KidSmart
early learning program

IBM

Early Learning in the Knowledge Society

Report on a European Conference

22 and 23 May 2003, Brussels

Contents

Foreword

The emerging Knowledge Society has raised the priority of education and learning for governments and their citizens. When the European Council's Lisbon Summit in 2000 set the objective of creating the most competitive knowledge-based economy in the world by 2010, they clearly recognised the growing importance of 'knowledge' as the key differentiator for competitive advantage. They stressed the need for sustainable growth and employment, social cohesion and quality of life. Reaching this ambitious target can only be done by recognising that knowledge, innovation and business dynamism are vital for opening up new opportunities for growth. This is a challenge that can only be met through a strong partnership involving government, the education sector and business and by recognising the complementary contributions of each participant.

In this context, governments are reviewing Early Learning provision for children up to the age of six years. A recent report identified a worldwide trend for reviewing early learning and an increased focus on developing more specific curriculum goals and raising the professional qualifications of practitioners for this age group. IBM's KidSmart Early Learning Programme supports this agenda with strong evidence that the introduction of information and communications technology (ICT) can be a powerful tool for transforming education. The programme, introduced in 1999, addresses the 'digital divide' in IT skills and develops professional skills to help children aged 3-6 years reach the highest level of academic performance. Results from programme evaluations around the world indicate strong gains in both these areas, showing that the quality of teaching and learning supported with ICT has increased significantly and children's motivation for learning has benefited from the introduction of the KidSmart Early Learning Centres.

IBM organised the European conference on Early Learning in the Knowledge Society to review the use of ICT in early education and to identify how policy can be strengthened. The conference delegates brought strong evidence and experience of the impact of ICT on expanding children's learning and developing practitioners' skills. They also identified four areas where policy development is needed to spread the benefits that best practice in this area can deliver. This was the first conference of its kind to bring together policy makers with leading practitioners, consultants and academics. This formation of professional networks is a powerful way to accelerate the changes that are needed to achieve the Lisbon agenda and vision for Europe to provide opportunity for all and equip future generations with the skills that they need. IBM will continue to support this process through partnerships at a European and national level.

Hans-Ulrich Maerki
General Manager,
IBM Europe Middle East Africa

Executive Summary

The Early Learning in the Knowledge Society conference held on 22 and 23 May 2003 brought together 117 delegates from 21 countries in a high level forum to examine effective practice and emerging policy strategies related to the use of ICT in Early Learning settings. This strategic conference was organised by IBM at a time when many national governments have completed the initial phases of ICT implementation in primary and secondary education and are becoming aware that new technologies can also make an important contribution to the social, cognitive and emotional development of younger children.

Government interest in the use of ICT in Early Learning reflects a growing awareness that children of all ages now live in a media-rich environment and interact with a diverse range of electronic devices both inside and outside the home. Proponents of ICT in Early Learning point out that it is no longer appropriate to suspend learning about and with these new technologies until our children begin formal schooling. They are part of each child's and parent's world and have the potential to provide even very young children with opportunities for new forms of creativity, communication and collaboration that are not dependent upon mastery of the spoken and written word. The potential of ICT to empower children with learning difficulties and special needs is yet another reason to explore the uses of new technology early on in a child's development.

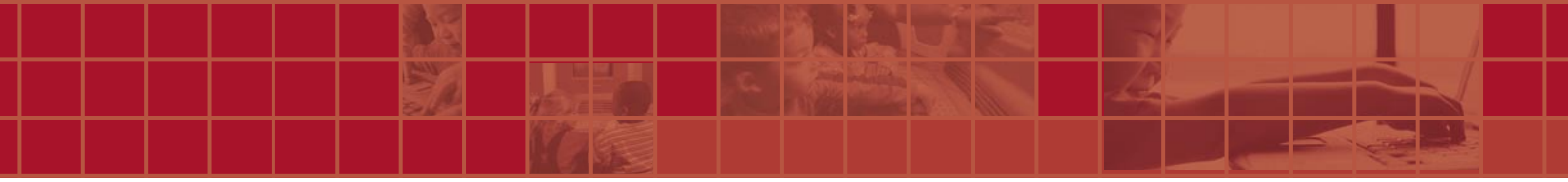
Research into the use of ICT in Early Learning, however, is only just beginning in most countries and a comparative study on national approaches in all member states of the European Union has yet to be undertaken. Currently Europe also lacks the sort of large-scale, longitudinal study of ICT in Early Learning that has recently been published in the US[1]. Against this background, the Early Learning sector including national and regional policy makers, both public sector providers and those from non-governmental (not for profit) sectors, leading practitioners and researchers, and representatives of the European Commission met to review the status of ICT in Early Learning and make recommendations for policy development.

While much needs to be done in terms of research into the impact of ICT in Early Learning, the conference made clear that practitioners in this sector are already making innovative use of new technologies, even where resources and funding are limited. As this report highlights, there is a growing number of examples of best practice related to the use ICT in Europe's Early Learning settings and growing confidence that investment in this area both enhances child development and has strong potential to yield significant long-term social returns.

The IBM KidSmart Early Learning Programme is one of the initiatives making a significant contribution to developing ICT practice in Early Learning settings across Europe and the conference provided an opportunity to discuss the interim findings from a major evaluation of the programme involving 117 settings in five countries. The final results will be published at the end of 2003 but this initiative already shows that the appropriate use of new technologies can make a key contribution to how young children learn. The implication of the findings is that policy makers should now start to consider how the ICT provision currently made for primary schools can be extended to the early years. Although this will not be an easy task in an education sector that is already working hard to meet demands to deliver more quantity and quality in education delivered by schools, the conference demonstrated the solid base of skills, knowledge and expertise that already exists to build upon.

The conference brought together policy makers and practitioners in a single forum in order to establish an overview of the current status of ICT in Early Learning settings across Europe and to exchange and debate effective strategies, in a process which would inform and make recommendations for education policy in this area. Keynote addresses from The European Commissioner for Education and

[1] *Young Children's Access to Computers in the Home and at School in 1999 and 2000: early Childhood Longitudinal Study. US Department of Education Institute of Education Sciences. National Centre for Educational Statistics 2003.*



Culture Viviane Reding and Hans-Ulrich Maerki, General Manager of IBM Europe, Middle East and Africa, set the context for this process and emphasised the strong potential for Early Learning to make an impact on the wider economic and social goals set by the Lisbon Summit through raising educational attainment and embedding a culture of lifelong learning. Through the presentations and discussions in the three conference workshops the delegates highlighted a number of key actions and priorities which can be taken forward from the conference to help develop a co-ordinated policy agenda for ICT and Early Learning at regional, national and European levels.

Role of ICT

The conference recognised that children are surrounded by technology from a very young age and that there is a growing obligation on Early Learning practitioners to help children develop a 'critical awareness' of ICT. ICT must also be seen as encompassing virtually every audiovisual resource. Many of the exemplary practices at the conference demonstrated that ICT in Early Learning is about much more than personal computers and that highly innovative work is being carried out using programmable toys, floor robots, digital cameras, scanners, mobile telephones, and cassette and video recorders.

A developing curriculum and pedagogy

There is now an evolving pedagogy related to the use of ICT in Early Learning settings and many examples of best practice using ICT were evident at the conference. Both practitioners and research studies can provide evidence of how ICT can stimulate creativity and motivate and encourage children to acquire new skills and knowledge. There is also a growing consensus concerning some key guiding principles that determine the effectiveness of ICT in the early years, and this needs to be built into codified practice.

Practitioner training

The conference was unequivocal that practitioner training and ongoing professional development for all staff is perhaps the single most important issue that is key to the successful implementation of ICT in Early Learning settings. Successful training depends on providing opportunities for collaborative reflection and for sharing best classroom practices as well as presenting materials and resources developed with children. It is also essential that training goes beyond helping practitioners to develop their ICT skills and focuses on how new technologies impact on pedagogical processes, the curriculum and work with parents.

Resources

A minimum level of resourcing is important. Innovative forms of play and learning are much more likely to emerge where computers, a diverse range of software, Internet access and other forms of ICT are available in each classroom and can be used throughout the day as multi-functional tools that can be integrated with other activities.

Knowledge building

There is very little research that indicates either how to develop more successful strategies for the implementation of new technologies in the early years or which reports on the impact of the use of ICT with younger children. Successful policy related to the use of ICT in Early Learning settings can only be developed in tandem with extended research programmes at both a national and European level. There is a particular need for forms of applied and action research that directly involve practitioners and lead rapidly to the development of practical solutions, recommendations and guidelines that will encourage the take-up of current best practice.

Additional areas highlighted throughout the conference were:

- **Digital divide.** There are still huge disparities in children's access to ICT. There is evidence that the KidSmart Early Learning Programme is helping to bridge the 'digital divide' in disadvantaged areas and has both improved children's digital literacy and made a significant difference to children's social skills, behaviour, thinking skills, concentration, memory and language development. Discussion of the 'digital divide' also needs to consider issues beyond access. Practitioners need to work with parents so that they start to use software with their children that provides real educational opportunities rather than simple 'edutainment.'
- **Software.** There is a need for 'open-ended' educational software that reflects current pedagogical thinking, stimulates creativity, encourages collaboration and leaves scope for practitioners to intervene in order to support and interact with the child.
- **Special needs.** The potential impact that ICT can make to children with atypical and special needs is difficult to overestimate. Both personal computers and switch activated toys can catch the attention of children who are difficult to engage by other means.
- **Parents.** Parents respond well to being involved in the education of their young children, and children benefit when parents actively support them in their use of the computer and other forms of ICT. Current fragmented initiatives to improve the digital literacy of adults may also be improved by looking at how some Early Learning settings are demonstrating ways in which children and their parents can jointly experiment and learn with new technologies.

Summary of Conference Policy Recommendations

The conference made four detailed recommendations considered key to the development of a strategic policy agenda for the use of ICT in Early Learning. These are presented later in this report (page 27) and can be summarised as:

1. Include Early Learning in national ICT strategies for education.
2. Urgently provide initial training and ongoing professional development for all practitioners.
3. Optimise ICT policies by supporting parental involvement.
4. Support knowledge building and co-operation at all levels for practitioners, policy makers and parents.

Conference Programme

22 May 2003

10:00–11:00 Opening plenary session

- **Welcome: Richard Straub**, Director, IBM Learning Solutions, Europe, Middle East and Africa
- **Commissioner: Viviane Reding**, European Commissioner for Education and Culture
- **Hans-Ulrich Maerki**, General Manager, IBM Europe, Middle East and Africa

11:00–12:30 Research presentation and panel discussion

Evaluation of the KidSmart programme in Europe

- **Professor Iram Siraj-Blatchford**, University of London Institute of Education

Panel discussion

- **Mr. Jouni Kangasniemi**, Senior Adviser, representing Tuula Haatainen, Minister for Education, Finland
- **Ms. Corinne Hermant**, Directorate-General for Education and Culture, European Commission
- **Ms. Valerie Cox**, Head of Early Education and Child Care, Scottish Executive, UK
- **Mr. David Mulville**, Executive Vice-President, Riverdeep
- **Professor Hans Eirich**, State Institute for Early Childhood Education and Research, Germany
- **Mr. Kenneth Spence**, Gilmerton Children's Centre, UK

Moderator: Richard Straub, Director, IBM Learning Solutions, Europe, Middle East and Africa

12:30–14:00 Lunch

14:00–15:30 Workshop 1: Sharing effective practices

A and B: Practitioner training

C and D: Institutional practice

E and F: Classroom practice

15:30–16:00 Break

16:00–17:30 Workshop 2: Developing the role of ICT in early childhood education

A. The role of ICT in the cognitive, social and emotional development of young children
B. Pedagogical approaches to the use of ICT in Early Learning
C. The contribution of ICT to the socialisation and emotional development of children with atypical and special needs
D. Addressing the digital divide through early education
E. Effective partnership with parents in developing awareness and appropriate uses of ICT with their children

17:30–19:00 Tour of demonstration stands

19:00–22:30 Conference dinner

Conference Programme

23 May 2003

Chair: Richard Straub, Director, IBM Learning Solutions, Europe, Middle East and Africa

08:30–09:20	Feedback from workshops 1 and 2
09:20–10:30	Policy directions for ICT and Early Learning • **Yael Ravin**, Program Director, IBM Institute for Advanced Learning, New York • **Professor Doutora Mariana Torres Cascais**, Secretary of State for Education, Portugal
10:30–12:00	Workshop 3: Recommendations and actions
12:00–13:15	Lunch
13:15–14:00	Concluding plenary session Presentation of conference recommendations Concluding remarks • **Ms. Valerie Cox**, Head of Early Education and Child Care, Scottish Executive, Scotland • **Richard Straub**, Director, IBM Learning Solutions, Europe, Middle East and Africa

Conference Quotes

"As European Commissioner in charge of education, training and culture, the message I would like to bring today is that, at the political level, there is an increased awareness of the importance of early learning as the foundation for successful learning throughout life. At the centre of our efforts is – and will be – the concept of lifelong learning. This widens our concept of what happens in school and the role of formal education throughout life. If a policy based on the concept of lifelong learning is to achieve its full potential, it is vital that we think in terms of a continuum, beginning at the earliest stages of education, and continuing, essentially, throughout the individual's lifetime."

"My first conclusion which I draw from my observations on current work in this field is the need for more educational research, and the learning as such should be the focus of the research. My second conclusion is to stress the importance of preparing pre-school teachers for the upgrading of pre-school education through the use of ICT. This may be the most important task to start with. Pre-school teachers must be 'digitally literate,' allowing them to understand when and how they may effectively use the computer. It seems essential to me that they get an in-depth understanding of the effective use of ICT, in particular with regard to personal, social and emotional development; communication, language and literacy; mathematical development; physical development; and creative development."

Viviane Reding, European Commissioner for Education and Culture

"Pre-school is one of our main priorities now. We are conscious of the real needs of schools and we are also re-structuring pre-schooling in terms of defining the competencies that young children should acquire. In three to four months, for example, we will issue new guidelines for pre-school settings. I came to this conference not to teach but to learn something about new technologies and the way we can introduce them effectively in pre-school education and the best way to make progress in this area. We believe that if children can learn with new technologies as early as possible they will not experience the sort of problems my generation experienced when they were introduced to computers later in life."

Professor Doutora Mariana Torres Cascais, Secretary of State for Education, Portugal

"When we developed KidSmart our primary objective was to make it available to disadvantaged children in order that they could benefit from technology in their formative years. We continue to donate KidSmart units to Early Learning settings in regions where it can have a real impact.

But there is another reason for our commitment to KidSmart. Early Learning using Information and Communications Technology can help to address the enormous demographic shifts which will occur in the European Union over the coming decades. As our population ages it is vital that we equip our children with technological skills and knowledge. In this way Europe will become more productive and increasingly competitive on the world stage.

To date IBM has donated 14,000 KidSmart Early Learning Centres in 50 countries around the world. Two million children have had access to KidSmart technology. We plan to expand this initiative in Europe, to help advance early learning among disadvantaged children and to promote the concept of lifelong learning."

Hans-Ulrich Maerki, General Manager, IBM Europe, Middle East and Africa

"As late as 1996 it was still the policy in German Youth Ministries that ICT was not suitable for very young children, but this attitude changed completely in the late nineties. Now we want to introduce new content and new types of support into the kindergarten – mathematics, support for science activities, language development and literacy and electronic media."

Professor Hans Eirich, State Institute for Early Childhood Education and Research, Munich, Germany

"My conclusion is that KidSmart has been a great leveller. Our experience at Gilmerton has been that children with high levels of disability have sometimes actually been the best when it comes to using the computer. Where previously their participation in activities was low, they are now actively sought out by their peers and their self-esteem is boosted by being able to help others."

"I think the research which indicates that there is not enough adult/child interaction in some environments that have implemented ICT is largely down to the fact that the practitioners in these settings have not received training that provides them with a degree of confidence in how to use the equipment."

Kenneth Spence, Gilmerton Children's Centre, UK

"The first phase of ICT rollout was concerned with infrastructure and connectivity and the delivery of computers. Now the issue is more about the delivery of quality content. It is not about providing games but about developing proper learning tools that will need to be accompanied with appropriate forms of professional development whereby teachers can learn how to integrate ICT into the curriculum."

David Mulville, Executive Vice-President, Riverdeep

"Training is the biggest investment that is needed and we cannot wait for another 5-10 years until people have been trained through universities. We need to provide skills to all Early Learning practitioners now and to build a critical awareness of technology – the uses and maybe even the abuses of technology. These aspects are vital for practitioners in order to provide appropriate role models – to be able to show the use of the technology across the whole range of human development."

"Our research shows that the most disadvantaged groups of three and four year-olds are using the computer at home for up to 5-15 hours a week – but most of that time is spent on computer games. Discussion of the 'digital divide' needs to be concerned with more that just access. The other vital aspect is about the quality of the children's experiences once they have access to computers. That is why we are so interested in not just working with practitioners but also with parents in order to give them a concept of the range of software that exists and how it offers real educational opportunities rather than pure 'edutainment' opportunities."

Professor Iram Siraj-Blatchford, University of London Institute of Education

"The world is changing. Eventually we will be able to eliminate the resources barrier. Prices will keep coming down and things that seem absolutely unaffordable today in a few years will be available in every class for every student. Forget about current resource constraints and think where technology is going to be in the next five years."

Yael Ravin, Program Director, IBM Institute of Advanced Learning, New York

"The Commission's e-Learning programme brought together some of Europe's leading Learning Laboratories for a small workshop during which a number of reservations were expressed about applying the 'office model' of computing (primarily using only desktop PCs with a screen, keyboard and mouse) to learning environments. What is encouraging about Early Learning is that it is moving beyond this model and is embracing a wide diversity of equipment, software and more natural interfaces. As this conference has also illustrated, Early Learning practitioners are equally conscious that technology must be introduced in such a way that it does not replace real-life experience or face-to-face interactions."

Corinne Hermant, Directorate-General for Education and Culture, European Commission

"This audience is a microcosm of the wider world of Early Learning stakeholders and the conference has demonstrated very powerfully the importance of talking to one another and sharing best practices. But we need to ensure that this debate and dialogue continues at all levels beyond events such as this. We need to ensure that policy makers in different countries can continue to explore the strategic issues raised here and also that policy makers and practitioners at a local level can participate in these discussions."

"The conference has made it very clear to me that there is now an evolving pedagogy related to the use of ICT in pre-school settings. It is crucially important that we capture this and find ways to consolidate it in some way without setting it in concrete. As well as enabling this pedagogy to evolve, we must also find ways to share it more widely so that we avoid re-inventing the wheel and benefit from existing best practice at a European level."

Valerie Cox, Head of Early Education and Child Care, Scottish Executive, Scotland

Conference Themes

The strategic backdrop to this first European conference on ICT and Early Learning was set in the opening keynote speeches by Commissioner Reding and Hans-Ulrich Maerki in relation to the goal set by the European Council's Lisbon Summit in March 2000 for Europe "to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and social cohesion." They positioned Early Learning as a powerful building block for embedding lifelong learning across Europe and meeting the challenges posed by the Knowledge Society and the impact of demographic change on the workforce. Early Learning policy and the integration of ICT in this sector are still in their infancy. A key aim of the conference was to establish current status and make recommendations on how ICT can strengthen the Early Learning experience. The conference was structured in three workshop sessions which aimed to analyse effective practices, identify key areas for policy development and propose strategies to take these forward.

The first set of workshops focused on sharing effective practices related to practitioner training, classroom practice and institutional practice. A second round of workshops, informed by short papers from practitioners, researchers and content developers, then examined strategies for developing and implementing ICT in the following areas:

- The role of ICT in the cognitive, social and emotional development of young children
- Pedagogical approaches to the use of ICT in Early Learning
- The contribution of ICT to the socialisation and emotional development of children with atypical and special needs
- Addressing the 'digital divide' through early education
- Effective partnership with parents in developing awareness and appropriate uses of ICT with their children.

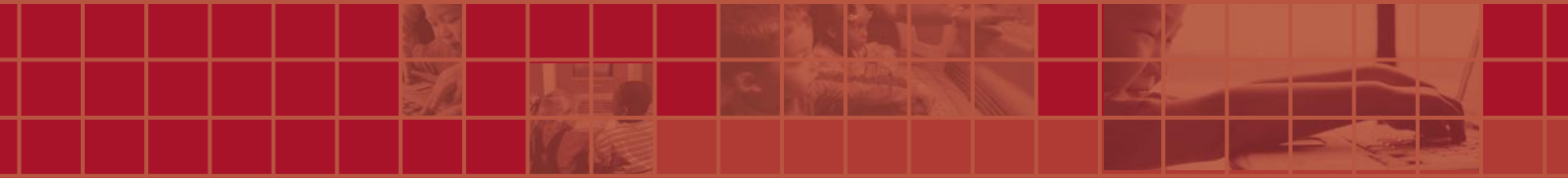
Presentations and papers delivered at the conference are available at **ibm.com**/ibm/ibmgives/reports

Each of the eleven conference workshops was asked to identify key policy issues relevant to the respective topic or theme. These were consolidated at the end of the first day of the conference and used as the basis for discussions in a final round of workshops on day two which identified a number of key policy actions that are necessary to advance the use of ICT in Early Learning. The output from these final workshops is the set of specific conference recommendations that are presented in the final section of this report.

A number of common issues related to the use of ICT in Early Learning settings arose in the workshops, papers and the conference plenary sessions. These include discussions and recommendations relating to training and professional development, support for parents, children with special needs, the 'digital divide', the availability of suitable content, the role of research and funding/ resource strategies. The key issues presented in this section of the report draw on feedback from all workshop discussions, case studies and papers that relate to each conference theme.

The Contribution of ICT to Child Development

While the potential role that ICT can play in the cognitive, social and emotional development of young children was highlighted in many exemplary practices, conference delegates were careful not to suggest that new technology was any sort of panacea. Ingrid Pramling Samuelsson from the University of Gothenburg in



Sweden echoed the views of many delegates in suggesting that ICT "should be regarded as a tool that can be used in many ways and for different purposes but that it should constitute only one aspect of a rich and diverse early childhood educational programme."

The Swedish experience indicates, however, that in order to make a difference, minimum levels of resourcing are important. ICT may have a low impact on child development, for example, if Early Learning settings have only one computer and access to it needs to be strictly timetabled and controlled. Innovative forms of play and learning are much more likely to emerge where computers, a diverse range of software, Internet access and other forms of ICT are available in each classroom and can be used throughout the day as multi-functional tools that can be integrated with other activities.

A number of speakers also made it clear that the extent to which ICT contributes to the child's development is not just dependent on the child's ability to use new technology and learn ICT practical skills. The challenge for practitioners is to help children to develop a critical awareness of ICT and an ability to evaluate both computer software and the information that is presented through all forms of new technology. In the Swedish experience, "the most important goal for the practitioner is to help the child to experience the technology as a communication tool that has vast possibilities – to give the child a feeling for ICT and encourage the child to explore and create up to the limit of the child's and the technology's capacity."

While not denying the importance of ICT as a tool that can both empower the autonomous learner and support collaborative working, Charles Crook from the University of Loughborough in the UK also suggested that it was important to understand the complexities of the social context within which the ICT is embedded. His research suggests that, while there is considerable evidence that ICT can be a powerful resource in helping to support joint working and classroom collaboration between school age pupils, it must be recognised that the social systems of pre-school environments have different dynamics. Crook particularly cautions against "taking too romantic a view of young learners as collaborators" and suggests that communities of learners do not automatically materialise "by simply bolting new technology onto the spaces that they occupy together."

The conference clearly illustrated that assessing how ICT impacts on the cognitive, social and emotional development of young children is a complex process that involves both research into the child as an autonomous learner and an examination of how collaborative learning can best be supported both within Early Learning environments and at home. It also recognised that while practitioners still need a better understanding of the technology, how children learn and how ICT can be used to enhance the learning process, there is a growing consensus concerning some key guiding principles that determine the effectiveness of ICT in the early years. For example, the seven principles for good practice developed by the Developmentally Appropriate Technology in Early Childhood (DATEC) project (based on research with both practitioners and researchers in the field), point the way for how new technologies can make a significant contribution to early childhood development:

1. Ensure an educational purpose
2. Encourage collaboration
3. Integrate ICT with other aspects of the curriculum
4. Ensure the child is in control
5. Choose applications that are transparent
6. Avoid applications containing violence or stereotyping
7. Be aware of health and safety issues

Their final recommendation is that parental involvement should be inextricably linked to all of these principles.

Pedagogical Approaches to ICT in Early Learning

The problems of integrating computers and other technologies into Early Learning pedagogy were analysed from a number of perspectives. Iram Siraj-Blatchford reported on a UK study for the Department for Education

and Skills on 14 pre-school settings selected on the basis of having good to excellent child outcomes on cognitive, social and behavioural development. Although the project findings showed these settings to be effective in promoting learning, they were not so good at integrating ICT into the curriculum and often failed to apply the 'excellent' strategies they had developed in their pedagogy to the ICT area.

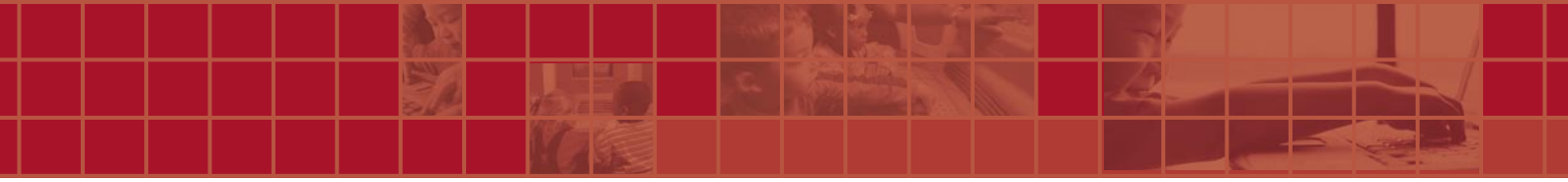
In most of the settings, for example, the children worked at the computer in groups of two to four and several practitioners referred to the quality of the children's collaboration. However, the study and at least one respondent suggested that the quality of interaction was actually quite variable and depended in part on the involvement of existing friendship groups. Other observations show that staff expressed a good deal of uncertainty regarding the appropriate use of computers. According to Iram Siraj-Blatchford, the overall findings suggested that, even in what were judged to be effective pre-school settings, "the ICT curriculum remains at a relatively early stage of development. Practitioners remain unclear regarding the learning objectives and, while computers are seen as valuable resources, there is still a great deal to be done to integrate the technology into the pre-school learning environment." The European evaluation of the KidSmart programme strongly demonstrates the importance of adult led small group activities and the active encouragement of 'sustained shared thinking.'

Innovative pedagogical approaches are beginning to emerge in a number of countries. For example, Maria-Jose Lera and Maria-Jose Ruiz from the University of Seville reported on how ICT helped practitioners explore the importance of narrative structures and storytelling with young children. Using Stanley's Sticker Stories, one of the Riverdeep software applications supplied with the KidSmart Centre, practitioner-researchers observed and supported the children as they developed stories around a variety of characters to which they could then add their own music and recorded sound. In the process, all the children increased their ICT knowledge and skills through saving their work and using the keyboard, printer and microphone. In devising the story and playing with the software the children were particularly stimulated to make use of the keyboard. The results of the research indicate that the writing skills of these children improved more than those of a control group that did not use the Stanley's Sticker Stories application. This was one of many examples at the conference where practitioners highlighted pedagogical approaches in which ICT can stimulate creativity and where it can motivate and encourage children to acquire new skills and knowledge.

The Stanley Sticker Stories application is soon to be replaced with the Thinking Things programme but, in spite of the commitment of companies

such as Riverdeep, there is still limited availability of 'open-ended' educational software which reflects current pedagogical thinking, stimulates creativity, encourages collaboration and leaves scope for the practitioners to intervene in order to support and interact with the child. Delegates also pointed to the current lack of mechanisms to help both practitioners and parents identify and select suitable (ethical, intercultural) software for use with children, particularly those who have special needs (including immigrants and those whose mother tongue is a minority language). In order for new pedagogical models to flourish, it was considered essential to foster a critical awareness in both practitioners and parents of what constitutes effective software so that they can better recognise the limitations of current games and 'edutainment.'

However, the extent to which a critical mass of appropriate software can be developed quickly for the Early Learning sector remains problematic



and may not be an issue that can be resolved solely by market forces. In a panel session, David Mulville, Executive Vice-President at Riverdeep, highlighted how even large, global software developers face serious difficulties and costs in localising applications for European markets. Support from policy makers in terms of software development for Early Learning (maybe in the form of subsidised purchasing schemes) may be essential in order that new, pedagogically sound applications can be made available to support innovative practice.

A broad definition of ICT

The interim findings of the European evaluation of the KidSmart Programme and the experience of projects such as the Aproximar Project in Portugal demonstrate the potential of using computers in Early Learning settings. Several of the conference workshops, however, also demonstrated that ICT, especially in the early years, is not confined to the use of personal computers. In fact, broader definitions of what constitutes ICT provide a greater potential for developing effective practice.

Lynn Kennington from the Gamesley Early Excellence Centre in the UK emphasised that "ICT needs to thread through all areas of the foundation curriculum and socio-dramatic play in a variety of fun ways in order to enhance learning." At Gamesley, for example, a closed circuit television (CCTV) system is used to provide a play environment that helps children develop their language and literacy skills. Constructed using two donated televisions and video surveillance cameras from a hardware store, this inexpensive system has been a huge success with the children. The novelty of being on television has encouraged children to communicate with others in different rooms in the building. Research indicates that the equipment develops communication skills and encourages social interaction, with children sharing more visual attention and making increased eye contact.

Gregoria Batalla and Anna Diaz Cappa from the Zaleo school in Madrid, along with many other delegates using KidSmart Early Learning Centres, also emphasised that policy makers must not adopt a narrow definition of ICT in Early Learning but must think of new technologies as 'encompassing virtually every audiovisual resource.' Many of the exemplary practices clearly demonstrated that ICT in Early Learning is about much more than personal computers and that highly innovative work is being carried out using programmable toys, floor robots, digital cameras, scanners, mobile telephones, cassette recorders and video recorders.

When using any form of technology, delegates were of the view that the key principles to be observed include the recognition that:

- Play is at the centre of young children's learning
- Learning opportunities need to involve the whole body and as many of the senses as possible, which some ICT allows (e.g. MIMIC and MAI software – see section on Children with Special Needs)
- Computers and technology should not limit the creativity of children
- Being in control and having a sense of competence is important.

What is also key is providing practitioners with the skills and confidence to use a wide range of equipment and developing ways to integrate new technologies into existing Early Learning activities. There was unanimous agreement that technology should never replace real-life experience, physical activities or face-to-face interaction but that children are surrounded by technology from a very young age and there is an increasing obligation on Early Learning practitioners to help children develop a 'critical awareness' of ICT. Indeed, a number of workshops even took the view that 'ICT in Early Learning must increasingly be seen as a right' and that universal and unrestricted access to new technologies for children of any age and ability must increasingly become a social and educational priority.

The KidSmart Programme Evaluation

The KidSmart programme utilises the KidSmart Early Learning Centres to expand IBM's education grant programme into the Early Learning sector, focussing in particular on disadvantaged communities. The KidSmart Early Learning Centres that are donated by IBM have been specially designed for children aged 3-6 years and consist of a powerful computer housed in durable and colourful furniture that allows several children to sit and interact together. The provision of award-winning educational software from Riverdeep, practitioner support and a web site for practitioners and parents elevate it to the status of an Early Learning Programme.

The aim of the programme is to support practitioners who are trying to enrich teaching and learning through the appropriate use of new technologies in Early Learning settings. This is seen as a crucial first step in helping children to reach the highest level of academic performance as well as contributing to bridging the 'digital divide' in a significant number of under-resourced communities. In addition, KidSmart supports the development of critical social skills in young children. The programme is currently running in almost 1,500 Early Learning settings in 19 European countries and a further 7,000 settings in 50 countries world-wide. Over 3,000 units have been donated so far in the UK, Ireland, France, Germany, Italy, Spain, Belgium, Norway, Sweden, Finland, Denmark, Portugal, the Netherlands, the Czech Republic, Poland, Hungary and Switzerland.

A well resourced partner organisation with expertise in Early Learning works with IBM in each country to identify appropriate settings for donations as well as managing a training programme for practitioners, contributing to ongoing evaluation and engaging parents in the educational benefits of ICT.

The KidSmart programme's web site, which features sections for parents and practitioners, is available in eight languages and is available at www.kidsmartearlylearning.org

Overview of KidSmart Evaluation Studies

The following evaluation studies of the KidSmart Programme have been undertaken by independent academic researchers since it was first launched in the USA in 1999:

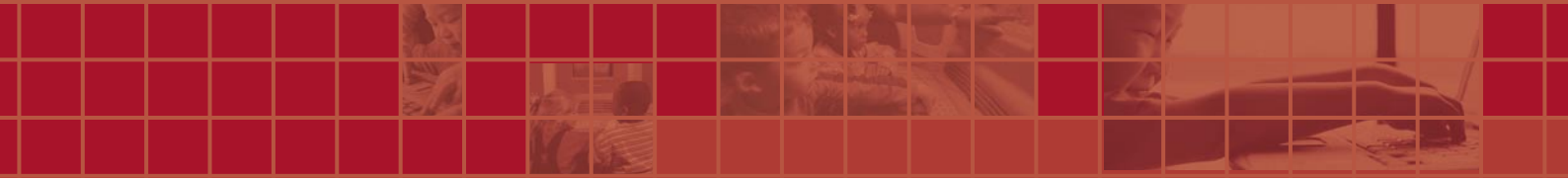
- Three annual reports up to December 2002 have been published by:
  - Bank Street College in New York, US
  - The Centre for Early Childhood Development in Cape Town, South Africa
- A two-year evaluation by Dresden University, Germany, 2002
- The Universities of Cambridge and London on the UK programme, 2001
- The Ministry of Education for Madrid, Spain, 2001
- The National Centre for Technology in Education, Ireland, 2001
- The City of Vienna, Austria, 2001.

In each of these studies, the following general findings are reported:

1. The Programme has had a very positive impact on the quality of the learning environment
2. There is a strong demand from early education practitioners to extend the programme further
3. The KidSmart Early Learning Programme is extremely popular with children, schools, practitioners and parents.

Further findings:

- Children tend to work collaboratively in twos and threes at the computer. The quality of this collaboration is improved when it is facilitated by experienced practitioners
- Children's motivation for learning increased following the introduction of the KidSmart Early Learning Centres
- The KidSmart Centre is robust, child friendly and integrates well into the early childhood environment. It supports and extends children's learning in a very enjoyable way
- Children tend to persist longer in trying to resolve problems than when using other media
- The use of the Centres has increased the self-esteem of early education practitioners, who have become much more confident in using computer technology overall



- In the UK a promising impact on the motivation and concentration levels of boys has been noted and in South Africa there has been improved school attendance since the introduction of the KidSmart Early Learning Centres because parents are keen for their children to have the opportunity to work with computers
- There is evidence of a wide variety of promising practices in using the KidSmart Early Learning Centres to extend and enrich learning. A mechanism for disseminating these more widely should be developed.

All the studies highlighted the critical importance of professional training which addresses the appropriate use of technologies in the education of very young children.

European KidSmart Evaluation

The conference provided an opportunity to present and discuss the current findings from a new European evaluation of the KidSmart Early Learning Programme. This is being led by John and Iram Siraj-Blatchford from the Universities of Cambridge and London. The final report from the evaluation will be published at the end of 2003, and the conference presentation from Iram Siraj-Blatchford provided the following interim findings based on a sample of 117 Early Learning settings in five European countries: France, Germany, Italy, Spain and the UK.

1. The quality of teaching and learning with ICT has increased significantly since the introduction of the KidSmart Early Learning Programme, particularly in Italy, Spain and the UK
2. The KidSmart Early Learning Centre is being integrated more closely into the curriculum in most countries, particularly in role play activity
3. There has been a significant increase in the number of practitioners who are now 'very comfortable' with the computer in all five countries surveyed
4. The percentage of practitioners who view 80 to 100 percent of the children's time on the computer as productive has risen sharply in four of the five countries surveyed and by over 80 percent in Germany and Spain.

Children with Special Needs

In the workshops and plenary sessions several practitioners and researchers highlighted the extent to which ICT can help combat social exclusion by motivating children with special needs and learning disabilities. Kenneth Spence, Manager at Gilmerton Children's Centre in Edinburgh, reported success in using computers to help autistic children to count. The ability of the computer to repeat the same sequence of events as often as the child desires is often exactly what autistic children require and enjoy. Computers providing colours, lights, sounds and music, together with screens that respond to a child's touch, can also catch the attention of children who are difficult to engage by other means.

Children with special or atypical needs at Gilmerton have also benefited significantly from the use of switch activated toys, particularly children with severe motor difficulty. One simple touch is all that is required to get a toy to move about and play a tune. Even a child with severe cerebral palsy can hit a switch and watch the screen change on a computer. As pointed out in this presentation, this could be the first time the child feels that it has had an impact on the world around it. The most amazing things about computers, according to Spence, is that "children who are often not interested in anything else – who do not even watch television – are interested in the computer because it is an interactive two-way experience."

Ronald Kemeling, a consultant and researcher from the Netherlands, underlined this issue in his presentation on the MIMIC programme. This unique multimedia computer software, which can be used to build up an interactive space by means of a simple video camera and a computer, allows children to receive multi-channel feedback on their movements. Colours and subsequently emotions can be linked to a movement towards a specific spot. Language and communication exercises can also be composed that involve the discovery of words and letters or the structure of sentences. The software was designed for use by children with a development problem such as autism and psycho-pathological disorders who experience difficulty in exploring their environment and for whom positive feedback is often lacking. Using MIMIC, practitioners can work with children on spatial orientation exercises, body scheme development, matching exercises and behavioural therapeutic approaches. Once again the use of ICT allows children to feel in charge of their world. As Kemeling reported, "The children seem to discover that they have a grip on what happens around them and that they have the surrounding environment under control."

Another innovative approach to 'interactivity' was highlighted by Max Kruitwagen, ICT Co-ordinator in the Helmond Education Service Centre in the southern part of the Netherlands where there is a large immigrant population and a need to support children whose first language is not Flemish. Here the challenge for the Halloween project was to use ICT to encourage communication between the practitioner and the pupils and between groups of pupils who might not share a common language. At the same time, there was a desire to ensure that the practitioners and pupils were virtually unaware of the ICT equipment being used. According to Max Kruitwagen. "We did not want two and three year old children sitting behind a computer - we wanted to make the children themselves the 'pointer' in the software program." The Motion Activated Interface (MAI) that was developed allows the child to interact with the ICT system simply by moving around in a projected image on the floor. The technology involved appears quite complex and includes a multimedia projector, a motion detection camera, audio equipment and a computer. The software, however, simply invites the children to play and walk around, and the computer responds to the child's activity by triggering a video, voice, sound and animation. In short, the children 'learn with their body, their heart and their head.' The evaluation of the project will continue over the next couple of years but both practitioners and pupils are reported to be enthusiastic about this system which the project leaders believe 'shows how ICT can be given a natural place in children's learning.'

ICT also has the ability to help children when they are ill. Hester Stubbe from the Utrecht University Children's hospital in The Netherlands showed how 20 IBM laptop computers and an educational local area network can provide web-based lessons for chronically sick children who require continuous medical care and regular treatment in hospital. Here ICT can both help to prevent children from falling behind in their studies and preserve the child's social context by ensuring that they can keep in touch with classmates and friends using e-mail, online chat and Webcam connections, the last of which is particularly suitable for young children.

The conference confirmed that the potential impact that ICT can make in this sector is difficult to overestimate. Many practitioners suggested that they were continually surprised and impressed by the doors that ICT can open up for children with special needs and the contribution that new technologies can make in the lives of these children. As Kenneth Spence observed, "My conclusion is that KidSmart has been a great leveller. Our experience at Gilmerton has been that children with high levels of disability have sometimes actually been the best when it comes to using the computer. Where previously their participation in activities was low, they are now actively sought out by their peers and their self-esteem is boosted by being able to help others." It may be difficult, of course, for policy makers to fully appreciate what the current generation of technologies can offer these children, particularly if their own experience of ICT is limited. One of the challenges will be to find

ways to capture the imagination of policy makers and help them see that new technologies are already a part of these children's everyday lives and provide them with opportunities for communication and control of their environment that we could only dream about a decade ago.

Partnerships with parents

The importance of the home learning environment has been recognised for many years with statistical analysis showing how the mother's qualification level and socio-economic status (SES) are strong predictors of educational outcomes. In a conference paper John and Iram Siraj-Blatchford highlighted that major research studies such as Effective Performance in Pre-school Education (EPPE) are now also showing the importance of the home learning environment to early childhood development and learning. While any detailed analysis of the effects of home use of ICT lay beyond the scope of the EPPE research, the exemplary practice discussed at the conference clearly suggested that children benefit when parents actively support them in their use of the computer and other forms of ICT.

The importance of engaging parents and helping them to support their children's use of ICT was an issue highlighted in several workshops. Lynn Kennington from the Gamesley Early Excellence Centre in the UK highlighted how virtually any Early Learning setting can use very simple technology to build closer relationships with parents. For example, Gamesley makes effective use of 25 audio cassette players, story tapes (recorded by the staff themselves) and accompanying books. Audiotapes and CDs of the children singing favourite rhymes and songs are sent home to parents to enable the child to continue to learn them at home with the parents' support. The karaoke feature on cassette recorders is ideal for encouraging children to sing and perform and for involving parents in their children's play and learning.

Gamesley is also leading the way in demonstrating advanced use of ICT, including using Webcams to communicate with parents who have this equipment at home. All parents are greeted with an interactive whiteboard placed in Gamesley's entrance hall which is used to provide information in the form of messages, videos, digital photos and PowerPoint presentations on recent events, new activities and trips. Digital cameras are used extensively to communicate with parents about their children's experiences. Photographs of the children are used as screensavers on the computers and touchscreen monitors allow parents to turn the screen page photographs with ease.

Digital cameras are also loaned to parents to encourage them to record their child's day at home thereby developing a sense of 'time and place' for the child. Staff then laminate the photographs and make books with them.

Another example of 'digital portfolios' was described by Lars-Goran Borjesson, a practitioner and consultant from Stenungsung in Sweden. Here computers with sound cards and multimedia software were used with digital and video cameras to allow children to keep a growing record of what they have done and learned as well as to capture their own views and thoughts about school work and their personal interests. The work is saved on a computer or school server and burned onto a CD-ROM so that parents and grandparents can follow what the children have been doing. In some cases the portfolio has also been made available as a series of web pages. According to Lars-Goran Borjesson, parents are enthusiastic about digital portfolios as they provide a better overall understanding of the child's knowledge and development than can be conveyed by a written report. Having this information accessible over the Internet also allows parents to follow the daily activities of children at school, which may be particularly helpful for parents who are separated.

This ability of ICT to allow children to record their own development in both the early years and as they proceed through school was recognised by

all conference practitioners as an immensely powerful tool. Digital portfolios not only allow practitioners to build better partnerships with parents but also provide every child with what can be seen as a 'living memory' of what they have thought, felt and experienced at different stages of their lives. The problem of course is that it may be difficult to ensure the continuity of this process as children transfer from Early Learning settings to primary schools and then on to secondary education. The challenge for policy makers here is to find effective mechanisms so that digital portfolios and various forms of records of achievement are valued and recognised as much as examination results.

Early Education and the 'Digital Divide'

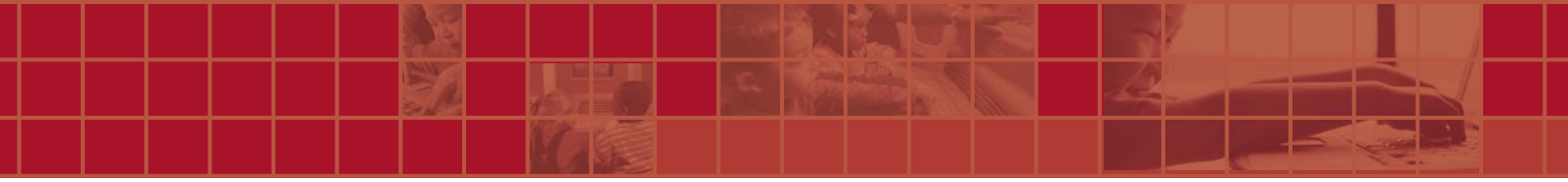
There is a growing awareness that the artificial isolation of schools from the outside world can be addressed by the innovative use of new technologies and new communication networks. The concept of the 'school without walls' sees learning as a dynamic process where, through the appropriate use of advanced technologies, pupils are supported as they continue to learn in formal institutions but are presented with increasing opportunities to learn in the home, libraries, museums and the wider community.

Problems remain, however, in implementing this vision. These include the 'digital divide' and huge disparities in children's access to ICT. Many of the children who participated in the Aproximar Project in the North Alentejo region of Portugal lacked electricity let alone computers in their homes. Eric Atmore, Director for Early Childhood Development in Cape Town, drew attention to the fact that in South Africa only between three and six percent of the population has access to ICT in spite of it being one of the best resourced of the African countries. Anne Rourke from Inverclyde Education Services also highlighted that many Early Learning practitioners in this part of Scotland initially made huge assumptions about children's access to ICT. In one centre with 120 children, for example, 74 percent were found to have no access at all to computers outside the Early Learning setting and 96 percent of their parents/carers had not used a computer at all.

Participation in the KidSmart Programme has allowed Early Learning practitioners in North Alentejo, Cape Town and Inverclyde to start to bridge this 'digital divide.' It is clear that while corporate philanthropy is playing a pioneering role, publicly funded initiatives are essential to provide basic levels of equipment and software to help redress the lack of opportunities experienced by children in remote or disadvantaged areas. In Cape Town, the introduction of the KidSmart Early Learning Centres has made a significant difference to the children's digital literacy, improved the children's social skills and behaviour and led staff to see improvements in thinking skills, concentration, memory and language development. Non-English speaking children, for example, have increased their vocabulary and learnt to speak English better. In Inverclyde the introduction of the KidSmart Early Learning Centres also provided additional benefits. For example, parents in one location began to discuss with the practitioners how they managed 'other technology' at home. Many parents discovered that they did in fact have a range of ICT skills already such as programming video recorders and washing machines. As Ann Rourke of Inverclyde Council reported, "For some parents and staff the notion that ICT did not always mean working at a computer came as a revelation. Parents then realised how technologically skilled some of their young children were."

A number of workshops commented on this process. It seems that for many practitioners this sort of 'revelation' represents an important step towards overcoming their inhibitions or fear of using computers. It is also important in encouraging the development of an awareness that ICT 'means more than just a computer' and is not just a 'new thing to be taught' but rather that it is a tool to support and help young children develop their understanding of the world. In this sense it is important, as John Siraj-Blatchford highlighted, that ''Discussion of the 'digital divide' needs to be concerned with more than just access."

The European KidSmart evaluation, for example, indicated that in some countries the largest disadvantaged groups of three and four year-olds are using the computer at home for



up to 15 hours a week – but most of that time is spent on computer games. In order to bridge the 'digital divide,' the research indicates that we will also need to address the quality of the children's experience once they have access to computers. The KidSmart evaluation concludes that young, disadvantaged children must be provided with experiences and educational role models that demonstrate uses for the computer that extend beyond entertainment. Positive models are being provided by the KidSmart Early Learning Programme but this needs to be extended. Given the number of home computers, the potential for developing parental learning partnerships is very strong. For this to happen, the conference suggested that the training of practitioners needs to include the topic of working with parents so that parents develop a concept of the range of software that exists and how it offers real educational opportunities.

In some areas, however, the use of ICT in Early Learning settings is already having a major impact on parents and how they view new technologies. For example, some of the parents involved in the KidSmart programme in Inverclyde have progressed from learning side-by-side with their child in the Early Learning setting to taking basic training classes at community learning centres, or enrolling for ECDL (European Computer Driving Licence) courses at local colleges. Although the numbers are still relatively small, this phenomenon provides an interesting model for how the 'digital divide' can be addressed at the level of the whole family. On the basis of such secondary level effects of the use of ICT in Early Learning settings, policy makers may well wish to re-think and consolidate what are often fragmented initiatives aimed at addressing the 'digital divide.' Current initiatives are often launched by separate agencies and are aimed at either children or adults. The model emerging in Inverclyde, however, suggests that more effective strategies for bridging the 'digital divide' may be developed by looking at the dynamics of how children and their parents jointly experiment and learn with new technologies.

Practitioner Training

The conference was unequivocal that practitioner training and ongoing professional development is perhaps the single most important issue in the successful implementation of ICT in Early Learning settings. A large number of conference delegates even suggested that initial and continuing staff training represents the foundation without which the extended use of ICT with young learners may not materialise. As Iram Siraj-Blatchford also observed, "The integration of ICT is currently only happening in a small number of special centres like Gamesley in the UK and there is a long way to go – mainly because the associated training needs are huge." The European evaluation of the KidSmart programme is finding, for example, that practitioners engage in too few intensive adult-child interactions with the KidSmart Centre, demonstrating the need for further training in the pedagogies to support children's development.

While fully aware of the funding implications of what they were proposing, conference delegates made it clear that training related to the use of ICT must also be made available to all practitioners in Early Learning settings. Potentially, the introduction of ICT impacts on every aspect of play and learning in Early Learning environments and, as indicated above, carries over into how parents can become more actively involved in their children's development. The interim European research findings on the KidSmart Early Learning Programme suggest that practitioners with training make better progress in their understanding and deliver higher quality education using an integrated approach to ICT than those without training. The conference sent a strong message to policy makers that the training of just some groups of Early Learning practitioners would not be sufficient. As evidenced by a number of presentations and papers, the impact of current training programmes indicates that investment in practitioner development is money well spent.

In Portugal, for example, the University of Evora has developed a series of practical training workshops for 26 Early Learning classes that are using KidSmart Early Learning Centres. Focusing on both the development of practitioner practices and the production of pedagogical materials, the training lasts for 38 hours and,

on successful completion of the course, practitioners are awarded three credits that count towards their career development. Co-funded by the Portuguese Ministry of Education and the European Social Fund, the workshops have addressed not just the 13 KidSmart practitioners in the region but other practitioners from the same locations that were interested in the content and the dynamics provided by this training opportunity. Other members of the community, including school co-ordinators, parents, mayors, politicians and other Early Learning practitioners are also invited on certain days.

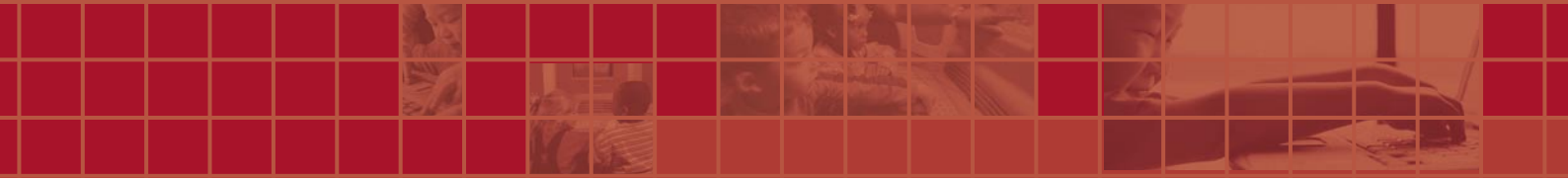
In this Portuguese initiative and elsewhere, successful training seems to depend on providing opportunities for collaborative reflection and for sharing best classroom practices as well as presenting materials and resources developed with children. It is also essential that training goes beyond helping practitioners to develop their ICT skills and focuses on how new technologies impact on pedagogical processes and the curriculum. The development of a 'critical awareness' of ICT (the benefits as well as potential negative aspects of using new technology) was repeatedly cited by speakers as an important goal in all training activities developed both for Early Learning practitioners and for parents.

If the conference was unequivocal that 'training is the biggest investment that is needed,' it was also clear that we cannot wait another five to ten years until a sufficient number of Early Learning practitioners have received training in ICT as a part of their university or college courses. New in-service mechanisms are also required in order to develop ICT skills and knowledge rapidly and extend existing pedagogical approaches. The new technology itself may be able to make an important contribution here. For example, Ray Arnold from the University of Cambridge Faculty of Education explained how the university is now offering an innovative 30-hour ICT course for Early Learning practitioners. The course was designed to meet the training needs of practitioners as identified in the DATEC project and in the evaluation of the KidSmart programme. Once again, a key training aim has been to extend Early Learning practitioners' concepts of ICT beyond the use of computers and to help combat the scepticism of some parents and practitioners about the role of ICT in young children's learning.

The course, which is open to practitioners and a wide range of other practitioners, including classroom assistants, is currently running in its pilot stage of development as a traditional face-to-face faculty-based course with the intention of making it available on the DATEC web site from September 2003. The intention, however, is to go further than just making this an online course in terms of providing learning materials and programmes of study. The aim is also to incorporate a substantial element of online tuition and to use focused discussion areas to provide mutual help, support and advice. Clearly this approach will need to be tested on a larger scale but the message for policy makers is that e-Learning and web-based portals could potentially play an important part in making quality training and support accessible in a cost-effective manner to a much wider audience of Early Learning practitioners.

Resources for ICT in Early Learning

The implications of funding the extended use of ICT in Early Learning initially appear daunting, particularly for those countries that are still struggling to provide adequate levels



of hardware, software and broadband Internet access in primary and secondary schools. In her presentation to the conference, however, Yael Ravin, Program Director at the IBM Institute of Advanced Learning in New York, reminded delegates that the world is changing rapidly. Visions related to 'pervasive computing' are being realised faster than anticipated, interaction with technology is becoming more and more natural and the costs of equipment and software are continuing to fall. Her key message to the conference was: "Forget about resource constraints and think where technology is going to be in the next five years."

Surprisingly, perhaps, this visionary perspective was not at variance with the current experience of practitioners, primarily because many projects and initiatives demonstrated what could be achieved with existing technology. In several of the conference workshops it was suggested that while Early Learning settings certainly need more equipment and software, "there is a tendency to over-emphasise the resource implications of using ICT in Early Learning settings." John Siraj-Blatchford, for example, drew attention to the experience of a group of 16 schools in the remote North Alentejo region of Portugal which participated in the Aproximar Project. Some of the four to five year-old children involved did not have electricity in their homes, let alone computers, but the schools were able to use normal dial-up Internet connections to allow the children to carry out collaborative drawing activities and (assisted by the practitioner) use chat tools to communicate with children in other locations.

While faster computers and broadband connectivity might have improved the experience, John Siraj-Blatchford highlighted that "the technology available worked and allowed the children to draw and collaborate in the shared whiteboard space." His conclusion was that, "this was one of the most sophisticated applications of technology that we found in our KidSmart reviews." Anabella Ribeiro and Maria Assuncao Folque who were directly involved in the project echoed this view that innovative practice is possible with relatively limited resources. The goal of the Aproximar Project was particularly to help combat the social isolation of children in rural schools and the available technology was clearly extremely effective in helping children to become familiar with computers as a communication tool. As the project concluded, "Having someone to listen to their ideas, someone who shares the same interests, as well as someone who might help solve a problem or answer a question, created a new sense of community in the isolated schools of North Alentejo."

Building the Knowledge-base on ICT in Early Education

The conference showed that innovative practitioners across Europe are becoming increasingly aware of the contribution that ICT can make to child development and the Early Learning curriculum. Currently, however, there is very little research in this area that indicates how to develop more successful strategies for the integration of new technologies in the early years or reports on the impact of the use of ICT with younger children. Benchmarking studies related to the level of ICT hardware and software provision in Early Learning settings and overviews of different approaches to practitioner training and funding regimes are unavailable in most countries.

Conference delegates were unanimous that successful policy related to Early Learning use of ICT could only be developed in tandem with extended research programmes at both a national and a European level. While there is an obvious need for longitudinal studies of the use of ICT in Early Learning, delegates particularly emphasised the need for forms of applied and action research. In support of the range of policy actions identified by the conference, delegates suggested that research must directly involve practitioners and lead rapidly to the development of practical solutions, recommendations and guidelines that will encourage the take up of current best practice.

The Emerging Policy Agenda for Early Learning

As the European Commission looks towards the further development of its e-Learning Strategy, it acknowledges that schools are already placing greater emphasis on the quality of e-Learning products and services and on the pedagogical context for their use. The Commission suggests that in the majority of countries we are moving beyond questions of connectivity and infrastructure to ones associated with content, practitioner training and organisational implications, including new social interactions inside and beyond schools. The Commission also observes that:

"At Member State level, most countries have their own action plan for encouraging the use of ICT in education and training, often involving direct support for local experiments at all levels of education and training, in particular for teachers' and trainers' training. There is a rich experience, in some cases reaching the third or fourth 'generation' of policy documents, based on the evaluation of past efforts and involving wide ranging consultation with educational practitioners. In all Member States, specific policies for the integration of ICT in education and training systems are considered necessary."[2]

Presentations and discussion at the conference demonstrated in a compelling way that exemplary practice and 'rich experience' related to the use of ICT in Early Learning is already emerging. However, the evidence from the conference was that, to date, the integration of ICT in Early Learning settings has been largely omitted from the policy agenda in most countries. Limited funding has been one of the contributing issues. As national strategies for ICT in schools mature, the conference also signalled that governments across Europe are introducing ICT at progressively earlier stages of education, as the following examples illustrate.

Germany, Bavaria: In a panel session at the conference, Hans Eirich, from the State Institute for Early Childhood Education and Research in Munich, highlighted how as late as 1996 it was still policy in German Youth Ministries that ICT was unsuitable for very young children. However, this attitude changed completely in the late nineties in response to the OECD PISA (Programme for International Student Assessment) study, where German pupils were ranked in the final third of the 32 countries profiled. Shocked by these findings, policy makers concluded that "education should no longer start at six when children enter primary schools but should begin from birth to age six." Hans Eirich went on to report that "we now want to introduce new content and new types of support into the kindergarten – mathematics, support for science activities, language development and literacy, and electronic media." Questioned as to whether this might be regarded as a form of over-regulation, Professor Eirich replied that it was not so much an issue of trying to produce a regimented approach to Early Learning but "more a case of trying to give some minimum structure to the curriculum."

UK, Scotland: Lydia Plowman from the University of Stirling described the development of a national strategy for Early Learning in Scotland for the Scottish Executive (the devolved government for Scotland). Starting in late 2001, a major challenge in devising the strategy has been the lack of information on current Early Learning practice. As a result, Learning and Teaching Scotland (a government-funded agency which has responsibility for the curriculum and the role of ICT in learning) was commissioned to carry out a review of ICT in Early Learning settings. A later consultation exercise in autumn 2002 invited participation from all Early Learning providers across the public, private and voluntary sectors. This took the form of an audit of ICT resources,

staff development opportunities and patterns of use. More than six hundred returns were analysed by the university which indicated that more than 80 percent of Early Learning settings have computers available for children to use. Currently a draft strategy document is being discussed and a final set of proposals will be published later this year.

Portugal: Significant progress is also being made in countries where ICT implementation in schools is less well developed. In her address to the conference, Professor Doutora Mariana Torres Cascais, Secretary of State for Education in Portugal, announced that: "Pre-school is one of our main priorities now and we are also re-structuring pre-schooling in terms of defining the competencies that young children should acquire. In three to four months we will issue new guidelines for pre-school settings." In addition, the Secretary of State suggested that the issues raised at the conference together with the final set of policy recommendations would be looked at closely by the Portuguese Ministry and would help to inform their national strategy for ICT in Early Learning.

Europe: At a European level there are positive signs that the next phase of the European Commission's e-Learning strategy will recognise the importance of supporting the use of ICT in Early Learning settings. In her keynote presentation at the conference Viviane Reding, the European Commissioner for Education and Culture, suggested that the updated e-Learning strategy will continue to be centred on the Lisbon objectives. At the same time, however, Commissioner Reding indicated that "the message I would like to bring today is that, at the political level, there is an increased awareness of the importance of early education as the foundation for successful learning throughout life." While not able to disclose the details of the new e-Learning strategy, the Commissioner was able to reveal "that the effective use of ICT – at all ages – will be an integral element" of the new policies. She also made clear that greater emphasis on Early Learning is directly in line with the Commission's promotion of the concept of lifelong learning. She concluded that "If a policy based on the concept of lifelong learning is to achieve its full potential, it is vital that we think in terms of a continuum, beginning at the earliest stages of education, and continuing, essentially, throughout the individual's lifetime."

"I was very surprised and pleased when I realised that the 'KidSmart Early Learning Programme' is not just an ICT-programme, but much more a programme for a new learning culture for pre-school and primary school kids."

Manfred Jerusalem, Head of Division 'New Media in Schools' Standing Conference of the Education Ministers of the German Länder, Bonn

The Commissioner's speech reflected the discussion in the conference workshops which emphasised that the use of ICT in Early Learning settings represents "not just an evolution of current early learning practice but a revolution." There was a shared awareness that Early Learning is indeed a vital first step on the road to lifelong learning and that a new policy response will be required to reflect this paradigm shift.

The nature of this policy response at both a national and European level will begin to emerge later this year. As the conference made clear, however, a growing number of practitioners are already one step ahead of policy makers and continued innovation with ICT in Early Learning seems virtually unstoppable. This point was also underscored by Valerie Cox, Head of Early Education and Child Care at the Scottish Executive, who suggested that "in Scotland after the Lisbon declaration there was the realisation that, with or without government intervention, e-Learning and the use of ICT was already happening in many Early Learning settings." The challenge now in Scotland and the rest of Europe is how to best extend current exemplary practice and support the growing awareness of what ICT can add to the development and learning of young children. Valerie Cox's remarks in the concluding session succinctly reflect what was achieved at the conference and what still remains to be done.

"This audience is a microcosm of the wider world of Early Learning stakeholders and the conference has demonstrated very powerfully the importance of talking to one another and sharing best practices. But we need to ensure that this debate and dialogue continues at all levels beyond events such as this. We need to ensure that policy makers in different countries can continue to explore the strategic issues raised here and also that policy makers and practitioners at a local level can participate in these discussions and draw on the sort of experience and expertise that has been in evidence at this event."

[2] *Proposal for a Decision of the European Parliament and of the Council Adopting a multi-annual programme (2004-2006) for the effective integration of Information and Communication Technologies (ICT) in education and training systems in Europe (e-Learning Programme). COM (2002) 751 final, 2002/0303 (COD), Brussels 19/12/2002.*

Policy Recommendations

The conference demonstrated that, at a regional, national and European level, the momentum is building to ensure that public policy encourages and supports the use of ICT in Early Learning settings. Independent research has also confirmed how initiatives from the private sector, such as the IBM's KidSmart Early Learning Programme, can help stimulate this process and provide ongoing assistance to Early Learning practitioners. We have now reached the stage, however, where the sort of exemplary practices highlighted at the conference need to be taken to scale so that the use of ICT becomes a systemic part of Early Learning in Europe. The following recommendations were proposed by the conference as an important step towards developing a strategic policy agenda:

Recommendation 1

Include Early Learning in national ICT strategies for education

National policy strategies for the use of ICT in education should provide a strong ICT component that is well embedded into educational goals and strategies for early childhood education. They should ensure proper continuity of provision and support as children make the transition from Early Learning settings to primary school. For example, this should allow the transfer and continuation of work on such things as 'digital portfolios.' As part of the national strategy, a broad definition of ICT should be adopted (to include computers and a wide variety of other devices and applications). ICT needs to be understood as a multifunctional tool for Early Learning that is used to introduce and support real life experiences and physical activities but not to replace them. Based on existing best practice and an expanded programme of action research in this area, policy development should focus on the appropriate use of new technologies aligned with pedagogical models which reflect the fact that play, creativity and collaboration remain central to the educational experience of young children.

Recommendation 2

Provide initial training and ongoing professional development for all practitioners

Policy strategies need to reflect the fact that initial practitioner training and accredited, ongoing professional development is a vital and urgent requirement for the successful implementation of ICT in Early Learning settings. As ICT has the potential to impact on almost every aspect of play and learning in Early Learning environments, it is essential that training is extended to all practitioners and that it should address both pedagogy and the curriculum. Training should provide a means by which good practices, including structured activities, are shared more widely and must help practitioners to integrate computers and a wide range of other devices and applications effectively. In order to embed the training in developmentally appropriate pedagogy, innovative practitioners who are experienced in the use of ICT should be directly involved in the training process, and initial training should equip practitioners with the skills needed to work with parents to provide appropriate educational support using ICT in the home. An assessment should be made of the potential that e-Learning can make to the training of Early Learning practitioners based on existing pilots and one or more demonstration projects funded by European Commission research programmes.

Policy Recommendations

Recommendation 3

Optimise ICT policies by supporting parental involvement

Policy strategies should recognise that the successful use of ICT in Early Learning will be optimised if parents are made more aware of the potential of ICT and are encouraged to use ICT themselves as a means of becoming more involved in the education of their children. Work with parents should begin by helping them to recognise and build on their own competencies. Policy makers should investigate the extent to which ICT-equipped Early Learning settings can provide a venue for initiatives aimed at improving adult ICT literacy and skills, particularly within multi-agency programmes aimed at bridging the 'digital divide' and promoting social inclusion.

Recommendation 4

Support knowledge building and co-operation at all levels for practitioners, policy makers and parents

Knowledge building and co-operation at regional, national and European levels is needed to help disseminate research findings, share best practice, and assist policy development for Early Learning. Benchmarking of ICT provision in Early Learning settings in EU Member States should be included in the next phase of the European Commission's e-Learning Programme 2002-2004. Support should also be provided at both a national and European level to develop web portals that will encourage the sharing of experience and knowledge (including that related to children with special needs) and which provide both practitioners and parents with mechanisms for identifying resources that have been evaluated as being suitable for the early years.

A clear need for further research into early learning processes and the role of ICT has been identified, and this could be a further action for specific action research networks of Early Learning practitioners and experts.

Acknowledgments

IBM would like to thank the following people who contributed to the success of the European Conference: Early Learning in the Knowledge Society:

Conference Planning Committee

- Maria-Jose Lera, University of Seville, Spain
- Birgitta Lidholt, Skolverket/National Agency for Education, Sweden
- Eva Marsh, Skolverket/National Agency for Education, Sweden
- Cláudia Pires, Assistant to the Secretary of State for Education, Portugal
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Rapporteur:	Annette Hell, University of Tuebingen, Germany
Chair:	John Siraj-Blatchford, University of Cambridge, United Kingdom
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Rapporteur:	Ingrid Geretschlager, Landesakademie, Austria

The Role of ICT in the cognitive, social and emotional development of young children

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Pedagogical Approaches to the use of ICT in Early Learning

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Rapporteur:	Maria-Jose Lera, University of Seville, Spain

The contribution of ICT to the socialisation and emotional development of children with special needs

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Addressing the digital divide through Early Education

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Acknowledgments

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DATEC: John Siraj-Blatchford, UK. www-datec.educ.cam.ac.uk/datec2.nsf

European Schoolnet: Marion Thomaseth and Petru Dumitru. www.eun.org

Gamesley Early Excellence Centre: Lynn Kennington, UK. www.earlyexcellence.org/gamesley.htm

Halloween: Yvette Hess and Hester Wobbe, Netherlands. www.halloween-research.nl

KidSmart: Carol Berry, UK. www.kidsmartearlylearning.org

TryScience: Kate Woodhouse, UK. www.tryscience.org

Riverdeep: Teresa Hagan and David Mulville, Ireland. www.riverdeep.net

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Skolverket: Eva Marsh, Malin Berndtson and Hanna Henriksson, Sweden. www.multimedia.skolverket.se

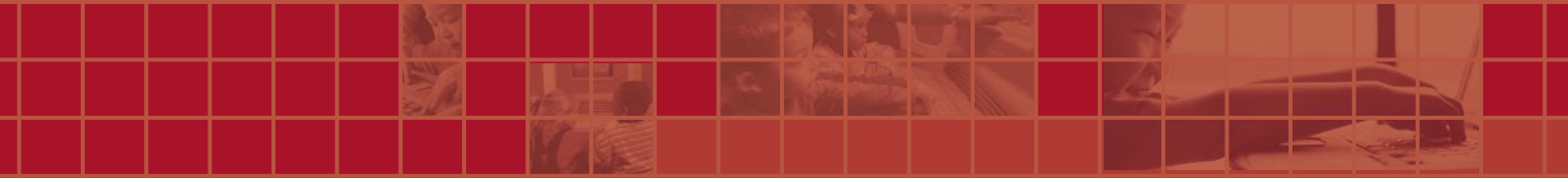
Swansea LEA: Debbie Roberts and Jan Marsh, UK. www.swansea.gov.uk

University of Evora: Maria Assuncao Folque and Ana Monteiro, Portugal.

Zaleo School: Anna Diaz and Gregoria Batalla Batalla, Spain. www.inicia.es/de/eizaleo

The European evaluation of the KidSmart Early Learning Programme will be published at the end of 2003 and IBM would like to thank the evaluation team for their contribution to the conference:

- Ray Arnold, University of Cambridge, UK
- Hans Eirich, State Insitute for Education and Research, Munich, Germany
- Maria-Jose Lera, University of Seville, Spain
- Franca Rossi, University of Rome, Italy
- Iram Siraj-Blatchford, University of London, UK
- John Siraj-Blatchford, University of Cambridge, UK
- F. Francis Strayer, University of Bordeaux, France
- Marcello Visocchi, University of Rome, Italy



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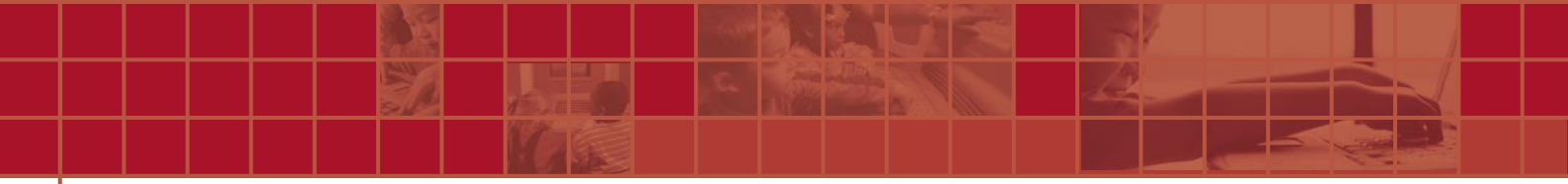

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IMWEE01002-3 (09/03) TG/PG