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SITES-module 2: one study, many perspectives

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The papers in this Symposium were the first public reports from countries participating in *Module 2* of the *Second Information Technology in Education Study* (SITES M2). The SITES study started in the autumn of 1997 with an indicators module (a limited school survey in November 1998). The second module of international comparative case studies of innovative practices supported by information and communication technology, SITES M2, started in 1999 and was the basis of these papers. A third module will include a survey and performance assessment of students.

SITES is conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). IEA's mission is to contribute through its international comparative studies to enhancing the quality of education. SITES M2 is not a 'typical' IEA study as it is not a survey type of international comparative study, but a collection of 174 case studies from 28 countries. On the one hand the study will provide policy makers and educational practitioners with information about innovative pedagogical practices using technology (abbreviated as

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IPPUTs) from across the world, showing the richness of innovative pedagogical applications of ICT in education ('what is possible with ICT'). On the other hand the analyses of the innovative cases will provide insights into factors and conditions that facilitate the realisation of such innovative practices (e.g. how can they be realised in other conditions?). On top of this, the set of cases allows countries, not only to study their own innovative cases within the perspective of their own national policies and developments on ICT in education, but the international comparative perspective allows countries also to study their innovative cases against similar cases from other countries.

SITES M2 allowed for analyses from a variety of national perspectives
These first reports from the SITES M2 study show that the study provides a very rich data set that clearly allows for addressing a great variety of national interests. This versatility is illustrated by the research questions addressed in the eight national papers, which took eight different perspectives.

- In what different ways does ICT influence teaching and learning processes in schools (Australia)?
- Is it possible to characterise differences in innovations that are theoretically derived and empirically confirmed for relevant ICT-supported cases? (Israel)
- Would innovative teaching practices using ICT contribute to the development of learning outcomes essential for preparing the younger generation for the challenges of the knowledge society of the 21st century (Hong Kong SAR)?
- How do different kinds of ICT uses create new conditions for learning and knowledge construction (Norway)?
- To what extent does ICT use promote students' and teachers' collaboration (Germany)?
- How are IPPUTs contributing to redefining the classroom, e.g. by promoting the involvement of others outside the physical classroom, or by changing interactions within the classroom (England)?
- Are factors accounting for successful ICT-supported innovation and reform within a country that is geographically and economically challenged, the same as those in countries without such disadvantages? (Chile)
- Does the level of ICT integration in the learning process depend on the (lack of) support from local authorities (Denmark)?
- Which factors (such as teacher characteristics and environmental factors) do educators perceive as the most significant in bringing about successful implementation of ICT in education (Canada)?
- What are the attributes of the school context that appear to be critical for successful implementation of innovative teaching practices using educational technology (USA)?

Each of these perspectives is in principle also an angle from which the database of international IPPUTs can be analysed. It is interesting to see that the papers find their starting point in the conceptual framework underlying the study. Each national perspective has one of the components of the frame as its main focus: curriculum goals and content (Hong Kong, Norway); a perspective of students and teachers (Germany, Canada); the ways of ICT use (Australia); the IPPUTs themselves and their influence on the teaching/learning processes (England), the school context — the meso level (USA) or the wider environment of the school (e.g. Denmark).

One may hope that as soon as the international database is made available by the IEA, researchers will widen their scope of analysis by including cases from other countries. National researchers may apply several criteria for selection: they may take cases from 'relevant other' countries, they may focus on a certain type of IPPUT, or they may focus on certain school types.

This Special Issue clearly illustrates that a collection of international case studies provides rich and promising possibilities for further analyses.

The international perspective.
The paper by Kozma and Anderson illustrates that the study will offer many opportunities for cross-national, cross-case analyses. The first step of the analysis resulting in the six clusters of IPPUTS invites the next step, namely analysing the commonalities of the clusters.

The international cross-case analyses in SITES M2 must provide important input for *the next module,* SITES M3. For that purpose it is hoped that this international analyses will address at least two important questions, namely: what are the characteristics of the different types of innovative pedagogical practices using ICT and what are the factors which make them sustainable? Cross-case analyses may result in identifying a number of characteristics of successful cases and strategies that provide input for SITES M3, especially the part that will assess the *readiness of schools and teachers* for innovative pedagogical practices needed in education for the future.

Concluding remarks
The SITES M2 study allows policy makers, practitioners and researchers interested in questions related to shaping and developing education in an information age to address important and highly relevant research questions, such as the ones already mentioned about the characteristics of successful IPPUTS and their sustainability. Other relevant research questions include transferability of technology use, the use of 'non-cutting edge' technology in realising innovative pedagogy and the embedding of IPPUTS in the curriculum.

In studying such questions, the contexts of the cases should be taken into account as a factor. Some IPPUTs could only be developed because they are part of special policy programmes providing resources in terms of hardware, software, extra manpower, or specialist input. Such IPPUTS are important, as these reveal what is, in principle and under certain conditions, possible. But scaling up from these special cases to 'normal' schools that have to implement such innovative practices within the 'normal' budgetary conditions presents another challenge and calls for specific research efforts. It is for that reason important that careful attention be given to those cases in the international database of schools realising such innovative pedagogical practices within the 'normal' operational conditions of the school.

To conclude, if the studies presented in this Special Issue (and others that will follow in the future) will be looked on as studies generating hypotheses on the 'why' and 'how' of IPPUTs, further cross-case analyses may have the character of confirmative case analyses that will test these hypotheses. Such an approach will in the end make SITES M2 a study contributing even more in important and meaningful ways to the body of knowledge on ICT in education.