Recognizing the potential of ICT in early childhood education

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Prelude

In my presentation

• I will not present our study, I will be talking about it…

• I will be (a little bit) emotional and personal:
Motivation and background premises

- how did I meet a computer,
- how did I learn about TEL and revolutionary shift in ICT for education paradigm,
- how do I try to benefit from all possible opportunities for children to experience better learning
What are NOT the goals of our study

• compare or assess different approaches and different policies,
  • declare any approach the best or better than others (there are many approaches and many solutions, many cultural backgrounds... ),
• measure any data... this is qualitative study,
• and yet, from all countries and all ECE centres some common or similar features and opinions are emerging...
What are the goals of our study

- better understand the **phenomenon of ICT** and its potential for ECE,
- **identify** different aspects of this phenomenon,
- **recognize** its possible powers, risks and trends of further development,
- **articulate** certain common principles and recommendations,
- outline and motivate future - and much needed - educational research.
Facts

• focus exclusively on institutional ECE (reflecting also the role of parents and ICT at home)

Literature review (not the main goal)

Excellent resources from
• a few leading ECE centres (outside our network),
• New Zealand, UK, Russia, Slovakia etc. - in general: very rare,
• IFIP expertise accumulated in its TC for Education,
• network of 17 ECE centres.
Study methodology

- between May and August 2010,
- network of 17 ECE centres,
- confront our observations with the research literature,
- exploit experience from our own research projects.

About the network

- excellent, innovative ECE centres working in different conditions,
- **purposive sample** - through the leading education and research authorities,
- **semi-structured questionnaire**, 
- based on it they produced detailed **reports** about different aspects of the process,
- we **visited** many of them in person,
- **qualitative research methods** to analyze the reports.
Obstacles and problems

- occurrence of digital divide - ICT not equally approachable by all,
- Southern Chile example

We believe in the power of ICT to motivate and challenge children, expand their perception of the world, their language and thinking, and develop their values as being indigenous. We see ICT as an important component of today’s learning process, particularly so in poor surroundings.
In our report we...

- study history of the idea of exploiting ICT in education – for effective, authentic, attractive and safe support of its learning objectives.

We pay homage to Piaget, Vygotsky and other seminal scientists who taught us so much about children.

... Papert, Feurzeig, Kay ...

We also to pay homage to two distinguished ladies:

- French researcher Rachel Cohen – since the mid 80s applied ICT for developing French language knowledge to non-native young children in ECE centres,

- Hungarian researcher Marta Turcsányi-Szabó – since 1984: Logo language as a tool for exploiting powerful concepts and ideas in kindergartens.
In our report we...

- want to draw your attention to a movement (M. Resnick, MIT) called Life-long kindergarten

  We should make the rest of school (indeed, the rest of life) more like kindergarten. What's so special about kindergarten? As kindergartners playfully create stories, castles, and paintings with one another, they develop and refine their abilities to think creatively and work collaboratively, precisely the abilities most needed to achieve success and satisfaction in the 21st century.

- analyse why it is an emerging imperative to integrate ICT in ECE (Papert, Caperton 1999)

  The spread of digital technology into every other sector of society makes it inevitable that it will eventually permeate school...

  When children grow up with this kind of knowledge-technology it is inconceivable that school will not change very radically.

  So the choice is not whether we will consider deep changes in school but how many children will be lost before we recognize that we have to do so.
In our report we...

1. Observe that **digital divide** often goes across generations, across social groups and also across families.

   Teachers **should help** parents develop **information behaviour** of their children.

   Teachers must be **ICT literate** to be good teachers of today.

   
   

2. Analyse studies which warn of several **perceived risks** in the area - and comment them.

   **HOWEVER:** most of them warn of children as **passive**, **solitary computer game player isolated from social interactions in learning and play**.

   *Young children today are growing up in a world which not only contains but is also increasingly shaped by ICT.*
   
   (J. Siraj-Blatchford, D. Whitebread, 2003)
In our report we...

• present the concept of developmental appropriateness of ICT
general framework to develop one’s skills in recognizing and applying appropriate ICT products (DATEC)

The ICT tool should – be educational,
  - encourage collaboration,
  - support integration,
  - support play,
  - leave the child in control,
  - be transparent and intuitive,
  - avoid violence or stereotyping.

The integration of ICT should
  - develop awareness of health and safety,
  - support the involvement of parents.
In our report we...

- study, identify and analyse **key areas of learning** which could be supported by ICT:
  - communication and collaboration,
  - creativity, problem-solving and playful uses of technology,
  - socio-dramatic play,
  - learning to learn,
  - mathematical understanding and exploring the world,
  - literacy, visual literacy, painting, media education,
  - learning of music.
Snapshots of practice

Rich collection of good (surprisingly good!) practices from our study ECE centres

These snapshots (episodes, cases, vignettes...):

– give us deeper insight into different approaches and designs,
– present innovative, creative pedagogical interventions,
– indicate trends and problems,
– show abundance of possibilities and complexity of the area,
– help us understand the potential of ICT for ECE,
– help us identify various actors and aspects of the process.
Aspects of the process (1/2)

Based on in-depth analysis of the reports
+ Confronted with the findings from the literature
+ Supported by our own research and personal experiences

1) How is this process initiated, what is the motivation?
2) Which categories of ICT are being used in the ECE centres?
3) How are ICTs being implemented and used, how do teachers organize activities with ICT – indoors and outdoors?
4) How are ICTs accepted and exploited by children, what are successful activities and recommended organizational forms?
5) What is the actual level of ICT competency of ECE teachers and how is their professional development organized?
6) What role do parents play in this process - ECE centre/parents partnership?

7) What are the areas of concern about children’s safety and health in the digital world?

8) How can we exploit ICT in favour of children’s development in all domains?

9) How can ICT be used to support children with special education needs?

10) What kind of ICT curriculum are we constructing - educational and developmental goals, instruments?

11) What are the most frequent obstacles of this process?

12) Where are we and where do we go from here - plans for further development?
IWBs are interactive only when they are applied by educators using an **interactive pedagogy.**
Using ICT with and by children

ICT and gender issues

Class management and class scenarios

Using ICT...
- indoors
- outdoors

Working in teams
Communication & collaboration

Organizing the space:
where is ICT located
- in computer corner
- in computer class

Who conducts the activity
- teacher
- two or more teachers
- ICT specialist
- teacher together with ICT specialist
- teacher and researcher(s)
- specialist SEN or other

What kind of activity

Which category of ICT
see previous map
Stay safe and healthy

Critics are often ill-informed about the real strategies and processes in ECE. Leading source: Byron Review entitled *Safer Children in a Digital World*.

According to her findings, it is already ECE stage, when we should start building children’s first knowledge and skills necessary for living, learning and play safe in the digital world.

As our ECE teachers have pointed out repeatedly, attentive, thorough and knowledgeable integration of ICT across curriculum is the best answer to most of the concerns.
Strategy for integrating ICT in your ECE centre

Recommendations on how to start or how to boost the process - for the principals, teachers, politicians and decision makers...

Who can start? Everybody who cares about giving children new opportunities to develop, play and express themselves

• Huge budget is not quite necessary.
• Could be started with one single digital toy or digital camera or one computer...
• More than budget it requires - good will and knowledge about the potential of ICT for education, curiosity, courage and persistence.
• (good example: Chilean robotic project)
We address…

... a principal (headmaster) or education stakeholders and formulate 8 steps
(not linear, not fixed, running in interactions and iterations …)

1. develop your potential
2. classify your position
3. set up your goals and objectives
4. build your environment
5. promote professional development of your staff
6. integrate, observe and reflect
7. build networks
8. plan further development
1 Develop your own potential

If you want to start or intensify the process - several questions will emerge... Prepare yourself:

- study official documents, policies, regulations...
- develop your ICT competency (digital literacy),
- read and learn from books, browse Internet,
- search for examples of good practice (snapshots),
- look for more contacts (other ECE centres)...

It will bring a lot of extra work!
2 Classify your position

Most likely you have already taken some steps in order to integrate ICT into your activities.

Try to **identify and understand** the following **aspects**:

- motivation and initialization; initiator; extrinsic or intrinsic
- what benefits (impossible without ICT) do you observe or expect?
- which ICT do you (want to) use? Understand what is ICTs...
- how do you (plan to) use ICT? As isolated optional entertainment for children or in integrated ways?
- are your colleagues ready to learn? Try to establish a learning community...
- who will support you?
- what does your centre use the ICT for? (administration, SEN children, … )
- how much attention do you pay to the **reflection of the development** of your pupils in the context of using ICT?
3 Set up your goals and objectives

What are your **learning goals and objectives**? What would you consider a successful course of the process? Note that **optimal decisions and strategy** do not exist.

- Keep your goals and strategy simple.
- Keep your goals and strategy flexible.
- Think about which areas of development and learning do you want to support.
- Clarify what are NOT your goals.

**Inappropriate goals:**

- learning to operate computer and other ICTs,
- *rewarding* children with the access to ICT after they successfully completed some other tasks or behaved properly,
- ...
4 Build your environment (1/2)

- Familiarize with all regulations concerning ICT usage in ECE.
- Your children’s **being safe** is the highest priority.
- Choose proper ICT. Do not tolerate old hardware (monitors… etc.)
- Always apply DATEC criteria (*Developmentally Appropr Tech for Early Childhood*)
- Build your ICT space - if possible, in your class room, build your **ICT corner**:
  - (a) safety
  - (b) functionality - easy integration
  - (c) manageability
  - (d) supervision
  - (e) flexibility

**If possible:**
- have Internet connection in your ICT corner,
- have furniture designed to your needs,
- proper lighting - adjustable,
- IWB must be installed carefully - its height, projector and its light beam,
- establish the **rules of usage and behaviour**.
4 Build your environment (1/2)
5 Promote professional development of your staff

• It is continuous life-long process of the personal growth.
• Think about efficient ways of increasing your teachers’ motivation.
• Plan, observe and evaluate the process of professional development of your staff.
• Create and support atmosphere of the learning community within your centre, where people value expertise, where they learn from each other on daily basis and support.

Different forms and formats of the trainings...

• peer coaching within your ECE centre

Should NOT be run by “general” ICT experts, but by experts on ICT in ECE. Should be run in levels, modules, accepting different styles and different formats.

• Initial computer skills
• Broader ICT competencies
• Special ICT competencies (SEN); digital programmable toys
• New pedagogies of ICT for ECE
# Example structure:

<table>
<thead>
<tr>
<th>Discovering ICT</th>
<th>Learning with ICT</th>
<th>Integrating ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>painting and drawing</td>
<td>Internet</td>
<td>digital camera</td>
</tr>
<tr>
<td>working with text</td>
<td>social networking</td>
<td>digital toys</td>
</tr>
<tr>
<td>multimedia</td>
<td></td>
<td>edu software for children</td>
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<tr>
<td>presentations</td>
<td></td>
<td>pedagogy of ICT</td>
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<td></td>
<td></td>
<td>integrating ICT into ECE</td>
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<td></td>
<td></td>
<td>safe and healthy with ICT</td>
</tr>
</tbody>
</table>
6 Integrate, observe and reflect

- Start with some fairly simple activities (using digital camera; using a drawing program; using simple programmable toy…).
- Try to **integrate these activities** into other activities within your curriculum.
- Employ more and more **scenarios**.
- Concentrate on how to **recognize and exploit new possibilities**.
- Increase your skills in planning and conducting the activities.
- Integrate more **categories and types** of ICT.
- Exploit ICT **indoors and outdoors**.
- Learn to observe, how children develop their skills working with ICT.
- Improve or develop your **reflective practice**.
- Continuously **create and collect high quality documentation**, for example in the form of e-portfolio.
7 Build networks

Do not be alone in your innovative process. Build or join communities of practice, networks of other educators...

- **inside your centre** - building, multiplying and sharing knowledge,
- **with the parents** of your children - cooperating and combining efforts.

Any change would be more or less impossible unless you won the **approval and support of the parents**.

- with other educators - sharing, multiplying and disseminating knowledge,
- with other centres, local education authorities, research institutions, primary schools...
8 Plan further development

Look ahead, beyond the problems of today. Ponder about general course of the process.

- **study the actual trends** in early childhood education,
- **read** special literature on this topic,
- **be active in communication** with other innovative teachers and centres,
- **write** about your experiences,
- **plan to integrate more categories** of ICT, new forms of class management,
- **think about obstacles** and how to overcome them,
- **reconsider** your ICT corner,
- **observe** new issues, topics, techniques.

Mini Solar construction kit,
- energy and its renewable resources
Six major findings

• **it is not inevitable** to start with huge budget,
• **it is inevitable** to start with large enthusiasm, knowledge, excitement, personal involvement and belief in children and modern education,
• there are **many different** ICTs to work with - and many forms,
• **ICTs must be integrated** into complex activities of ECE.

Then:
- all developmental domains can benefit and be supported,
- most of the concerns can be avoided or decreased.

• all ECE teachers and educators are newcomers into this area - we have to learn and reflect,
• extensive educational research is needed.
Next Generation Forum (research group) points out:

new technologies can be very powerful in supporting the creative potential of young children

ICT toys and creative tools can change important aspects of children’s learning:

- **ICTs change the learning relationships** between children and teachers;
- **ICT empowers children by granting them a voice** they have never had before;
- **they open novel ways of designing dynamic things** - they put children in touch with ideas and concepts that used to be beyond their reach;
- **they foster change in learning strategies**;
- **they open new pathways to social interaction**.

This is an urgent challenge we simply cannot overlook.
Thank you for this excellent opportunity.

Thank you for your kind attention.

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