TWG 6: 21st century learning – expanded brief paper

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Introduction

This paper specifically addresses the EDUsummit 2009 Call to Action:
- To establish a clear view on the role of ICT in 21st century learning and its implications for formal and informal learning.
This paper is expanded based on the discussions in the Thematic Working Group 6 on 21st century learning of the EDUsummit, June 8-10 at UNESCO in Paris.

Thematic Working Group 6 engaged 20 participants from Norway, Philippines, France, Russian Federation, Kuwait, Italy, Australia, USA, Israel, Germany, UK and the Netherlands and a representative from UNESCO. Working group moderators were Joke Voogt (Netherlands) and Ola Erstad (Norway). Rapporteurs were Cathy Norris (USA) and Punya Mishra (USA).

Research update

What should be learned and why

The globalisation and internationalisation of economy along with the rapid development of information and communication technologies (ICT) are continuously transforming the way in which we live, work and learn. While the need for routine production workers has decreased, the need for service and knowledge workers has grown. Studies increasingly indicate the need for creative and innovative workers. Advances in ICT have created jobs that did not exist a decade ago, and young people need to be educated for careers that do not yet exist. These developments require drastic changes in what has to be learned and how.

An analysis of different frameworks for 21st century learning show consensus about the skills that are needed for living and working in the 21st century. The 21st skills that are considered essential are: collaboration, communication, digital literacy, citizenship, problem solving, critical thinking, creativity, productivity. Some skills evolved from the 20th century and have been studied for some time (problem solving, critical thinking), while others (e.g digital literacy) are new and unfamiliar.
An important change has taken place in the way new digital tools and collaborative environments have enhanced learning, from an emphasis on reproducing information and content to content creation and sharing in virtual environments, which some describe as a remixing culture. In the Nordic European countries, the concept of ‘digital bildung’, or what it means to be literate in contemporary culture, is emphasized. Digital literacy is a broad concept that has different aspects:

- **Technological literacy**: to be aware of the interplay between technology and society and to understand the technological principles needed to develop relevant solutions and achieve goals;
- **ICT literacy**: the skills needed to make effective and efficient use of ICT;
- **Information literacy**: the capacity to access information efficiently and effectively, to evaluate information critically, and to use information accurately and creatively.

**TWG 6 Discussions**
The participants of TWG 6 agreed upon the consensus described above, across the different frameworks about what 21st century skills are. We also agreed that the term ‘21st century skills’ has different connotations in different countries. By relating to the 21st century the term also has a chronological label, which has a static instead of dynamic connotation. Although we criticized the term we decided to keep the term (for the time being) in our discussions. We understand ‘21st century skills’ as the knowledge, skills,
attitudes, and values learners need to develop in order to participate fully in contemporary society.

‘21st century skills’ in educational practice

The Second Information Technology in Education Study (SITES) revealed that, when findings from 1998 are compared with findings from 2006 and across the participating education systems, the perceived presence of 21st century learning in schools, according to their principals, had increased. However, it was also observed that school principals in a number of Asian countries (Hong Kong, Japan, Taiwan, Thailand, Singapore) reported an increase in 21st century learning in their school, while principals in some European countries (e.g. Denmark, Norway) reported a decrease. The importance addressed to 21st century skills is also confirmed by the development of new courses in several Asian countries (e.g., Integrated Practice Activity in China; Life wide learning in Hong Kong). However, the SITES study also showed that perceived presence of 21st century learning by school principals is not always reflected in teacher and student practices.

Implementation issues

The implementation of ‘21st century skills’ requires a restructuring of the curriculum. It is not only a matter of trading 20th century content and goals for those of the 21st century, but a matter of redefining what has to be considered as core in the 21st century curriculum and considering the implications of a 21st century curriculum for the current school system.

Consensus is found in the pedagogy needed to teach ‘21st century skills’. Important methods for learning ‘21st century skills’ are: problem-based learning, cooperative learning, experiential learning, and formative assessment. In addition, comprehensive use of ICT to enhance student learning and the mastery of ‘21st century skills’ is advocated. ICT applications such as Web 2.0 tools, multi user virtual environments, and augmented reality can contribute to the development of ‘21st century skills’.

For the assessment of ‘21st century skills’, new assessment frameworks are needed. Most frameworks argue the need for an emphasis on formative assessment to allow for individual guidance of students in their learning process. Performance assessment strategies are required to be able to understand students’ progress in mastering the ‘21st century skills’. Few studies focus on the development of online performance assessments for assessing (some) ‘21st century skills’, e.g. information and computer literacy skills and scientific inquiry (problem solving, critical thinking and collaboration and communication skills).

TWG 6 Discussions

The working group discussions during the EDUsummIT 2011 focused on ways in which ‘21st century skills’ could be acquired in formal and informal learning settings. We realized that we live in a world that is constantly changing and that we need to develop meaningful learning environments to make sense of these changes. We agreed that there is a need for a developmental continuum of pedagogical approaches supported by technologies to address ‘21st century skills’ as our students progress through schools. We also agreed that it is necessary to reconceptualize content (disciplinary knowledge) in
order to be able to incorporate ‘21st century skills’ in a meaningful way in teaching and learning. In our view basic skills are a condition for the development of ‘21st century’ skills at high level. We discussed how 21st century knowledge is constituted and came up with three knowledge types; Foundational knowledge (what we know), Meta knowledge (what we do) and Humanistic knowledge (what we value). We discussed the role ICT could have (in a positive and negative way). We also realized that there are tensions inherent in realizing these goals.

We realized that to advance 21st century learning we need to help to create an action agenda for policy and research. Such an action agenda could only be developed when we start with a conversation among stakeholders. We need to get agreement on what we, as a community (be that a nation, state, local school authority, or school), want our students to come out of their education being prepared to do. What skills/competencies do they need to succeed today and tomorrow?

Scalability

Beyond making 21st century skills a part of education, using ICT to shift our educational structures from industrial era schools to new types of 21st century formal educational models is important. Societies can no longer afford a labor-intensive model of education that uses expensive human resources inefficiently. This is not a temporary financial dislocation due to an economic downturn, but a permanent sea-change that has already happened in every other service sector of our economy. In K-12 schooling, our stellar illustrations of success are based on personal heroism, educators who make sacrifices in every other part of their lives in order to help their students. These are wonderful stories, but such a model for educational improvement is unscalable to typical teachers. We have not found a way to be effective and affordable at scale. The U.S. Department of Education’s 2010 National Educational Technology Plan presents a transformational vision for 21st century education that builds on insights about modern interactive media gained from other parts of the economy, but also depicts new processes and structures that recognize the unique challenges of helping students learn, lifelong and lifewide.

TWG 6 Discussions

We discussed the notion of scalability in relation to technology use and 21st century learning and agreed that scalability is not about replicability. The variety of implementation is more important rather than everyone doing the same thing. Re-conceptualizing might be a better word for this. We agreed that we need to know more about the relationship between formal and informal learning settings and believe that a research agenda to inform practice and theory with a diversity of research methodologies in this area is warranted.

Major issues

- Most frameworks seem to assume that 21st century skills are acquired in formal educational settings, but there is a lot of potential to learn 21st century skills in informal learning settings. It is important to know students learn from their involvement with ICT and how these skills relate to 21st century skills.
The role of non formal and informal education contexts in supporting the acquisition of 21st century skills should be acknowledged but is not yet clear. The way we conceptualize learning environments online and offline becomes important. We need strategies to link what is learnt in and outside the school. 21st century skills are often discussed disconnected from core school subjects. It seems important to provide models and examples on how 21st century skills can be related to core subject domains to help policymakers, school leaders, and teachers implement 21st century skills in the school curriculum.

The need for different types of literacy in the knowledge society must be acknowledged. Digital literacy should not be regarded as a separate set of skills, but instead embedded within and across the other 21st century skills and core subjects. Because of the ubiquitous use of technology in our society, schools and universities often assume that their students are digitally literate, but it is becoming increasingly clear that students differ greatly in their use of technology and therefore in their technology skills.

To be able to measure student learning of 21st century skills, a better understanding of alternative forms of assessment that comply with the demands of valid, reliable and fair testing. This seems an important prerequisite for the implementation of 21st century skills at a large scale. Also we must include change as a dynamic factor over time as part of our understanding of skills and how they develop.

A new approach to teacher professional development -based on 21st century skills- should be adopted. Teachers should be given the opportunity to develop 21st century skills themselves and to experience how these skills can be brought into the classrooms. This also relates to school leadership programs in the way schools develop as learning organization to support learning of 21st century skills.

Globalization implies that the development of 21st century skills in young people is important worldwide. It is important to understand how developments of 21st century skills reproduce or create new knowledge divides within and across countries and cultures. The latter implies a need for cultural understanding of the conception of 21st century skills.

Recommendations from TWG 6
We further focused on plans that could be implemented to address these needs and considerations at the local, regional and global level that are required to ensure successful implementation.

To help to agenda setting for policy and research a small repository of inspiring practices (including descriptions about the process of the design) could help to start the conversation between different stakeholders about ways 21st century learning can be implemented in different settings. The repository can be small; its function is to frame the conversation about 21st century learning. It should be made accessible at global, regional and local level.

A white paper is needed to inform policy makers and teachers in a coherent way about the need and directions of 21st century learning. The white paper can be supported by examples form the aforementioned repository.

There is a need for a mechanism to link local and global discussions on 21st century learning. The EDUsummIT, and similar initiatives where researchers, policy
makers and practitioners from a variety of regions meet could be a platform for such discussions.

- New research frameworks are needed to be able to conduct just in time research that is driven by theoretical frameworks and contributes to theory and practice.

**Brief bibliography**


Dede, C. (2011). Reconceptualizing technology integration to meet the challenges of educational transformation. *Journal of Curriculum and Instruction 5*, 1 (May), pp. 4-16


