ways even in very didactic teaching traditions but that asking open questions and having students more actively engage in creative and critical processes might imply changes in student and teacher relations in some contexts (20').

In pairs, participants reflect on the teaching tradition in their context. What does a typical lesson look like? What are students doing and what are teachers doing? What is the typical relationship between teacher and student? How much room for flexibility is there? Are teachers encouraged to try out new pedagogical approaches? How much room for creativity / critical thinking is there? (40')

With a different partner, they reflect on a typical day and week for a teacher in their school. How much time are they planning, teaching, assessing, grading, reflecting, learning, collaborating, doing administration, having free time etc…? Where would developing their approach to creativity / critical thinking fit in? (20')

Individually, participants reflect on and record what, if any, are their priorities for action and change, given the vision for creativity / critical thinking they set out in activity 9.2. (30')

Finally with a third partner, they discuss and identity some concrete actions each of them could take around pedagogy and teacher time in their context given their priorities and visions, as well as considerations of equity and inclusiveness. How could they monitor the impact of those actions? (40').

Facilitator invites volunteers to share key actions and notes suggestions so that they are visible to all (20'). Participants can add to their own key actions once they have heard what others are planning. Facilitator encourages participants to set aside time to implement, monitor and reflect on their actions and their impact and discuss this with colleagues from their schools and learning networks (10').

Reflection questions:

- What are the strengths and limitations of the teaching traditions and organisation of teacher time in your context? What room do they leave for creativity and critical thinking? What are your key priorities for change and what do you plan to do as a leader to implement and monitor that change?

Rationale, alternatives and extensions

It may be useful for the facilitator to emphasis research showing that fostering student creativity and critical thinking can support the development of subject knowledge.

ACTIVITY 9.5: Assessment literacy and assessment cultures for creativity and critical thinking

Time required: 2h

Objective: To reflect upon the role of assessment literacy and the assessment cultures that they wish to create in their school context.

Description:

The facilitator provides a presentation of some related research evidence about assessment literacy and what sorts of assessment culture might support the integration of creativity and critical thinking across a school (20'),

Participants individually reflect on how much room there is to integrate assessment with learning in their school? How is assessment generally used in the school? What sort of assessment culture exists now in their own school? How do they know? How do they make use of related evidence? How is equity in learning outcomes monitored? What sort of assessment culture would they like to create? (20')

In pairs, participants discuss the kind of assessment culture that facilitates fostering and assessing creativity and critical thinking in schools and how this compares to the current situation in their schools. The facilitator circulates providing input (30').

In small groups, participants discuss what is needed from leaders to implement assessment literacy into the culture of a school (30'). They share one or two key points with the wider group that they will take away from the conversation (20').

Reflection questions:

- What sort of assessment cultures exists at your school and why and what role do student skills such as creativity and critical thinking play within it?
- What are some concrete actions you could take to strengthen assessment literacy in your school and make more space for creativity and critical thinking?

Rationale, alternatives and extensions

The initial presentation could also be provided as a video or groups of participants could be asked to present on related topics.

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ACTIVITY 9.6: Real-world partners and problems for creativity and critical thinking

Time required: 1h30

Objective: To consider how real-world partners and problems can support school-wide approaches to creativity / critical thinking.

Description:

Participants work in pairs to map possible real-world and creative partners both within the school and in the wider community (e.g., industry, artists, other schools, colleges and universities and agencies, community groups, local authorities, civil society) (30').

With a different pair, they select one of these potential partners and discuss possible ways of building an effective partnership to help embed creativity / critical thinking at the school? What could a potential partnership look like and involve (e.g., projects, visits, mentoring, work experience etc.)? (30')

In small groups, they share ideas for potential school-wide themes and initiatives that could include real-world partners (30).

Reflection questions:

- What real-world partners do you currently work with as a school and is there any room for attention to creativity and critical thinking within that partnership?
- How could you build further partnerships, themes and initiatives to support school-wide approaches to creativity and critical thinking? What would these require from you as a leader?

Rationale, alternatives and extensions

None

ACTIVITY 9.7: Heat map for creativity and critical thinking.

Time required: 2h

Objective: To create a heat map showing areas of school life that already have creativity and / or critical thinking and where there might be room for more.

Description:

Participants work with a pair to produce a heat map, detailing what is happening related to creativity and / or critical thinking in different areas of the school. They first decide on some general categories to include as headings. For examples, they might consider different departments at the school, the curriculum or learning standards, teaching, learning and assessment practices, after-school activities, partnerships, professional learning, policies, special events and learning themes, and so on (30').

Then individually, each of them creates their own heat map (40'). They reflect on their finished heat map and identify areas where there might be opportunities to integrate more creativity and critical thinking (20'). In small groups they share their ideas and provide suggestions and input on the ideas of others (30')

Reflection questions:

- What is happening across the school related to creativity and critical thinking? Where is there room for more?
- How easy or challenging was it to create the heat map? What revisions did you make along the way and why?

Rationale, alternatives and extensions:

Participants may need support to understand what a heat map is and how to create one.

Participants could create a different kind of mapping or simply list the different areas of the school with attention to creativity and / or critical thinking. They could also focus on just one aspect of school life, e.g., the curriculum across different school subjects. If there is very little attention to creativity and critical thinking currently in the school, a blank heat map could be created to help participants think about the different areas where there is potential for student creativity and critical thinking.

ACTIVITY 9.8: Designing school-wide change for creativity and critical thinking.

Time required: 2h40

Objective: To design whole-school initiatives to embed creativity and critical thinking across the school.

Description:

Facilitator introduces the idea of an ambition loop statements (10'). In small groups, participants generate 1-3 "statements of ambition" around creativity and critical thinking. For this, they can review and select some of the groups' visions from activity 9.2, and if necessary, reformulate them as statements (e.g., "Teachers across the school explore pedagogical approaches and learning opportunities that are enriched by openness, curiosity and a focus on developing creativity" (McGraph, 2023, p. 76[25]). (30').

They select one ambition statement and start to design a possible school-wide initiative that could make the ambition a reality (this could range from initiating a one-off event to more radical ideas such as letting students run the school for a day). Who would they need to involve to make this initiative a reality? (30')

In pairs, participants reflect on how applicable this initiative is to their own school context. How much of a paradigm shift is this for their school? What would be required to align school policies and organisation? What kind of institutional knowledge, capacity, monitoring and evaluation would be needed to make it happen? What needs to change and how can they lead and support that change? (40')

Individually, they return to their initial vision set out in activity 9.2. Is there anything they would change about it? They review all of the key actions they have identified in the different activities and schedule in some time for each. If time allows, they consider what support they need from others and what networks

they are in to support their leadership around creativity and critical thinking (30'). The activity ends with a short whole-group discussion about what participants are taking away from the module and how they plan to implement change in their own school contexts (20')

Reflection questions:

- What if creativity / critical thinking were embedded across the school? What would need to change?

Rationale, alternatives and extensions

Participants could be asked to complete the individual reflection at home after the activity.

Useful resources:

McGrath, J., (2023[25])"What systematic connections should we have around schools to support the work of teachers? Global lessons and the potential of ambition loops", *OECD Education Working Papers*, No. 296, OECD Publishing, Paris, https://doi.org/10.1787/77de597c-en.

Module 10: System-wide creativity and critical thinking

Overview

This module, primarily aimed at policymakers, invites participants to consider their system's current approach to creativity and / or critical thinking and their vision for these skills going forward. They learn about what other systems are doing, consider what policy levers and delivery mechanisms are available in their own context to support teaching and learning for creativity / critical thinking, and design a possible policy initiative to further embed creativity and / or critical thinking in the system.

Learning outcomes

Subject content and technical skills	Creativity and critical thinking
• Identify policy levers and delivery mechanisms to support the implementation of competency-based education.	• Identify and question assumptions made when thinking about policy levers and delivery mechanisms.
• Learn about how other systems are implementing competency-based curricula and communicate key learnings relative to their own system.	• Design and appraise policy initiatives and monitoring mechanisms to support competency-based education.
• Consider the opportunities and challenges of building whole-of-government approaches to skills such as creativity and critical thinking.	

Preparatory work

Before the module, consider the role of creativity and critical thinking or similar competencies across your educational system currently and what you would like this to look like in 5 years from now.

Opportunities for monitoring and assessment of participant learning

This module is not assessed. Reflection questions are provided which can be helpful for participants to build awareness and insight about their learning.

Suggested pathways

The module activities can take place in the listed sequence (approx. 6.5 hours in total) or only some activities can be chosen according to the needs of participants. Alternatively they could be delivered as

stand-alone activities. If participants have not previously been introduced to the OECD rubrics for creativity and critical thinking, it may be important to facilitate an initial discussion about these concepts to establish a shared understanding.

Additional reading

OECD (2023[26]) *Supporting Students to Think Creatively: What Education Policy Can Do* https://www.oecd.org/pisa/innovation/creative-thinking

Lucas, B. (2022[27]) *Creative Thinking in schools: A snapshot of progress across the world*. London: Global Institute of Creative Thinking.

ACTIVITY 10.1: What are other systems doing on creativity and critical thinking?

Time required: 1h45

Objective: To enable participants to learn from what is happening in other international contexts and to identify related policy levers and delivery mechanisms.

Description:

The facilitator provides relevant examples and case studies of how systems are implementing policy initiatives around creativity / critical thinking, or competency-based curricula, and what their challenges and successes have been (45'). Participants volunteer to share other relevant examples from their own contexts (15').

In pairs, participants discuss where their system is with creativity / critical thinking as of today, whether the case studies would be possible in their own contexts, and what, in an ideal world, they would like their system to achieve around creativity, critical thinking and related competencies (30'). Volunteers share key points from this discussion (15')

Reflection questions:

- How do the examples discussed today compare to what is happening in your context? What is different and similar about your context to the examples shared?
- What policy levers are available in your context to help embed support for student creativity / critical thinking into the education system?

Rationale, alternatives and extensions:

The initial presentation could also be provided in video form for participants to watch before the activity begins.

Required resources:

Examples and / or case studies of related policy initiatives, including voices of stakeholders if possible.

ACTIVITY 10.2: Policy levers and policy constraints for creativity and critical thinking

Time required: 1h45

Objective: To support participants to consider how specific policy levers could be used to support student creativity / critical thinking across the system and any limiting factors that need to be considered.

Description:

Participants form small groups to consider what policy levers exist around the following areas that could help embed support for student creativity / critical thinking in their contexts:

- Pre-service initial teacher learning, qualification frameworks and accreditation standards
- The teaching profession, professional learning, teaching standards, and use of teacher time
- The curriculum
- National assessments and assessment cultures
- Educational transitions
- Quality assurance
- Digital platforms and resources
- School / professional networks and institutional leadership

They come up with 2-3 concrete mechanisms to increase attention to creativity / critical thinking using policy levers in this area (e.g., integrating creativity / critical thinking into university entrance exams). They consider the specific characteristics of the school and governance system in their contexts and any related policy constraints and think both of “low-hanging fruit” and more radical or unusual measures in relation to this (45’).

Groups then pick one of their mechanisms and consider what further changes it would require or imply (i.e., If university entrance exams were to change, what else would need to change about curriculum, pedagogy, professional learning etc?). They create a mind map of changes and implications and discuss what it would take to make these changes in their own contexts (45’). Volunteers share key points from their discussion (15’)

Reflection questions:

- How could this policy lever be used to embed student creativity / critical thinking into the system?
- What constraints would need to be considered?

Rationale, alternatives and extensions

Participants begin by discussing policy constraints in order to ground the discussion in a realistic assessment of what is possible. However, if the facilitator feels this will limit the following discussion unnecessarily, constraints can be discussed later in the activity. The activity can be adapted according to the needs of the context, participants and facilitators. If everyone is working on the same policy lever, the facilitator can present related evidence to deepen the discussion. If time allows, groups can discuss more than one policy lever.

ACTIVITY 10.3: Whole of government approaches to creativity and critical thinking

Time required: 1h30

Objective: To support participants to consider whole-of-government approaches to supporting creativity / critical thinking.

Description:

Participants watch a video about Ireland's whole of government approach to supporting creativity (or another relevant example) (20'). In small groups, they share examples of whole-of-government approaches from their own contexts and discuss the associated opportunities and challenges for policy making (30').

In different small groups they discuss existing or possible shared interests and policy agendas that could bring together education agencies, regional education offices and bodies, and other governmental departments in supporting creativity / critical thinking in their contexts. They brainstorm initial actions that could be taken to start exploring and building a whole-of-government approach to embedding creativity / critical thinking across their systems (40').

Reflection questions:

- Why would educational agencies, regional bodies, and other governmental departments be interested in embedding creativity / critical thinking across the system?
- What messages, agendas and policy objectives could help build alignment and coherence on this issue across government?
- What first steps could be taken towards creating a whole-of-government approach and who in your network could support this?

Rationale, alternatives and extensions:

The exact nature of discussions can be adjusted to the needs of participants.

Required resources:

Video of Ireland's whole-of-government approach to creativity or another relevant example.

ACTIVITY 10.4: Policy initiatives and monitoring mechanisms for creativity and critical thinking

Time required: 1h30

Objective: To enable participants to design a policy initiative to embed creativity and / or critical thinking in an area of the system.

Description:

Small groups select a policy lever and policy objective to work on for this activity. Then they start to design a possible policy initiative that could meet this objective. They consider how they could consult education stakeholders, including students, or involve them as co-designers, what the design and implementation might involve and how they could monitor the effectiveness (60'). Volunteers share key elements of their policy initiative and reflect on what they are taking away from this module and any concrete next steps they plan to take to support creativity / critical thinking in their own contexts (30').

Reflection questions:

- What challenges did you overcome in your design process and how did you overcome them?
- Was there anything that surprised you?
- What sort of leadership do you think would be needed to implement such a policy or initiative?
- How could it be monitored?
- What are you taking away from this module and what are your concrete next steps around creativity / critical thinking in your context?

Rationale, alternatives and extensions:

Alternatively, the facilitator could also talk through the strengths and limitations of a number of example cases from different contexts and participants could suggest improvements. If participants have not taken any introductory modules, it may be important to include some initial discussion about the definition of creativity and critical thinking to establish a shared understanding. The OECD conceptual rubrics for creativity and critical thinking provide a useful starting place for that discussion.

ANNEX 1: Facilitation guides

Preparation for modules

Preparatory work for the facilitator

Familiarise yourself with the required and optional reading for the module, as well as with www.oecdcericct.com the OECD app for creativity and critical thinking. The app is intended as a professional learning tool and accompaniment to this professional learning framework. It contains approximately 100 example lesson plans for primary and secondary lessons in science, maths, language arts, visual arts and music, along with curated resources and tools related to creativity and critical thinking. Ask participants to take the pre survey, which will be available through the app.

Opening modules

Begin modules with introductions and icebreakers and giving an overview of the module. It may also be helpful to discuss participant and facilitator expectations and to ask the group to set intentions for the module and professional learning programme in general (if the module is the first of the programme). You can ask the group to create and agree statements about how they plan to work together and have participants make a commitment to try to implement what they learn in their everyday teaching and learning context. Modules can start with a brief introduction or reminder regarding what is meant by critical thinking / creativity, especially if participants have not taken any activities from the introductory module.

Choosing activities

If participants will take both creativity and critical thinking modules, it may be important to vary their experience across the equivalent modules. For example, activity 1.1 could be offered for the creativity section and 5.2 for the critical thinking section. Possible pathways are provided in the introduction. Activities should be chosen according to the facilitator's knowledge of the teaching context and needs of participants. Involving participants in discussing and choosing activities can be a valuable way of giving participants agency over their learning and ensuring it is relevant to their needs. The facilitator can also make participants aware that activities not offered in-person are often available on www.oecdcericct.com for self-study. The app is also a useful resource if participants would like to offer workshops on what they have learnt when they get back to their school.

General considerations

Throughout activities, facilitators can target discussions to specific disciplines, educational levels, class sizes, and contexts as appropriate. Example lesson plans are available in several different disciplines. They can also ask participants to compare and contrast how the learning they are discussing might look different across the different disciplines etc. represented in the group.

Closing modules

It is important to offer an opportunity to systematise and reflect on what has been learned, and particularly on what this means for practice. If possible, have participants identify concrete steps they can take to implement what they have learned back at school and remind participants about the work they should complete at home. At the end of the final module, ask participants to take the post survey, which will be available through www.oecdcericct.com.

Guides to activities

Facilitation guides provide some indications of potential facilitation challenges that could arise and how they could be addressed, as well as an idea of relevant content that could be covered in facilitator presentations. Please note that facilitation guides are provided for selected activities only.

Activities 1.1 and 5.1: Facilitation guide

Overcoming potential challenges:

Definitions of creativity and critical thinking: It is important to acknowledge participants' existing experiences, beliefs and understandings of creativity and critical thinking, as well as the multiple conceptualisations of these skills in the literature. However, activities also need to be grounded in a shared understanding of these skills, which can be operationalised in the classroom and which avoids common misconceptions (e.g., that creativity is about only self-expression or producing things of beauty or that critical thinking is only about justifying positions). Giving the OECD definition of creativity as "coming up with new ideas and solutions" and critical thinking as "questioning and evaluating ideas and solutions" seeks to address this and establish a common basis for discussions. Participants can be reassured that alternative interpretations of these skills will be acknowledged and discussed later in the module, even whilst the facilitator can also be clear about how the skills will be framed and discussed during activities in this professional learning framework.

Facilitating a valuable discussion: The final section of activities 1.1 and 5.1 can involve either a facilitator presentation or plenary discussion or both. Initially, participants may be reticent to speak up, especially as they may only recently have met one another. Encourage them by sharing your own experiences and coming prepared with examples illustrating the importance of creativity / critical thinking (e.g., drawing from the 'content to cover' section below). If the plenary discussion is stalling, ask the participants to discuss with their immediate neighbour instead, pull names out of a hat to share their thoughts, or revert to a facilitator presentation.

Being realistic: Ask participants to be realistic about the links they make between creativity and critical thinking and their aspirations for their students. For example, they may suggest that being creative will allow young people to come up with responses and solutions to climate crisis. Creativity is an important skill for innovation and it is vital students can exercise creativity and critical thinking in relation to their knowledge of climate change. However, it wouldn't be fair to suggest that young people can or should come up with solutions to the complex, multi-faceted and system-level effects of climate change and the skills needed to respond to climate emergencies are likely to be multi-dimensional. Another example might be participants suggesting that critical thinking is necessary to fight radicalisation, which can underestimate the complex interplay of factors that contribute to this phenomenon. Setting unrealistic or overly grandiose expectations around creativity and critical thinking can lead to teachers feeling deceived or overwhelmed

and does not support effective learning design. This is not to minimise the importance of these skills but just to highlight the importance of discussing them realistically.

Making the most of "meta" moments: It is important to ask participants to notice opportunities to discuss the pedagogy for creativity that they themselves are experiencing. It can be challenging to openly invite participants to discuss their experience of your facilitation but this is an important learning experience and helps participants identify practices they want to take back to their own teaching. It can also become a vehicle for participants to take shared responsibility for their learning and to develop the tools to recognise their own creativity. At the end of discussion, it may also be useful to ask participants where they see creativity / critical thinking in their work and the work of their peers, and to highlight that, for example, creativity is likely to be found in the *ideas* in annotations rather than in the drawings.

Content to cover:

It is important discussions cover a wide range of reasons creativity / critical thinking is valued. During the activity, the facilitator could draw from some of the following points drawn from (Vincent-Lancrin, 2021[5]):

- Creative and critical thinking are some of the most in-demand skills in the labour market, in response to digitalization and automation. The 2023 Future of Job survey of the World Economic Forum (WEF) found that "analytical thinking and creative thinking remained the most important skills for workers in 2023" (World Economic Forum, 2023[28]).
- Generative artificial intelligence such as Chat GPT has expanded the kind of jobs which may be at risk of automation. However, furnishing young people with the ability to find and evaluate solutions makes them better able to take advantage of new technologies (OECD, 2023[29]).
- "Critical thinking plays a role in individual well-being, but is more often seen as an essential pillar of the functioning of modern democracies. Ancient philosophical traditions saw it both as a way to have a good and a happy life (Hadot, 1995) and a means toward good government. In modern democracies, people are expected to exercise their critical thinking as an integral part of being citizens. In a digital world, critical thinking has become even more important to make judgments about the multiplicity of information available (Vincent-Lancrin, 2021[21])
- Creativity too can also contribute to democratic societies and many domestic and international issues require creativity at a social level in order to be solved agreeably (Vincent-Lancrin, 2021[5]).
- Creativity can create a feeling of focus and wellbeing, according to positive psychologists. Csikszentmihalyi famously described the state of flow that often comes with creativity (Csikszentmihalyi, Abuhamdeh and Nakamura, 2014[30]; Csikszentmihalyi, 1997[31]). Flow refers to a state, in which people are so involved in an activity that nothing else seems to matter; the experience is so absorbing that people will continue an activity even at great cost, for the sheer sake of doing it (Csikszentmihalyi, 1997[32]). Csikszentmihalyi and Schneider showed that these optimal moments can be experienced by adolescents in school when they perform certain learning tasks (Csikszentmihalyi and Schneider, 2000[33]).

Activities 2.3 and 6.3: Facilitation guide

Content to cover:

The OECD report, *Fostering Students' Creativity and Critical Thinking What it means in school* (2019) found eleven signature pedagogies related to the fostering of creativity and critical thinking. The term 'signature pedagogy'' was coined by Lee Shulman ([34]). According to Shulman, signature pedagogies are operational acts of teaching and learning that have a relation to what professionals in a certain field might

do. They feature a set of assumptions about how best to impart knowledge and know-how and a set of moral beliefs about supporting attitudes and values. Signature pedagogies include an emphasis on particular kinds of outcomes and involve routines or 'signatures' that help students learn (Shulman, 2005[34]). For example,

Design thinking: "Design thinking is a business model developed for the engineering of new or improved products and processes. Design thinking consists of engaging students in learning experiences in which they think and act like designers and thus develop their creative and critical thinking skills. The design process involves several phases in which students expand and consolidate ideas" (Vincent-Lancrin et al., 2019, p. 103[4]). The dschool at Stanford University provide a rubric for design thinking involving stages in which students: empathise, define, ideate, prototype, test, and then reflect and iterate. Several helpful guides can be found online. For example, https://www.makersempire.com/what-is-design-thinking-a-handy-guide-for-classroom-teachers/

Dialogical teaching: "fosters continuous and controlled dialogue between students and teachers, as opposed to traditional teacher-centred, presentation-based methods of instruction. It involves talk that goes beyond questioning-answering that has a knowledge transmission function. Dialogical pedagogy encourages students to narrate, explain, analyse, speculate, explore, evaluate, discuss, argue etc. IT requires students to learn to listen to their peers, think about what they are saying, given them time to think and respect". (Vincent-Lancrin et al., 2019, p. 105[4])

Project-based learning: "Project-based learning is a student-centred, cross-disciplinary method of instruction that has emerged as a prominent strategy to develop learners' in-depth understanding of academic content along with a wide range of skills. The pedagogical model is built around three principles: 1) learning is context-specific; 2) learners are actively involved in the learning process; 3) learners achieve a common goal through social interactions and the sharing of knowledge and understandings" (Vincent-Lancrin et al., 2019, p. 115[4]). It is important that project-based learning is rigorously scaffolded.

Research-based learning: "Traditionally developed in higher education, the research-based approach has spread across primary and secondary classrooms promoting the undertaking of a research project as a learning and teaching strategy at all levels. In this pedagogical approach, students learn about methods and procedures, and through the research process. Teachers need to plan, deliver and assess students' work over these research processes, while providing students with a hands-on responsibility as actual researchers." (Vincent-Lancrin et al., 2019, p. 117[4])

Other approaches: It can be useful to discuss with participants if there are additional signature pedagogies they have used. For example, in service learning, students work with local community groups to design and implement a project that addresses a real-life challenge and addresses the needs of the local community. It can also be stressed that it is important not to have a narrow, rigid and mechanistic view of these pedagogies and there can be some overlap between them.

Signature pedagogies can be used ineffectively: It is important to help participants understand what characterises effective use of signature pedagogies for the development of creativity / critical thinking and to discuss examples of promising practice. For example, it can be important to establish clear objectives and an explicit, guided structure in problem-based learning in order to support student learning.

Signature pedagogies involve uncertainty: "Signature pedagogies students are not only active but interactive. Students are accountable not only to teachers, but also to peers in their responses, arguments, commentaries and presentations of new data. They are expected to participate actively in the discussions, rounds, or constructions… Signature pedagogies are pedagogies of uncertainty. They render classroom settings unpredictable and surprising, raising the stakes for both students and instructors" (Shulman, 2005, p. 57[34]). It can be useful to discuss with participants what is uncertain about these pedagogies and what teaching strategies they can develop to navigate this uncertainty.

Activities 3.7 and 7.6: Facilitation guide

Content to cover*:*

- Definition of a learning environment: The concept of a learning environment is defined in many different ways. Most definitions include not just the physical space and arrangement of the classroom but also digital settings, out-of-school settings, and the existence and use of a range of tools, documents, artefacts, learning materials etc. A learning environment also includes the socio-cultural setting encompassing people and the broader cultural framework, as well as any norms and routines about how interactions take place and how time and space is used (Davies et al., 2013[35]).
- Be ready to share some characteristics of a flexible learning environment to support participant discussion. These could include resource-rich, flexible open and inclusive spaces, which can be arranged in different ways. In very flexible learning environments, there be no defined 'front' of the room. A flexible learning environment is not just about physical space though and may also include flexibility in routines and use of time and in how and where students pursue their learning etc. Be ready to share examples (e.g. photos and cases could be sourced online).
- Be ready to contribute reasons why a flexible learning environment has been associated with the development of creativity and critical thinking. For example, creativity and critical thinking often involve students actively collaborating together and undergoing varied processes and producing diverse products. These diverse processes and products may require different types of resources, settings, and arrangement of learning spaces and different modes of interaction (Davies et al., 2013[35]).

Activities 4.5 and 8.5: Facilitation guide

Overcoming potential challenges

Resistance to rubrics: Participants may be initially resistant to the idea of rubrics, especially in contexts where they are not commonly used. They may feel that creating a rubric is too time consuming or complex. Be ready to discuss and acknowledge these concerns even whilst also explaining some of the benefits of rubrics.

Content to cover:

- Assessment rubrics can be used to increase transparency, fairness, and consistency in how outcomes are assessed (Andrade, 2005[36]). They can support dialogue with peers and educators about what creativity / critical thinking at different levels looks like and how the rubric's descriptors are reflected in student work (Kilgour, Northcote and Williams, 2020[37]). If they are discussed or even co-created with students, they can support student-centred approaches, enabling students to become partners in their learning processes.
- It's important that rubrics aren't seen as simply a list that needs to 'ticked off' to receive good grades – they do illustrate the expected shared characteristics of different pieces of student work but those pieces of work might otherwise look quite different to one another and represent a range of novel or personal positions and formulations (Bearman and Ajjawi, 2021[38])

ANNEX 2: Handouts

Handout A: Types of tasks by discipline to foster creative and critical thinking

Type of task	Driving question or problem	Student tasks
Science activities		
Explain a physical phenomenon	*Why do you feel colder when you are wet than when you are dry when you are sitting by the pool?*	Students find an answer to a scientific question by applying the scientific method (e.g. experiments, data analysis).
Solve an environmental problem	*How can we reduce air pollution?*	Students identify the causes of a problem and propose a solution. May require to take into account conditions for success going beyond the scientific sphere (e.g. socioeconomic constraints).
Design an artefact	*How can we build a tornado-proof structure?*	Students are asked to design an artefact fulfilling certain constraints.
Challenge a theory	*Can you imagine an alternative taxonomy to classify living beings?*	Students challenge a theory or scientific construct by comparing it to competing theories or constructs.
Imagine scientific counterfactuals	*What would the world look like if the theory of plate tectonics did not apply?*	Students engage in counterfactual reasoning to imagine what the implications would be if certain conditions were changed, for instance, if a scientific theory did not apply.
Mathematics activities		
Ill-structured mathematical problem	*Find a possible destination for this year's school trip*	Students solve an authentic problem that mirrors real-world situations. The problem leaves room for interpretation and the data provided is inconclusive so students will have to define the problem space, take into account different alternatives and justify the choices made.
Multi-solution tasks	*Calculate the perimeter and the area of a figure in at least 3 different ways*	Multi-solution tasks have one single answer but different methods can be used to reach it.
Visual arts activities		
Merging different art forms	*Produce a contemporary piece of graffiti inspired in cave art*	Students deconstruct art forms into their different components (e.g. technique, themes) and produce a personal piece of art combining elements from different art forms.
Challenging art theories	*Is graffiti a legitimate art form? Can functional objects be considered art?*	Students consider whether traditional definitions of art hold in view of unconventional pieces of art.
Conveying emotional or	*Choose objects that represent you and put them together so*	Students produce a visual representation of their inner self.

aesthetic experience Interdisciplinary activities	*that they make up a face or figure.*	
Synergies between artistic disciplines	*Imagine how a classic poem or other literary text would sound to a rap beat*	Students analyse a piece of art through the lenses of a different artistic discipline (e.g. a painting through the lens of literature, a musical piece from the perspective of visual arts).
Synergies between science and arts	*Produce a humorous print about cell structure for a t-shirt*	Students play with scientific concepts through the techniques of artistic disciplines, e.g. metaphors, poetry, imagery and visualisation.
Design problem involving art and technology	*Design a fashion accessory that can be used as bicycle lightning*	Students design an artefact that has to fulfil both functional and aesthetic constraints.

Source: (Vincent-Lancrin et al., 2019[4])

Handout B: Examples of teaching techniques and prompts to promote creativity and critical thinking

Technique	Prompts for students
Brainstorm	Your ideas on this topic/question (X) are needed! A lot of ideas have to be considered before we agree on a few. So for now, the more the better! There are no bad ideas: any idea has the potential to become the next great solution/invention/product. It is forbidden to criticise other people's ideas. Every student to speak at least once. And then a “second round” of brainstorming on the same topic (a day later).
Connections	Imagine connections between this object/concept and another three that you can think of [independent links]. Alternatively, work out how this object/concept links a set of three others [network links]. Alternatively, find ways of linking these ten random objects.
Define conditions for failure	What alternative proposals would fall short of the desired outcome? What could go wrong if we followed these alternative ideas? And what could be done to ensure a greater chance of success next time?
Define the problem/question	How would you describe the problem? Describe the “needs” or interests that make this situation a problem. What is the central problem/dilemma? Can the problem be broken down in smaller sub-problems/questions? Identify the main and secondary components of the problem/question.
Identify constraints	What are the limitations that exist when finding a solution to the problem/question? In what respect are these limitations, how different would the outcome be in the absence of these limiting conditions?
Improvements	Can the proposed idea be improved? Explain why and how. What needs to be done in order to bring about these improvements?
List impossibilities	What solutions or proposed ideas are completely out of the realm of possibility? (as an opportunity to challenge assumptions)
Outline hypotheses	What are all the potential explanations for this issue/problem/question?
PATENT method	Problem: What is the problem? Argument: What is your core argument? Thinking: How can you justify your claim? Experiment: How can you prove that your suggestions work? Necessary and Desirable requirements: Does the solution/product satisfy necessary requirements? Does the solution/product satisfy desirable requirements? Explain your reasoning. True, but…: What are potential reservations/exceptions/objections to your solution/argument/product?
Pros and cons	What are the benefits or disadvantages to a proposed solution/idea? Once a solution/idea is proposed what occurs as a result? What are the negative and positive outcomes of the solution?
Rationale for order of solutions	What is the rationale for the solution as proposed? Could the solution be proposed/justified in a different way?
Reverse engineering	Tell a well-known story backwards: start from the end and make it unfold back to the beginning. Highlight moments where the story could have taken different directions.
Role-playing	Put yourself in the place of character/person X1, and say and do what your think he/she would feel/think/dodo in situation Y / how he/she would respond to question Y / what solution he/she would propose for issue Y. (Combine with role rotation and reflection).
SWOT method and comparison with priors	Write down your first reactions to this topic/idea/argument (X). Now, take time to examine its Strengths, Weaknesses, Opportunities and Threats: What are its main merits? Are there weak points where it does not hold together? If this idea/solution/argument was true, what could do next best on it? Also, what would be the risks or problems that come with it? How do these compare with your previous reactions? Do they challenge your prior ideas?
Test and assess hypotheses	Now that a solution has been proposed, how can you demonstrate that it would lead to the desired outcome? How can that outcome be simulated? Can you design an experiment to test your hypothesis? What type of evidence would we need to know if the hypothesis works or not?
Using and suggesting metaphors	Think of other situations/ relationships that are similar/analogous to that which is observed. Connect this problem/question with similar problem/question in another subject/discipline

Waiting time	Stop and think for several minutes before answering to develop more intuitive/deeper responses

Source: (Vincent-Lancrin et al., 2019[4])

Handout C: Example feedback (by generative AI) on creativity for participants to discuss and improve

The following feedback for students was generated by ChatGPT (and amended by the author) in response to the following prompt: “Students are tasked with using the content covered in a secondary science curriculum unit on energy sources to design a city of the future. They are expected to demonstrate both the subject knowledge covered in the unit and creativity. Please imagine three different levels of student work ranging from average to outstanding and write some brief feedback to each student, covering both subject knowledge and creativity”. This feedback is not therefore provided as an example of good practice but just as a starting place for discussions about what might be helpful and not so helpful in feedback that seeks to support student creativity. If available, participants can instead be provided with sample feedback from their own context and curriculum. It may be useful to discuss this feedback in relation to the OECD assessment rubric for creativity, provided here.

Student A (Emerging):

Your work demonstrates a basic understanding of sources of energy, but push yourself to include more specific scientific details. Connect your futuristic city elements with the principles we've explored in class. You need to expand on your ideas. What unique elements can you add to make your vision of the future city stand out?

Student B (Flourishing):

Your futuristic city shows a solid understanding of sources of energy. Well done! Make sure to maintain accuracy and consider delving even deeper into the scientific principles to enhance your concept. Challenge yourself to explore even more innovative and unexpected ideas to elevate your work.

Student D (Outstanding):

Outstanding application of scientific principles! Your grasp of sources of energy is evident, and your incorporation of these concepts into the city's design is both accurate and sophisticated. Your futuristic city is not only scientifically sound but also incredibly imaginative. Consider sharing your insights with the class during our discussion; your ideas can inspire others.

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EDUCATIONAL RESEARCH AND INNOVATION

Supporting Teachers to Foster Creativity and Critical Thinking: A draft professional learning framework for teachers and leaders

The importance of creativity and critical thinking for students, societies, and economies has become almost consensual. Helping students develop these skills is a key responsibility of education systems. Yet, a common barrier is that teachers do not have enough opportunities and resources to develop professional knowledge on what supporting student creativity and critical thinking involves and how it can be done in their context. This professional learning framework is addressed to that need. It offers professional learning activities to help teachers, institutional leaders and policy-makers consider what planning, teaching, assessment and school practices can support students to develop creativity and critical thinking as part of subject learning. It provides a flexible framework, with separate modules on creativity and critical thinking, which can be adapted and implemented to address the needs of local contexts, participants, disciplines, and education levels according to the time and resources available. It is an output of the OECD fostering and assessing creativity and critical thinking project, which has worked with teachers, university professors, teacher educators and experts in 21 countries to develop and trial approaches to supporting student creativity and critical thinking in subject teaching.

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