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DIRECTORATE FOR EDUCATION AND SKILLS
CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION (CERI) GOVERNING BOARD

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ASSESSING PROGRESSION IN CREATIVE AND CRITICAL THINKING SKILLS

Preliminary concept note

30-31 October 2014

Following up on the strand on "education and skills for innovation" of CERI Innovation Strategy for Education and Training, new work on assessing progression in creative and critical thinking skills has been included in the CERI programme of work and budget for 2015-16. This document presents a preliminary concept note for the new work.

CERI Governing Board members are invited to:

- *COMMENT on the proposed design of the project;*
- *EXPRESS THE INTEREST of countries to participating in the project.*

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ASSESSING PROGRESSION IN CREATIVE AND CRITICAL THINKING SKILLS

PRELIMINARY CONCEPT NOTE

Background

1. Following up on the strand on "education and skills for innovation" of CERI Innovation Strategy for Education and Training, new work on assessing progression in creative and critical thinking skills has been included in the CERI programme of work and budget for 2015-16.

2. There is a worldwide debate on the skills that students should acquire for modern, globalised economies based on knowledge and innovation. Several countries have revisited their curriculum to take a more demanding approach to knowledge acquisition, but also to develop skills in thinking and creativity as well as social and behavioural skills. The PISA conceptual frameworks pay due tribute to the importance of all these different skills, and increasingly expand their coverage in its assessments (OECD, 2014). The necessity to assess a broader range of skills in educational settings is thus widely recognised, but teachers' (and countries') ability to monitor progress is limited by the lack of understanding of how some of the creative or social skills materialise at different development stages. New assessments are developed that try to incorporate these dimensions.

3. Despite the difficulties, attempts to assess creative and critical thinking skills have a rich history. Some tests such as the Torrance Tests of Creative Thinking are widely used in research to assess creativity in a generic way. As shown in some recent work, notably *Art for Art's Sake? The Impact of Arts Education* (Winner et al., 2013) and *Critical Maths for Innovative Societies. The Role of Metacgonitive Pedagogies* (Mevarech and Kramarski, 2014), researchers typically use these tests to assess the impact of some pedagogies and fields of study on creativity or critical thinking. Typically, they assess *fluency* (number of relevant responses and ideas generated), *flexibility* (variety of categories of responses), *originality* (statistical rarity of the responses) and *elaboration* (details in the responses).

4. Yet the literature review carried out by Spencer et al. (2012) on key issues and debates around creativity and its assessment found no examples of widely used and credible methods of assessing creativity in the school setting. Creativity tests tend to be disconnected from common pedagogic practice and have thus not necessarily helped to foster a common understanding of what creativity and critical thinking mean in practice for teachers and learners, and how the acquisition of these skills can be monitored. This is currently one of the challenges faced by countries willing to see their education system contribute to the development of creative and thinking skills.

5. As part of CERI Innovation Strategy, the Secretariat partnered with Creativity, Culture and Education (CCE) to address this challenge and initiate the prototyping of a new, teacher-friendly formative assessment tool to assess students' progression in creativity, and to undertake its field testing in English schools. The research was commissioned to the Centre for Real World Learning (University of Winchester, United Kingdom). A working paper by Bill Lucas, Guy Claxton and Ellen Spencer [EDU/WKP(2013)1] synthesises its findings, while a more detailed report on its research protocol and outcomes is posted on the CCE website.

6. The first objective of the research was to develop a first prototype of such an assessment tool, which focuses on five dispositions of the creative mind:

- *Inquisitive*. Creativity entails uncovering and pursuing interesting and worthwhile questions in one's creative domain. This disposition includes three sub-habits of mind: a) wondering and questioning; b) exploring and investigating; c) challenging assumptions.

- *Persistent*. As noted by Thomas Edison (and repeatedly emphasized by others), "genius is one percent inspiration and ninety-nine per cent perspiration". This disposition includes three sub-habits of mind: a) sticking with difficulty; b) daring to be different; c) tolerating uncertainty.

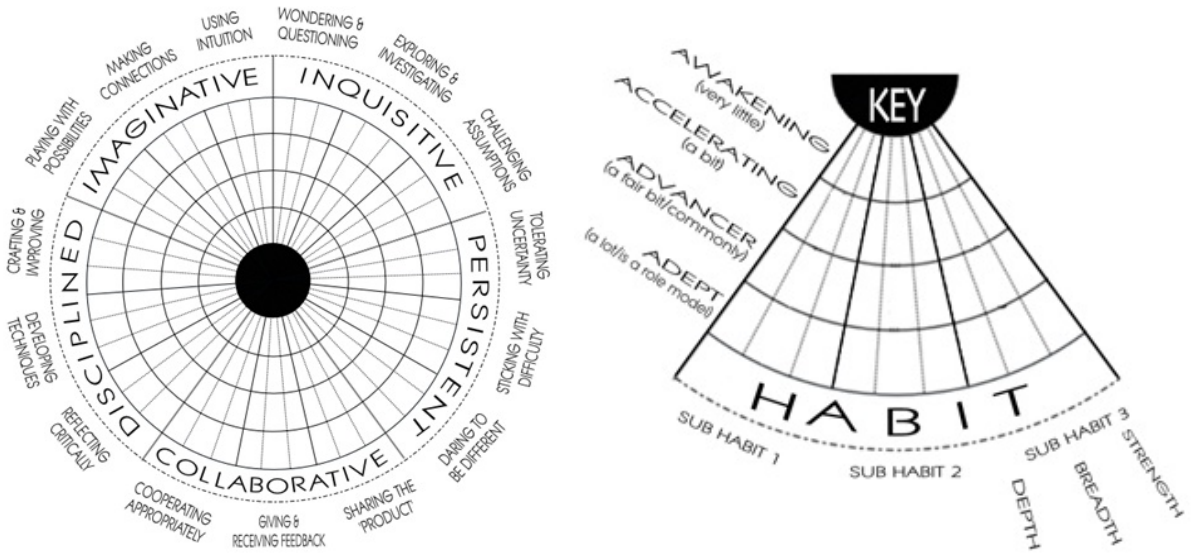
- *Imaginative*. At the heart of a wide range of analyses of the creative personality is the ability to come up with imaginative solutions and possibilities. This disposition includes three sub-habits of mind: a) playing with possibilities; b) making connections; c) using intuition.

- *Collaborative*. Many current approaches to creativity stress the social and collaborative nature of the creative process. This disposition includes three sub-habits of mind: a) sharing the product; b) giving and receiving feedback; c) cooperating appropriately.

- *Disciplined*. As a counterbalance to the "dreamy", imaginative side of creativity, there is a need for knowledge and craft in shaping the creative product and in developing expertise. This disposition includes three sub-habits of mind: a) developing techniques; b) reflecting critically; c) crafting and improving.

7. Rather than creativity only, one can argue that these five dispositions correspond more or less to another presentation of the definition of "skills for innovation" used in CERI Innovation Strategy. These skills for innovation are categorised as 1) technical skills (know-how and know-what), skills in thinking and creativity (e.g. curiosity, ability to make connections, imagination, dealing with uncertainty), and behavioural and social skills (e.g. communication, collaboration, persistence, energy). Under the banner of "21st century skills", other ways of categorising these skills also exist.

Figure 1. Field Trial 1 Tool



Source: Lucas, Claxton and Spencer (2013)

8. The project on progression in creativity favoured a formative approach to assessment tool design and emphasised the teacher- and learner-friendliness of the tool so that it could be used effectively within

schools. The first field trial was planned as a proof of concept. It showed that teachers could easily understand and use the tool to assess pupils. The second trial focused on self-assessment by individual learners.

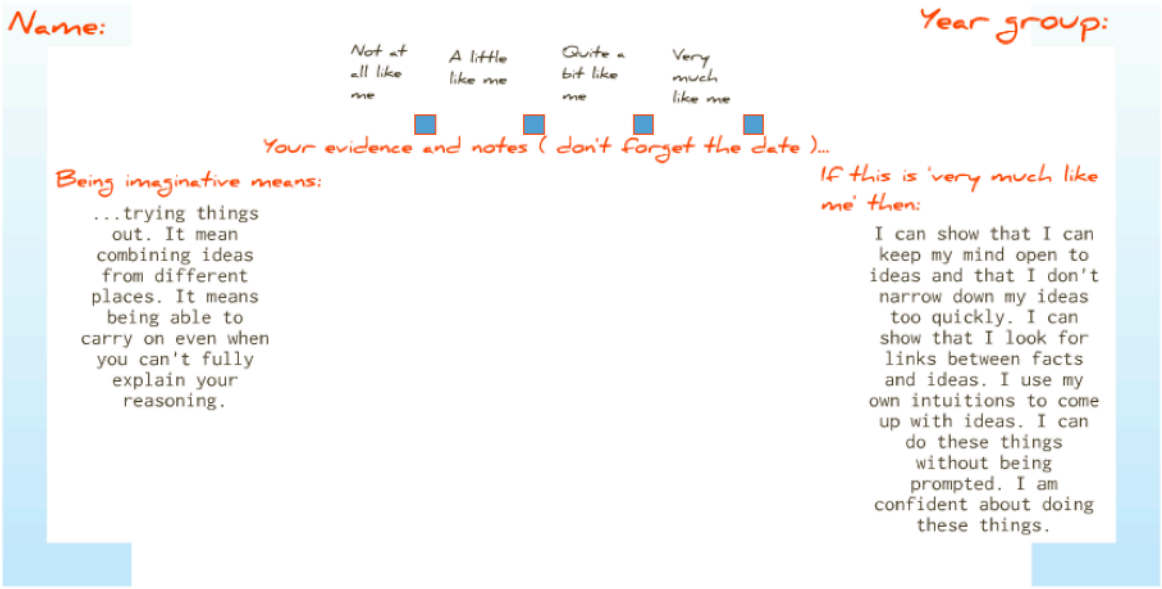
9. The tool tested initially is shown graphically in Figure 1.

10. Using a case study methodology, both field trials took just one of the five dispositions: "being inquisitive" for the first trial and "being imaginative" for the second. Both took place in England.

11. In the first trial, teachers at six schools (3 primary and 3 secondary) were asked to focus on 6 to 12 pupils and attempt to map each child's profile onto a copy of the reporting tool at a single moment in time by shading in the appropriate "strength", "breadth", and "depth". They were given full instructions. In terms of validating the whole tool, teachers were asked to share their thoughts on the five broad habits, and 15 sub-habits upon which the tool was built. Teachers' feedback provided a 'proof of concept' that the defined habits and sub-habits were useful and complete, and that they could be monitored and assessed.

12. In the second trial, teachers at eleven schools (5 primary and 6 secondary) trialled a modified tool – this time for pupils to self-assess with – in one of their classes for a period of four to six weeks. Teachers implemented the project in a variety of ways, generally following the guidelines given by the project team. Many pupils were given the opportunity to develop their own definitions of imagination. Teachers held 2-3 class sessions with the class prompting them to self-assess using the pre-formatted pupil reporting tool. They were asked to consider, from recent examples, how imaginative they had been in comparison with the exemplar statement on the tool (see Figure 2). They were asked to justify their self-assessment of how closely they fit the exemplar statement on the reporting tool.

Figure 2. Field Trial 2 Tool



Source: Lucas, Claxton and Spencer (2013)

13. Beyond the proof of concept that an assessment tool sufficiently comprehensive and useful for teachers could be developed, the project found that the tool was more easily used with children aged between 5 and 14, and that the primary use of the tool is in enabling teachers to become more precise and confident in focusing on creativity in their teaching, and as a formative tool to enable learners to record and

better develop their creativity. In many ways, the tool is a means to help teachers to better articulate what they mean by creativity and to put more emphasis on it in their teaching.

14. The prototype was not tested with the average teacher or school, and only in the English context, so that much more work would be needed to validate it in an international context. Moreover, the progression aspect remains under-developed: one of the next steps would be to better define different levels of proficiency in the different dispositions. Piloting the tool in different countries, contexts and education levels could be a way to do it.

Objectives of the project

15. Building on the past work presented above, the project aims to further develop and refine our understanding of how creative and critical thinking skills can be assessed in an educational setting. Based on teachers' knowledge and practice, the project will collect tasks and evidence examples from classes and teachers in different countries to see how students demonstrate these skills in different settings, and try to derive explicit developmental standards for specific grades/levels of schooling and/or higher education and build a common language in these areas. As "creative and critical thinking skills" is too broad, the specific sub-skills or dispositions on which the project will focus will have to be agreed upon in the initial steps of the project.

16. The objectives of the project are to:

a) *take stock* of how countries or institutions explicitly assess creative and critical thinking skills (when they do so), or some aspects of them;

b) *prototype and pilot an assessment tool* that will help teachers and students monitor their acquisition, and articulate a language that appears easily understandable and usable internationally;

c) collect a *set of tasks and expectations* describing what students at different levels of the acquisition of these skills could do and thus give concrete examples of progression (or standards) in these skills;

d) provide *fora* for knowledge exchange on practices and ideas around the fostering and assessment of creative and critical thinking skills;

e) produce a *report* documenting the study and its results.

17. Beyond a contribution to the improvement of international knowledge and understanding on these issues, participation in the study will allow countries to explore domestically how they can really monitor the implementation of a skills-based curriculum and incentivise both teachers and students to develop the creative and critical thinking skills that will nurture innovation in their society. It will also give them a unique opportunity to step back and start developing a common language about these issues.

Proposed methodology and country participation

18. The proposed methodology for the new work will be to coordinate country studies based on two networks, one of schools and one of higher education institutions. While the Secretariat will coordinate the work internationally, a national research coordinator will coordinate the school network within countries.

19. With the help of local researchers, teachers in selected schools/establishments will report on their current practices in assessing creative and critical thinking skills, on their use of the pilot assessment tool,

and will be asked to develop and propose tasks and criteria to evaluate their students' proficiency in the different skills. These examples will then be brought together and discussed at the international level, allowing for idea sharing and for starting building an international consensus and an international language around these issues. Thanks to an iterative process, participants will learn from the cultural differences in understanding and implementing the concepts and the study will capture these differences and hopefully identify some common patterns as well.

20. The project will involve the development of a research protocol, which will flesh out in more details the design of the project. Country representatives, and network members, will meet face-to-face 2 to 3 times. Webinars and other meetings may also be held on specific aspects of the work. The country research coordinators will have responsibility to oversee the research domestically, to gather the examples, and to report and liaise with the Secretariat.

21. The project will work with two international networks of schools and academics focusing on two different educational levels: primary/secondary education and higher education.

- School network: participating countries will have to identify at least 3 schools, and several teachers willing to participate in the study within these schools. National researchers will work with them and liaise with the Secretariat. These schools should ideally be different in the socio-economic characteristics of their students. They do however not need to be "average" schools, and having an interest (or even a practice) in the development and use of assessment tools (or "qualification frameworks") for creative and critical thinking skills would be welcome.

- Higher Education network: participating countries will suggest universities or higher education institutions having some experience in trying to foster creative and critical thinking skills. The Secretariat may also invite key institutions working in this area (even if their country does not participate in the project). These institutions will typically offer programmes in design thinking, innovation, entrepreneurship, etc., and have thus already developed some standards to assess students' progression in creative skills. The Secretariat will coordinate this network. Work with higher education institutions and young adults is particularly important to have a good connection to the creative and thinking skills that matter in the labour market – as they could be quite different from those that one can expect in primary or secondary school.

22. Many choices will have to be made with participating countries and institutions.

23. While the assessment tool presented above could be used as such, a first step will be to see how it compares with similar existing tools in participating countries, if any, and whether it needs some adaptation prior to its piloting internationally.

24. The progression will typically be assessed over one academic year, with examples of where students stood before and after as far as the skills investigated are concerned. Documentation about the pedagogic practices that were used to foster these skills will be a dimension of the research work.

25. The specific levels and age group of students remain to be decided with participating countries. The grade will be determined at the initial phase of the study, depending on countries' interests and practical contingencies. According to the English pilot study mentioned above, grades or ages that are close to national exams or evaluation should probably be avoided to get a better involvement of teachers and students in the research.

26. The specific skills and attitudes assessed will also have to be determined, as "creative and critical skills" encompass many sub-skills and dispositions. An initial proposal would be to investigate two skills/dispositions.

27. The discipline(s) in which examples should be given and the tools tested should be determined, as skill development tends to be domain-specific. Some aspects of domain-generic habits of minds could also be part of the study though.

Budget

28. The project will have to partly rely on voluntary contributions. An annual participation fee of EUR 25k is proposed to help cover international costs. The Secretariat will also seek additional voluntary contributions. Countries should factor in some domestic project costs as well when budgeting their participation in the project (e.g. research, domestic coordination and reporting, international reporting, travel costs, translation costs).

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