Thematic Working Groups Final Reports
TWG1 - Multi-stakeholder Partnerships become Smart Partnerships when they:

- have a shared purpose (values, concept vision) that evolves into a synergy (more than a sum of the parts)
- enhance the quality of education with digital technologies (ICT)
- have a strategic and holistic approach
- include partners within and across education (including researchers), government (education, commerce & law enforcement), industry, communities, and civil society (e.g. NGOs)
- harness ICT smartly (gathering evidence with prompt feedback to improve performance)
- recognise the emergent process and facilitate their own organisation to change

While it is possible to have a Smart Partnership with a small scope, a large initiative to enhance the quality of education with digital technologies (ICT) is less likely to be sustained without a Smart Partnership. (A Smart Partnerships can include one or more Smart Partnership(s) nested within it.)

Note: Slide added by Niki after EDUsummit in Bangkok. Thanks to TGW2-9 members who suggested improvements included here.
TWG1 - Challenges of Smart Partnerships

- Develop a shared understanding/definition of SMART PARTNERSHIPs.
- Identification of which stakeholders should be involved in the partnership i.e. who should be involved to ensure that the partnership is complete?
- Ensuring the participation of all stakeholders
  - How to encourage/motivate business partners into areas in which they have no presence? e.g. rural, remote areas, out-of-school organisations etc.
  - How to promote the ‘buy in’ of educators and other stakeholders?
- Tension in developing a shared vision, trust & respect across & between partners.
- Power issues: development of distributed ownership and responsibility across partners.
- Engagement of sufficient numbers of educators to ensure sustainability.
- How to gather convincing evidence that illustrates a successful partnership?
- What indicators are helpful in evaluating progress in projects?
- How to harness ICT ‘smartly’ to gather evidence, to provide immediate feedback and to communicate
- Deepen understanding of scalability and smart partnerships.
TWG1 - Recommendations

- Develop and communicate a shared understanding of Smart Partnership.
- More research on Smart Partnerships should be commissioned.
  - Particularly in the Asia Pacific region.
  - Develop robust indicators for effective smart partnerships.
  - Develop more robust indicators for learning outcomes resulting from Smart Partnerships.
- Smart Partnerships should be comprehensive and be inclusive of communities and context (ie move beyond education systems).
- Smart Partnerships need smart communication strategies; attention should be paid to this from the outset.
- Additional incentives required when the business case is not clear for all parties (eg rural/remote areas, marginalised learners).
- UNESCO and Edusummit participants should advocate for:
  - Capacity building to increase the number and sustainability smart partnerships
  - Capacity building for smart ICT use (eg access to big data).
  - Smart Partnerships where scalability is necessary.
TWG1 - Actions

- Develop policy paper. (AM & all)
- Discussion paper on Smart Partnerships developed for special issue. (ML)
- Research paper Indian Smart Partnership for special issue. (AS & ND)
- EdusummIT 2017 TWG on organisational change/evolution. (ND & DO)
- Contribute to UNESCO for policy makers, eg AMFIE, RDTC. (ND & HN)
- Symposium for IFIP TC3 conference July 2016 in Portugal. (CL)
- TG1 rep. for WERA at AERA EdusummIT symposium. (CL)
- Develop research bibliography in Google doc etc. (all)
- Map a range of Smart Partnerships using Davis’ Arena (ND, AS, DO, HN)

Note: Initials of leader in brackets
TWG2 - Challenges

Key Challenges

- Content (student-centered)
- Bridging formal and informal learning
- Recognition and assessment of informal learning

Pedagogical Key Challenges

- Policy (school, district, national)
- Recognition of informal learning (as a means for life-long-learning)
- Recognition of mobile and online learning
- Teacher professional development

Resources & funds

- Standards (technology)

Technology

- Security & privacy
- Usability
- Platforms & interoperability

Infrastructure & resources

Research

Need research to cover pedagogical and technological challenges in the incorporation of mobile technologies in our schools
TWG2 - Recommendations

Collaboration
- Student-focused
  - Reevaluate curriculum
- Self-directed learning
  - Teacher prep in pedagogy

Pedagogy
- Reinvent our schools

Technology
- Funds for mobile infrastructure
  - Data protection, data recovery, incryption
  - Cloud-based work-spaces
  - Cross-platform affinity and BYOD
  - Guidelines to blend with ADL and support of W3C standards

Policy (school, district, national)
- PD: Self-directed & spontaneous learning with MAT
  - Define framework for proper integration

Research
- Effect case studies in impact of informal learning
- Research on assessing competencies in formal / informal learning
TWG2 - Actions

Develop Policy Paper for UNESCO by 10/31

Finalize Discussion Paper 11/15

Provide a Journal Article on Mobile Learning based on our work at EDuSummit by 2/16

Submit AERA Proposal and Present if Accepted

Develop Paper on Mobile Learning for Refugees “Food, Water and Sim Cards” @ UNESCO Mobile Learning Week, March 2016

Continue our Professional Learning Network Work on Mobile Learning and Informal Education

Share out Results Locally
TWG3 - Challenges

1. contextualization: sociocultural awareness
digital diversity / equity

2. sustainability and scalability of PD

3. challenge (transform? innovate?) pedagogy and content

4. technology discernment

5. systemic and systematic PD
TWG3 - Recommendations

Policy-makers are encouraged to: 1) engage the widest possible range of stakeholders in education systems for TPD in the needs assessment, choice and application of ICT to learning; create a continuum of pre- and in-service PD focused on ICT; 2) recognise that deployment of ICT alone is not sufficient - teachers are necessary and active contributors to the design of good practice, in addition to ministries, NGOs and the commercial sector, etc.; 3) networks of support, PLNs and communities including OER - examine what works - provide a synergistic eco-system; 4) distribute findings of action and design research about the use of ICT in education from individual teachers, schools, academia, and ministries; 5) draw a set of compulsory skills, possibly re-certification of teachers based on ICT skills.

In addition, principals are encouraged to: 6) consider teachers’ beliefs about learning; 7) engage teachers regarding the need for change: combine training with immediate effect; 8) document and disseminate good practices.
TWG3 - Actions

1. 3 research papers:
   a. TPCK and PD
   b. PD and discernment and sustainability
   c. challenges and model paper

2. Policy paper - UNESCO

3. 4-page document for the e-book (website)

TWG4 - Addressing gaps and promoting educational equity

Challenges

ICT-related educational programs currently being designed, adopted and implemented by third party organizations and governments do not often take into account that:

1. technology is changing rapidly and is often repurposed;
2. time is needed to implement and recognize agreed outcome benefits (the U challenge);
3. there are differences and complexities within the contexts in different countries (political, social, technological, linguistic, cultural, economic, local and religious contexts);
4. the above have significant implications for teaching and learning.
TWG4 - Recommendations

1. Be aware that change is inevitable, and that sustainability has to embed adaptability;
2. Design projects inclusive of adequate time to build a reflective process that anticipates the dynamics of the U challenge;
3. Ensure understanding of what it is within a context that can gain systemic commitments in various contexts;
4. Commit resources and partners to long-term professional development of educators;
5. Build in systemic and synchronous top-down and bottom-up processes that will assure sustainability.
TWG4 - Actions

Research or white paper: To address gaps and promote educational equity there is a need to problematize long-term change in the digital age.

Policy brief: To offer policy guidelines that will help in the design of ICT in education projects and programmes that address digital equity to be sustainable:

1) To emphasize the importance for third-party organizations and governments to develop an improvable set of action principles when they conduct ICT initiatives in technology-poor learning environments in developing and developed countries;

2) To understand the essential conditions as a basis toward sustainability;

3) To consider appropriate indicators and predictors along the way which are dependent on the context;

4) To recognize and accommodate the U challenge.
TWG5 - Challenges

1. Summative assessments and evaluations are over-emphasized.
2. Failure to accommodate dynamic problem-solving contexts and the role of big data and small data devices.
3. The unintentional use of assessments to benefit a few.
4. Unclear how big data can benefit learning.
5. Lack of tools to support formative assessment in complex problem-solving domains.
6. Lack of tools to support the analysis of big data for diagnostic purposes, cross-cultural comparisons and personalized learning.
7. Extending data and formative assessments beyond narrow academic uses to diverse communities.
8. Untapped use of big and/or small data to support both formal and non-formal learning.
TWG5 - Recommendations

1. Clarify and emphasize formative assessment and formative evaluation for policy makers, teachers, recruiters and learners (e.g., develop assessment literacy).

2. Articulate the changing emphasis in learning from static declarative knowledge to dynamic problem-solving contexts, including the role of small data devices, in the context of assessment.

3. Use assessments for the benefit of all (e.g., equity, meritocracy, social justice).

4. Clarify the role of big data in informing meaningful formative assessments.

5. Develop tools to support and improve formative and summative assessments and evaluations in complex problem-solving domains.

6. Develop tools to support the analysis of big data for diagnostic purposes, cross-cultural comparisons and personalized learning.

7. Use data and formative assessment to support a variety of purposes (e.g., recruiting, career advising, etc.) in the best interests of learners and society.

8. Use big and small data to support both formal and non-formal learning.
TWG5 - Actions

1. Develop and disseminate white papers that clarify and emphasize formative assessment and formative evaluation for policy makers, teachers, recruiters and learners (e.g., develop assessment literacy).

2. Recommend to a funding agency to support the development of a clearinghouse of formative assessment exemplars and case studies in support of complex problem solving.

3. Use big data to identify and understand inequitable assessments; provide technology-enabled formative assessments to benefit individual learners.

4. Provide examples of the use of big data in informing meaningful formative assessments and evaluations.

5. Recommend to funding agencies to emphasize the specification/development of tools to support formative assessment in complex problem-solving domains.

6. Recommend to funding agencies to emphasize the specification/development of tools to support the analysis of big data for diagnostic purposes, cross-cultural comparisons and personalized learning.

7. Develop a conceptual framework for extending the use of data and formative assessment to support a variety of purposes (e.g., recruiting, career advising, etc.) in the best interests of learners and society.

8. Provide examples of the use of big and small data to support both formal and non-formal learning.
TWG6 - Creativity in a technology enhanced curriculum

Punya Mishra, Petra Fisser, Danah Henriksen, Eugenia Kovatcheva, Paolo Tosato, Miroslava Cernochova, Leah Irving, Sacha DeVelle, Michael Henderson, Sue Cranmer, Janet Cochrane, Nick Reynolds, Don Krug, Tim Ptaston
TWG6 - Challenges

Creativity?

- Why?
- What is it?
- Where is it?
- Creativity and ICT? (Digitality & Network Effects redefining where it is)

3 Key groups / Interests → Leading to 3 key areas of challenge

- Policy / Curriculum
- Teacher Education / Teacher Professional Development
- Assessment
TWG6 - Recommendations

● Policy / Curriculum
  ○ Creativity needs to be featured in policy at all levels (Macro / Meso / Micro)
  ○ Creativity should be embedded across the curriculum
  ○ A greater push for research to identify models, and practices

● Teacher Education / Teacher Professional Development
  ○ Develop TE curriculum that integrates creativity and its components across the program
  ○ Specific course / programs focusing on creativity and technology
  ○ Identify / use a framework that connects creativity and technology to curriculum guidelines

● Assessment (in context of ICT)
  ○ Recognize that assessment of creativity exists within a range of tensions / dilemmas
  ○ Alternative forms of assessment - dynamic, flexible for triangulation
  ○ Evidence based research from the classroom
TWG6 - Actions

● Update (4 pages, Oct. 5)
● Policy document (4 pages, Dec 1)
● Research papers: At least 3, if not more!!
  ○ Policy/Curriculum; Teacher education / PD; Assessment
  ○ Policy scan & literature review
● Conferences
  ○ SITE2016 (Danah/Petra/Punya); Australian Council for Computers in Education 2016 (Janet/Michael/Nick)); QED Bulgaria 2016 (Eugenia); FabLearn 2016 (Michael); Knowledge informed technology and business innovations and creativity; Berlin (Sacha); Network Learning conference (Sue); World FATE conference, 2016 (Miroslava)
● Creativity Assessment Database
TWG7 - Challenges

• Indicators that are meaningful and have implication for policy and practice
• Indicators that are useful in informing progress, and feedback for refinement & decision making
• Communicating indicators clearly to different audiences and across levels
• Going beyond the measurement of input
• Creating operationalizable and valid measures for the indicators

Creating quality indicators applicable
TWG7 - Recommendations

• For policy makers & funders
  – Identify the indicators that matters, and have mechanism/measures for these to influence policy & decision making

• For educators/institutional leaders/practitioners
  – Use indicators to provide feedback, ensure alignment across context, processes and outcomes within level, and give feedback on alignment across levels

• For researchers
  – Develop & validate measures that can be reliable and easily implementable

Establish & curate repository of measures for
TWG7 - Actions

• 2 week deadline for expansion of bullet points—extended abstract (max 4 pages)
• Paper on the indicators framework, rationale, etc.—1 Dec
• Paper on examples to illustrate how the framework can be used—conference symposium (SITE, 21 Oct; European Conference on Educational Research (ECER) Aug 2016; CITE Research Symposium June 2016)
• Policy brief (4 pages), also for AMFIE—1 Jan
TWG8 - Challenges

1. Inconsistent and unequal access to safe and secure networked technologies [systems and infrastructure] in and out of school
2. Increasing loss of privacy and lack of control over one’s data
3. Lack of awareness of potential positive and negative impact of digital technologies
4. Lack of informed and ethical online personal, group and institutional behavior and use of data
5. Lack of policies that employ systems approach to prevention, detection intervention and response
6. Lack of professional standards relating to digital citizenship and cyberwellness for pre- and in-service teachers
7. Policy decisions are often driven by high profile stories not by evidence-based research
8. Children are particularly vulnerable and often targets of cybercrime, trafficking, abuse and radicalization
TWG8 - Recommendations

1. Develop safe and secure networked [systems and infrastructure] technologies in and out of school impacting children’s and educators’ lives and digital culture.
2. Develop and enforce personal, group and institutional data privacy policies, skills and competencies.
3. Implement specific actions to raise awareness of potential positive and negative impact of digital technologies.
4. Develop education policies and frameworks that encourage ethical online behavior and use of data by individuals, groups and institutions.
5. Develop policies that incorporate a systems approach to cyber wellness that includes prevention, detection, intervention and response.
6. Develop, support and assess professional standards relating to digital citizenship and cyberwellness for pre- and in-service teachers.
7. Address digital citizenship and cyberwellness supported by evidence-based research, while being sensitive to high profile media stories.
8. Collaborate with national and international agencies to prevent, detect and intervene to instances of cybercrime, trafficking, abuse and radicalization.
TWG8 - Actions

Publish:

- Synthesize 2-day working session into 4 page White Paper
- Write 4-page UNESCO Policy Brief
- Develop “academic” paper for publication
- Submit an article for UNESCO Bangkok’s ICT in Education Newsletter (Sept)
- Link to other research activities/publications

Present: at national and international conferences: e.g., SITE, AERA, ASCILITE, ATE, ICEM, WAIER, WEF, QED, NPSE

- Open-source, media presentations, “Conversations (AUS) - http://theconversation.com/au”
- COP ITU Strategy Regional Workshop 24-25 October
- FOSI conference Washington DC Nov 18
- UNESCO’s Asia-Pacific Ministerial Forum on ICT in Education

Continue Working as Group (and welcome others):

- Create the Digital Citizenship Network
- E.g., a wiki-type space

Disseminate through Social Media:

- Blogs
- Microblog
- Linkedin article

Deliver the UNESCO policy guidelines and policy brief to gov leaders

- Leverage existing networks (ITU, Intel AS Policy Group, WEF, African org, etc)

Catalog existing programs and toolkits for educators
Working Group 9: Curriculum - Advancing Understanding of the Role of Computer Science in the Curriculum

Mary Webb, Margaret Cox, Andrew Fluck, Charoula Angeli, Jason Zagami, Joyce Malyn-Smith & Joke Voogt
Rationale

Economic
A society of active producers rather than a passive consumers of technology
Need for computer scientists to sustain a competitive edge
Need for CS enabled professionals in all industries to support innovation

Social
Power to lead, create and innovate within society

Cultural
Drivers of cultural change
Actions

- Build on research from past EduSummits and thematic working groups;
- UNESCO Policy Paper on Advancing Understanding of the Role of CS in the Curriculum;
- Call to Action Paper on Advancing Understanding of the Role of CS in the Curriculum;
- Research Paper 1 on “Arguing for Computer Science in the School Curriculum”;
- Research Paper 2 on the “Challenges for specifying structure and sequence in the Computer Science curriculum: the interrelations between resource issues and pedagogical approaches”; and
- Research Paper 3 on “Defining Pedagogical Content Knowledge needed for primary teachers to teach Computer Science”.
Computational thinking

Digital Literacy
Operational skills
Media Literacy
Digital Citizenship
Cyberwellness

IT/ICT - the applications and connectivity used by students to enhance learning in all subjects
Information Technology - the hardware and operating systems operated by people in educational contexts.

Please TWEET your rejection!!
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| 1. Lack of clear understanding (outside the field of Computer Science) of Computer Science/Informatics as an academic discipline. | (a) Adopt a globally agreed statement of Computer Science/Informatics as a discipline in its own right (P, I, R, E).  
(b) Articulate the nature, importance and relevance of Computer Science/Informatics to society and education (P, I, R & E). |
| 2. The need for Computer Science/Informatics as a distinct subject in school curricula is controversial and poorly understood. | Disseminate and communicate a clear rationale to different stakeholders about the need to have Computer Science/Informatics as a distinct subject in school curricula (P, I, R & E). |
| 3. Computational thinking, a core component of Computer Science/Informatics, is considered to be an important 21st century skill, but due to its complexity, it is difficult to implement in schools. | Promote computational thinking through the means of a Computer Science/Informatics curriculum, which aims at making computational thinking commonplace (P, R & E). |

P=Policy Makers; I=Industry; R=Researchers; E=Educators
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<td>4. The development of Computer Science/Informatics school curricula is</td>
<td>Design Computer Science/Informatics curricula based on a content analysis, and research students’ learning difficulties as well as the effects of different pedagogical approaches. (E &amp; R)</td>
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<td>impeded by insufficient empirical evidence of student learning in order to support content definition and sequencing.</td>
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<td>5. Previous ICT curricula delivers poorly prepared students for Computer Science/Informatics in further/higher education or professional employment.</td>
<td>Facilitate better smart partnerships between education systems and industry/professional associations. (E &amp; I)</td>
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<td>6. Integrating Computer Science/Informatics across other subjects in school curricula has been ineffective.</td>
<td>Identify clear learning outcomes, assessments and standards for Computer Science/Informatics. (E, I, P &amp; R)</td>
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<td>7. Teacher professional development in a newly introduced Computer Science/Informatics subject is a challenge in quality and quantity for many countries.</td>
<td>a) Encourage more Computer Science/Informatics graduates to become teachers and update their knowledge regularly. (P, I &amp; E)</td>
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<td>b) Add a Computer Science/Informatics specialisation to pre-service training for primary school teachers. (P &amp; I)</td>
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<td>c) Make Computer Science/Informatics professional learning a requirement for periodic teacher re accreditation/licensing. (P)</td>
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<td>d) Schools need resource allocations to free teachers to undertake the professional learning and preparation for a new Computer Science/Informatics subject. (P)</td>
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| 8) Identifying and allocating the additional resources for teaching Computer Science/Informatics is a challenge. | (a) Some of Computer Science/Informatics can be taught without computers. But computers especially mobile devices can enhance the learning experience. (P, E, I & R)  
(b) Teacher training needs to provide skills in using the available resources in the most efficient way. (E) |