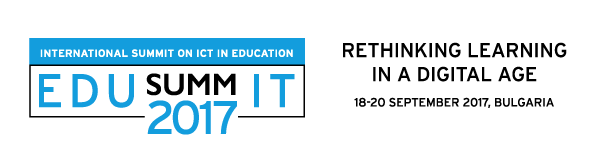
**Thematic Working Group #6: Developing creativity in teachers and learners**

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**Introduction**

Contemporary technologies provide new and powerful ways to be creative, and this has significant implications for teachers and students in classrooms. Yet there is little understanding of where nations and global educational contexts stand with regard to policy and practices relevant to creativity and technology. Technology-fluency and creative thinking are increasingly touted as core ways of thinking and work for success in the 21st century. So it is more important than ever that we develop an understanding of what goes into these constructs for learners and teachers, consider what different nations and global contexts are currently doing with creativity and technology, then consider what is needed for strengthening education on these issues, from an international perspective.

Given this, the focus of TWG6 is threefold. First, we aim to better understand what is meant by creativity in the 21st Century. Second, we aim to better understand the roles that technology may play in facilitating or hindering creativity in teaching and learning. Third, we aim to determine how we can foster creative practices with teachers and students.

Governments and educational institutions globally call for the development of creativity and technology infusion in 21st century teaching and learning (Henriksen, Mishra, & Fisser, 2016). Our group’s three critical focuses, at the intersection of creativity, technology and 21st century education, will examine both theory-driven and practice-based issues that inherently connect to and drive policy. Through this we aim to deep dive into a better understanding of the issues that affect the development of creativity in teachers and learners -- both more generally at an international level, and with specifics from the nations represented in EDUsummIT 2017 TWG6. As we compare and contrast existing policy between nations and across international contexts, and consider what current scholarship tells us as well as what current practices exist, we aim to provide an understanding of the current state of research and practice on creativity and technology, as well as recommendations going forward.

**Building Forward from EDUsummIT 2015**

A key focus at the EDUSummIT 2015 in Bangkok within the TWG6 working group (Creativity in a Technology Enhanced Curriculum), was on building an understanding of areas of intersection of creativity and technology in teaching and learning, and identifying ways that creativity can become more deeply integrated into technology- rich curriculum for teachers and students within developed and developing contexts. A main part of the rationale for the group’s working during the 2015 summit was driven by the vital role that creativity plays as a principal driver for growth, development, and new innovations that have occurred throughout human history and increasingly in 21st century society.

In the 2017 summit, we extend this motivation forward, framing this as a core issue for education, in that creativity and technology-fluency are foregrounded for problem framing/solving, new growth and development, and learning in our complex world. Contemporary technologies provide new and powerful ways for individuals and groups of individuals to be creative – and in our 2017 summit, as in our 2015 summit, it is important to give consideration to how these opportunities fit within a 21st century framework for education.

There are multiple issues and challenges associated with creativity in education, several of which arose in our working group discussions at EDUSummIT 2015. One of the issues that we emphasized and focused on initially, was in answering the question of: what is creativity? This proved a significant challenge and area for discussion, as we recognized the subjectivity and variability with which people define and think about creativity across contexts. Multiple discussions revealed a variety of approaches and ideas even within the group. To work forward from a shared understanding, we identified some core elements of creative thinking/practices that recurred in the discussions, and that more importantly were supported by scholarship. This will be covered in more depth in a later section, with a focus on the components of Novelty, Effective, and Whole (Henriksen, Mishra, & the Deep-Play Group, 2013).

Moving forward from that, the group proposed that beyond just asking “What is creativity?” for educational systems to be successful in enacting it, it is just as valuable to consider Csikszentmihalyi’s (1997) question of: “Where is creativity?” In this question, Csikszentmihalyi asserts that creativity exists as an interaction between the individual, the field, and the domain. This acknowledges that multiple components must act together to lead to creative acts and disseminate them to the world. These components (of the individual, the field and the domain) must work as a system for something to be declared Novel, Effective & Whole. Thus merely looking at the individual does not do justice to the complex process involved in thinking about creative work. In the Henriksen, Mishra, and Fisser (2016) article resulting from EDUsummIT 2015, we explore how this idea leads to the notion that creativity must be infused from a systemic perspective. The 2015 group identified the systemic elements of: Policy & Curriculum, Teacher Education & Professional Development, and Assessment -- all of which must work together to effectively bring 21st century creativity and technology-fluency together into classrooms and school systems.

At the close of EDUsummIT 2015, we left off with the idea that creativity involves approaches to thinking rather than a set body of knowledge that can be taught. However, we can reinforce and support sustained creativity by engaging with the idea that it can become a ‘habit of the mind’. However, this also means that the education system / educators need to be able to recognize and support a sustained facilitation of creativity as a habit of the mind, and agree upon what that is and how to do so – something that can vary greatly across contexts and cultures. So essential challenges involve convincing policy makers, who often prefer clear answers and objectivity, that it is important to infuse curricula with creativity – an area that can be subjective without one “right” answer. Additionally, a challenge lies in how to implement something as context-driven as creativity in ways that are broad enough to speak to policy and curricular choices across varied settings. As we move forward into EDUsummIT 2017, this sets up a challenge that moves us further into the space of policy and practice.

**Our Challenge for EDUsummIT 2017**

We left EDUsummIT 2015 thinking and writing about the many areas of variability and subjectivity in the challenge of enacting creativity in education, as well as some common themes around creativity. To begin to understand some of these areas of variability and synchronicity we plan to explore more specifics around education policy and practice in different global contexts. In order to really understand the possibilities and challenges of creative education with technology, we must understand what is already being done (if anything) across a range of global contexts. Thus, a focus in starting out for TWG6 in 2017, will be to collectively gather information as a group to understand what types of policies, big ideas, or common practices are already in place with respect to creativity--among the range of nations represented in the group. While this is clearly not comprehensive of the scope of international policy broadly, it does provide opportunities to explore a range of practices and contexts, and to begin to develop a sense of how different nations/contexts are viewing these constructs systemically. Because this group’s focus is on developing creativity in teachers and learners, we will ask group members to hone in on teacher education standards and school curriculum specifically, and provide information on existing policy/practice for their national context.

As we can then compare and contrast as a group, a challenge for us is to look across this range of examples of creativity and technology in policies and practices, and to identify points of connection and disconnection. In doing this, we hope to provide a sense of where education is already meeting the challenges of the 21st century, and where it falls short or where gaps or disconnection exists. As we identify useful themes both from scholarship, national policies, and our own experiences, we aim to provide a picture of what creativity and technology look like in education--and through our work provide thematic takeaways and recommendations for the field across contexts.

**Defining Creativity**

Most definitions of creativity drawn from literature across education and psychology, focus on the fact that creativity is both “novel” and “effective.” In this sense, creativity can be described as the production of useful solutions to problems, or novel and interesting ideas across domains, which create products and/or artifacts and impact thinking (Amabile, 1989, 1996; Oldham & Cummings, 1996; Plucker, Beghetto, & Dow 2004; Zhou & George, 2001).

While novelty and effectiveness or value are in many versions of “creativity” definitions, our definition (which we take forward from the TWG6 EDUsummIT 2015 work) takes this concept and builds on it with Mishra and Koehler’s (2008) concept of “wholeness.” Mishra and Koehler describe this third construct of wholeness as something used in an ordered and aesthetic manner in a specific context. Thereby, the working definition for creativity we use based on creativity literature, is the Novel, Effective, and Whole definition applied by Mishra and Koehler (2008). In this way, creative ideas are not just novel and effective, but they have a certain aesthetic sensibility, which is connected to and evaluated within a specific context or paradigm.

**Exploring the literature**

For the latter half of the 20th century and onward into the present, psychologists, and educators have delved deeper into the arena of human creativity (Plucker, Beghetto & Dow, 2004).  It has frequently been demonstrated that there are clear intellectual, educational, and talent-building advantages associated with creative thinkers for students and even adults throughout life (Guilford, 1950; Renzulli, 1994; Torrance, 1981; Blicbau & Steiner, 1998). Educational psychologists and researchers have noted strong positive connections between creativity and other significant areas including: life success (Torrance, 1981), leadership in the workplace (Williams, 2002), psychological functioning, and intellectual/emotional growth (Runco, 1997). Maslow (1968) and Rogers (1976) the overall beneficial impact that creativity had upon human development, mental health and self-actualization.

In the past, and ongoing into the future, human creativity has been, and will continue to be, one of the most important factors in growth and developments that build and shape our society (Freedman, 2007).  Creativity is a trait that is valued and emphasized more highly than ever both in the workplace and the classroom (Florida, 2002). It has been tightly linked to both important and incremental accomplishments and innovations throughout different fields and contexts, in the arts, the sciences and many others (Catterall, 2002).

**Developing creativity in teachers and learners**

Creativity is an essential concept across education and psychology (Starko, 2005).  The advantages and benefits associated with creativity as a thinking skill or habit of mind, both for individuals and institutions, are numerous. These also vary across the lifespan (Sternberg & Lubart, 1991; Sternberg, 2006). Creative thinking, whether in the ability for or inclination towards it, has been noted as one of the most highly regarded and valued traits in most modern societies (Lewis, 2008). It is recognized as being of the most coveted of psychological qualities, yet there is often little understanding of it, or it is considered to be an inherent trait only accessible to the most unique or special individuals (Sternberg & Lubart, 1991). This view has often left it in a problematic space, in which we recognize the importance of it, but are hesitant or uncertain of what to do in classrooms. Yet as Sawyer (2011), Pink (2005) and numerous other thinkers and scholars of 21st century thinking processes note, creativity is one of the most essential elements of both individual and societal advancement in our complex world. Without it, we face great challenges and problems without the approaches and habits of mind that allow us to come up with novel and effective solutions. Increasingly, the field of education has focused on the need to ground our teachers and students thinking and working processes in creativity (Cropley, 2003, Sternberg, 1999). And given the technology-rich contexts and the new affordances possible with digital technologies, it is vital that we consider creative thinking alongside technology fluency (Mishra, Koehler, & Henriksen, 2011).

Looking across research and literature in educational scholarship, or even the common rhetoric in classrooms and institutions, there is undeniably a sound conviction that creative thinking should be developed and encouraged both inside and outside of schools and classrooms (Williams, 2002). The benefits of creativity are many and varied, for individuals and for society overall, and they should be emphasized in the classroom.

Amabile (1996) noted that after all developmental and other factors influencing the growth of individual creativity are considered, most are found within the classroom, with teacher characteristics and approaches being extremely influential. Creative teachers help students to construct their own learning and understandings through discovery – a model of learning that is valuable in a complex world (Lilly & Bramwell*-*Rejskind, 2004).  Such teaching approaches help students develop as innovative and independent thinkers – people who can produce and create, rather than merely summarize and repeat (Piaget, 1973). In their classrooms, students tend to be cooperative, enthusiastic, and engaged (Hickey, 1999; Kiely, 1998). Creative teachers help students to reconstruct their knowledge and understandings through discovery and rediscovery (Lilly *&* Bramwell*-*Rejskind, 2004). Bateson (1999) maintains that everyday creativity is a critical component in education, because the ability to learn and grow throughout life relies on innovation and new construction.

Karnes et al. (1961) suggested that creativity is significantly related to educational achievement, and that the teachers who are best at motivating creativity in their students also modeled creative or divergent thinking themselves.  Cropley (2003) maintains that, “creativity offers classroom approaches that are interesting and3thus seems to be a more efficient way of fostering learning and personal growth” (p. 28).  Conventional teaching practices such as transmission-models, punishment, reward, competition, and evaluation, have been found to stifle students’ innate creativity (Ramey & Piper, 1974). On the flip side, classrooms that promote self-directed learning and autonomy seem to cultivate innovative or novel thinking tendencies (Amabile, 1996). Creative teachers support students’ creative abilities and promote comfortable environments in which students can experiment with ideas, explore possibilities and push boundaries (Bramwell*-*Rejskind, 2000).  Lilly *&* Bramwell*-*Rejskind, (2004) indicate that these teachers foster a positive learning climate, encourage curiosity, and model flexibility.  They “view fostering their own creativity as a precursor to fostering it in their students.” (Lilly *&* Bramwell*-*Rejskind, 2004, p. 3).

The ability to enhance creativity in teachers has also been extensively promoted (Milgram, 1979; Davidovitch & Milgram, 2006). This is somewhat troubled by the fact that research measures to assess and analyze creative teachers are infrequent in the literature. It has been suggested that there is an increasing need for the teaching of creativity in schools, particularly in teacher education (Mack, 1987). Sternberg and Lubart (1991) note that it would be beneficial to empower teachers to give more long-term assignments to promote and improve students’ tolerance for ambiguity. They additionally support the concept of intellectual risk-taking and suggest that teachers encourage students to take more risks with their new skills.

Notably, there is a strong body of thinking in educational research, which either equates or tightly links effective teaching with creative teaching (Anderson, 2002; Bain, 2004; Bleedron, 2003, 2005; Davidovitch & Milgram, 2006; Torrance, 1981).  Anderson (2002) noted that, “The most fundamental risk these teachers accept is found in their willingness to confront both success and failure in the interest of teaching better. They risk themselves in being responsible for their work. In this way, they are not so different from creative artists in other arenas” (p. 35).

This lays out the importance and challenges of understanding creativity within the arena of education. Beyond this, moving the discussion further into the context of EDUsummIT, we highlight the fact that not much scholarship has gone in depth to explore the relationship between creativity and technology. In recent years, scholars have begun to emphasize the important linkage between these 21st century constructs of education (Mishra & the Deep-Play Research Group, 2012; Henriksen, Hoelting, & the Deep-Play Research Group) -- yet more work is clearly needed in this area. Particularly when it comes to understanding the relationships between these issues in policy and practice, EDUsummIT 2017 affords an ideal opportunity to explore this at the global level.

**Creativity across TWG6 National Contexts**

One of the great strengths of EDUsummIT is in the opportunity it affords to bring together noted leaders, scholars, practitioners, policy makers and other educational experts from a range of global, international contexts. Through the affordances of this structure, we seek to gain a better understanding of the “state of the field” in terms of how creativity and technology are integrated into policy and practices across different nations. Here we aim to provide some preliminary ideas and a general understanding of how this looks, as we enter into the EDUsummIT setting.

As part of this endeavor, at EDUsummIT 2017, the TWG6 will evaluate and consider aspects of both policy and practice around creativity and technology across nations. We aim to have participants help us investigate and consider these issues among the nations represented, and will expand on each of these global contexts along the lines of: Teacher Standards, and Curricular Environments.

* USA
* Australia
* Italy
* Czech Republic
* Israel
* Finland
* Bulgaria
* Netherlands
* Sri Lanka
* China
* Slovakia

**Conclusion**

Here, we have laid out some aspects of the broader conversation on creativity and technology—both in terms of how it is viewed and discussed in the popular educational discourse, and in terms of what the current scholarly takeaways are. This provides the beginning and the basis for more in-depth conversation, work and information-gathering that will be a part of TWG6 at EDUsummIT 2017.

In addition to this, we will be asking participants to bring examples (informal case studies) of strategies for creativity in the classroom. It is our hope and aim that through all of these efforts, we can begin to expand on the broader international discussion of creativity, technology, and their intersection for 21st century education. Our work is structured to do so from a multi-dimensional perspective—to consider how we might understand current contexts and offer recommendations for the future.

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