IN-DEPTH EVALUATION OF CERI

REPORT OF THE EXPERT PANEL

12 OCTOBER 2010
Introduction

1. The IDE of the Centre for Educational Research and Innovation (CERI) is being conducted in parallel to that of the Education Policy Committee (EDPC), as part of the OECD’s internal process for evaluating the work of its committees and programmes to which they are linked.

2. It was agreed at the time of the launch of the two evaluations in November 2009 that CERI, given the research orientation of most of its work, would be assessed from the double perspective of both the education policy and the research communities. Consequently, a panel review was designed into the evaluation methodology to provide a means of assessing the relevance and quality of the work produced by the Programme from a research perspective, as well as its potential for informing long-term policy developments and increasing the understanding of innovations.1

3. The review panel was constituted in July 2010. It was composed of five experts in the field of education research, including with experience of the use of research in a policymaking context. The participating experts were:2

- Eric HAMILTON (United States).
- Hans SIGGAARD JENSEN (Denmark).
- Pierre LENA (France).
- Rudolf TIPPELT (Germany).
- Charles UNGERLEIDER (Canada).

4. The experts reviewed selected CERI product streams in their areas of expertise and interest, first individually in August, and then collectively in September 2010 when they visited Paris to question CERI officials on the work of the Programme.

5. The review covers fifteen of the seventeen product streams that were implemented during the review period of 2004 to 2008/09. Some of these product streams were still ongoing when reviewed. The two product streams were excluded from the review since they fell outside the expertise of the panel and/or were produced by staff having left the Organisation. The review also excluded policy-focused education products produced under the responsibility of the Education Policy Committee but which contain a significant CERI input, since these are not aimed at the research community.

6. The remainder of this report presents the results of the panel review, which will be integrated into the overall CERI report on finalisation of the IDE.3

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2. Curriculum vitae can be found in Annex II.
3. The terms of reference of the panel review can be found in Annex III.
Panel Assessment Results

7. The product streams were each assessed according to three criteria:

- scientific quality of the research inherent within the product stream;
- extent to which the product stream addresses key questions in, and/or contributes to, the field of educational research, i.e. research impact;
- potential of the product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations, i.e. longer term policy impact.

8. Experts were requested to assess product streams according to the above criteria, using the following scale: Very Low; Low; Medium; High; Very High. Intermediate ratings, Medium to High for example, were also allowed. They were also asked to provide comments explaining their assessment. The composition of the panel was designed to ensure that each assessed product stream was reviewed by at least two experts.4

9. Preliminary ratings provided individually by the experts converged in 80% of product stream (i.e. they were the same or contiguous), with the greatest degree of convergence (93%) in the area of scientific quality where widely recognised sub-criteria were available to support their work.5 After having had the opportunity to compare and contrast each others’ assessments, discuss their underpinnings and then seek clarification from CERI officials on the work, the ratings were collectively adjusted. As a result of this iterative process, the final ratings of the experts were convergent for all assessed product streams.6

Overall results

10. The overall results of the assessment reflect very positively on the work done by CERI during the review period, with no product streams being rated as low or very low in respect to their scientific quality, research impact and potential for longer term policy impact.

<table>
<thead>
<tr>
<th>Panel Observations</th>
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<tbody>
<tr>
<td>This results reflects the degree to which the panel is impressed by the quality of the material produced, which is typically clear in its intent, exposition, and development, as well as its scientific merit (where applicable), its contribution to education and potential to inform policy development. The three meetings with CERI staff also provided the panel with the opportunity to appreciate the strength of CERI leadership and expertise, and the capacity of its team to work constructively with researchers and experts in the fields relevant to its work.</td>
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</table>

4. One product stream was, however, reviewed by a single expert due to a second expert withdrawing when it became apparent that there was a potential conflict of interest.

5. Experts were requested in their assessment to take into account as set of sub-criteria established by the United States National Research Council. A similarly widely accepted framework was not readily available for use in the case of the two other criteria, which probably contributed to the lower degree convergence of the experts’ preliminary ratings.

6. The final individual assessment of the experts can be found in Annex I.
11. The following product streams can be considered as outstanding in that they are assessed as at least high with regard to all three criteria:

- **Products in the area of the Innovation Strategy** (2008-09) which build on earlier work conducted by CERI to make a contribution to the OECD horizontal project, and which will be continued within the CERI work programme for 2011-12.

- **Products in the area of the Social Outcomes of Learning** (2006-08) which build on a broader project to focus specifically on civic engagement and health outcomes, involving collaboration with the World Health Organization. The final report is currently in the process of being finalised.

- **Products in the area of the Learning Sciences and Brain Research** (2005-08) representing the final years of a pioneering project started in 1999, aimed at creating and developing a dialogue between neuroscientists and the education community. The results of this work are now feeding into other CERI projects, for example on language learning.

- **Products in the area of the University Futures** (2004-06 & 2008-09) which constitute a major body of very forward looking work that includes the use of scenario building to trigger discussions on key issues, including the implications of trends in demography and globalisation on Higher Education. Some products within the stream have not yet been finalised.

- **Products in the area of the Schooling for Tomorrow** (2005-08) which aim to help policymakers take a longer term view of education policy issues by developing and using tools to support futures thinking and strategy setting. This product stream builds on some earlier work in this area and includes an online knowledge base.

- **Products in the area of the Innovative Learning Environments** (2008) representing an ongoing area of work within which only one output was available at the time of the review. This work draws on some of the results of the *Schooling for Tomorrow* product stream.

12. The results of the review are presented in the table below:
<table>
<thead>
<tr>
<th>Product Streams</th>
<th>Years(s)</th>
<th>Scientific Quality</th>
<th>Research Impact</th>
<th>Potential for Longer Term Policy Impact</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Products in the area of social outcomes of learning:</strong></td>
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<tr>
<td>➢ Publication entitled <em>Understanding the Social Outcomes of Learning</em> (2007)</td>
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<tr>
<td>➢ OECD Education Working Papers</td>
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<td>• Education and Civic Engagement Review of Research and a Study on Norwegian Youths (N°12, 2007)</td>
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<td>• Skilled Voices? Reflections on Political Participation and Education in Austria (N°11, 2007)</td>
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<tr>
<td>➢ Symposium entitled <em>Measuring The Effects of Education on Health and Civic Engagement and proceedings</em> (Copenhagen, 2006)</td>
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<td><strong>Products on the area of learning sciences and brain research:</strong></td>
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<tr>
<td>➢ Teach the brain website and brain-related learning tools</td>
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<td><strong>Products in the area of age, learning and assessment:</strong></td>
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<tr>
<td>➢ Publication entitled <em>Teaching, Learning and Assessment for Adults: Improving Foundation Skills</em> (2008)</td>
<td>2005-06, 2008</td>
<td>Medium to High</td>
<td>High to Very High</td>
<td>Medium to High</td>
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<tr>
<td>➢ Chapter 4 in <em>Education Policy Analysis 2005-6 entitled Improving Learning through Formative Assessment</em> (2006)</td>
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<td>➢ Policy Brief on formative assessment policies (2005)</td>
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<td><strong>Products in the area of e-learning in post-secondary education:</strong></td>
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<td>➢ Policy brief entitled <em>E-learning in Tertiary Education</em> (2005)</td>
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<td>➢ Conference on the subject of <em>E-Learning in Post-Secondary Education: Policies, Practices, and Research</em> (Calgary, Alberta, 2005) and Final Conference Report</td>
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<td><strong>Products in the area of Language and Cultural Diversity:</strong></td>
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<tr>
<td>➢ Report entitled <em>Policies and Practices Supporting the Educational Achievement and Social Integration of First and Second Generation Migrants: A Systemic Review.</em></td>
<td>2008</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Only one reviewer. Work continued beyond review period</td>
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<td><strong>Products in the area of New Millennium Learners:</strong></td>
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<td>➢ The New Millennium Learners International Conference, Brussels September 2009</td>
<td>2008-09</td>
<td>Medium to High</td>
<td>Medium to High</td>
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<tr>
<td>Product Streams</td>
<td>Years(s)</td>
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<td>Research Impact</td>
<td>Potential for Longer Term Policy Impact</td>
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<td><strong>Products in the area of digital learning resources:</strong></td>
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<td>➢ Publication entitled <em>Beyond textbooks: Digital learning resources in the Nordic Countries</em> (2009)</td>
<td>2007-09</td>
<td>Medium to High</td>
<td>High to Very High</td>
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<tr>
<td>➢ Country Case Study Reports on Denmark, Finland, Iceland, Norway, Sweden (2008 and 2009)</td>
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<td>➢ Publication entitled <em>Giving Knowledge for Free: The Emergence of Open Educational Resources</em> (2007)</td>
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<td><strong>Products in the area of Systemic Innovation in Vocational Education and Training:</strong></td>
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<tr>
<td>➢ Country reports for Australia, Denmark, Germany, Hungary, Mexico and Switzerland (2008-09)</td>
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<td><strong>Products in the area of Cross-border Tertiary Education:</strong></td>
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<td><strong>Products in the area of University Futures:</strong></td>
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<tr>
<td>➢ Publication entitled <em>Higher Education to 2030, Volume 2, Globalisation</em> (2009)</td>
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<td>➢ Publication entitled <em>Higher Education to 2030, Volume 1, Demography</em> (2008)</td>
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<tr>
<td>➢ CERI Forum on university futures preceding the Athens meeting of education ministers, (June 2006)</td>
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<td>➢ Background paper entitled <em>University Futures And New Technologies: Possibilities And Issues</em> (2005)</td>
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<td>➢ University Futures Meeting on the subject of <em>Demography and the Future of Higher Education</em>, including documents and presentations (2005)</td>
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<td>➢ Workshop and summary report on <em>University futures and new technologies</em> (2005)</td>
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<td>➢ Contribution to <em>Policy Futures in Education 2(2) 2004</em> entitled <em>Building Future Scenarios for Universities and Higher Education: an International Approach.</em></td>
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<td><strong>Products in the area of Schooling for Tomorrow:</strong></td>
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<tr>
<td>➢ Publication entitled <em>Trends Shaping Education - 2008 Edition</em></td>
<td>2005-08</td>
<td>High</td>
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<td>➢ On line knowledge base - OECD Schooling for Tomorrow Series: <em>The Starter Pack - Futures</em></td>
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<td>Thinking in Action (2007-08)</td>
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<td>➢ International Workshop entitled The Future Educational Workforce, Cardiff, UK (September 2007).</td>
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<td>➢ Publication entitled Think Scenarios, Rethink Education (2006)</td>
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<td>➢ Conference on the topic of Emerging Models of Learning and Innovation (Mexico, 2006)</td>
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<td>Products in the area of knowledge management in education:</td>
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<tr>
<td>➢ Publication entitled Knowledge Management: Evidence in Education, Linking Research and Policy (2007)</td>
<td>2008-09</td>
<td>Medium to High</td>
<td>High to Very High</td>
<td>High to Very High</td>
<td>Work continued beyond review period</td>
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<td>Products in the area of Education Horizons:</td>
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<td>➢ Publication entitled Education Today: The OECD Perspective (2009)</td>
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<tr>
<td>➢ Publication entitled Innovating to Learn, Learning to Innovate (2008)</td>
<td>2008</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Work continued beyond review period</td>
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<tr>
<td>Products in the area of Innovative Learning Environments:</td>
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<tr>
<td>➢ Interim Report entitled The OECD Innovation Strategy: An Agenda for Policy Action on Innovation (Section on human capital, 2009)</td>
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<tr>
<td>➢ Seminar on Advancing Innovation: Human Resources, Education and Training (Bad Honnef, Germany 2008).</td>
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<td>➢ Seminar on Advancing Innovation: Human Resources, Education and Training (Bad Honnef, Germany 2008).</td>
<td>2008-09</td>
<td>High to Very High</td>
<td>High to Very High</td>
<td>Very High</td>
<td>Work continued beyond review period</td>
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8

Scientific quality

13. In total, around one-half of the assessed product streams were at least of high quality, with products in the area of Learning Sciences and Brain Research obtaining a rating of very high. Work on the Social Outcomes of Learning and the Innovation Strategy is also prominent being judged of high to very high scientific quality.

Panel Observations

These are well written individual documents that exude quality of thought and provide a qualified overview of an area of research that is relevant to “burning” current issues in the education field. They also represent the initiation of work in new research areas or new approaches to current research areas.

The material typically poses significant questions that can often be investigated empirically; makes reference to literature in the domain and employs (more or less explicitly) conceptual frameworks appropriate to addressing the issues or problems; and employs research methods appropriate to the topic. The chains of reasoning employed in the work were typically clear and logical, and the material reviewed typically sensitive to the challenges of generalisation across jurisdictions with different structures and cultural conditions. The authors also typically showed how the results and conclusions they drew were consistent with those of others in the field. The material is publically available enabling public and professional scrutiny.

The work on Learning Sciences and Brain Research is of a pioneering nature as cooperation between brain research and learning science was very scarce about the turn of the millennium. The dialogue between brain research and learning science is essential for understanding lifelong learning. The main issues in this field, for example sensitive periods of learning or concepts of plasticity, are very well addressed. The publications are, from a theoretical and an empirical point of view, highly informative and they are covering the topics of learning and thinking from early childhood to youth and adulthood. The role of environment and of educational intervention is constantly analysed and the interaction of nature and environment are exceptionally well described.

It is not only important to measure academic achievement, but it is also highly relevant to take social outcomes, such as civic and social engagement as a result of learning and education, into consideration. The indicators to measure social outcomes are soundly defined and the profound methodological scientific reasoning is convincing. The work on Social Outcomes of Learning provides many additional research questions and perspectives for the international scientific community. It would be extremely valuable to continue this research approach in the future.

Products realised in the area of the Innovation Strategy blend analysis and literature to produce a thematic overview of the relationships between workforce skills, education, government strategy and innovation.

14. In the case of product streams rated as medium and/or medium to high scientific quality, some were developed with a strong focus on informing policymaking rather research. Consequently, an assessment using criteria relating to scientific quality would not provide a wholly accurate basis
for judging this work. Examples of product streams falling into this category are those covering Cross-border Tertiary Education, New Millennium Learners and Age, Learning and Assessment.

15. The results of the assessment of scientific quality are presented in the table below.

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<thead>
<tr>
<th>Product Streams</th>
<th>Scientific Quality</th>
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<tr>
<td></td>
<td>Very Low</td>
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<tr>
<td>Products in the area of Learning Sciences and Brain Research</td>
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<td>Products in the area of Social Outcomes of Learning</td>
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<td>Products in the area of the Innovation Strategy</td>
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<td>Products in the area of Language and Cultural Diversity</td>
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<td>Products in the area of Systemic Innovation in Vocational Education and Learning</td>
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<td>Products in the area of University Futures</td>
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<td>Products in the area of Schooling for Tomorrow</td>
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<td>Products in the area of Innovative Learning Environments</td>
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<td>Products in the area of Age, Learning and Assessment</td>
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<td>Products in the area of New Millennium Learners</td>
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<td>Products in the area of Digital Learning Resources</td>
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<td>Products in the area of Cross-border Tertiary Education</td>
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<td>Products in the area of Knowledge Management in Education</td>
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<td>Products in the area of Education Horizons</td>
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<td>Products in the area of e-Learning in Post-secondary Education</td>
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</table>

**Research Impact**

16. More than two-thirds of the product streams are assessed as having at least a high level of research impact, with the remainder rated at least medium. No product stream was assessed as having a low research impact. Products in the area of Learning Sciences and Brain Research and Social Outcomes of Learning are again both outstanding areas of work, being judged as having a very high impact on research.

**Panel Observations**

CERI has played an active role in initiating and organising new research fields, and the selection of research topics and issues reflects those that are prominent in these fields, and ones that deserve critical attention.

The work on Learning Sciences and Brain Research and Social Outcomes of Learning has in many ways been instrumental in putting new research areas on the international research agenda in educational research. That this work acts as an interface with prior research and studies is evident. Cooperation and discussion between the neuro-research and learning science research communities and practitioners from different educational institutions is highly innovative. The conclusions of these research streams are based on explicit reasoning, while judgments are logical and the consequences drawn are always based on theoretical and empirical research.
Nevertheless, both research streams offer possibilities of professional critique of the international scientific community. Some products and publications are peer-reviewed and the logic of the knowledge and judgments are closely related to the research methods having been used. The criteria of validity and reliability are constantly taken into consideration. Both research streams fill gaps within the current research landscape and while they do not test hypothesis directly, they do test new ideas and are connected to solving problems. Generally speaking they analyse the wider benefits of learning on a sound theoretical and empirical basis.

17. The results of the assessment of research impact are presented in the table below.

<table>
<thead>
<tr>
<th>Product Streams</th>
<th>Research Impact</th>
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<tbody>
<tr>
<td>Very Low</td>
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<tr>
<td>Products in the area of Social Outcomes of Learning</td>
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<tr>
<td>Products in the area of Learning Sciences and Brain Research</td>
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<td>Products in the area of Age, Learning and Assessment</td>
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<td>Products in the area of Digital Learning Resources</td>
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<td>Products in the area of University Futures</td>
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<td>Products in the area of Education Horizons</td>
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<td>Products in the area of Cross-border Tertiary Education</td>
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<td>Products in the area of Schooling for Tomorrow</td>
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<td>Products in the area of Knowledge Management in Education</td>
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<td>Products in the area of Systemic Innovation in Vocational Education and Learning</td>
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<td>Products in the area of e-Learning in Post-Secondary Education</td>
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<td>Products in the area of Language and Cultural Diversity</td>
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<td>Products in the area of New Millennium Learners</td>
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</table>

**Potential for Longer Term Policy Impact**

18. More than two-thirds of product streams are assessed as having at least a high potential for policy impact in a longer term perspective. No product stream was assessed as having a low potential for policy impact. Potential impact was judged as very high for products developed in the framework of the *Innovation Strategy*.

**Panel Observations**

CERI has played an active role in initiating and organizing new research fields and the contribution to focusing educational research on areas of high policy significance and relevance of both immediate and longer term importance. The Programme also helps the wider educational research community to consider the policy implications of its work and to undertake it in such a way as to ensure high policy relevance based on high quality research. The material produced is typically useful as a broad overview of the particular topic addressed and for guidance in developing policy in light of the challenges in the area because of the clarity of the exposition,
the effective organization of the material, the transparency of stated limitations, and the inclusion of helpful appendices.

In the specific case of work conducted in the area of the Innovation Strategy, a major characteristic is an intellectual transparency and clarity that informs policy-makers but does not shy away from acknowledging the ambiguity of terms or the need to chart. It effectively shows that variations in national skill formation systems across developed economies is consequential, that policies and structures are determinative, while shedding insight on the challenges of definitions and metrics for skills and innovation. This work is highly relevant for the analysis and evaluation of OECD policy proposals in the field of education and innovation.

19. The results of the assessment of potential to inform policy impact are presented in the table below.

<table>
<thead>
<tr>
<th>Product Streams</th>
<th>Potential for Longer Term Policy Impact</th>
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<tr>
<td></td>
<td>Very Low</td>
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<tr>
<td>Products in the area of the Innovation Strategy</td>
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<tr>
<td>Products in the area of Social Outcomes of Learning</td>
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<tr>
<td>Products in the area of Learning Sciences and Brain Research</td>
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<td>Products in the area of University Futures</td>
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<td>Products in the area of Education Horizons</td>
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<td>Products in the area of Digital Learning Resources</td>
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<tr>
<td>Products in the area of Systemic Innovation in Vocational Education and Learning</td>
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<tr>
<td>Products in the area of Cross-border Tertiary Education</td>
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<tr>
<td>Products in the area of Innovative Learning Environments</td>
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<td>Products in the area of Age, Learning and Assessment</td>
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<td>Products in the area of Knowledge Management in Education</td>
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<tr>
<td>Products in the area of e-Learning in Post-Secondary Education</td>
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<tr>
<td>Products in the area of Language and Cultural Diversity</td>
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<tr>
<td>Products in the area of New Millennium Learners</td>
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**Considerations for the future**

20. On the basis of its review of CERI’s work during the 2004-08/09 period, the panel of experts would like to make the following suggestions for consideration by the CERI Governing Board in the context of its future work:

- Many, perhaps most, of the literature reviews that are undertaken make use of experts who are given wide latitude in the identification, selection, and critical appraisal of the literature they review. There are no specific protocols regarding the conduct of such reviews. However, practice in the field is changing; it is increasingly the case that use is being made of systematic reviews of evidence in the field of education. Systematic reviews make explicit the specific question or questions the review will address, the
search strategy that will be used to locate the relevant literature, the places where the reviewer will look for the literature, the criteria for including and excluding material from the review (often as a consequence of coding by two or more independent raters), the assessment and coding of the strengths and limitations of each of the research items reviewed (often as a consequence of coding by two or more independent raters), and, where possible, the representation of the relevant findings in terms of a common metric (effect size), and the analysis of the findings in light of the assessment of the quality of the research. Consideration should be given to making more extensive use of these techniques as a means of enhancing this aspect of its work. Informal and subjective reviews are interesting and important and could be tools for OECD in relation to policy recommendations. But the movement towards more evidence-based policy also favours a move towards more formal and systematic reviews of research.

- There is a heavy reliance on experts in the work, though it is unclear how expertise is determined. One of the problems with this approach is the advice provided by experts does not always indicate the evidence that has been used in forming her or his judgment. A second problem is that expertise takes time to develop and favours older, more established individuals rather than those new to the field who might have different perspectives than those held by established ‘experts.’ In this context, whether use of a more transparent request for proposals (RFP) process might enhance its work should be considered.

- Ensure greater exposure to differences of opinion among experts contributing to document streams – the short compare/contrast features of the Gorard/Cook “debate” that took place in the work on Knowledge Management in Education is a good example.

- Display a positive tentativeness or humility about recommendations involving issues that are mediated by values that may or may not be fully shared. Some documents asserted or indulged an ideological perspective that would be better re-directed, if even to say “many or most would support x, y, z” instead of assuming everyone supports x, y or z. The documents that assert support of universal day care are the best example. The value tradeoffs of universal day care are simply too complex and unsettled to assert it, as is done, as a uniformly accepted good.

- Integrate the understanding that industrialised societies are entering a new era of scarcity that will constrain policy recommendations that rely on increased government funding. This means recommendations and research must become more imaginative or creative to function more or less within existing fiscal constraints.

- Make a vigorous effort to build a community of online respondents to product streams, individuals who would furnish feedback and multiple points of view on individual reports. If successful, these points of view would become discussion items and that is a fitting direction for these or other documents.

- While policy briefs have been used to disseminate evidence from a more detailed and lengthy product, this seems to have been uneven across domains and less extensive than desirable. There are many more opportunities to make the work accessible to decision-makers and practitioners. More attention to dissemination would increase the appetite that policy-makers and practitioners have for the work.
There have been a number of praiseworthy attempts to encourage knowledge mobilisation by encouraging interaction among policy-makers, researchers, and practitioners. One of the strategies to engender interest and support among countries is to pursue topics that have high visibility among jurisdictions (brain research, for example). While useful, the strategy has its limitations. Chief among them is that the evidence may be inadequate to support new policies or practices. When that is the case, it might be advantageous to caution the various audiences that the evidence is too limited at the present time to support changes to policy or practice.

Work on some of the projects covered by the reviewed should be continued, in particular in the field of brain research, learning sciences and the social outcomes of learning. Furthermore, it is important to continue the comparative description of the output of educational systems on the basis of replication and longitudinal analysis. It is necessary to publish more results of the research in peer reviewed international research journals, so that the scientific international community can react to its research. Most of the work is based on the concept of knowledge society; it would be useful to check whether additional models of society are appropriate to give a basis of interpretation of empirical research. It should be considered whether policy institutions and also students in universities could be additional target groups of publications. Especially the product “Education today” is (besides Education at a Glance) is very suitable for the use in university seminars – giving basic information about input, process, output and outcome of different educational systems and organisations.
ANNEX I

FINAL EXPERT ASSESSMENTS
EXPERT N°1
<table>
<thead>
<tr>
<th>Product Stream 8</th>
<th>Products in the area of New Millennium Learners (2008-09):</th>
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<tbody>
<tr>
<td></td>
<td>The New Millennium Learners International Conference, Brussels September 2009</td>
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</tbody>
</table>

| The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as: |
| Very High / High / Medium / Low / Very Low (please circle the relevant rating) |

| The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as: |
| Very High / High / Medium / Low / Very Low (please circle the relevant rating) |

- The product stream has high scientific quality. WP41 and WP38 employed a creditable combination of meta-analysis blended with case study citations to drill into and dissect NML issues. In particular, the student-teaching study (WP38) comprised a strong meta-analysis, with important and frequent invocation of individual case studies. The studies were sufficiently thorough to expose the patchiness in definitions that policy makers and researchers must grapple with (e.g., how to define skills and competencies) while still stressing large themes (e.g., 21st century skills and competencies are “covered” but with little sense of effectiveness). Any assessment of scientific quality should note these types of issues, disclosed explicitly in the product stream, since they affect the product stream methodology. There are definitional or construct shortcomings in this stream, though, that spread across all three of these evaluation columns. Two constructs – of new millenium learners (NML) and ICT in education – were treated in overly monolithic and therefore opaque and undifferentiated fashion. There were occasional references to construct validity questions and underlying assumptions about each construct, but their treatment in such an undifferentiated way undermined the quality of otherwise exceedingly insightful analysis. |

- I believe the product stream fell short of its intended mark in addressing key questions in educational research. The stream made an implicit assumption that ICT is an inherently positive practice in education. It routinely referred to higher use of ICT in salutary language and to lower use of ICT in the language of deficiency of education. As a learning technologist and computer scientist, I actively promote and advocate the use of technology in all forms of learning and education, and press hard to bring it into greater use. Yet I was very troubled that underlying assumptions about ICT’s intrinsic value were assumed and un-articulated. It so happens, as common sense and experience suggest, that some non-technology forms of teaching and learning might be much better than technological forms. If that is the case, the various equations of “more ICT means better education” that were woven throughout the product stream can and should be challenged. Because the product stream does not make efficacy distinctions (the fact that both technologically-driven or non-technologically-driven practices can be effective and ineffective) it compromises its ability to speak to several key questions in education research. The summative statement of the teacher training document, |

- Here again I believe that the product stream fell short of the intended mark. Comments about treatment of NML and ICT in overly unified or monolithic terms are problematic in a context of policy and innovation. The general recommendations that “governments should make an effort to properly identify and conceptualise the set of skills and competencies required so as to incorporate them into the educational standards that every student should be able reach by the end of compulsory schooling” exposes a mismatch between national education standards and the dynamism of ICT. By the time a government could complete this task, the standards would be outdated or else so generic as to be of minimal value. A stronger potential for the product stream might to find a more agile and lightweight path to help policy makers to help schools and students navigate ICT dynamism. While this evaluation is not intended to comment necessarily specifically to the merits of the recommendations, in this case, a better tack might be to acknowledge that a traditional national standards process might not lend itself to the need. The caution about ICT occasionally carrying a negative image as relegating teachers to a subordinate role is a valuable policy distinction in...
“dedicated time and financial resources are needed since there is a lot of work to be done before all teacher trainers and mentor teachers change their views from teaching about ICT to teaching with ICT (words from Kirschner & Davis, 2003)” seems to miss the point – the main event is not teaching about technology, nor with technology, though both are important – the main event is teaching, and because there are goals attainable only with technology, the technology comes along. The papers just did not make this distinction.

In fact, the student teaching article, in citing work by Swain, went directly to this question by observing student teachers avoiding ICT usage because they did not feel compelled instructionally to use ICT. This would have been a valuable area to probe. But in any case, it was a useful tonic or example that more ICT does not translate without fail to more learning.

Another way to put it: For the product stream to receive a higher rating on addressing key questions in or contributing to educational research, at least minimal attention should have been given to a generic rationale for ICT in schools. Instead, ICT was generally treated as a univariate construct (it is used or not used) when the field is starving for insight on how or why ICT might be used.

An exception to the observation that ICT was not differentiated within-construct: A comment was raised in one citation (Drent and Meelisen) about the innovative use of ICT, and the exclusion of interest of drill and practice software because they are not student-centered. Yet, interestingly, drill and practice, especially when self-regulated by students, arguably can be a wonderful, humane, and crucial element of a learner’s experience, and one that offloads from the teacher important but

the product stream. How can teachers and school leaders be leveraged with ICT as imaginative innovators would be a powerful policy implication for the paper to pursue but not properly raised. The citation of Lapointe & Chiasson highlights the necessity of training towards pedagogical use, but does not go far enough.

The access/motivation/competence Venn diagram is useful, but does not break encompass the sine qua non of improving student learning. And that is still where policy makers must be challenged by OECD product streams. It seems in this case that the recommendation is to find the “sweet spot” that intersects access, motivation and competence. But the true “sweet spot” is where those three converge on powerful ICT solutions that help students learn. This must be the direction. The same distinction holds on the Micro/Meso/Macro classification. That framework, the document concludes, entails weak national technology structure. This in part seems to be the case because while we are getting detailed and well-written answers, we are asking the wrong questions.

One policy-driver theme arising from document 41 is the gap between use of technology in-school and out-of-school. This is an appealing point of deficiency in ICT usage – appealing in the sense that it attracts attention (“Kids do more computer stuff at home than in school. Outrageous!”) Personally, I would like to see the gap go the other way, and for many youngsters, it does (i.e., more in school than out of school.) But again, the issue is not whether there is a gap, but rather the efficacy of ICT usage on behalf of learning in school. If that problem is solved, whether ICT usage in schools is greater than, less than, or equal to that out-of-schooling is not more than a
tedious of skill scaffolding. The quest we all share for deep thinking, insightful, imaginative and knowledgeable problem-solvers does not preclude skill-building. ICT can play a highly sophisticated role in this. While arguing that data from the 1990s is less useful than data from the 2000’s, the product stream did not go far enough in emphasizing year to year variation and transformation of the entire ICT enterprise. Even in the 2000’s we have experienced ICT transformation, and the construct has shifted steadily as a result of social networking, mobile devices, infrastructure, memory and power increases, AI, and knowledge about learning. The product stream simply did not sufficiently dissect ICT. The analysis of student teachers and ICT highlighted crucial research issues associated with mentorship and also hinted at, though would have been better served with more emphasis on, data that challenge prevalent understandings of so-called NMLs and digital natives. For example, it shared data that younger student-teachers were not intrinsically more techno-facile than older counterparts, challenging some NML orthodoxy. Anything that challenges what I think history will consider to be a casual and unrigorous orthodoxy about “digital natives,” is to the good.

matter of passing interest. Effective usage of ICT is the holy grail, not the amount of it. That point appeared to receive insufficient attention in the product stream.
<table>
<thead>
<tr>
<th>Product Stream 10</th>
<th>Products in the area of Systemic Innovation in Vocational Education and Training (2008-09):</th>
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<tbody>
<tr>
<td></td>
<td>Publication entitled Working out Change: Systemic Innovation in Vocational Educational and Training (2009)</td>
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<tr>
<td></td>
<td>Country reports for Australia, Denmark, Germany, Hungary, Mexico and Switzerland (2008-09)</td>
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<table>
<thead>
<tr>
<th>Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:</th>
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<tr>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
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<tr>
<th>The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:</th>
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<tr>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
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<tr>
<th>The document stream provided an excellent and in-depth treatment of issues and variables associated with VET innovation. It was well-placed to identify issues of capacity-building and of the need for development of measures and conceptual frameworks to better assess systemic innovation.</th>
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<tbody>
<tr>
<td>The logic paths and theory for the framework all were sensible, and had analytic power and fresh insights.</td>
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<tr>
<td>That said, I believe that a complex, multitier adaptive systems perspective would have been at least as helpful as the two-dimensional schematic framework in the product stream. Adaptive systems – including socioeconomic systems such as VET structures - have a profound capacity to absorb innovation without changing. A study of failure of systemic innovation efforts would be useful here. As one researcher (unknown) has put it, “systems resist systemic reform systemically.” At least in the K12 and tertiary sectors, there have been countless examples of systemic innovation efforts that were grounded in precisely the kind of encompassing, research based and process-oriented frameworks offered here, enticing for their logic and connectedness. They have mostly failed, not because the logic models were illogical but because of the way they were put into practice.</td>
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<tr>
<th>The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:</th>
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<tr>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
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<tr>
<th>This product stream involves a publication on systemic innovation and a series of reports, each of which includes 2-3 case studies, of reform or innovation within VET.</th>
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<tbody>
<tr>
<td>The individual country reports follow a common pattern of responding to factors and schematics appearing in the Working Out Change publication.</td>
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<tr>
<th>A recurrent theme in the product stream summary publication and country reports surrounds metrics of innovation. “One major shortcoming is the limited empirical base available for testing it more thoroughly.” VET is a complex, heterogeneous, multilevel and elusive domain. While any VET subsystem may have an internal logic and system of goals or outcomes, generalization across them with usable metrics that facilitate comparison is daunting – or, more accurately, has not been accomplished.</th>
</tr>
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<tbody>
<tr>
<td>Because of this point, well made in the documents, an assessment of scientific quality of the document stream itself is necessarily confined to the quality of the frameworks, questions, and insights, along with the clarity and usability of the country studies.</td>
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<tr>
<th>In general, the stream posed insightful questions, such as how to validated systemic innovation in the field of educational research.</th>
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<tr>
<td>The country studies were very useful, furnishing a cross-section of types of reforms and innovation across the members.</td>
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<tr>
<th>The analysis of barriers and drivers was quite insightful, especially in highlighting that barriers can become drivers and vice-versa, and argues for more understanding of VET from a complex adaptive systems perspective.</th>
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<tbody>
<tr>
<td>The definition of systemic innovation in VET was left for the reader to compute inductively. The section on definitions gave different definitions of innovation and of systems but some simple, clean examples of true VET systemic innovation would have anchored the section, as in “this alteration was systemic, this one was not.” A policy-maker</td>
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19
light of the metric problem, and in understanding the nature of dynamics underlying different innovations. Because of the multiple methods, case studies, consistent mapping of frameworks across multiple contexts, this product stream rates highly.

How does the summary document define VET? It did not offer even a synthetic definition, but one would have helped in conceptualizing a volume devoted to VET systemic innovation. Exemplars appear, of course, in the country studies, but a cross-cutting construct settled upon in the unifying document would have been helpful.

or were unsound or insufficiently inclusive, but because traditional logic models are inherently inadequate for capturing emergent and multitier adaptive behavior. The product stream likely would have made a larger dent in this problem if it had tackled a failure analysis.

The issues of dissemination, scale up, mainstreaming are of course among the most crucial in the under-theorized domain of VET systemic innovation, and they were treated ably in the product stream.

needs examples that extend beyond permutations of abstractions, and, with due respect and acknowledging the authors conceded how difficult the definitions were, this product stream would have been well-served with some examples – even if they could not be treated as case studies, of the category of objects called “systemic reform in VET”. By this I mean systemic alterations that exceed all of those in the case studies which were recognized as incremental. Systems can carry out important innovations that are not systemic (and indeed are incremental, as the grid suggests). Even a hypothetical illustration, perhaps drawing from the country studies, comparing a system innovation that is systemic (i.e., significantly alters the way the system component interact to form a system) versus one that is not (i.e., incrementally improves some component of the system) would be helpful if the intent is to formulate pathways for the systems to change. That seems circular, but there is a distinction that is important to make.
<table>
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<tr>
<th>Product Stream 16</th>
<th>Products in the area of Innovative Learning Environments (2008):</th>
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<tbody>
<tr>
<td></td>
<td>Publication entitled Innovating to Learn, Learning to Innovate (2008)</td>
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<tr>
<td>The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:</td>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
</tr>
<tr>
<td>The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:</td>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
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</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The discussion by Keith Sawyer on the learning sciences has both sharply positive and then less effective value from the standpoint of scientific research. In order to simplify or economize on space, learning sciences was treated as a likely more monolithic and homogeneous domain than it is, which implied suggesting areas of consensus where it does not exist. For example, there has been persistent aversion in the learning sciences community to research or design in education that might be associated with drill and practice, whereas the traditional cognitive sciences have launched different flavors of artificial intelligence out of such lower order processes, and have also built up a literature base suggesting that lower order skills must be automatized before some higher order skills emerge. These are important theoretical distinctions that a discussion on learning sciences might have acknowledged. It is far from a monolithic enterprise.

In general, as noted in the next column, the arrangement of the chapters would have been better served., with more point and counterpoint (similar to the Cook and Gorard essays of Product Stream 14). How do some of the models differ on individual, learning, Foreword states that “... too many of today’s schools are not adequately fostering deep knowledge, creativity and understanding: they are not well aligned with the knowledge economy and society of the 21st Century.” This is a strong and simple entrée into the landscape of educational research issues. The landscape tour covered numerous complex areas with deftness. In generally, this was very well laid out. Commendable depth and breadth.

One crucial topic: different ways to envision school: as “education” or focus on learning and innovation.

A product stream devoted to innovation in learning (and learning to innovate) necessarily pulls out numerous case studies, as this surely did, especially in Sliwka’s chapter. But there was only one reference located in the product stream about what in the US are called charter schools. These likely merited deeper coverage, because they are forming an infrastructure of state-sponsored experimentation. It is not that all charter schools are innovative, but they have a greater proximity to – and in fact are a part of – public school environments and may have the most agility for large scale experimentation. It is likely that there are now many times more than a few charter schools. Seemed to furnish an excellent landscape view for policy makers. Helps them move away from superficial questions such as what works and what does not, and into a more situated view of reform.

I believe that educators and policy makers should be move by some of the emancipatory vision imparted by Rodriguez-Romero and others. One question I do not see shared or discussed – and would have loved to see in this exposition of innovation is... what if? What if the dreams of more pervasively individualized and successful schooling were realized? This is not just a rhetorical question. While many of the calls for and analyses of innovation pathways may seem radical, they still seem to avoid accounting for society’s intrinsic and relentless reliance on a tier of the population that has essentially failed to excel in schooling. OECD countries rely on schools to sort economic winners and losers, and rely on the losers for low cost labor. Middle and upper tiers of society rely on lower tiers for services. The workforce supply? Primarily from those for whom primary and secondary schools were unsuccessful experiences. What if we reached the goal of more uniform excellence? What happens to those sectors of society that demand, and those sectors of society that supply, members of the workforce for whom primary and secondary were suboptimal? What sort of workforce structure would accommodate lower school performance variance at a
culture and society? This might lead to highlighting or isolating critical variables on which innovative schooling will hinge.

These are intriguing suggestions, but a point and counterpoint discussion might isolate some questions about the role of federal and local authorities, the role of the community, and the role of divergent social movements.

The ethos of OECD, to share experiences, is reflected in the summaries of alternative approaches to innovative schooling. An analysis isolating salient differences would likely benefit policy-makers. What are the epistemological, political, cultural, distinctions?

I thought the document omitted the crucial role of assessment relative to one key fact: we are still grappling with what it is we want to assess (i.e., theoretical specification of deep competencies, creativity, etc.), and there is little or no question that assessments that probe more deeply than standardized instruments, that capture more complex performance competencies, are dramatically more expensive and time-intensive than current large-scale instruments. The learning science chapter acknowledged that the instruments are not in place, but I believe understated the challenge of transitions to next level assessment forms. Until member countries arrive at more sophisticated assessment forms, innovation will be bottlenecked. It is not an easy path. But this is a topic, in any case, that I think deserved more attention.

...much higher performance level? My suggestion is that our economic structures demand a supply of lower-echelon workers, who are obtained in part from those who had lower-echelon experience in school, and breaking social reliance on a failure tier may expose social flaws we do not yet recognize. Neither traditional liberals nor conservatives have dealt with this in sound and thoughtful ways, in my reading. This would have been an interesting opportunity to do so, and would have fit well in the product stream.

The notion shared in the product stream that bureaucratic systems are devoted to self-preservation is an important explanatory device – invocation of a complex adaptive system metaphor woven into a discussion of innovation and reform in school may be constructive in helping innovation seeking bureaucrats understand that, as one person wrote, “The system is implicitly geared towards maintaining the integrity of its own design.” It is not an intrinsic flaw but rather an intrinsic property of systems, and should be understood as such.

The summary of 4-5 alternative innovative learning environments was nicely laid out, and gives policy makers a birds-eye view of options. But, it would have been helpful to lay out potential policy agendas. “(Chapter 6) argues that the goal of the education system should be to accompany those actors who have found “new routes” to respond to their learning needs, and to design with them realistic policies that can guarantee these routes” - how so, what are some policy paths?

As Marilyn Cochran-Smith (1998) states, it is not so much a matter of educators being capable of giving specific pedagogical treatment to students who show differences, but of actively undertaking a pedagogy to pursue better social justice with any groups of students. For this author, the teachers should be committed to social change and act as part of the
social movements.

Few teachers are not committed to social change, but the notion of “the social movements” seems to imply a monolithic way of thinking about progress, and therefore be exclusionary of community wisdom and preference.

The proposition offered to policy makers of “the state as a social movement” to promote solidarity seems both unacceptably coercive and at odds with the notion of social experiments. It seems that a more constructive way to consider the state as promoting community rather than solidarity. Solidarity implies a kind of conformity that is antithetical to other parts of the product stream.
<table>
<thead>
<tr>
<th>Product Stream 17</th>
<th>Products in the area of the Innovation Strategy (2008-09):</th>
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<tbody>
<tr>
<td></td>
<td>- Report entitled <em>Assessment and Innovation</em>, <em>(Education Working Paper No. 24, 2009)</em></td>
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<td></td>
<td>- Report entitled <em>Workforce Skills and Innovation: An Overview of Major Themes in the Literature</em> <em>(2009)</em></td>
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<tr>
<td></td>
<td>- Seminar on <em>Advancing Innovation: Human Resources, Education and Training</em> <em>(Bad Honnef, Germany 2008)</em></td>
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- Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as: Very High / High / Medium / Low / Very Low (please circle the relevant rating)

- The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as: Very High / High / Medium / Low / Very Low (please circle the relevant rating)

- The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as: Very High / High / Medium / Low / Very Low (please circle the relevant rating)

This commendable product stream of five documents furnishes a penetrating and cross-cutting perspective on innovation strategy. The individual documents are well written; they exude quality of thought. The stream blends analysis and literature to produce a thematic overview of the relationships between workforce skills, education, government strategy and innovation.

In this product stream, innovation is the construct in question – obvious, but also worth noting is that the different documents either directly defined or described innovation in multiple facets and could it, as a defined construct, to relate different economic and industrial trendlines and intercausal relationships to it.

Large theme discussion methodologically would have benefitted from a catalog of examples. This was a high level discussion, but the repeated citation of either statistical briefs or other theory pieces could have been clearer with references to a few case studies.

The document set tries to unpack and explain prevalent views connecting innovation and workforce development, and what is cites as the "virtuous circle between increased investment in workforce education, investment in knowledge creation…and increased rate of technical change" (p12, DSTI/STP/RIHR (2009)). It dissects these connections effectively.

It also effectively dissects forms of innovation (product/process/organizational, R&D's relationship to it, the conflation of R&D with innovation, etc.

The stream does not shy away from acknowledging the ambiguity of definitions, including the definition of "skill" itself, or the definition of innovation. This seems to be an important part of any discourse that seeks to address key questions. It allows for a greater flexibility in addressing the landscape of literature and helps make sense of work that might conflate skill as one-off attributes with skill levels.

But some of the distinctions retain a national-dimension (e.g. UK versus Germany), whereas some research communities are producing more nuanced and cross-national understandings of skill.

The product stream effectively shows that variations in national skill formation systems across developed economies is consequential, that policies and structures are determinative.

A nice example goes to the assertion that low-skill capital, as in the case of the UK, attracts lower financial capital. The UK-Euro distinction is asserted in discussing factory failure and re-work rates as an artifact of lower skill levels, in contrast to the higher quality assurance systems of European industries. This is an example of setting the table for policy implications.

Differentiated innovation studies as a newly christened domain of research (p. 61) is a powerful development.

The distinction of "generic" skills versus specific ones opens up an important policy avenue in terms of how to cultivate or nurture such skill sets in the generic so that they can apply in specific domains. These are serious and detailed challenges for the learning sciences community.

I would have preferred to see more discussion of radical versus incremental innovation, especially in terms of the evisceration of how innovation can
(so, for example, in this example, UK skill understandings are acknowledged to be evolving).

Would love to see a recognition of the learning science analogs - how do mental models become either gradually reshaped or transformed.

Attention both to assessment in learning and to charter schools in this product stream corresponds to two of the most looming and significant issues in education innovation, and contribute to a high rating for addressing the crucial issues of innovation in education.

eviscerate entire professional communities.

Helpful highlighting of the increases in higher education output outpacing workforce growth.
EXPERT N°2
<table>
<thead>
<tr>
<th>Product Stream 4</th>
<th>Products on the area of learning sciences and brain research (2005-08):</th>
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<tbody>
<tr>
<td></td>
<td>- Teach the brain website and brain-related learning tools</td>
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<tr>
<th>Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:</th>
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</table>

**Explanation:**

The co-production with the French Academy is of very high quality and there are several important contributions. The book on Understanding the Brain gives a very competent picture of the state of the art in the field 2007.

**Explanation:**

The issue of the relation between the neurosciences and educational thinking and research is of the highest importance.

**Explanation:**

There might be very important implications, and some are already seen in the areas of dyslexia and the lack of numeracy. It is an active research area and there are several studies under way that could have important policy and practice implications. Contributing to the development of the field has been a major thing, and CERI has been of great importance and impact.
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<tbody>
<tr>
<td></td>
<td>➢ Policy brief entitled <em>E-learning in Tertiary Education</em> (2005)</td>
</tr>
<tr>
<td></td>
<td>➢ Conference on the subject of <em>E-Learning in Post-Secondary Education: Policies, Practices, and Research</em> (Calgary, Alberta, 2005) and Final Conference Report</td>
</tr>
</tbody>
</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:
Very High / High / **Medium** / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:
Very High / High / **Medium** / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:
Very High / High / **Medium** / Low / Very Low (please circle the relevant rating)

Explanation:
The products in this stream are more surveys that gives a picture of the field and policy documents than contributions to research.

Explanation:
The area is very important for the development of the tertiary education field and the publication gives a solid picture of where we stand, and is as such a valid and qualified contribution of the nature of a consulting report.

Explanation:
The development of e-learning in the tertiary field is dependent upon solid information, and the publication and the conferences and reports contribute to this.
<table>
<thead>
<tr>
<th>Product Stream 8</th>
<th>Products in the area of New Millennium Learners (2008-09):</th>
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<tbody>
<tr>
<td></td>
<td>- The New Millennium Learners International Conference, Brussels September 2009</td>
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</table>

- **Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education** (See annex), the scientific quality of this product stream is assessed as:
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- **The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:**
  - Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**

The reports are solid consulting reports but to not significantly contribute new scientific knowledge. The research review is done in the format of an informal research review, and not as a systematic/formal research review.

The issue of new learners is important and has great consequences. The issues of new types of skills and competencies are important and addressed in many contexts. The reports give some important inputs.

The issues of new types of learning, learners and skills is of importance for policy and innovation, but is probably addressed in too narrow a context. There is a significant lack of references to other projects in the field done by other types of agencies (ex. JISC in the UK).
<table>
<thead>
<tr>
<th>Product Stream 9</th>
<th>Products in the area of digital learning resources (2007-09):</th>
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<tbody>
<tr>
<td></td>
<td>- Publication entitled <em>Beyond textbooks: Digital learning resources in the Nordic Countries</em> (2009)</td>
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<tr>
<td></td>
<td>- Country Case Study Reports on Denmark, Finland, Iceland, Norway, Sweden (2008 and 2009)</td>
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<tr>
<td></td>
<td>- Publication entitled <em>Giving Knowledge for Free: The Emergence of Open Educational Resources</em> (2007)</td>
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<tbody>
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**Explanation:**
The publications and country case studies are good surveys and reports on the situation in the Nordic countries. The publications do not significantly contribute to the scientific knowledge in the field.

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**Explanation:**
The publications address very significant issues and contribute to the field of educational research as background reports on the situation, that could form the basis for the formulation of research projects. The reports in many ways – quite naturally – suffer from the rapid technological development in the field.

<table>
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</table>

**Explanation:**
Open learning resources, open access and the whole development of Web 2.0 and other technologies have significant importance for educational policy and for innovation. The reports here are important but already in many ways not address the present-day key issues. This is also difficult due to the rapid development of the field. Again the focus is somewhat narrow, as many developments occur in the library, the information and computer business sector, and in the information sciences, rather than the educational sciences and the educational sector.
<table>
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<tr>
<th>Product Stream 12</th>
<th>Products in the area of University Futures:( 2004-06 &amp; 2008-09)</th>
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<tr>
<td></td>
<td>Publication entitled <em>Higher Education to 2030, Volume 2, Globalisation</em> (2009)</td>
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<tr>
<td></td>
<td>Publication entitled <em>Higher Education to 2030, Volume 1, Demography</em> (2008)</td>
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<tr>
<td></td>
<td>CERI Forum on university futures preceding the Athens meeting of education ministers (June 2006)</td>
</tr>
<tr>
<td></td>
<td>Background paper entitled <em>University Futures And New Technologies: Possibilities And Issues</em> (2005)</td>
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<tr>
<td></td>
<td>University Futures Meeting on the subject of <em>Demography and the Future of Higher Education</em>, including documents and presentations (2005)</td>
</tr>
<tr>
<td></td>
<td>Workshop and summary report on <em>University futures and new technologies</em> (2005)</td>
</tr>
<tr>
<td></td>
<td>Contribution to <em>Policy Futures in Education</em> 2(2) 2004 entitled <em>Building Future Scenarios for Universities and Higher Education: an International Approach</em>.</td>
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</tbody>
</table>

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Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:**

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:**

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**

The publications and reports are very solic contributions to especially the demographic issues facing higher education. There are still two major publications pending in the stream on scenarios and technology. The two publications could easily result in significant papers in journals.

The issues addressed are very important for higher education policy and the two publications give a broad background for continuing educational research in the field.

The very good mapping of the issues especially in the demography area is of the highest relevance to higher education policy. Issues of globalisation and the understanding of the have great importance for the field of innovation in higher education, where cross-border and international degree programmes and initiatives is increasingly on the agenda. The results of the stream would be relevant of programmes such as the EU Erasmus Mundus, the EU Atlanties programme and for cooperation with countries f.i. in Asia.

The presentation of the four scenarios that is contained in the material points towards some very interesting material being published and the scenarios could in important ways inform policy discussions both at the national and the international level.
<table>
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<tr>
<th>Product Stream 13</th>
<th>Products in the area of Schooling for Tomorrow (2005-08):</th>
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<tr>
<td></td>
<td>- Publication entitled <em>Trends Shaping Education</em> - 2008 Edition</td>
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<tr>
<td></td>
<td>- Publication entitled <em>Personalising Education</em> (2006)</td>
</tr>
<tr>
<td></td>
<td>- Publication entitled <em>Think Scenarios, Rethink Education</em> (2006)</td>
</tr>
<tr>
<td></td>
<td>- Conference on the topic of <em>Emerging Models of Learning and Innovation</em> (Mexico, 2006)</td>
</tr>
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</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

Explanation:  
The three major publications (not taking the Trends shaping education) into consideration launches important new issues and contributes through f.i. conferences proceedings and collections of contributions to a start of new forms of thinking about schooling. There are some significant research contributions but mostly contributions based on attempts at new forms of approaches to thinking about how to develop school systems and institutions. There are some significant attempts at drawing conclusions from the PISA results.

Explanation:  
Personalisation, demand orientation, new scenarios, all are important new topics and concern key questions that educational research should contribute to enlighten. The PISA 2000 results started an era of attempts of thinking and rethinking. The stream has contributed significantly to this.

Explanation:  
The product stream has raised significant issues and great policy importance and has shown new ways in which educational innovation can move. Understanding demand for education is very important for educational policy.
|-------------------|------------------------------------------------------------------------|

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Explanation:

The most significant research contribution is found in the Innovation in the knowledge economy publication. The others are more surveys and reports on policy discussions. The Evidence in Education is uneven but contributes to the “evidence-movement” although not with significant new contributions but rather a report on the situation in the field. The issues raised are significant. The national review of Educational R&D in Switzerland is by its nature a report and not a research contribution.

The stream is addressing very significant issues concerning the understanding and use of knowledge in the educational field. As contributions to educational research they are more agenda setting than contributions. Viewed from 2010 perspective they to a certain extent reflect an enthusiasm for knowledge management that has somewhat waned, although the issues surrounding the forms of knowledge and the use of knowledge in the educational field are as important as ever – viz. the heated discussions about research based teacher education and the conception of teaching as a research based profession. The issues raised are important and have still to be addressed although they are perhaps today phrased differently.

The understanding of evidence and of innovation (especially new forms like social and organisational innovation) are of high importance for educational policy. Organisational development and innovation in the educational field is as important today as it was in the middle of the first decade of 2000.
<table>
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<tr>
<th>Product Stream 17</th>
<th>Products in the area of the Innovation Strategy (2008-09):</th>
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<tr>
<td></td>
<td>➢ Report entitled <em>Assessment and Innovation</em>, (Education Working Paper No. 24, 2009)</td>
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<tr>
<td></td>
<td>➢ Interim Report entitled <em>The OECD Innovation Strategy: An Agenda for Policy Action on Innovation</em> (Section on human capital, 2009)</td>
</tr>
<tr>
<td></td>
<td>➢ Seminar on <em>Advancing Innovation: Human Resources, Education and Training</em> (Bad Honnef, Germany 2008).</td>
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Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

**Very High** / **High** / **Medium** / **Low** / **Very Low** (please circle the relevant rating)

Explanation:
The reports are of high quality and raise significant scientific issues that have to do with the understanding and evaluation of important issues facing educational research today. The two workings papers 24, and 25 are of high interest and pose questions relevant to the evaluation and analysis of policies and scenarios that have been central to OECD positions. The analysis of the USA charter schools is interesting although important things have happened since the report was written. As literature and research reviews they suffer from being informal and non-systematic and thus not living up to the quality criteria common today in the field of research synthesis (a situation promoted in the evidence report of stream 14). Still the three reports are of high interest and could easily result in significant journal papers.

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

**Very High** / **High** / **Medium** / **Low** / **Very Low** (please circle the relevant rating)

Explanation:
The issues raised between innovation and assessment and innovation and quasi-markets are issues of great relevance to educational research and are key questions. The contributions seems to questions some very commonly held positions (positions also promoted by OECD) and are thus critical in a significant and positive way. The stream seems to advance understanding of the educational system.

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

**Very High** / **High** / **Medium** / **Low** / **Very Low** (please circle the relevant rating)

Explanation:
The policy relevance and the relevance for innovation is clear and important. Maybe establishing quasi-markets do not contribute to raising the level of innovation. Whether this is true or not has great importance for educational policy in the field. The movement towards more assessment and new forms of assessment and its consequences are similarly of great policy significance. This stream seems to me extremely significant and interesting.
GENERAL COMMENTS

The output of CERI can be classified in the following types:

1. Direct research contributions:
   1.1. Significant research contributions initiating a research field or contributing to an existing one in new ways in the form of conferences proceedings or an anthology
   1.2. Significant research contributions to scientific journals initiated as part of CERI projects or programs

2. Surveys:
   2.1. Surveys based on the educational situation in member nations of OECD
   2.2. Surveys of the international situation in a field of education

3. Research reviews:
   3.1. Reviews of research of an informal or non-systematic nature
   3.2. Surveys of the literature in a field (implicit reviews of research) done by a researcher or group of researchers

4. Policy statements:
   4.1. Policy stating documents based on analysis
   4.2. Policy oriented conference reports based on a concept or problem-formulation from CERI

5. Textbooks:
   5.1. Textbook-like documents (the most recent being “The Nature of Learning”)

The contributions of type 1 can clearly be assessed by the normal standards of research evaluation. The contributions of type 2 are more like consulting reports and have to be judged on the criteria of whether they give a trustworthy picture of the situation in a specific field, such as f.i. the use of ICT in a specific sector of education. They are usually not as systematic as f.i. what in that area is found in the SITES 2006 report, but based on the selection of the surveyors. The contributions of type 3 are informal and non-systematic research and literature reviews. As such they typically represent the views of a single author and the quality is dependent upon this author and ultimately on the selection of this rather than that author. Documents and products of type 4 are not typically research contributions but rather strategy, policy or agenda setting documents. Documents of type 5 are very useful contributions to creating overview of a significant field and deliver material that can be used in teaching. “Understanding the brain” and “The Nature of Learning” are very good examples of this. Highly qualified researchers contribute as authors to edited volumes of great educational value.

The major contributions to educational research and therefore to research informed policy and practice comes from contributions of type 1 and 3. Sometimes the two types are mixed so that a review of literature is coupled with a significant contribution. Type 2 contributions contribute valuable knowledge about the situation in a field, that may have great importance for policy both at the national and international level, but they are not significant contributions to research. They could form the basis for the formulation of significant research projects.

The major problem as I see it concerns the contributions of type 3. As a result of the increasing focus on the use of research, on evidence and evidence-based practices a new “discipline” of
research synthesis has emerged. The activity of f.i. clearingshouses exemplifies this. The report on Evidence in education itself advocates such activities. Today there are standards for doing research synthesis – or systematic research reviews. The textbook “Systematic Reviews in the Social Sciences” (Pettecrew & Roberts 2006) gives a practical introduction. Informal or non-systematic reviews are interesting and may be of value, but in the field there are now clear standards. CERI has been promoting this trend. The issue I see is whether CERI should itself live up to the standards and best practices that we have today in the field of research synthesis.
EXPERT N°3
This Product stream, entitled *Policies and Practices Supporting the Educational Achievement and Social Integration of First and Second Generation Migrants: A Systemic Review*, is made of a single publication (2008) and is more a review of the available literature of empirical research dealing mainly with the question “What policies and practices have been demonstrated to support educational achievement and social integration of first and second generation migrants?” As such, it does not really qualify to be analysed in terms of a scientific research in education, but can be examined as a potentially important contribution to an central question for students in today’s world, given the present and forthcoming amplitude of migrations inside and between countries.

The reviewer is probably not familiar enough with the methodology of such a literature search, and therefore is interested by the process. Starting from 3939 research papers analyzed with a heavy, time consuming computer machinery, it ends up with 20 papers to be accepted for final analysis. The selected ones are mostly issued from United States (11 of them), 7 countries contributing with 1 or 2 papers to the rest of the 20. This selection gives an heavy weight to the US, which is indeed a country of immigration, but how typical of immigration phenomena in today’s world, and how typical in terms of schooling and integration policies? Fortunately some additional papers have been retained as “background material”.

It therefore would seem that the procedure, no matter how carefully applied (there is no question on this scientific methodology) reaches somewhat biased conclusions. The review itself acknowledges this point, as having a strong focus on first generation migrants, on school achievements, on language proficiency as the main assessed factor in half of the studies (i.e. 10). Only two of the 20 included studies deal with settlement or welfare qualification policies, while these are known to play a critical role in integration or school achievement.

Probably because of the over-discriminating process of inclusion and of the research itself, excessive conclusions may be drawn, when based on a single study. E.g. the affirmation (item 90) “Brilliant (2001) demonstrates that the perceived lack of interest in their children’s education on the part of parents from minority cultures is really a problem with linguistic and cultural barriers that may between schools and parents. Immigrant parents often lack familiarity with schools and resources.”, probably true for some ethnic groups, is certainly wrong for others (migrant from Asia in European countries). In other cases (item 124), the conclusion appears quite trivial: all [5 included studies] indicate modest but encouraging results for migrant children who engage in some form of early childhood education and development (ECED) program. Indeed, the authors of the review conclude (item 139) by some statements which probably reflect most the bias of the sampling process itself.

It can be hoped that this review, no matter how limited could be the value of its conclusions, opens the way to a deeper analysis within OECD/CERI, given the utmost importance of the matter worldwide, as well as the possible social and political implications of neglecting the subject. In fact, the Review discussion showed that CERI is fully conscious of the abovementioned limitations and has initiated two projects, briefly described to the reviewers and to be soon published, which will most likely answer the reviewer’s questions. Given these informations, the ratings can be reviewed.

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Explanation:

See above text

Explanation:

See above text

Explanation:

See above text
### Product Stream 9

**Products in the area of digital learning resources (2007-09):**
- Publication entitled *Beyond textbooks: Digital learning resources in the Nordic Countries* (2009)
- Country Case Study Reports on Denmark, Finland, Iceland, Norway, Sweden (2008 and 2009)
- Publication entitled *Giving Knowledge for Free: The Emergence of Open Educational Resources* (2007)

This Product stream is made of 3 publications, the first one (2007) making a broad survey of the issue under the title *Giving Knowledge for Free: The Emergence of Open Educational resources*, while the two others focus on the Nordic countries, first with a case study (2008 & 2009), second with a deeper analysis *Digital learning resources in the Nordic Countries* (2009), based on national reports by each of these.

This stream adresses a fundamental question of today’s education and learning processes, in the context of the digital revolution: in the first publication, it studies the open educational resource (OER) movement, which aims at breaking down the existing barriers of proprietary systems and to encourage and enable sharing content freely. In the last one, it broadens the issue to digital learning resources in general (DLR) and the associated policies. It is a follow-up of previous OECD/CERI work on e-learning (2001, 2005).

The first publication (2007) sets the scene, focusing on OER for higher education but making the point that many of the conclusions, pending deeper studies, would be valid for the school sector and adult education. The last publication, using the case studies made in 5 Nordic countries, makes an in-depth investigation on policies observing that:

> there is a noticeable trend towards teacher-generated digital learning materials, offered either as open or paying resources both to the teaching community and to parents and pupils themselves. However, until now little effort has been devoted to mapping the resulting landscape, even if governments show a growing interest in the actual level of use of such resources by teachers, how these resources contribute to the quality of learning, how they can improve learning outcomes and what the factors may encourage or prevent the dissemination of ICT-based educational innovations.”

Especially interesting in this Nordic analysis is the adopted methodology of systemic innovation, a tool OECD/CERI has developed and is now applying in various instances to evaluate and inform policies by examining the innovations development through and impact on the educational system as a whole.

Clearly, given the overall rapid changes of today’s digital world, the present stage of this stream represents a fruitful but yet quite limited

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<th>The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:</th>
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<tbody>
<tr>
<td>Scientific quality: HIGH. Considering OER initiatives, the first report clearly formulates four central research questions: sustainability of cost/benefits models; intellectual property rights; incentives and barriers; improvement of access and usefulness. A combination of an analytical, literature strand and empirical case studies with questionnaires and Internet dialog on a selected group of universities produced a reasonably informed picture of current OER status. This leads to an interesting, and probably new, conceptual vision of OER characteristics: what is openness, what exactly are resources? Given the fast changing nature of the subject, the Report remains open to changes and states it carefully (p.38). The research goes on in detailing</td>
<td>Adressing key questions in, and/or contributing to, the field of educational research. VERY HIGH. There is no question that this stream addresses a key question, probably the most important and difficult one higher education institutions in developed countries are facing today. But the challenge is also for the developing world: are OER able to contribute to the schooling of tomorrow, and how? It is unfortunate that this stream is not yet covering such countries, since in Chap.3 only China’s case is detailed (many other developing countries are mentioned, but no details or analysis given except for Brazil and Mexico). Research in the future will be needed, and highly facilitated by the analysis grid established in this stream.</td>
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<td>Explanation:</td>
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<td>HIGH</td>
<td>VERY HIGH</td>
<td>VERY HIGH</td>
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**Explanation:**

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- **Explanation:**

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- **Explanation:**

  Inform long term education policy requirements and/or increase understanding of educational innovations. HIGH. OER is already changing, and will most likely more in the future transform in depth higher education institutions, especially class management for teaching personnel and students. It is not necessary to stress here how much the digital world, whether resources are proprietary or open, has already transformed the scientific research itself. Today, all institutions ask themselves which policy adopt. Chapters 5 to 8 of the first document are exemplary as policy recommendations in adressing the issue, as they are built as a guide for strategic discussions, including in detail the fundamental issue.
Another key question is the subject of the last document: since teachers continued in-service training is a central factor in the evolution and quality of school systems (see PS 13), will digital learning resources facilitate this training? and which research is needed to focus properly on real needs with efficient resources, as their development cost is far from being negligible? The government recommendations produced in this document do not appear to cover sufficiently in depth the subject as many factors, not analyzed in the encountered Nordic cases, may hamper the use of resources – even of high quality – by the teachers. Deepening the research on this point would be important, as outlined in the research issues list (p.114).

of intellectual rights, one to which university scholars are the most sensitive. As there are aspects at international, national, intermediate or institutional levels, all these are clearly distinguished within the common objective of OER growth. The message is clearly expressed: “So far most higher education systems have been slow to adjust to this challenge. It is recommended that countries study closely the OER projects described in Chapter 4, which are set up to widen participation in higher education, bridge the gap between non-formal, informal and formal learning and promote lifelong learning.” (p. 121).

Regarding the teachers in-service training, using DLR is clearly full of promises. But how can educational systems promote this use on a large scale, with efficiency and impact on school quality? There, systemic innovation is needed, and the third document analyses carefully the driving and braking factors. Especially useful for policy makers is the chapter detailing the need of a knowledge base of DLR. It outlines “a conceptual framework for creating a system of indicators related to the development, use and effects of DLRs. Finally, it sketches out some embryonic scenarios on new ways of producing, distributing and using DLRs.”
Products in the area of Schooling for Tomorrow (2005-08):

- 13A Publication entitled Trends Shaping Education - 2008 Edition
- 13F Publication entitled Think Scenarios, Rethink Education (2006)
- 13G Conference on the topic of Emerging Models of Learning and Innovation (Mexico, 2006)

This stream is the largest, and is made of 9 documents plus many others within the Internet knowledge base. These documents are quite different in nature. Schooling for tomorrow is a broad and ambitious subject, which has many facets, some important ones – but not all of them – being treated in this stream. The stream is organized around the thinking on the futures of schooling (Futures Thinking), well defined as follows (in 13B) : “Futures thinking is relatively under-developed in education compared with a number of other policy sectors, such as energy, the environment, transport and pensions. This is despite education’s fundamental impact on individuals and societies over the long term. Futures thinking is pertinent to education because it clarifies and deepens understanding of the major forces which drive change in education systems, schools and communities.”

To achieve this ambitious and new goal of helping decision-makers at all levels to look beyond short-term needs, the effort has been organized within OECD/CERI in three phases, Phase 2 being concluded in 2006 by the basic document Think Scenarios, Rethink Education (13F). Phase 3 is not completed yet. Indeed, in line with the central theme Schooling for Tomorrow and parallel to the preparation process of this basic document, numerous side contributions have emerged, some of them being represented by the 2006 Hiroshima Conference (13C) and Mexico Conference (13G), the studies on Personalizing Education (13D) or on Demand-sensitive schooling (13E), the latter being also the subject of a special issue of the European Journal of Education (2006) which unfortunately was not available to the reviewer. A 2008 detailed study is also devoted to Lifelong Education (13I). All these documents have been placed in the same stream for assessment.

Complementing these documents, a large knowledge base covers the whole subject of Schooling for Tomorrow and can be browsed through on Internet. It forms the core of Phase 3, being conceived as the repository of many OCDE and national contributions to the subject. The three Phases and their logical connection are presented in a special document (13B) available on the base, The Starter Pack – Futures Thinking in Action (2007-2008), which is easy to read and is made to help education actors to enter the Futures thinking and scenario approach.

Finally, an interesting and complementary product (13A) appears in 2008, Trends shaping Education. This document is conceived to support long term strategic thinking on education to help policy planners or other actors to put their action in a global perspective and to stimulate thinking on the futures, using scenarios. “It provides an overview of trends in the context of education and raises pertinent questions about their impact on education. This compilation relies mainly, but not exclusively, on OECD sources. It gives, as far as possible, robust international evidence of the trends.” The data here are mostly factual, presenting a useful selection and compilation of information with references to go deeper and brief conclusions, each questioning education. The document is extremely well presented (graphs, summaries, high points) and easy to read and use.

Overall, this stream is an extremely rich and diverse source of information. It is be difficult for the reviewer to analyse this wealth in great detail, while applying to the diversity of contributions, resources, analysis the three evaluation criteria which are working well for the other streams. On the other hand, these criteria can be used to attempt judging the main purpose of the stream, i.e. futures thinking.
<table>
<thead>
<tr>
<th><strong>Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:</strong></th>
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<th><strong>The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:</strong></th>
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**Explanation:**

**Scientific quality.** HIGH. Two different aspects are treated in the stream, and they deserve a different analysis in term of scientific quality. First, the overall « scenario » strategy is essentially an exercise of prospective, which assumes the forces acting on the actors, their degrees of freedom, the parameters they have to account for in establishing policies are well known. It is indeed difficult to apply real « scientific » criteria to such exercise. What can be done, and is well done in the stream, is to try to be as exhaustive as possible in gathering ideas, parameters, constraints to establish the scenarios. Getting six scenarios as six possible examples in thinking the schooling for tomorrow is an appreciable contribution, leading the way to other ideas of possible scenarios with other constraints, parameters, etc… The creation of a knowledge base in order to increase the examples is excellent. It is only when sufficient empirical material will be accumulated that, possibly, a real « scientific » approach will develop, with direct and conclusive investigation. In the mean time, theoretical discourse (as in document 13F, Part I) on scenarios will remain… theoretical. The stream contains another kind of material, which is designed to help policy planners to enter this « scenario » thinking : e.g. 13A, or the knowledge base. These documents contain excellent background information, but do not pretend to a status of scientific research.

**Addressing key questions in, and/or contributing to, the field of educational research.** HIGH. Thinking the Futures is undoubtly a key question. But the question really takes shape when breaking up in issues which illustrate key points where the future shall be fundamentally different from the present. Touching on such points is done in this stream through some excellent contributions, namely the one on *Personalising Education* (13D) or the good, although limited in its data collection, on *Demand-Sensitive Schooling* (13E). Both underline the need for further research, but both set the scene on the basis of sound analysis. Indeed other key factors will have to be considered for establishing scenarios, such as ICT use (PS9) or the teacher’s profession (briefly addressed in 13C). For this last point, given the importance of the teacher and the cost of them, one may wish that the stream had developed a deeper analysis of this key point, through data collection and case studies : without the teacher, many of the best Futures scenarios will not succeed !

**Inform long term education policy requirements and/or increase understanding of educational innovations.** HIGH. Clearly this is the main goal of the stream, as already noted above. There is more in *Schooling for tomorrow* than a wish to inform or to understand. The goal is to propose a new methodology to establish long term policies. The actual efficiency of the process is not demonstrated yet, but the building blocks which are available at the end of Phase 2 and the steps taken in Phase 3 are very interesting. It is probably hopeless to have some perfect cases demonstrating the value of the process, but initiating such a profound movement of strategic thinking is certainly needed : to be convinced, one may just observe how poorly European countries have been dealing with the Lisbon objectives of a *society of knowledge*, and the distance between intentions and what is actually happening in the classrooms of Europe.
### Product Stream 16

**Products in the area of Innovative Learning Environments (2008):**

- Publication entitled *Innovating to Learn, Learning to Innovate* (2008)

This Product stream is made of a single publication (2008), which outlines a new orientation after the large OECD/CERI research body *Schooling for tomorrow* (PS 13). The main shift goes from *schooling to learning*, in order to enrich practices and reform. The long-term goal for OECD/CERI is ambitious, as it aims to complement surveys such as PISA and TALIS in establishing new criteria for learning. It is also part of a new exercise launched in 2007, *Innovation Strategy*. This publication summaries and discusses key findings from the learning sciences, shedding light on the cognitive and social processes that can be used to redesign classrooms to make them really effective learning environments. It is made of a succession of chapters, addressing various aspects of learning, and of case studies carried in Mexico. Although the work received international participation, it also reflects a particular involvement of Mexico, both in authorship and in case studies. On may therefore question to which point this analysis is by itself sufficient to inform a more global OECD/CERI strategy.

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**Explanation:**

**Scientific quality.** *HIGH.* Chapter 1 poses significant questions on learning and schools, directly inspired from the PISA results analysis and the goals of knowledge economy which requires educated workers. It questions the validity of redesigning learning environments, and organizes the material presented in the subsequent chapters. Chap. 2 and 3 refer to fundamental research on learning, and considers some of its conclusions on optimized learning and the most effective learning environments as well established, since they are not discussed in detail.

**Explanation:**

**Addressing key questions in, and/or contributing to, the field of educational research.** *HIGH.* The question of the relative inefficiency of schools (demonstrated in many countries by the PISA results) is, given their high cost on any national budget, a central issue. This question calls for a number of aspects to be looked at: managerial, teacher training, social environment, class room style, understanding of learning process. These various points are analyzed, with more or less details, each argument being related to the needs of the new economy. Case studies are interesting, but they may not be fully representative of the broad variety of innovation strategies and alternative schooling experiments in OECD countries; on the other hand, Mexico may represent an interesting model for innovation in emerging/developing countries.

**Explanation:**

**Inform long term education policy requirements and/or increase understanding of educational innovations.** *HIGH.* Several chapters deal with this (5, 7, 8, 9). Chap.5 stresses the fact that innovation is a grassroot process, with myriads of local experiments. The question is how to make them percolate into the whole education system. The proposed strategy remains unfortunately quite theoretical. Chap. 7 and 8 examine earnestly the difficulty to manage innovation and its dynamics, and the excellent chap.9 insists with great details and arguments on the necessity to overcome bureaucratic structures in education and to use a new paradigm of open environment, where flexibility and resilience combine with long-term goals.
EXPERT N°4
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<tr>
<th><strong>Product Stream 3</strong></th>
<th><strong>Products in the area of social outcomes of learning (2006-08):</strong></th>
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<tr>
<td></td>
<td>▶ Publication entitled <em>Understanding the Social Outcomes of Learning</em> (2007)</td>
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<td>▶ OECD Education Working Papers</td>
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<td></td>
<td>◦ Education and Civic Engagement Review of Research and a Study on Norwegian Youths (N°12, 2007)</td>
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<td></td>
<td>◦ Skilled Voices? Reflections on Political Participation and Education in Austria (N°11, 2007)</td>
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<td></td>
<td>▶ Symposium entitled <em>Measuring The Effects of Education on Health and Civic Engagement</em> and proceedings (Copenhagen, 2006)</td>
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**Explanation:**
The measurement of social outcome, civic and social engagement together with cognitive and achievement diagnostic studies is highly innovative. Longitudinal and replication studies are necessary to fulfil high quality standards in this field.

The research group was able to define an extensive framework of indicators for social outcome, making it possible to focus on the wider benefits of learning which refines the understanding of intended and unintended effects of education.

The research group is working on the basis of clear and sound methodological scientific reasoning; an example of outstanding research are the defining and measuring processes for indicators of indirect effects of education. The research stream has managed to improve the focus of many additional research questions, which is meaningful for the international scientific community.

The continuity of this research approach would be extremely valuable and meaningful, especially relating to the impact of regional contexts.

**Explanation:**
The product stream is addressing the important role of social and cultural capital in modern society. The consequences of education (including early, school and further education) on civic engagement, as well as on information and behaviour in the field of health and health education are addressed. The direct and indirect efforts and effects of education on societal cohesion are fundamentally discussed. This results in a research framework that also includes political involvement and general political interests.

An important development is the model: learning, competence and capital innovation.

The high assessment of this stream is justified given that the theoretical terms human and social capital are worked out on an empirical basis. This research stream expands the field of study in this area by providing solid empirical evidence for related theories (e.g. P. Bourdieu’s theory and general milieu theories).

**Explanation:**
Some conclusive implications benefitting policy are obvious: funding and support for longitudinal studies are a requirement in this field. In addition, research clearly identifies that early childhood education has an important impact on schooling and on lifelong learning in general.

The awareness of the importance of early education (family) and schooling for personal and social development in later life periods are important for LLL strategies. Also some consequences for adult education, relating to intervention and prevention are important for education policy requirements.

On the one side, the effects of intentional learning are clear; on the other side, the importance of social contexts and the effects of informal learning are equally visible; both have a strong positive value for policy strategies.

The products in this area provide valuable insight into the wider benefits of learning in different societies. Both economical and non-economical social and cultural outcomes (not only output) of education and learning are well addressed in this research stream.
Product Stream 4

Products on the area of learning sciences and brain research (2005-08):
- Teach the brain website and brain-related learning tools

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

Explanation:
The resulting dialogue between stakeholders and leading researchers of the involved scientific disciplines guaranteed high quality results in this stream.
The product stream is not limited to either basic or applied research, but is rather an integrated and elaborated documentation of developments in learning oriented brain research. It depicts the slow and continuous progress of developments and innovation in the field of “Brain Research and Learning”.
The pioneering nature of this stream points to a highly innovative future topic of research. The books and publications present the current state of the research field between 1999 and 2007.
The continuity of dialogue between brain research and learning/education science is important for lifelong learning. The sensible periods of learning, and especially the concept of plasticity has enormous importance for future research.
The whole research field is still in an early phase of development making continuity of research activities a requirement for any progress of merit and long term value.

Explanation:
This product stream is pioneer work in the field: when the project started in the late 1990s, brain research and learning science had worked parallel to each other, but not in collaboration.
A major innovation of the project was to bring together not just brain research and learning science in general, but to integrate the practical interests of institutions and educational fields. Cooperation between these two domains are still uncommon.
Valuable findings are generated through this collaboration in the areas of learning over the life cycle (especially plasticity of the brain), the acquisition and development of literacy, numeracy and the capacity of problem solving in the process of lifelong learning.
Publications from this research stream are well structured and highly informative, covering the topics of learning and thinking in early childhood, as well as an interdisciplinary analysis and discussion of youth and adulthood.
The role of nature and the environment are differentiated and integrated leading to adapted strategies of teaching, and more importantly to a better understanding of learning processes in general.

Explanation:
The project makes clear that international support for the cooperative and innovative development of the interdisciplinary field is a necessity, and the cooperation of brain research and learning sciences guarantees that no isolated research leads to problems of funding.
The cooperation of science and best practice, the structured dialog with practitioners lead to a better transfer of knowledge, as well as the generation of good research questions for applied research. In this area basic and applied research are essential.
Benefits for practice resulting from research findings in this area require time, practice and a patient policy development. With a focus on longterm research, the immediate value of shortterm outputs are not always clear. However, research of this type can greatly reduce the myth of brain research.
Nevertheless, sensitivity and awareness of plasticity of the older experienced brain, the difference of fluid and cristalline intelligence, and the importance of individual activity and early childhood learning are convincing results with great impact and benefit for policy.
It is extremely important to distinguish between the myth and reality of brain research and its consequences for learning. The social and educational (environmental) interventions are evident on all levels of education.
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<th>Product Stream 5</th>
<th>Products in the area of age, learning and assessment (2005-06, 2008):</th>
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<td></td>
<td>- Publication entitled Teaching, Learning and Assessment for Adults: Improving Foundation Skills (2008)</td>
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<td></td>
<td>- Chapter 4 in Education Policy Analysis 2005-6 entitled Improving Learning through Formative Assessment (2006)</td>
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<td></td>
<td>- Policy Brief on formative assessment policies (2005)</td>
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<tr>
<td>Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:</td>
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**Explanation:**
In general, the publications give a good overview of tools of assessment, and the important shift of assessment from school to adult learning. Many rational arguments show that the transfer to teaching and learning of adults is very important and highly innovative.

Many results are connected to the assessment of competences in adulthood. Although the work in this stream are not directly a pre-analysis for PIAAC, however it implies some important descriptive and clearly structured information regarding literacy, numeracy and problem solving in adulthood. In some countries empirical studies in this field are now in progress (adult).

Research conducted in this stream helps to shed new light on formative evaluation, especially the transfer to later learning periods.

**Explanation:**
A major strength is the description of formative assessment to improve learning in secondary classrooms (transfer to practice).

This product stream innovatively addresses the learning and competency development of adult learners, specifically assessment of adults and older adults. These questions are extended through the inclusion of different milieus and age groups.

That formative and summative assessment reinforce each other is not new, however the arguments presented by this stream in the publications are well structured.

Of special importance is the assertion that both legislation and beaurocratic rules are often enormous barieres to formative evaluations.

**The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:**
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**
The six key elements of formative assessments presented in this research stream are helpful for practical implementations.

This information can greatly benefit education and pedagogy at many levels, including university seminars and teacher training seminars, as well as schools and other educational institutions.

The dimensions for formative assessement are well known, however this project uses an innovative logical structure and design, which increases the clarity and comprehension in various settings with different target groups – even for novices: classroom culture, learning goals, teaching individual student progress, varied instruction methods, varied approaches to assessing understanding, active involvement.

The barriers (class size, attitudes) and some ideas concerning the promotion of legislation are helpful for transfer.

Generally it can be said, that everyting discussed is important and valid, but not absolutely new.
### Products in the area of Systemic Innovation in Vocational Education and Training (2008-09):

- Country reports for Australia, Denmark, Germany, Hungary, Mexico and Switzerland (2008-09)

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<td>Country reports are necessary because they are qualitative descriptions of different systems, nevertheless the question is crucial whether we can generalize from these national case studies. Of great importance in this context are the typologies of case studies. Country differences in educational systems have to be taken into consideration. Some countries have school based vocational training, in other countries (Switzerland, Germany) the Dual System is dominant, some have enterprise based training, and in Latin America economy financed training centers (SENA, SENATI, SENAC …) can be found. This means that the knowledge base is different and diverse, and in the reports from this project, methodologically this is well reflected. The studies conduct sound qualitative research, however more “hard” quantitative statistical data are necessary. An interesting approach would be PISA Vocational Training, and addressing research projects to prevention of drop out. Knowledge management (because of the diverse agents and institutions which are active) would be in Vocational Training a separate research focus.</td>
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<td>Country reports are suited for background reports. The systemic innovations in vocational education and general in public services are informative. Of course institutions and organizations and their structures are also responsible for quality, but the systemic approach is enlightening. Key questions are the processes and dynamics (imitation, implementation, monitoring, evaluation, scaling up) of systemic innovations. It is important and in the studies successful to identify the drivers and barriers of systemic innovation. Why these country reports and not other countries (systematic or pragmatic reasons?) The sample seems to be pragmatic. On a systematic level the implications of the analysis would be clearer.</td>
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<tr>
<td>Policy can learn a lot about management of change within complex systems. In general the policy implications are meaningful and well addressed. Models of systemic innovation are helpful for policy strategies, but more empirical research is necessary. The transfer to policy is difficult because of the many stakeholders involved in Vocational Education (private, federal and state based institutions). One consequence of the diversity of players is the concentration on national and regional contexts. Analysis of the vocational training subsystems for riskgroups and drop outs (in some countries more than 30%) is important. Knowledge communication is especially difficult in Vocational Training Systems, and the main question is who should be addressed and who is willing to play a part in collective planning.</td>
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The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

Very High / High / Medium / Low / Very Low (please circle the relevant rating)

Explanation:
The multi level conceptual framework is very positive: individual, organizational, sectoral, societal. The data are statistically comparable and a replication of data is possible. The institutional change between 1991 and 2003 is well analysed, nevertheless to answer the research questions more longitudinal studies are needed. More follow up studies and continuity of the data in this field is necessary (maybe in collaboraton with other units of OECD).

Explanation:
The outward mobility of domestic students is addressed and well reflected, as well as the inward mobility of foreign students and the design of educational programmes. It is important that guidelines for quality provision, and quality assurance systems are intensively discussed. Social differences are analysed especially on the basis of gender (earnings). The matching of tertiary education and the demand of labour market is discussed. All together it is a cornerstone for capacity development. Difficult but interesting would be the analysis of the results of the “Bologna-process”: Are B.A. and M.A. students more mobile than students than within the old structures?

Explanation:
The analysis gives valuable insights on capacity development for policy makers and stakeholders. The problem of brain drain is worked out and relativised. The fact that in this product stream UNESCO/ World Bank/ OECD are cooperating is an excellent basis for a broad dissemination. The fostering of international and regional mobility in a global world society is highly relevant for universities and many key players in international policy. The explicit inclusion of financial aspects (scholarships and funds) would be important.
<table>
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<tr>
<th>Product Stream 12</th>
<th>Products in the area of University Futures: (2004-06 &amp; 2008-09)</th>
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<tbody>
<tr>
<td></td>
<td>Publication entitled <em>Higher Education to 2030, Volume 2, Globalisation</em> (2009)</td>
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<td>Publication entitled <em>Higher Education to 2030, Volume 1, Demography</em> (2008)</td>
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<td></td>
<td>CERI Forum on university futures preceding the Athens meeting of education ministers (June 2006)</td>
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<td></td>
<td>Background paper entitled <em>University Futures And New Technologies: Possibilities And Issues</em> (2005)</td>
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<tr>
<td></td>
<td>University Futures Meeting on the subject of <em>Demography and the Future of Higher Education</em>, including documents and presentations (2005)</td>
</tr>
<tr>
<td></td>
<td>Workshop and summary report on <em>University futures and new technologies</em> (2005)</td>
</tr>
<tr>
<td></td>
<td>Contribution to <em>Policy Futures in Education</em> 2(2) 2004 entitled <em>Building Future Scenarios for Universities and Higher Education: an International Approach</em>.</td>
</tr>
</tbody>
</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**
The demographic and participation trends are described on valid statistical data. The picture of trends is very clear. The quantitative analysis is comparative and covers long-term trends.

The differentiation of age groups and demography implies very useful information.

Nevertheless, the explanation of the description of higher education could be stronger.

The additional scenario techniques are helpful in this context for the interpretation and better understanding of statistical information. The authors are not working out predictions that are very difficult, from a methodological point of view (i.e. complex systems).

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**
Many antecedents and basic factors of university development are discussed: e.g. fertility, cohort streams, mobility, migration, etc.

For planning, the means of statistical indicators is not always informative. For policy we need more regional/national and even university-specific information. However, this problem is reflected in the papers and it becomes clear that diversity especially has to be focused in steering processes.

In general, it is obvious that the stream informs about very important trends for policy and stakeholders; the longer term planning until the year 2030 is fine for scenarios and judgements; furthermore, it is possible to give exact predictions over such a period in complex systems with many intervening variables.

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**
The product stream is addressing formal and informal learning in institutions of higher education. The relation of general academic and vocational tertiary education is covered. The demographic development is very strong and sophisticated, and the consequences for the future of universities is addressed.

The topic dealing with inequalities of participation of higher education is analysed, specifically gender oriented.

In studies about the future of universities the age structure of the academic professionals and the staff is often unattended. In the documents of the product stream this important aspect of the future of higher education is very well included. There is no doubt that new technologies will change the competences and qualifications of staff in universities. The new recruitment strategies of universities are covered in a productive way.

In general, it is obvious that the stream informs about very important trends for policy and stakeholders; the longer term planning until the year 2030 is fine for scenarios and judgements; furthermore, it is possible to give exact predictions over such a period in complex systems with many intervening variables.
<table>
<thead>
<tr>
<th>Product Stream 15</th>
<th>Products in the area of Education Horizons (2008-09):</th>
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<tr>
<td></td>
<td>- Publication entitled Education Today: The OECD Perspective (2009)</td>
</tr>
</tbody>
</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:
- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:
- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:
- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

Explanation:
- The key findings and information in education today are clearly portrayed in statistical graphs; the information is comparative and data replications are processed.
- The OECD indicators are described in detail, and in sum provide a broad and valid perspective to the actual developments in education. The description includes new findings and meaningful interpretations. It contributes additional information to “Education at a Glance”, but it is good to know both OECD resources.
- The theoretical interpretations follow the concepts and leading ideas of knowledge economy and knowledge society. Different conceptions of society would lead to different data selections and interpretations: e.g. civic society, risk society, aging society, third sector societies.
- The product stream gives useful inspiration for additional research projects.
- Coming from the perspective of knowledge management, the strength of the products are not so much in knowledge generating, but rather knowledge communication and knowledge transfer.
- CERI is sometimes not so much a research unit using quantitative or qualitative research procedures, but rather a “broker” between research and politics. This stream fits especially to this communication and transfer function.

Explanation:
- The Product stream is creating fundaments for learning sciences, including neurosciences. The digital technologies and the future effects on cognitive skills and non-verbal forms of intelligence are analysed.
- Many interesting suggestions for effective variation of instruction are included, as well as techniques of feedback and useful information on formative and summative evaluation. The indicators for individual students progress are well summarized.
- The strength of the stream is the intelligent aggregation of trends and developments in education over the life cycle.

Explanation:
- “Education Today” is a very good overview of international trends and suits for knowledge transfer not only for policy but also for teaching. The universal value “Education for all” is strongly addressed. The power of early education for all subsequent educational periods and institutions is very well documented.
- The underlined policy needs are not new, but are clearly emphasized: autonomy, funding, curricular standards, professional standards, working conditions….
- The product is useful as “marketing product” in a positive sense and is in the general public interest. In a time of low budgets, clear priorities are necessary and feed back of policy makers in workshop is useful.
- The papers are addressing early education (especially schooling and the importance of a learning culture which is fostering intrinsic interests of pupils) and the processes of transition in education, higher education and the expansion of needed high competences and qualifications, as well as the sometimes forgotten, but in knowledge societies immensely important adult education and further training.
- The valid overview makes this product strong for policy and practice.
EXPERT N°5
<table>
<thead>
<tr>
<th>Product Stream 3</th>
<th>Products in the area of social outcomes of learning (2006-08):</th>
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<tbody>
<tr>
<td></td>
<td>Publication entitled <em>Understanding the Social Outcomes of Learning</em> (2007)</td>
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<tr>
<td></td>
<td>OECD Education Working Papers</td>
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<td></td>
<td>• Education and Civic Engagement Review of Research and a Study on Norwegian Youths (N°12, 2007)</td>
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<td></td>
<td>• Skilled Voices? Reflections on Political Participation and Education in Austria (N°11, 2007)</td>
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<tr>
<td></td>
<td>Symposium entitled <em>Measuring The Effects of Education on Health and Civic Engagement</em> and proceedings (Copenhagen, 2006)</td>
</tr>
</tbody>
</table>

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

**Very High / High / Medium / Low / Very Low** (please circle the relevant rating)

### Explanation:

The product stream appreciates the complexity and inter-relatedness of the issues in its attempt to develop causal models. The work is informed by the literature which is typically well integrated. The arguments are clearly stated with few, if any, discernable gaps. The limitations of the approach used or data available are made clear to the reader. The discussion is typically nuanced with considerations of such factors as ‘mediators.’ Definitions of terms are explicitly set out and indicators operationalized. The methods are appropriate to the questions and purposes. The statistical approaches are typically and appropriately conservative; interpretative cautions are made clear. The product stream exhibits tentativeness about the assertions, making clear the state of the evidence available.

The clarity of exposition in the product stream is clear. I would have rated the produce stream as very high on this dimension if the methods of identifying, searching and selecting the literature had been set out more transparently. The appendix of the Copenhagen symposium makes an important first step in that direction by providing a list of the journals that were consulted in conducting the literature review.

### The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

**Very High / High / Medium / Low / Very Low** (please circle the relevant rating)

### Explanation:

Social outcomes of learning, and the potential recursive relations among them and between them and learning, are under-researched in relation to the economic outcomes. Furthermore, social outcomes and economic outcomes are related in complex ways that are deserving of attention.

The product stream might consider whether a ‘state of the field’ paper on what is known about the social outcomes of learning in which the principal gaps in knowledge are identified and organized into a proposed research agenda might be considered, if it has not already been considered and rejected.

### The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

**Very High / High / Medium / Low / Very Low** (please circle the relevant rating)

### Explanation:

For those jurisdictions concerned about the issues addressed by the product stream, the material is useful in several ways: (a) as a broad overview of the particular dimensions addressed (civic and social engagement, and health); (b) for the identification of some of the challenges affecting understanding (and by inference policy development); and (c) the guidance (appropriately tentative) for provisional policy consideration (if not development). Those ends are advanced by the clarity of the exposition; the effective organization of the material; the transparency of stated limitations; and the inclusion of helpful appendices such as the glossary of statistical terms and the compendium of data sets.

The material might prove more useful if more attention was paid to developing shorter summaries and policy briefs tailored to various purposes and audiences as appears to have been done a bit in some of the other product streams.
<table>
<thead>
<tr>
<th><strong>Product Stream 5</strong></th>
<th><strong>Products in the area of age, learning and assessment (2005-06, 2008):</strong></th>
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</thead>
<tbody>
<tr>
<td>➢ Publication entitled <em>Teaching, Learning and Assessment for Adults: Improving Foundation Skills</em> (2008)</td>
<td></td>
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<tr>
<td>➢ Policy Brief on formative assessment policies (2005)</td>
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</tbody>
</table>

**Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:**

<table>
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<tr>
<th>Very High</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Very Low</th>
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(please circle the relevant rating)

**The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:**

<table>
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<th>Very High</th>
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<th>Medium</th>
<th>Low</th>
<th>Very Low</th>
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</table>

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**The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:**

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<th>Very High</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Very Low</th>
</tr>
</thead>
</table>

(please circle the relevant rating)

**Explanation:**

Chapter 4 in *Education Policy Analysis* 2005-6 entitled *Improving Learning through Formative Assessment* makes the claim that “each of the case study countries has made important strides in advancing the practice of formative assessment” but does not define “important strides” or provide evidence or argument to support the claim.

It is not clear what the calculus of inference was that enabled the lessons to be drawn from either the case studies or the literature reviewed.

Overt editorializing (“In their influential review . . . Black and Williams (1998) . . . .”) detracts from the overall presentation and substitutes the authors’ judgment for that of the reader.

This product stream would be more valuable and persuasive if it had been (or were) informed by a systematic and meta-analytic review of formative assessment.

**Explanation:**

Formative assessment appears to encompass a range of practices that may be regarded as feedback about the learner’s progress. We know these practices are robust, producing effect sizes in the range of .7. Thus, the product stream does address an important dimension of education, though not as systematically as might be the case.

**Explanation:**

The Publication entitled *Teaching, Learning and Assessment for Adults: Improving Foundation Skills* (2008) provides a useful overview of jurisdicitional initiatives in the 9 countries. However, it is not clear whether other countries were asked to submit background reports and declined to do so or whether only these nine countries were approached.

Case studies (*Formative Assessment: Improving Learning in Secondary Classrooms* (2005) and Chapter 4 in *Education Policy Analysis* 2005-6 entitled *Improving Learning through Formative Assessment*) are useful to illustrate how a particular phenomenon operates, especially to practitioners. In isolation of more scientifically robust empirical work, the case studies have more limited value.

Notwithstanding the reservations expressed about the product stream, the policy brief effectively distills the material presented in the longer, more fully developed documents. One wonders whether such distillations should be focused on specific audiences of policy makers, policy analysts, and practitioners.
### Product Stream 6

**Products in the area of e-learning in post-secondary education (2004-05):**
- Publication entitled *E-learning in Tertiary Education: Where Do We Stand?* (2005)
- Policy brief entitled *E-learning in Tertiary Education* (2005)
- Conference on the subject of *E-Learning in Post-Secondary Education: Policies, Practices, and Research* (Calgary, Alberta, 2005) and Final Conference Report

<table>
<thead>
<tr>
<th>Area</th>
<th>Rating and Explanation</th>
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<tbody>
<tr>
<td>Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:</td>
<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
</tr>
<tr>
<td>The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:</td>
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<td>Very High / High / Medium / Low / Very Low (please circle the relevant rating)</td>
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**Explanation:**

*E-learning in Tertiary Education: Where Do We Stand?* posed some important questions about e-learning in PSE settings. However, there is the presumption that e-learning is a positive development and that institutions should be following a developmental trajectory toward some desired end (for example, institutions at the “leading edge,” “mainstream,” or “early stages”; “Engaging faculty and students to use innovatively and effectively existing technological functionalities is the next challenge.” “What policy agenda for further progress in e-learning?”; “E-learning could then be well-placed to transform tertiary education for better in the long run.” are a few examples of the bias in the work). The work of CERI is constrained by the necessity of appealing to partner countries for access and funding. The statement that “the sample was selected by means of a combination of OECD member country nominations and direct approaches by OECD/CERI” acknowledges that limitation, but such limitations do affect the scientific integrity of this and other product streams. The limitations of the survey in *E-learning in Tertiary Education: Where Do We Stand?* is acknowledged clearly for the reader.

A more nuanced and objective appraisal of the impact of technology on the three main challenges to PSE (quality, accessibility and affordability) would be a major contribution to the field.

**Explanation:**

*E-learning in Tertiary Education: Where Do We Stand?* and the policy brief are limited by the methodology it employed and by the rapidity of change in e-learning and the support of e-learning by governments. While these materials have some historical significance today, it is difficult to see how – given the aforementioned limitations – they might have been helpful to the jurisdictions involved.

General note: In rapidly changing environments, it is imperative that there not be a lengthy delay in the dissemination of information. The conference on *E-Learning in Post-Secondary Education: Policies, Practices, and Research* appears to have assembled as its presenters advocates for the use of e-learning in PSE. Apart from references to *E-learning in Tertiary Education: Where Do We Stand?*, there does not appear to have been other research about the impact of E-learning on PSE.

[Lest the reader think I am not in favour of the use of e-learning, I should point out that I make use of e-learning in my own teaching and have supported the development of connectivity and a portal for education when I was deputy minister.]
## Product Stream 11

### Products in the area of Cross-border Tertiary Education (2004-08):

### Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

### The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

### The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

### Explanation:

**Student Mobility, Internationalization of Higher Education and Skilled Migration** provides a useful overview of the student mobility issue. Nonetheless, most of the documents in the series tend to view migration and mobility through an economic lens. Papers that acknowledge controversies and contentious issues, such as the one by Stephen Machin and Sandra McNally, are more intellectually honest than ones that ignore such differences and, thus, more useful to policy makers.

Underlying the issue of skilled migration and PSE is the question of whether it is possible to accurately predict labour market needs (see, for example, the paper How might the changing labour market transform higher education? from The Changing Labour Market and the Future of Higher Education). In January 2007, The Canadian Council on Learning undertook a review to systematically and transparently gather, analyze and synthesize research devoted to discussing and determining whether it is possible to accurately predict labour market needs. 38 studies were included in this review, 28 of those used empirical strategies to demonstrate the accuracy of a particular forecasting method.

**Explanation:**

The issues raised by the product stream are important ones that confront most jurisdictions. Like a number of product streams, this one might benefit from having some reviews of the field and the literature in the field.

**Explanation:**

Although dated and voluntary in nature, the OECD/UNESCO Guidelines for Quality Provision in Cross-Border Higher Education nevertheless provided assistance in addressing an issue that is vexing for many in PSE.
model. Our analysis and evaluation of these studies resulted in a two major conclusions. “First, the quality of the literature devoted to labour market forecasting is inconsistent, meaning readers and reviewers of such material need to be proficient in econometric modelling and research design if they are to fully assess the value and or the flaws within the conclusions drawn by the authors. Second, forecasting research is very much source, location, and time specific. Consequently, it is not clear if the models will perform as well in other forecasting horizons. Our study suggests that there is no single forecasting model that can accurately forecast labour market needs in all situations. While some of the proposed models show an impressive level of accuracy in forecasting within a particular market, without controlled replicability the consistency of the forecast accuracy remains uncertain.”
<table>
<thead>
<tr>
<th>Product Stream 12</th>
<th>Products in the area of University Futures:(2004-06 &amp; 2008-09)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>➢ Publication entitled <em>Higher Education to 2030, Volume 2, Globalisation</em> (2009)</td>
</tr>
<tr>
<td></td>
<td>➢ Publication entitled <em>Higher Education to 2030, Volume 1, Demography</em> (2008)</td>
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<tr>
<td></td>
<td>➢ CERI Forum on university futures preceding the Athens meeting of education ministers (June 2006)</td>
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<tr>
<td></td>
<td>➢ Background paper entitled <em>University Futures And New Technologies: Possibilities And Issues</em> (2005)</td>
</tr>
<tr>
<td></td>
<td>➢ University Futures Meeting on the subject of <em>Demography and the Future of Higher Education</em>, including documents and presentations (2005)</td>
</tr>
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<td>➢ Workshop and summary report on <em>University futures and new technologies</em> (2005)</td>
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<td></td>
<td>➢ Contribution to <em>Policy Futures in Education</em> 2(2) 2004 entitled <em>Building Future Scenarios for Universities and Higher Education: an International Approach.</em></td>
</tr>
</tbody>
</table>

**Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:**

| Very High / High / Medium / Low / Very Low (please circle the relevant rating) |

**Explanation:**
The demographic and globalization documents address two of the most potent forces shaping university education. They address the important dimensions of each phenomenon, and typically do so clearly.

**The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:**

| Very High / High / Medium / Low / Very Low (please circle the relevant rating) |

**Explanation:**
This product stream helps to address the three dominant issues in post-secondary, and especially, university education: quality, accessibility and affordability.

**The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:**

| Very High / High / Medium / Low / Very Low (please circle the relevant rating) |

**Explanation:**
The Final Report entitled *The Future Of Higher Education* provides a useful distillation of the material in the product stream. It might take a page from the publication entitled *Education Today: The OECD Perspective* and be reorganized to provide hotlinks to the specific documents and chapters from which the summaries are drawn.
|-------------------|--------------------------------------------------------------------------|

Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:

- Very High / High / Medium / Low / Very Low (please circle the relevant rating)

**Explanation:**

**Innovation in the knowledge economy: implications for education and learning** explains that:

- The basic assumption underlying this report is that educational R&D activities can be organised in such a way so as to constitute a system. In this context, the basic purpose of such a system is to develop, organise and disseminate knowledge that illuminates the understanding of the education system and nurtures its continuous improvement by providing supporting evidence either for the policy and decision-making process or for educational practice. (5)

These assumptions not only underpin the report mentioned, but apply to the entire body of work in this product stream. While it is laudable to make such assumptions public, these assumptions do not seem to have been examined closely to determine whether and to what extent they may apply. They should be.

The material pertinent to the product stream in knowledge management does not lend itself to evaluation according to the criteria specified because the filed is immature. In fact, as the material indicates, determining the right questions to ask (the most important of all activities) is itself a challenge. How much and what kinds of knowledge management are desirable in education (at what levels) are questions that

**Explanation:**

**Knowledge management: Evidence in Education. Linking Research and Policy** provides an overview of the issues from differing standpoints: researchers, knowledge brokers, senior civil servants, and politicians.

**Innovation in the knowledge economy: implications for education and learning** identifies four forces of innovation – scientific advance, user-based networks, modularity and information and communication technologies – arguing that the education sector has been neglecting their potential. That the authors question the applicability of these paradigms for education is a noteworthy contribution.
are not fully articulated or developed. Nonetheless, the efforts taken to probe the dimensions of the problem (Innovation in the knowledge economy: implications for education and learning and Knowledge management: Evidence in Education. Linking Research and Policy) are worthwhile attempts to call attention to the issues.
<table>
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<tr>
<th>Product Stream 15</th>
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<td></td>
<td>Publication entitled <em>Education Today: The OECD Perspective</em> (2009)</td>
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Taking into account the scientific principles and guiding questions for assessing the quality of scientific research in education (See annex), the scientific quality of this product stream is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The extent to which this product stream is addressing key questions in, and/or contributing to, the field of educational research is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

The potential of this product stream to inform longer-term education policy requirements and/or increase understanding of educational innovations is assessed as:  
Very High / High / Medium / Low / Very Low (please circle the relevant rating)

Explanation:  
While I am in general agreement with much of the argument advanced in *Optimising Learning: Implications of Learning Sciences Research*, there are several shortcomings. First and most important is that, while there is a relationship between teaching and learning in formal educational settings, one cannot develop one in isolation of the other. Second, any changes to the nature of instruction must take into account the social, economic, and cultural context in which formal education occurs – in particular, its mass character (many students, many teachers). Third, it would appear that ICT is perceived as the solution to the problem of individualization of teaching and learning without evidence of its efficacy (in contrast see, *New Millennium Learners: Initial findings on the effects of digital technologies on school-age learners* and in particular its claim that: “This section reveals how little is known and examines how empirical research has contributed more to highlighting the negative impacts of technology than to unveiling and documenting its positive sides.”) Fourth, the characterization of ‘traditional’ formal education in the documents is primarily rhetorical in nature and does not fully represent contemporary schooling.

Explanation:  
Attention to the ‘learning sciences’ is welcome. Integrating the knowledge from a variety of sources and expressing that knowledge in terms of principles is a useful undertaking. Some caution is called for in attempting to make use of results from the field of neurobiology (and brain research more generally) in the field of education because that research does not provide sufficient evidence from careful study of human beings.

Explanation:  
*Education Today: The OECD Perspective* is a welcome beginning to the OECD’s knowledge mobilization efforts, providing a succinct introduction to many of the useful documents of the OECD.
GENERAL COMMENTS

1. I think it might be helpful to explain the perspectives that I brought to this task. I am a sociologist of education who teaches, among other courses, a course in policy analysis in education. I have had the privilege of serving as deputy minister of education for the Province of British Columbia. In addition, I was the Director of Research for the Canadian Council on Learning, a not-for-profit organization that, among other things, undertook research on behalf of various governmental and non-governmental organizations concerned with education. I have reduced my academic appointment at the University of British Columbia to assume a partnership in and management responsibility for Directions Evidence and Policy Research Group, a private-sector firm that undertakes research and policy development for public and private agencies. My reason for providing this background information is that I believe that appraising these product streams is informed by the perspectives afforded me as a consequence of the positions I hold (and have held).

2. Notwithstanding the caveats and qualifications outlined below, I am on the whole impressed by the quality of the material produced, its scientific merit (where applicable); the contribution to education; and its potential to inform policy development. The material is typically clear in its intent, exposition, and development. The executive summaries capture and express those dimensions of the work that my reading of the documents suggests are important.

3. One of the tasks that panels members have been asked to perform is to circle ratings for the various criteria that the OECD wishes to have applied to the product streams. The application of the rating scales is challenging for a number of reasons: (1) There are no specific anchors for the rating scales; (2) Standards for only the scientific stream have been provided; and (3) there are no exemplars for the ratings in each domain, though the scientific standards are quite explicit. In the absence of such information, I feel it will be challenging to make sense of the ratings of different panelists.

4. I want to address the criterion regarding the potential of a product stream to inform longer-term educational policy requirements and/or to increase understanding of educational innovation. I believe it is unwise to apply the criterion slavishly to any of the product streams for reasons that I hope to make clear. The potential of any product stream to inform educational policy requirements is almost completely dependent upon the contexts/nations and not the product streams or products. Whether a particular product or product stream informs or even has the potential to inform policy requirements in a particular jurisdiction depends on the circumstances of that jurisdiction (including such factors as the value preferences of the governing regime); the various competing demands on the political system; the resources available at any particular time; the capacities of the professionals working in the jurisdictions; and countless other factors of which I am certain you are aware. Much the same can be said about increasing understanding of educational innovations since what is regarded as innovative depends upon the value preferences and perspectives of a
particular regime. Not all regimes share the positivistic orientation that underpins these product streams.

Thus, I am proposing to apply a slightly different criterion, but one that meets the spirit behind the criterion as stated below. The criterion I shall apply is: Given that a particular context or nation is interested in, and prepared to consider material relevant to its policy/innovation needs, does the produce stream provide material worthy of consideration?

A further caveat regarding this criterion is that the potential of a product stream to inform longer-term educational policy requirements and/or to increase understanding of educational innovation depends, at least in part, upon the scientific merit of the work. Thus, if the scientific merit of the product stream is deficient in some respect, the deficiencies compromise the potential to inform educational policy or to increase understanding of educational innovation.

5. Not all of the documents produced are ones that can be classified as scientific research. Thus, the application of the criterion quality of scientific research in education is not always appropriate. For example, guideline documents, such as Guidelines for Quality Provision in Cross-Border Higher Education, should not be subject to evaluation according to this criterion as it is not concerned with research.

6. Notwithstanding my comments above, I have tried to reflect on the entire body of work that I have been asked to review. On the basis of that reflection, I have drawn the following general conclusions about its scientific merit:
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Over-all appraisal</th>
</tr>
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<tbody>
<tr>
<td>1. Pose significant questions that can be investigated empirically</td>
<td>The strengths of the OECD material in the product streams I reviewed typically address this criterion through their attempts to fill in the gaps in what is known about a topic in order to contribute to addressing practical issues or problems faced by member countries.</td>
</tr>
<tr>
<td>2. Link research to relevant theory</td>
<td>While the material typically makes reference to literature in the domain and employs (more or less explicitly) conceptual frameworks appropriate to addressing the issues or problems, a more explicit treatment of why the literature reviewed or included was selected and a more critical appraisal of the conceptual frameworks (identification of the underlying assumptions, strengths, and limitations) would be of value, even if only addressed in a technical appendix. Please see note 7 above.</td>
</tr>
</tbody>
</table>
| 3. Use methods that permit direct investigation of the question | The material I reviewed typically employed research methods appropriate to the topic, though there was little discussion of why the particular approach was selected from among the universe of possible (plausible) approaches. My sense is that the authors or the product stream managers might have considered this unnecessary given that the primary audiences for the material are policy-makers and, on occasion, practitioners. Nonetheless, I think it useful that discussion of the approach to research be included in some of the material (even if only in an appendix). As the protocol material suggests:  

  . . . it emphasizes that a report on a research study should indicate the following:  
  • The link between the research question and the method used and why the method is the most appropriate.  
  • A detailed description of the method and procedure so that other researchers can repeat the study.  
  • Possible problems or limitations with the research method. |
| 4. Provide a coherent and explicit chain of reasoning | While the chain of reasoning employed was typically clear and logical, the material did not (typically) explicitly “rule out alternate or rival explanations” nor indicate how threats to validity were addressed. |
| 5. Replicate and generalize across studies          | Authors were typically sensitive to the challenges of generalization across jurisdictions with different structures and cultural conditions. However, because most of the material was not experimental or even quasi-experimental, the conceptual frameworks not critically appraised, and the description and justification of the approaches taken scant, it is unlikely that work could be replicated in the manner that the criterion suggests. On the other hand, authors typically showed how the results and conclusions they drew were consistent with those of others in the field. But, because the basis for selection of literature was typically not explained, it was difficult to determine whether the authors ‘cherry picked’ the material included. |
| 6. Disclose research to encourage professional scrutiny and critique | The fact that the material reviewed is publically available enables public and professional scrutiny. If there are internal peer-review processes employed by the product streams, I did not notice mention of them. |
7. Although it has no immediate bearing upon the specific task, it would be helpful to know how these particular initiatives became the focus of attention in the product stream, whether any given initiative in the stream is part of a larger program of research and development in the stream, and what, if anything, will follow from the work that has been done in the particular product stream.

8. The work of CERI is constrained by the necessity of appealing to partner countries for access and funding – a limitation that affects the scientific integrity of all of the product streams (see for example, my comments about the selection of the case study sites.)

9. CERI’s work proceeds on the basis of assumptions that have not received sufficient examination to determine whether they are reasonable working assumptions. For example, *Innovation in the knowledge economy: implications for education and learning* explains that:

   The basic assumption underlying this report is that educational R&D activities can be organised in such a way so as to constitute a system. In this context, the basic purpose of such a system is to develop, organise and disseminate knowledge that illuminates the understanding of the education system and nurtures its continuous improvement by providing supporting evidence either for the policy and decision-making process or for educational practice (5).

   As I mention in my comments about the knowledge management product stream, these assumptions not only underpin the report in which they appear, but apply to the entire body of work in that product stream. These assumptions and the assumptions (often unarticulated) of other product streams deserve to be examined closely to determine whether and to what extent they may apply. In other words, each product stream would benefit from a more explicit discussion of its working assumptions. A useful model, to which reference is made in *Innovation in the knowledge economy: implications for education and learning*, is Schuller, Jochems, Moos, & Van Zanten’s (2006) criticisms of the “generic template” for the assessment of educational research systems (7).

10. Knowing that some effort has been made by some OECD product streams to develop brief synopses (other than executive summaries) for policy and other audiences (policy briefs, fact blogs, RSS feeds, “Did you Know”, for example), such documents are not, for the most part, represented among the material the panel was asked to assess. I believe that these attempts to enhance the OECD’s communication of its work are laudable. In particular, I think that use of such synopses for the reports under consideration in this exercise would extend their reach and utility. Not everyone (especially not senior decision-makers) has the time to digest the (often) lengthy reports produced. There is material of value in the longer reports which, if distilled, would be of interest to a variety of audiences, including practitioners, those responsible for developing cabinet notes and submissions, program managers, senior officials, and politicians. I suspect that some of the value of the reports is lost because of their length and the necessity of locating the particular material of interest to a specific audience.
CERI has also made a number of praiseworthy attempts to use policy briefs to disseminate evidence from a more detailed and lengthy product, though the use of policy briefs seems uneven across domains and less extensive than I think desirable. In fact, I believe there are many more opportunities to make the work that CERI does accessible to decision-makers and practitioners. More attention to dissemination would, I think, increase the appetite that policy-makers and practitioners have for CERI’s work.

11. Having recently taught a course in the politics of educational governance, I am struck that this material – while primarily oriented to an audience of decision-makers – would provide useful for teaching purposes in courses, for example, devoted to higher education policy and politics, the sociology of education, educational psychology, etc.

12. CERI relies heavily on experts, though it is unclear how expertise is determined. One of the problems with this approach is the advice provided by experts does not always indicate the evidence that the expert is using to form her or his judgment. A second problem is that expertise takes time to develop and favours older, more established individuals rather than those new to the field who might have different perspectives than those held by established ‘experts.’ CERI might contemplate whether the use of a more transparent RFP process might enhance its work.

13. Many, perhaps most, of the literature reviews that are undertaken by CERI make use of experts who are given wide latitude in the identification, selection, and critical appraisal of the literature they review. There are no specific protocols regarding the conduct of such reviews. However, practice in the field is changing; it is increasingly the case that use is being made of systematic reviews of evidence in the field of education. Systematic reviews make explicit the specific question or questions the review will address, the search strategy that will be used to locate the relevant literature, the places where the reviewer will look for the literature, the criteria for including and excluding material from the review (often as a consequence of coding by two or more independent raters), the assessment and coding of the strengths and limitations of each of the research items reviewed (often as a consequence of coding by two or more independent raters), and, where possible, the representation of the relevant findings in terms of a common metric (effect size), and the analysis of the findings in light of the assessment of the quality of the research. CERI should consider making more extensive use of these techniques as a means of enhancing this aspect of its work.

14. CERI has made a number of praiseworthy attempts to encourage knowledge mobilization by encouraging interaction among policy-makers, researchers, and practitioners. One of the strategies to engender interest and support among countries is to pursue topics that have high visibility among jurisdictions (brain research, for example). While useful, the strategy has its limitations. Chief among them is that the evidence may be inadequate to support new policies or practices. When that is the case, it might be advantageous to caution the various audiences that the evidence is too limited at the present time to support changes to policy or practice.
Eric R. Hamilton, Ph.D.
June, 2010

Professional Preparation

Ph.D., Mathematics Education, Northwestern University, 1986.
B.A., University of Chicago, 1975. Major: Tutorial Studies, Concentration in Mathematics, Bible, Psychology and Education

Positions

2008-
Associate Dean for Education, Graduate School of Education and Psychology, Pepperdine University. Professor of Education with joint appointment in Mathematics.

2003-08
Research Professor and Director, US Air Force Academy Center for Research on Learning and Teaching, US Air Force Academy CO.

2004-2005
Visiting Professor, Center for the Study of International Cooperation in Education, Hiroshima University

1998-2003
Division Director and Acting Division Director, Research, Evaluation and Communication, National Science Foundation.
LIMITED TERM FEDERAL SENIOR EXECUTIVE SERVICE (SES).
Oversaw thirty scientific, technical and contract staff and $65 million annual investment budget, with typical division load of 150-200 open awards.

1996-1998
Program Director, Division of Educational System Reform, National Science Foundation.
Oversight for systemic initiative awards for mathematics and science education reform in urban centers, including Los Angeles, San Diego, New York, Jacksonville, Columbus, St. Louis, Baltimore, and Washington, DC

1986-1996
Associate Professor, Department of Mathematical and Computer Sciences, Loyola University Chicago (Promoted from Assistant Professor, 1992)

Director, Chicago Systemic Initiative, a comprehensive effort to reform mathematics and science education in Chicago.

Founder and Director, Access 2000 Chicago Partnership, an NSF-funded consortium of universities, museums and community organizations in Chicago, to promote the participation of underrepresented minorities in science and engineering fields.

1979-1986
Doctoral student, Northwestern University; Lecturer, Loyola University Chicago (1984-1986)
1976-1979 | Grade 6-12 Mathematics Teacher, Harvard School, Chicago

**Publications and Refereed Proceedings**


Patents

Hamilton, E. (1993). Computer Assisted Instructional Delivery System," or SlateMate. SlateMate is a pen-based networking system that provides educationally driven collaborative capabilities to classroom instruction, particularly mathematics instruction. Licensed for international telephony and collaboration software. US Patent 5,176,520


National Research Program Leadership

Supervised with signature program authority approximately $500 million in National Science Foundation investments in science and mathematics education and education research while at NSF:


IERI was the nation’s largest field initiated education research program.


Other programs: Technology Integration in Education (TIE), Data Collection and Analysis for the Systemic Initiatives

Recently funded research grants:


71


**Grants Funded Prior to Coming to USAFA**

Approximately forty additional grants prior to 2003 as lead author, totaling approximately $20 million.

**Related Activities**

1. **Recognition** The Business-Higher Education Forum awarded Access 2000 (an NSF Center Hamilton directed) the Anderson Gold Medal as the nation's outstanding partnership of business, higher education, and public schools (1993). Additionally, while at Loyola, he was a White House Fellowship finalist, was formally recognized by the *Chicago Tribune* as one of the city's most outstanding university professors, and received a Math/Science Leadership award from the US Department of Energy.

2. **Software development:** Hamilton has developed interactive, pen-based networking software for learning environments which he holds patents in the US, Canada, France, Germany and the UK. This work is licensed in Internet telephony software and in educational and corporate training and collaboration software.
3. **Other leadership activities:** Hamilton was lead developer of the Chicago Urban Systemic Initiative (USI) and was then loaned to the Chicago Public Schools to direct the USI, a comprehensive effort to improve mathematics and science education there.

4. **International Collaborations:** Established or advanced approximately twenty international collaborations involving education and learning science research while at NSF. After going coming to USAFA, involved in numerous collaborations involving Japan, China, Africa, England, and organizer and principal investigator for the 2006-2008 Distributed Learning and Collaboration (http://dlac-research.net) symposium series in Shanghai and Hangzhou China, Singapore, Germany, and Kampala Uganda involving approximately 60 researchers from 15 different countries.

5. **Visiting Professorships:** Edge Hill University, England (Short-term, May, 2007); Hiroshima University, Japan (semester sabbatical, 2004-2005)

6. **Proposal and program reviews:** Science of Learning Centers (NSF: SBE/CISE/EHR); SBIR (NSF: ENG/EHR); ROLE (EHR); Informal Science Education (NSF: ISE); Science of Design (NSF: CISE).

7. **Conference Papers:** Approximately 60 conference presentations in mathematics education, learning technology and design, educational system reform, federal research sponsorship.

8. **Editorial:** Associate Editor, *Transactions in Learning Technology*

**Recent Symposia and Workshops Organized/Co-organized**

1. Distributed Learning and Collaboration: DLAC-I (Shanghai and Hangzhou, China, 2006); DLAC-II (Singapore, 2007); DLAC-III (Tübingen Germany, 2008)


3. Assessment of Group and Individual Learning through Visualization (AGILeViz), workshops at the International Conference on Artificial Intelligence (Marina del Rey) and International Conference on Computer Supported Collaboration (Rutgers University).

**Collaborations**

<table>
<thead>
<tr>
<th>Collaborator</th>
<th>Institution/University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Lesh</td>
<td>Indiana University</td>
</tr>
<tr>
<td>Goretti Nakabugo</td>
<td>Makerere University, Uganda</td>
</tr>
<tr>
<td>Jeremy Roschelle</td>
<td>SRI International</td>
</tr>
<tr>
<td>Chris DiGiano</td>
<td>SRI International</td>
</tr>
<tr>
<td>Phillip Vahey</td>
<td>SRI International</td>
</tr>
<tr>
<td>Friedrich Hesse</td>
<td>University of Tübingen</td>
</tr>
<tr>
<td>Yanghee Kim</td>
<td>Utah State University</td>
</tr>
<tr>
<td>Frank Lester</td>
<td>Indiana University</td>
</tr>
<tr>
<td>Chee Kit Looi</td>
<td>Learning Sciences Lab, Singapore</td>
</tr>
<tr>
<td>Wayne Ward</td>
<td>Univ. of Colorado –Boulder</td>
</tr>
<tr>
<td>Amy Baylor</td>
<td>Florida State University</td>
</tr>
<tr>
<td>Barry Sloane</td>
<td>Arizona State University</td>
</tr>
<tr>
<td>Lupita Carmona</td>
<td>Univ. of Texas at Austin</td>
</tr>
<tr>
<td>Umesh Thakkar</td>
<td>University of Illinois</td>
</tr>
<tr>
<td>Ruimin Shen</td>
<td>Shanghai Jiao Tong University</td>
</tr>
<tr>
<td>Nagao Masafumi</td>
<td>Hiroshima University</td>
</tr>
<tr>
<td>David LaBine</td>
<td>Smart Technologies</td>
</tr>
<tr>
<td>Michael Jacobson</td>
<td>Learning Sci Lab, Singapore</td>
</tr>
</tbody>
</table>

73
Jianhua Tao, Chinese Academy of Sciences
Ron Cole, Boulder Language Technologies
Celia Hoyles, University of London
Mark Schofield, Edghill University, UK
Andrew Hurford, US Air Force Academy
Larry Shuman, University of Pittsburgh

Courses Taught (1984-2010)

Calculus and Advanced Calculus; Discrete Mathematics, Linear Algebra, Computer Architecture;
Research Methods (online); Differential Equations; Information Technology (online);
Integrated Mathematics and Computer Science (including calculus); Computer Science I;
Computer Science II; Operating Systems (Graduate); Microprocessors
and Microprocessing(Graduate)

Personal

Married, Kristy L. Hamilton (March 3, 1984)
Four children (12, 14, 16, 19)
Marathon runner

24521 Mariposa Circle
Malibu CA 90265
310-568-2370 (office at Pepperdine)
719-271-7965 (mobile)
eric.hamilton@pepperdine.edu
Curriculum Vitae

Hans Siggaard Jensen  
Born 1947 in Viborg, Denmark

Present position:  
Professor of philosophy of science  
Vice-Dean/Strategic Development, School of Education, University of Aarhus  
Head of the Center for School Research  
Visiting Professor, Kingston University, Kingston University Business School, London & ESADE,  
Universitat Raimon Lull, Barcelona  
Professor II, North Trøndelag College of Higher Education, Steinkjer, Norway

Chairman of the European Doctoral School on Knowledge and Management (EUDOKMA)  
Honorary President of the European Doctoral Association in Management and Business Administration (EDAMBA)  
Chairman of the Research Committee on Education and Creativity under the Danish Strategic Research Council  
Member of the Danish Academy of Technical Sciences  
Chairman of the Board, Issuu (see www.issuu.com)

Education:  
1966: Graduate from the Virum Statsskole in the mathematical-physical sciences line  
1968: Cand.art. in philosophy, University of Copenhagen  
1968: Associated degree in mathematics with mathematical logic as focus, University of Copenhagen  
1968-1970: Doctoral studies at the Department of Philosophy, University of California, Los Angeles as a Fulbright Fellow and as Chancellors Teaching Fellow  
1972: Mag.art. in philosophy with specialization in philosophy of science, University of Copenhagen (highest taught research degree)  
1974: B.Sc. in psychology, University of Copenhagen  
Thesis 1972:  
On Essence and Existence, An Essay in the Logical History of Concepts  
Thesis 1974:  
The Theories of Piaget and Vygotsky on Thinking and Learning

Employment:  
1972-1974: Lecturer in epistemology, University of Copenhagen  
1974-1976: Research fellow, philosophy of science, University of Copenhagen  
1976-1987: Associate professor, philosophy of science, University of Aalborg  
1986: Visiting professor, Department of Computer Science, The Technical University of Denmark  
1987-1989: Associate professor, philosophy of science, Department of Systems and Computer Science, Copenhagen Business School  
1989-1996: Docent, from 1995 at the Department of Management, Politics and Philosophy
1996-2001: Research professor
2001-2005: Executive Research Director, Learning Lab Denmark
2005-2008: Professor in philosophy of science, The Danish University of Education & Head of Department, Learning Lab Denmark
2008- Vice-Dean/Strategic Development

External positions:
1976-1981: External lecturer, philosophy of science, Department of Psychology, University of Copenhagen
1985-1991: External lecturer, philosophy of science, Department of Computer Science, University of Copenhagen

Academic positions:
1977-1979: Chairman, Study Board at the Faculty of Humanities, Aalborg University
1979-1982: Dean, The Faculty of Humanities, Aalborg University
1990-1999: Chairman and Director, The Doctoral Programme in Business Administration, Copenhagen Business School
2000-2004: Chairman of the Danish Research Council on Doctoral Education (FUR)
2000-2001: Member, the Danish Government Commission on Research and Research Policy
2000-2004: Member/Chairman of the Board, Nordic Research Academy (NorFA)
2006- : Chairman, Program Committee on Creativity, Innovation, New forms of Production and the Experience Economy, The Danish Strategic Research Council since 2008 The Program Committee on the Creative and Innovative Society
2007- : Member of the Committee for the Internationalization of the Danish Educational System

Ph.D.-supervisions:
Has supervised/ is supervising 14 ph.d.-students.

Research Grants from:
Statens humanistiske forskningsråd (Danish Research Council for the Humanities)
Statens samfundsvidenskabelige forskningsråd (Danish Social Science Research Council)
Tværgående forskningsprogrammer (Cross-disciplinary Research Actions, a program under the Danish Research Councils)
EU’s COST 13 program
EU’s COMETT program
EU’s ESPRIT program
EU’s SPES program (for doctoral education)
EU’s HCM program (for doctoral education)
EU’s Marie Curie Program (for doctoral education)
EU’s IST Programme
EU’s 6th Framework Programme (IST)

Research institution evaluations:
IDSIA, Schweiz
OTIC, Heerlen, Holland
Stellenbosch University Business School
Freie Universität Berlin
Brunel University

Evaluations at the national level:
Evaluation of the Finnish doctoral education system 2005

Son activité de recherche a accompagné la naissance vers 1960, puis le développement d’une nouvelle branche de l’astronomie tournée vers l’observation des astres par leur rayonnement infrarouge, à l’aide de télescopes situés à la surface de la Terre, mais aussi à bord d’avions ou de satellites-observateurs. Dans ce but, il a développé de nouveaux outils, tournés tout particulièrement vers la production d’images de très grande résolution, appliquées à l’étude de la surface et de l’environnement d’étoiles jeunes ou évoluées, ainsi que du milieu interstellaire. Il a contribué à l’introduction de l’optique adaptative en astronomie, afin de corriger les effets délétères de l’atmosphère terrestre sur les observations, et formé de nombreux chercheurs dans ce domaine. Mettant en œuvre des idées introduites par le français Antoine Labeyrie, il est l’un des artisans du nouveau télescope européen VLT au Chili (Very Large Telescope) pour en faire un interféromètre de haute résolution et l’appliquer notamment à l’observation des planètes extra-solaires.


Quelques ouvrages

• La main à la pâte. L'enseignement des sciences à l'école primaire. Ouvr. coll. présenté par G.Charpak, Flammarion, 1996 (traduit en portugais, vietnamien, arabe, chinois).
• Les Sciences du ciel. Sous la direction de P.Léna, Flammarion, 1996.


Birth date and birth place: March 12th, 1951; Munich

Educational background: 1967 - 1970 Vocational training (in engineering)
1974    B.A. in Adult Education (Diplom FH), Munich
1977    M.A. in Educational Science, Sociology and Psychology at the University of Heidelberg
1981    Ph.D. (Dr. phil.) in Educational Science at the University of Heidelberg
1989    Habilitation at the Faculty of Behavioural and Social Sciences, University of Heidelberg

Professional experiences: 1977 - 1978 Curriculum planning and educational research at the Heidelberg Institute for Educational Science (project for the Federal Institute of Vocational Training, Berlin)
1978 - 1987 Assistant Professor at the University of Heidelberg, Department of Educational Science (teacher training, educational planning)
1987 - 1991 Vice Director at the State Institute of Adult Education in Baden-Württemberg, Mannheim
1991 - 1998 Full Professor and Director of the Department of Education at the University of Freiburg
1998 - today Full Professor and Director of the Institute of Education at the University of Munich (teacher training, educational planning, school and vocational training, adult and further education)

1999 - 2002 Student’s dean of Faculty of Psych. and Education
2002 – 2005 Dean of Faculty of Psychology and Education

2007-2009 Member of Senat and University Council (Hochschulrat)
Professional functions: 1998 - today
President of German Educational Research Association DGfE
Speaker of Evaluation Committee of Leibniz Gemeinschaft,
Member of advisory board of Deutsches Jugendinstitut and Deutsches Institut für Erwachsenenbildung
Evaluator of DFG (f.e. quality of Education),
Editor of “Zeitschrift für Pädagogik”,
Member of advisory committee of Zeitschrift für Erziehungswissenschaft,
Member of Steering Committee of ESREA
CHARLES UNGERLEIDER

<table>
<thead>
<tr>
<th>Address</th>
<th>1805 – 701 West Georgia Street, Vancouver, BC, V7Y 1C6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>604.694.2712  Mobile: 778.228.0617</td>
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<td>Fax</td>
<td>604.662.3168</td>
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<tr>
<td>Email</td>
<td><a href="mailto:cungerleider@ccl-cca.ca">cungerleider@ccl-cca.ca</a></td>
</tr>
</tbody>
</table>

EDUCATION

**Ed.D. Sociology of Education** 1972
University of Massachusetts
Amherst, MA

**M.A. Sociology of Education** 1968
Teachers College-Columbia University
New York, NY

**California Standard Teaching Certificate** 1966
San Francisco State University
San Francisco, CA

**B.A. Political Science and History** 1965
San Francisco State University
San Francisco, CA

WORK EXPERIENCE

**Director of Research and Knowledge Mobilization** 2005 - present
Canadian Council on Learning
Vancouver, BC

**Professor – Sociology of Education** 1970 - present
The University of British Columbia
Vancouver, BC

**Deputy Minister of Education** 1998 - 2001
Province of British Columbia
Victoria, BC

**Associate Dean – Teacher Education** 1993 - 1998
The University of British Columbia
Vancouver, BC
HONOURS & AWARDS

Reactor, “Power Without Responsibility: Institutions,” The Boston, Melbourne, Oxford Conversazioni on Culture and Society, St, Catherine’s College, Oxford UK

Resident, Rockefeller Foundation Bellagio Centre, Italy - Project Title: “The Future of the Canadian Public School.” 2002

Murray Elliott Award for Teacher Education, Faculty of Education, The University of British Columbia 2003

Research Trainee Fellowship, Teachers College-Columbia University 1966

PUBLICATIONS

BOOKS


JOURNAL ARTICLES


Canadian Journal of Education 29(1) 1-21.

Performance et cheminement scolaires des jeunes d’origine immigré au Canada:
apport actuel et utilisation des banques de données provinciales. Cahiers
Québécois de démographie. 34(1) 173-185


CHAPTERS


Ungerleider, C. & T. Burns (2004) The State and Quality of Canadian Public Education in D. Rafael (Ed.) Social Determinants of Health: Canadian Perspectives. Toronto: Canadian Scholars’ Press. 139-154


FILM AND TELEVISION PRODUCTION

Ungerleider, C.S. (Executive Producer and Director), (1994). Teaching: Making a difference. Provincial Teacher Supply and Demand Committee, (Running Time: 25 minutes)


ARTICLES IN PROFESSIONAL PUBLICATIONS (Inter-group Relations)


Ungerleider, C. (September, 1990) Students know their Charter rights. Teacher: Newsmagazine of the B.C. Teachers' Federation, 3(1) p. 10.


ARTICLES IN PROFESSIONAL PUBLICATIONS (Education)


BLOGS (ACADEMIC MATTERS)

http://www.academicmatters.ca/bloggers/policyandeducation.gk?catalog_item_id=1837&category=/blogger/policyandeducation


we want? Academic Matters.

Academic Matters.


Ungerleider, C. & S. Oldford (December 19, 2008) Student Mobility and Transfer in
Canada. Academic Matters.

Ungerleider, C. & S. Oldford (November 4, 2008) Canadian post-secondary education:
Not as simple as it once was. Academic Matters.

CHAPTERS IN REPORTS

committee action. A Manual to Promote Multicultural and Anti-racist Education.
British Columbia School Trustees Association, 300-318.

British Columbia School Trustees Association, 542-551.

CURRICULUM MATERIALS

Classroom Videos, Burnaby, B.C.

Ungerleider, C.S., et. al. (April 1990). Intercultural and race relations staff
development program. Association of Neighbourhood Houses of Greater
Vancouver, Collingwood Neighbourhood House and Kiwassa Neighbourhood
House, 69 pp.

sexist educational program for teachers, 157 pp.

Ungerleider, C.S. & Madryga, R. (1887) Student guide for education 492: The critical

From 1980 to 1982, The Vancouver Sun commissioned Charles Ungerleider and Ernest
Krieger to create Newscope, a curriculum resource for use by teachers in British
Columbia.

Vancouver Sun, 8 pp.

Newscope, Vancouver: The Vancouver Sun, 4 pp.


BOOK REVIEWS

Ungerleider, C.S. (December, 2005) Governing Education. B. Levin. Canadian Public Administration Volume 49 (1)


Ungerleider, C.S., (1991). When television was young. Historical studies in education. 3 (2),


OTHER PUBLICATIONS


Ungerleider, C.S. & D. Court (June 1989). An assessment of the needs of program
coordinators working in neighbourhood houses. Association of Neighbourhood
Houses of Greater Vancouver.

Ungerleider, C.S., (1989). Multicultural race relations exchange and leadership
training: An evaluation. Canadian Council on Multiculturalism in Education.

Tepper, E. L. & C.S. Ungerleider, (March, 1989). Training as a tool for change in a
polyethnic and multiracial society. Ministry of Citizenship, Government of
Ontario.

Canadian immigration personnel. Ottawa: Employment and Immigration

Evaluation and implementation report. Ottawa: Multiculturalism Directorate,
Secretary of State, (Contract 3FX64), 127 pp.

Ungerleider, C.S. (Editor), (1981). Perspectives on television education, Ottawa:
Minister of Supply and Services, 81 pp.

for the 1968 compensatory education survey: Characteristics of participants in title I
programs. Washington, D.C.: U.S.O.E., Department of Health, Education and

data for the 1968 compensatory education survey: Description of services offered
by title I programs and degree of urbanism. Washington, D.C.: U.S.O.E.,
Department of Health, Education and Welfare (Contract OEC-0-9-0334-
3354(010), 152 pp.

Youth tutoring youth: Training manual. New York: National Commission on
Resources for Youth, 118 pp.

Youth tutoring youth: Tutor's handbook. New York: National Commission on
Resources for Youth, 47 pp.

map of the school superintendency. Program for Situational Analysis. Teachers
College-Columbia University, 68 pp.

CONFERENCE PRESENTATIONS (1985-present)

Success/Learning to 18 Strategy,” Canadian Society for the Study of Education,
Ottawa, ON.
Ungerleider, C. (May 20, 2009) “Using evidence to change complex educational systems: Canada,” The Ninth Annual Campbell Collaboration Colloquium; Oslo, Norway

Ungerleider, C. (May 18, 2009) “Issues in the conduct and dissemination of rapid reviews of evidence,” The Ninth Annual Campbell Collaboration Colloquium; Oslo, Norway


Ungerleider, C.S. (September 30, 1994) Is curricular inclusion possible? The Inclusive Curriculum: Setting Our Own Agenda: A conference about making the curriculum more inclusive and reflective. Sheraton Landmark Hotel, Vancouver, British Columbia


Ungerleider, C.S., (October, 1985) Social Darwinism is alive and well!: The social and political context of recent educational changes in British Columbia. Administration and Policy Studies in Education, McGill University, 19 pp.


Ungerleider, C.S., (March, 1985) A tale of one city: Advancing human rights through civic

Ungerleider, C.S., (March, 1985). Television and politics. Faculty/Graduate Student Symposium on Political and Moral Predicaments, Department of Sociology and Anthropology, Simon Fraser University; Burnaby, B.C., 15 pp.


INVITED PRESENTATIONS


Ungerleider, C. “Politics and Teacher Professionalism in Canada,” 2006 Atlantic Educators’ Conference, St. Thomas University and the University of New Brunswick, November 17, 2006

Ungerleider, C. “Public Schooling: What the System Wants,” Public School Boards’


Ungerleider, C. “Learning and Liberty,” WestCAST, Vancouver, BC. February 18, 2005

Ungerleider, C. “Teacher Unionism and Professionalism in British Columbia,” Educational Administration Seminar, Department of Educational Studies, The University of British Columbia, January 23, 2004


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Ungerleider, C.S. “You don’t know what you have until it’s gone: A Lament for the future of public schooling in Canada,” Faculty of Education, University of Manitoba, Winnipeg, Manitoba, October 9, 2003


**PROFESSIONAL MEMBERSHIPS**

Canadian Society for Studies in Education  
American Educational Research Association
ANNEX III
TERMS OF REFERENCE

Introduction

The Centre for Educational Research and Innovation (CERI)\textsuperscript{7} is currently the object of an In-depth Evaluation (IDE), as part of the OECD’s internal process for evaluating the work of its committees and programmes. Within the framework of the IDE, it has been agreed that data will be collected and analysed so as to assess CERI from the double perspective of the education policy and the research communities. This document maps out the process for drawing on the perspective of the research community via a panel assessment of the work conducted by CERI from 2004 to 2008.

The assessment will focus on the following areas:

- the scientific quality of the work being produced by CERI;
- the relevance of the work with regard to recent and current research issues;
- the likelihood that CERI’s work will usefully inform longer-term education policy developments and increase the understanding of educational innovations.

The exercise will take place from June to September 2010. Each retained expert will be expected to devote five days to making the assessment, including a two-day visit to Paris.\textsuperscript{8}

Process

The panel review will be prepared and conducted as follows:

- Identified experts will be invited to indicate their interest in participating in the panel review, with each one being asked to select a minimum of five product streams (See Annex I) which correspond with their areas of professional interest and expertise.
- On the basis of an analysis of the responses of the experts, five will be retained with the aim of ensuring that most product streams are covered by the panel while maximizing the number of product streams where two experts will provide an assessment.
- The retained experts will be sent the relevant hyperlinks enabling them to access the documents within their selected product streams (or the documents in electronic form, as convenient) and a template to provide a framework for their assessments.\textsuperscript{9}

\textsuperscript{7} [http://www.oecd.org/about/0,3347,en_2649_35845581_1_1_1_1_37455,00.html](http://www.oecd.org/about/0,3347,en_2649_35845581_1_1_1_1_37455,00.html)

\textsuperscript{8} Resources have been set aside by CERI to cover the fees, travel costs and per diems of the experts.

\textsuperscript{9} See Annexes II and III for information and guidance on the assessment criteria.
• The experts will review their selected CERI products and complete their templates.

• The experts will come to Paris to question CERI staff on the products so as to clarify their understanding of the work, refine their individual assessments and arrive at a collective assessment.

• A rapporteur will be nominated to produce a synthesis report on the basis of the individual assessments and discussions within the panel.\(^{10}\)

The review process will be coordinated by the OECD Evaluation Coordinator\(^ {11} \) who may also call on the support of an independent consultant as necessary.

### Timing

<table>
<thead>
<tr>
<th>Steps</th>
<th>Dates/Deadlines</th>
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<tr>
<td>Invitation and selection of experts</td>
<td>May 2010</td>
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<tr>
<td>Sending of assessment material</td>
<td>June 2010</td>
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<tr>
<td>Review by experts of CERI products</td>
<td>July and August 2010</td>
</tr>
<tr>
<td>Completion of preliminary assessment templates by experts</td>
<td>By Wednesday 8 September 2010</td>
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<tr>
<td>Sessions with CERI staff and production of a first draft of a collective assessment</td>
<td>Two days in Paris w/c 13 September 2010</td>
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<tr>
<td>Transmission of a final collective assessment to Evaluation Coordinator</td>
<td>By Tuesday 28 September</td>
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</table>

\(^{10}\) All inputs into the process provided by the experts will be treated as confidential. The synthesis and collective assessment will be made on a non-attributable basis.

\(^{11}\) The IDE function is situated in the Council Secretariat and conducts evaluations under the oversight of an Evaluation Committee, an advisory body of the OECD Council composed of six ambassadors. The IDE function is organisationally independent of the OECD’s Education Directorate.
ANNEX II
EVALUATION CRITERIA AND RATINGS

Evaluation Criteria

1. **Scientific quality of the research:**
   1.1 Originality of the ideas and the CERI research approach.
   1.2 Quality of the CERI publications
   1.3 Quality of other CERI outputs (seminars, forums, workshops, etc.).

2. **Scientific relevance of the research:**
   2.1 Scientific relevance of CERI work in terms of addressing key questions in the field of educational research.
   2.2 Significance of the contribution of CERI work to the field of educational research.

3. **Potential impact:**
   3.1 Potential of CERI research for informing longer-term education policy developments
   3.2 Potential of CERI for increasing the understanding of educational innovations

Ratings

CERI product groups will be assessed against the abovementioned criteria according to the following five-point scale: very high (5), high (4), medium (3), low (2) or very low (1).
### ANNEX III
SCIENTIFIC PRINCIPLES AND GUIDING QUESTIONS FOR ASSESSING THE QUALITY OF SCIENTIFIC RESEARCH IN EDUCATION

<table>
<thead>
<tr>
<th>Scientific Principles</th>
<th>Guiding Questions</th>
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<tr>
<td><strong>1. Pose significant questions that can be investigated empirically</strong></td>
<td>Empirical research involves investigation that uses observations to guide conclusions. Research questions that are significant do one or more of the following: • Fill in the gaps in what we know about a topic. • Seek to identify why something occurs. • Solve a practical problem. • Test a new idea or hypothesis. • Expand on scientific knowledge from prior theories and research.</td>
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<td><strong>2. Link research to relevant theory</strong></td>
<td>Theories vary in scope; the more well-known scientific theories tend to be broad such as Einstein’s theory of relativity. Theories that are smaller in scope, sometimes referred to as conceptual frameworks, guide most research studies, particularly in the social sciences and education. Nonetheless, such theories provide the reason for the research design and interpretation of the findings. For example, the theory behind teacher professional development is that teacher learning influences instruction, which in turn influence student achievement. This theory is relatively small in scope because it applies only to teacher learning, in contrast to a theory such as Piaget’s, which applies to child and adolescent development. Theories that are small in scope however, can provide the rationale for scientific research.</td>
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<td><strong>3. Use methods that permit direct investigation of the question</strong></td>
<td>This principle means that the <em>research method</em> should be appropriate to the <em>research question</em>. The appropriateness of one method over another is the subject of debate. This is particularly true in the social sciences where research studies usually involve human subjects. Principle 3 however, does not focus on a particular research method. Rather, it emphasizes that a report on a research study should indicate the following: • The link between the research question and the method used and why the method is the most appropriate. • A detailed description of the method and procedure so that other researchers can repeat the study. • Possible problems or limitations with the research method.</td>
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<tr>
<td>Scientific Principles</td>
<td>Guiding Questions</td>
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<td>As Principle 1 indicates, science involves the measurement of observations. In social science research, this means that human behavior will be observed, measured and recorded. The method used to measure observations is critical because errors in measurement can influence the results. For this reason, research studies should report on the validity and reliability of the measuring instruments that are used.</td>
<td>validity and reliability of the measuring instruments?</td>
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<tr>
<td>4. Provide a coherent and explicit chain of reasoning</td>
<td>Does the study describe potential problems with the method used?</td>
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<tr>
<td>Conclusions about the results of research are based on inferential reasoning. This means that researchers make logical judgments based on the results of their research and on conclusions from prior research. The logic of their judgments depends on their research questions and the methods they used. An important part of this logical reasoning is to rule out alternate or rival explanations, also referred to as threats to validity. To counter such threats, researchers need to indicate in their studies how they avoided or controlled for such errors.</td>
<td>• Does the study rule out explanations for the results other than the explanation given by the researcher?</td>
</tr>
<tr>
<td>5. Replicate and generalize across studies</td>
<td>• Does the study demonstrate how errors or threats to the validity of the results were avoided?</td>
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<td>Replication means that a researcher who uses the same study method in the same situations or contexts as another researcher can make the same observations and obtain the same results. (Alternatively, the same researcher can obtain the same results on two different occasions.) Generalization refers to how much the results can be replicated in different contexts and with different populations. When the results of a study can be replicated and generalized, the results can be trusted more than results from studies without these characteristics. Usually, many research studies are needed to produce a body of knowledge that provides this information.</td>
<td>• Is there sufficient information to repeat the study?</td>
</tr>
<tr>
<td>6. Disclose research to encourage professional scrutiny and critique</td>
<td>• Are there other studies that have found similar results but in different settings or with different participants?</td>
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<td>Through this principle, the National Research Council emphasizes that the accumulation of scientific knowledge depends on its dissemination to members of the scientific community for professional critique. Researchers should submit their reports to journals and publications that require peer review. Presentations on research at professional conferences also provide the opportunity for critique. To facilitate scrutiny, researchers should keep accurate and accessible records of their investigations so they can provide information for review purposes. For education research to advance, the community of education researchers must enforce the norms of scientific research when judging education research studies.</td>
<td>• What additional research is needed to extend and generalize the results of the study?</td>
</tr>
<tr>
<td></td>
<td>• Where has the study been published?</td>
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<tr>
<td></td>
<td>• Has the study been reviewed by other education researchers?</td>
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