Focus Groups
ICTs and Education of Children with medical needs

final public report

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LeHo
Learning at Home and in the Hospital

Lifelong Learning Programme

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Introduction

This is the full scientific report of the two Focus Groups held within the LeHo project in 2014 and 2015. If you want to have a quick overview of the Focus Groups results please see the infographics on the following pages or here: https://magic.piktochart.com/output/6545523-leho-focus-groups

The LeHo Project

Throughout Europe, educational initiatives in hospital schools and home education have been designed to improve the engagement of students at risk of having their education disrupted due to their medical needs. Those initiatives often represent meaningful responses to a broad and complex range of educational challenges.

The main aim of the project "**Learning at Home and in the Hospital"** (LeHo – www.lehoproject.eu, funded with support from the European Commission under the LLP programme) is to investigate and document ICT's roles in improving communication and enabling children with a medical need access to aneducation. This aim has been reached through the pursuit of the following specific objectives:

- *Outline key educational factors and highlight good practices dedicated to the education and care of students with medical needs;*
- *Explore and design ICT-based solutions that enable children in hospital, receiving home therapy or attending school part-time due to illness, to access an appropriate educational provisions;*
- *Identify ways in which technology can impact pedagogy and teaching methods in Home and Hospital Education contexts (HHE).*

The Focus Groups

In order to collect and organise the complex plethora of presently used ICT solutions and assess potential problems in their used, in 2014 and 2015 the project team ran two sets of Focus Groups in the LeHo's participating countries. A Focus Group is a structured group interview conducted with select participants designed to gather in-depth opinions and knowledge about a particular topic. In fact, it often provides a wider range of information - in the form of qualitative data - than do surveys.

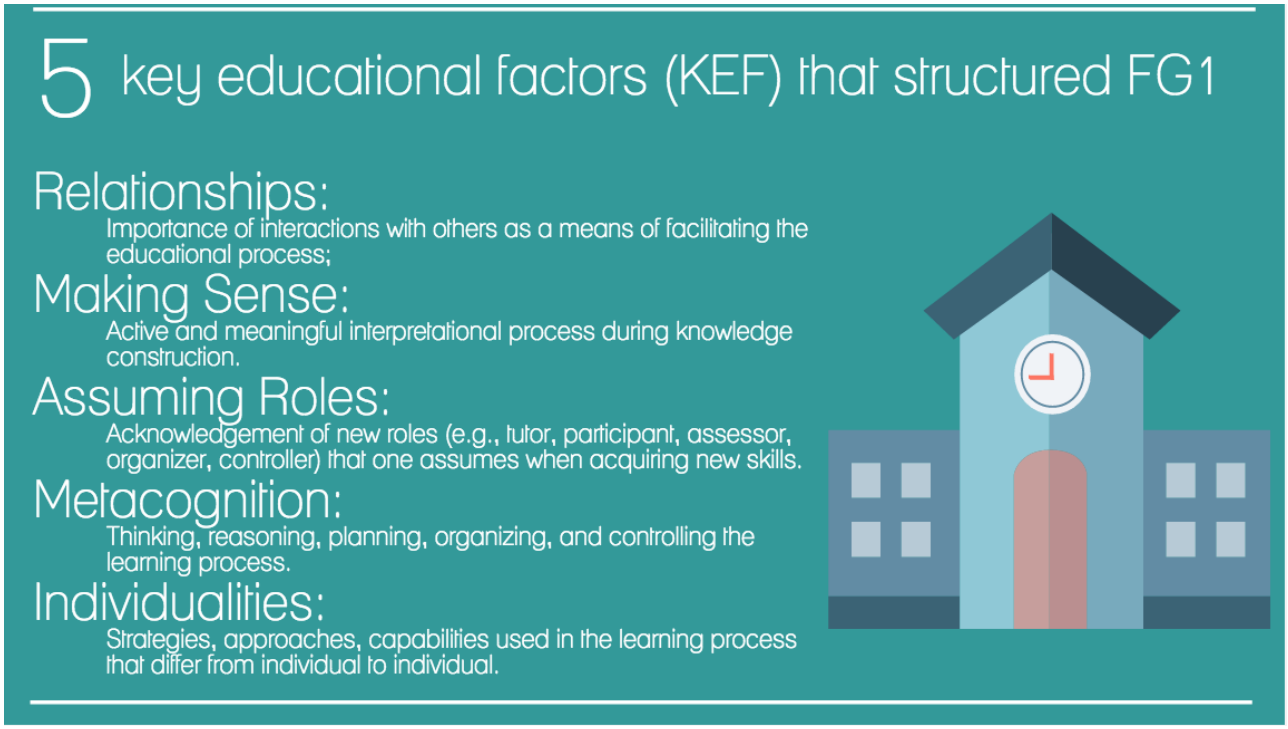
Within the LeHo project two Focus Groups have been conducted. The first one collected information on key educational aspects involved in Home and Hospital Education (HHE). The second one assessed and discussed ICT-related solutions for the education of children with a medical condition.

LeHo Key Educational Factors

In order to place the Focus Groups within an educational framework, Five key educational factors (KEFs), i.e., Relationships, Making sense and constructing knowledge, Assuming roles, Metacognition, and Individualities, were defined by the project team. These educational factors were based on an analysis of existing research in psychology, education and the education of children with a medical condition. A short description of each KEF can be found in the below insert:

1) *Relationships*: importance of interactions with others as a means of facilitating the educational process;
2) *Making sense and constructing knowledge*: active and meaningful interpretational process during knowledge construction.
3) *Assuming roles*: acknowledgement of new roles (e.g., such as tutor, participant, assessor, organizer, controller, etc.) that one assumes when acquiring new skills.
4) *Metacognition*: thinking, reasoning, planning, organizing, and controlling the learning process.
5) *Individualities*: strategies, approaches, capabilities used in the learning process that differ from individual to individual.

Further KEF documentation is here and on the LeHo Project website and in the below infographic



Chapter 1

First round of Focus Groups of the LeHo project

1.0 Method

To join FGs conducted by LeHo project staff, Teachers and Hospital Care Professionals (HCP) were contacted in LeHo's participating member countries (Belgium, Egypt, Germany, Italy, Spain and United Kingdom) through the use of mailing lists and direct contacts. FGs were conducted to see how the 5 KEFs were applied in the field of Home & Hospital Education (HHE) across LeHo participating members countries to determine both good practices and problematic areas for each KEF.
574 distinct FG statements were categorized into one of 38 categories (see Appendix A - Category Glossary at the end of this document) that were inductively created by three coders after reading a subset of statements. Agreement between the three coders was between 89 and 95% with a good reliability score, i.e., α = .88 and disagreements were resolved through discussion.

1.1 Demographic Analysis

99 doctors and teachers participated in the Focus Groups (31 Health care professionals – i.e., HCP) and 68 teachers). The average age for Focus Group participants was 44, and while not all participants indicated their gender (14), of those that did 25 were male and 60 were female and the average amount of experience across both groups was more than 17.5 years.

Table 1 illustrates the breakdown of participants by Country by Role and by Gender. Only in Egypt and the United Kingdom were the teachers predominantly male, while again in these countries the majority of HCPs were males.

COUNTRY	ROLE	FEMALE	MALE	NA
BELGIUM	HCP	89%	11%	0%
EGYPT	HCP	44%	56%	0%
ITALY	HCP	90%	10%	0%
UNITED KINGDOM	HCP	29%	71%	0%
BELGIUM	TEACHER	40%	60%	0%
EGYPT	TEACHER	69%	31%	0%
ITALY	TEACHER	90%	10%	0%
SPAIN	TEACHER	0%	0%	100%
GERMANY	TEACHER	44%	11%	44%
UNITED KINGDOM	TEACHER	80%	20%	0%

Table 1 Country by Role by Gender

Table 2 reports that most teachers had an average level of experience exceeding 15 years for both teachers and HCPs, with Italian teachers having the highest average experience and United Kingdom HCPs having the highest average experience.

COUNTRY	ROLE	EXPERIENCE
BELGIUM	HCP	14.5
BELGIUM	TEACHER	18.5
EGYPT	HCP	15.22
EGYPT	TEACHER	15.77
ITALY	HCP	17.83
ITALY	TEACHER	20.9
SPAIN	TEACHER	17
GERMANY	TEACHER	17.89
UNITED KINGDOM	HCP	25
UNITED KINGDOM	TEACHER	14.6

Table 2 Country by Role by Experience

Table 3 reports the average age by country and role. Considering the data reported in Table 2 regarding average experience, it is not surprising that the highest average age reported was for Italian teachers and the highest HCP average age was reported by the United Kingdom.

COUNTRY	ROLE	AGE
BELGIUM	HCP	41.25
BELGIUM	TEACHER	43.22
EGYPT	HCP	43.33
EGYPT	TEACHER	38.7
ITALY	HCP	41.67
ITALY	TEACHER	48.36
SPAIN	TEACHER	42.5
GERMANY	TEACHER	48.05
UNITED KINGDOM	HCP	52.14
UNITED KINGDOM	TEACHER	42.1

Table 3 Country by Role by Age

In examining the level of ICT knowledge (Table 4) we found that the most advanced level was found for Italian teachers and the highest basic level was found for Egyptian teachers.

COUNTRY	ROLE	ADVANCED	AVERAGE	BASIC	NA
BELGIUM	HCP	11%	78%	0%	111
BELGIUM	TEACHER	40%	50%	10%	0%
EGYPT	HCP	44%	56%	0%	0%
EGYPT	TEACHER	.8%	46%	46%	0%
ITALY	HCP	0%	50%	50%	0%
ITALY	TEACHER	64%	27%	9%	0%
SPAIN	TEACHER	0%	1.0%	0%	0%
GERMANY	TEACHER	11%	61%	22%	6%
UNITED KINGDOM	HCP	0%	71%	14%	14%
UNITED KINGDOM	TEACHER	20%	30%	50%	0%

Table 4 Country by Role by ICT knowledge

Most of the teachers who participated in the Focus Groups had middle or secondary teaching experience as can be seen in Table 5 as well as experience teaching in the hospital, as can be seen in Table 6. (Note: Most teachers had experience in more than one grade level.)

COUNTRY	PRESCHOOL	PRIMARY	MIDDLE	SECONDARY
BELGIUM	0%	50%	20%	30%
EGYPT	8%	92%	77%	54%
ITALY	27%	18%	27%	27%
SPAIN	0%	0%	83%	67%
GERMANY	17%	56%	72%	72%
UNITED KINGDOM	30%	50%	40%	80%

Table 5 Country by grade level teaching experience.

COUNTRY	HOSPITAL	SPECIAL	MAINSTREAM	HOME
BELGIUM	40%	20%	50%	30%
EGYPT	38%	46%	85%	15%
ITALY	82%	36%	91%	55%
SPAIN	100%	0%	0%	0%
GERMANY	100%	33%	50%	22%
UK	80%	60%	70%	80%

Table 6 Country by type of teaching experience.

2.0 First Round Focus Group Statement Analysis

Focus group data was organized in the following way:
Five Key Educational Factors
Relationships, Making Sense, Assuming Roles, Metacognition and Individualities
Issues
Practices, Hospital Problems, Home Problems and ICT
Evaluation
Positive, Negative

Given the data's heterogeneity, an analysis comparing results by country and by role was not possible.

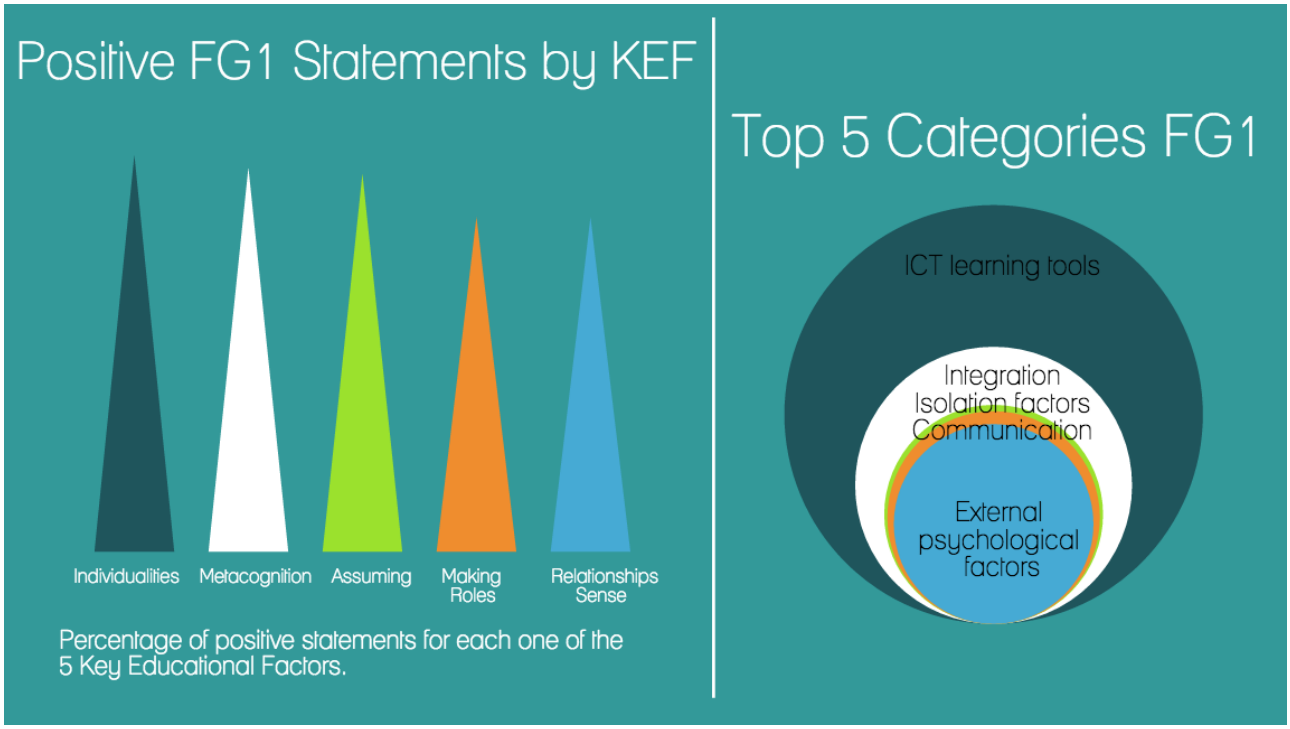
2.1 Statements by KEF by Issue by Evaluation

A total of 574 statements were collected. Among those, 331 were negative, 235 were positive, and 8 were listed as other, as they were neither negative nor positive. Table 5 shows the percentage distribution of answers per Key Educatio n Factors (KEF) and Issues.

		ISSUES					
	N	Practices		ICT		Hosp.*	Home*
KEY EDUCATIONAL FACTORS		-	+	-	+	-	-
Relationships	163	0	35.6	0	17.1	34.4	9.8
Making sense & constructing knowledge	105	1.9	30.5	0	20	38.1	6.7
Assuming roles	120	0	50	2.5	10	24.2	13.3
Metacognition	89	0	40	1	11.2	32.6	5.3
Individualities	97	1	58.8	0	4.5	28.9	5.2

Table 7. Percentage distribution of statements per Key Educational Factor per issue.

* It should be noted that these questions were asked in following way: "What problems do you see fulfilling this KEF at home/in the hospital?" therefore it is not unexpected that ALL of the statements were categorized as negative.


Positive FG1 Statements by KEF
Individualities
Metacognition
Assuming
Making Roles
Relationships Sense
Percentage of positive statements for each one of the 5 Key Educational Factors.
Top 5 Categories FG1
ICT learning tools
Integration
Isolation factors
Communication
External psychological factors

2.2 Table 7 Discussion

Table 7 shows the number of statements (i.e., N) offered by Focus Group participants for the 5 key educational factors (i.e., Relationships, Making sense & constructing knowledge, Assuming roles, Metacognition and Individualities) among the five issues (i.e., Practices, ICT, Hospital and Home Problems). The columns with the five issues represent the percentage of responses for each of those issues within a specific KEF. When columns are coloured red they are negative statements while when they are coloured green they are positive. It should be noted that most of the Focus Group participant negative statements were regarding the hospital environment as opposed to home schooling.

While most of the statements were for the Practices and Hospital issues, overall, the statements were well distributed among the five issues. While some (or all) of the statements for some of the key educational factors (i.e., KEF) were positive for some of the issues (i.e., Metacognition: Practices) all of the statements for the Hospital and Home issues were negative as the questions asked during the Focus Groups were to discuss problems at home/ in the hospital.

The less managed KEFs with educational practices appear to be Making sense and Constructing reality. From a pedagogical point of view this issue is related to the ability to structure an educational medium and long term projects with custom goals and a solid network of relationships.
Not surprisingly, the KEF that recognizes the individuality of the student (i.e., Individualities) is well covered by appropriate educational practices, given that most of the educational activities within HHE are individualized.

The use of ICT, which will be investigated specifically with a second Focus Group, shows some interesting trends. First of all, it should be noted that the field in which ICTs are perceived to be more useful could be found in the KEFs Making sense and Constructing knowledge. ICT is therefore perceived as a tool of choice for creating a socio-constructivist path that respects the needs of the child. Given the positive role of the KEF Individualities in the previous paragraph it is interesting that there are less ICT statements in the KEF Individualities than in all the other KEFs. ICT might be best thought of as a tool for keeping the child socially connected with his peers.

Questions regarding the hospital environment were asked in following way: “What problems do you see fulfilling this KEF at home/ in the hospital?” therefore it is not surprising that ALL of the statements were categorized as negative. It should be noted that the majority of teachers who participated in the Focus Groups worked in the hospitals and that children who are instructed in a home environment are observed less than those who are instructed

in a hospital environment. It might therefore be useful to develop better tools for observation and evaluation within the home environment, as it is easy for this environment to fall "under the radar."

2.2 **KEF by Evaluation by participants**

Figure 1 shows the overall number of positive and negative statements (i.e., N) offered by Focus Group participants for each one of the 5 key educational factors. When graphic bars are coloured red they are negative statements while when they are coloured green they are positive.
This graph offers a general overview of the comments for each Key education factor.

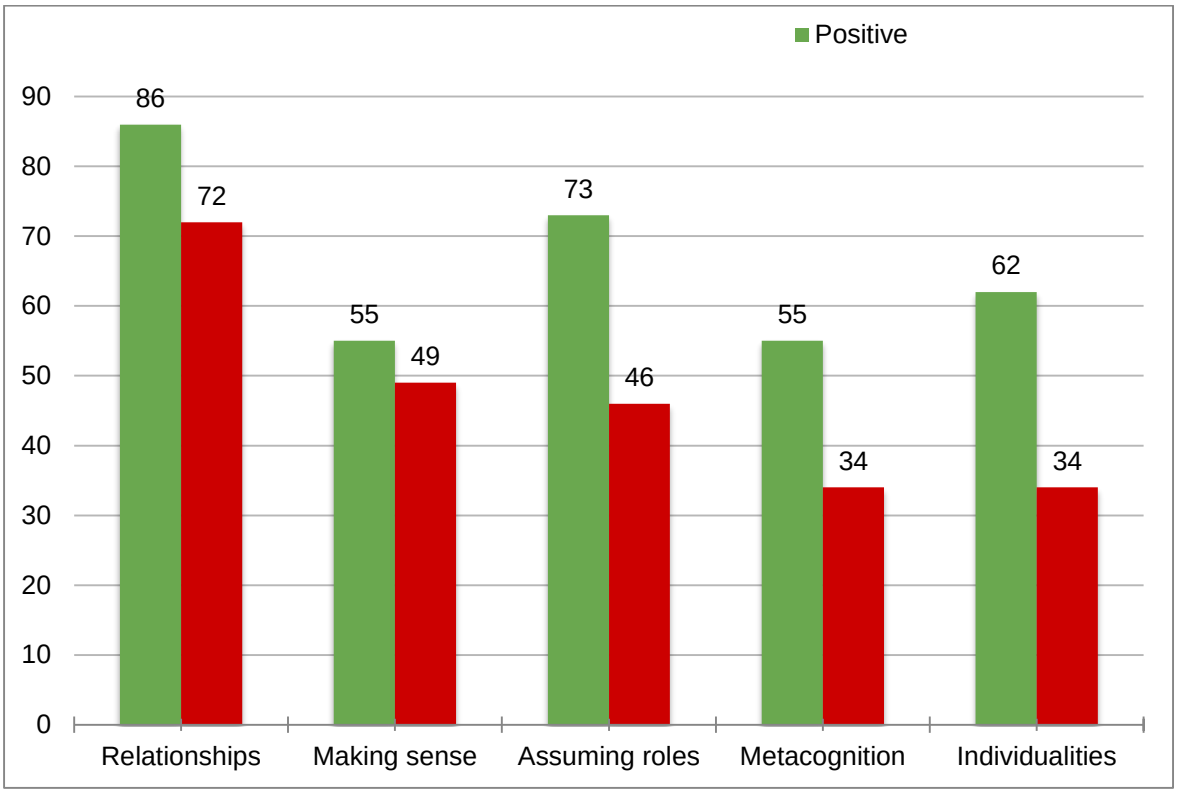


Figure 1. Count of positive and negative statements for each one of the 5 KEFs.

This figure shows that for all KEFs positive statements are more frequent than negative ones. This means that teachers and HCPs are able to indicate effective and widely used pedagogical solutions, especially when it comes to more traditional and practical educational aspects such as Assuming roles in front of others, ensuring individualised education, providing metacognitive tools and practice.

There are two aspects where the difference between negative and positive statements is not great; Making sense of the surrounding and internal reality and Relationships. These KEFs are connected with the complex reality of the child's life with a medical condition (e.g., continuity in social relationships, connecting the meaning of the school subjects with the

present situation of illness, etc.) and thus present more difficulties. These problematic KEFs need more work and details about them will be discussed later.

3. Category distribution by Key Educational Factors (KEF)

Before we being our discussion of the categories for each KEF, Table 6 reports the percentage and number of occurrences of each of the categories across all 5 KEF. The top 5 categories accounted for about 36% of all statements categorized across the 5 KEFs.

Category	%	Count
ICT learning tools	11.32%	65
Integration	7.49%	43
Isolation factors	5.92%	34
Communication	5.75%	33
External psychological factors	5.40%	31
Assessment	5.23%	30
Re-integration	4.70%	27
Teamwork	4.18%	24
Adaptive	3.83%	22
Intrapersonal psychological factors	3.83%	22
HHE not valued	3.48%	20
Experiential learning factors	3.31%	19
Stigma	2.79%	16
Other	2.44%	14
ICT use	2.26%	13
Individual factors	2.26%	13
Setting	2.26%	13
Cooperative learning	1.92%	11
Cost factors	1.74%	10
Family factors	1.74%	10
Safety	1.74%	10
Motivation	1.57%	9
Orientation factors	1.57%	9
Time factors	1.57%	9
Goal orientation	1.39%	8
Self-expression	1.39%	8
Virtual community	1.39%	8
Support factors	1.22%	7
Lack of personnel	1.05%	6
Academic factors	0.87%	5
Awards	0.87%	5
Children support factors	0.87%	5
Autonomy	0.52%	3
Mobility	0.52%	3
Reverse roles	0.52%	3
Age	0.35%	2
Long term factors	0.35%	2
Professional judgment	0.35%	2

Table 8 Statement categories by percentage and frequency

3.1 Relationships

In terms of Relationships 163 distinct statements were analysed (86 positive, 72 negative, 5 neutral).

Most recurring positive statements were about ICT learning tools (27), integration (14), teamwork (4).

> ICT learning tools: *"Interactive whiteboard for the patients"*
> Integration and school re-integration: *"Ensure child maintains contact with his classmates"*
> Teamwork: *"Use specific skills in science to support teamwork."*

Most recurring problems here are about external psychological factors (12), isolation factors (10), stigma (5).

> External psychological factors: "Rooms with 2-3 children does not help …"
> Isolation: "Would be helpful to have a teacher or classmate from school of origin …"
> Stigma: "Mental health is stigmatized …"

3.1.1 Discussion

The comparison between positive and problematic aspects raises some questions regarding the effectiveness of the solutions adopted. For example, the use of ICT tools and the declared pedagogical attention to the policies of integration and re-integration in school, are associated with problems of isolation and child's psychological issues related to external stressors such as lack of movement, space, the uncertainty linked to disease and so on. The presence of stigma against the sick child draws attention to the need to improve the actions of human and social mediation, such as the adoption of specifying educational projects aimed at the management of back to school (school re-entry Educational Programmes) or the transition between school and hospital.

3.1.2 Recommendations for the LeHo project

The use of ICT and attention to the integration processes should be more focused in the following areas:

1. The actual creation and maintenance of social bonds that are stable over time, that will help the child to overcome the occasional use of educational activities for the benefit of educational projects in the medium and long term. The use of a connective context[1] or

[1] Placing events in front of a proper background can help understand them and making sense of them, just like a background in a play helps you understand what's going on in the scene in the front. A typical example of a connective context is the cub scouts theme from Kipling's story called "Mowgli's Brothers" from the Jungle books. The terms "Law of the Pack," "Akela," "Wolf Cub" "Grand Howl", "den," and "pack" all come from the Jungle Book, and gain a new meaning

building understanding using the mediation of a character or tool[2] may be an appropriate methodology.
2. The knowledge and information of classmates.
3. The impact of psychological stressors could be dealt with paths and awareness of meaning (see KEF making sense), they may also be facilitated by educational planning that includes long-term design and is able to engage and integrate the different aspects of the life of the child with a medical condition (home school, hospital, home, peer group).

3.2 Making sense

In terms of Making sense 105 distinct statements were analysed (55 positive statements, 49 negative, 1 neutral).

Most recurring positive statements were about ICT learning tools (13), adaptive (4), Virtual community (8).

> ICT learning tools: "Groups of students autonomously use the internet."
> Adaptive: "Do their best to adapt to suit the situation of the child."
> Virtual community: "Facebook group allows for communication between parents and …"

Most recurring problems here are about isolation factors (12), HHE not valued (6), external psychological factors (6).

> Isolation: "Hospital cubicle = isolation."
> HHE not valued: "Teachers often lack the preparation."
> External psychological factors: "Difficulty to find space and tools."

3.2.1 Discussion

While ICT seems to be the elective choice when it comes to creating meaningful and constructivist activities with ill children, isolation still remains the bigger burden. It's somehow paradoxical, therefore, that despite the use of ICT, those communication technologies are not able to effectively solve the fundamental problem of isolation. The influence of some external psychological factors (e.g., the limitation of space, time and

in the eyes of the child living the cub scout adventure. The Jungle's fantasy theme acts as a connective context because it first appeals to a child's imaginative mind and then connects with some real-life activities.

[2] An example of such mediation character is the monkey in my chair, a program developed by Missing school, an association for kids having treatment for cancer. The kids receive a Monkey, who can go to school when the kid is too sick to attend, and sit in the kid's place in the classroom. The Monkey is an on going reminder to everybody of the class-member who is missing, and comes with its own backpack which can be couriered between school and home to deliver letters, cards, notes – and even homework. Hence The monkey becomes a mediator between the child and his classroom (http://au.thecurestartsnow.org/media/1014/monkey-in-my-chair-media-release-2013-10-07.pdf; http://missingschool.org.au/wp-content/uploads/2014/04/2014-04-BC-APR14-Monkey-In-My-Chair.jpg).

materials) and the management of the educational setting cannot be sustained only by teachers. We need a coordinated policy in general among those who manage hospital wards and those who manage the educational process. Lack of communication at this level is probably the real problem to be addressed if we are to resolve issues related to environmental factors (isolation, space, materials, time, stigma).

3.2.3 Recommendations for the LeHo project

The fact that teachers mention ICT does not mean that they use it effectively or that this is the most effective tool. LeHo should investigate further top ICT uses. In particular, the following question needs to be investigated: how can ICT meet the educational needs of children in the creation of meaning? Management aspects and the problems with the educational settings were highlighted here as a problem along with other external factors that influence significantly all parties involved in HHE. While these are beyond the scope of the LeHo project it should be noted that they are identified as a priority area of work that must be addressed to improve the educational needs of sick children and their families.

3.3 Assuming roles

In terms of Assuming roles 120 distinct were analysed (73 positive, 46 negative, 1 neutral).

Most recurring positive statements were about integration (10), teamwork (9), ICT learning tools (7), ICT use (5).

> Integration: "Students in the hospital attend classes together in the hospital…"
> Teamwork: "Medical staff and teachers communicate well and work together …"
> ICT learning tools: "Via Skype we shared poems …"
> ICT use "It has a website with the students, the parents and the foundation …"

Most recurring problems here are about stigma (7), isolation factors (5), intrapersonal psychological factors (4), external psychological factors (4),

> Stigma: "Some children refuse to talk about their illness as they feel that they are not normal …"
> Intrapersonal psychological factors: "Teachers can sometimes be too emotionally involved."
> Isolation factors: "The situation with home education is more isolating than …"
> External psychological factors: "No systematic activities …"

3.3.1 Discussion

Working in an integrated educational environment, through forms of cooperative learning seems to be the ideal choice to allow sick children to take active roles in front of their peers. ICT is indicated as an aid to these methodologies. The presence of stigma and problems related to intrapersonal psychological factors indicate the need to properly prepare the educational level of recipients (including the class and the teachers in the school to which the ill child belongs).

3.2.2 Recommendations for the LeHo project

The psycho-pedagogical preparation of the class (information about the disease and the physical appearance of the sick child, sharing of problems, concerns and forms of aid, etc.) should be strengthened and given due consideration. Proper management of ICT in general (for example, a web portal with an appropriate repository of activities) could be an interesting tool (see, for example, http://pso.istruzione.it; http://www.hospitalteachers.eu/timsis/). The concept of expression of the self is crucial to this key factor and education should be further developed and strengthened.

3.4 Metacognition

In terms of Metacognition 89 distinct statements were analysed (55 positive, 34 negative, 0 neutral).

Most recurring positive statements were about adaptive (8). ICT learning tool factors (7), experiential learning factors (5).

> Adaptive: "Mainstream schools adapt activities …"
> ICT learning tool factors "Using PowerPoint and movies …"
> Experiential learning factors: "Using puzzles in math and science."

Most recurring problems here are about safety (7), cost factors (5).

> Safety: "Science is a problem because experiments cannot be done."
> Cost factors: "There is a low budget for such activities.

3.4.1 Discussion

Metacognition is well connected with experiential learning tools and activities. However children's metacognitive learning processes are affected by the disease state (e.g., safety) or by the lack of economic resources. An example is the need to conduct scientific or practical work on natural or artificial materials. The fact that a sick child cannot operate directly and personally with things that might be "contaminated" due their compromised immune system (e.g., Leukaemia, Sickle Cell Anaemia) does not mean that they cannot participate vicariously or in a mediated way in such activities.

3.4.2 Recommendations for the LeHo project

There are two directions of work for the use of ICT.
The first is the use of ICT as a facilitator of metacognitive processes (for example, thinking tools, repositories and shared whiteboard card of reflection and organization of work, shared ICT thinking sheets, etc. www.thinkingclassroom.co.uk is rich in examples and activities, which could be adapted to a range of hospital and mediated by ICT).
The second is as a communication tool to facilitate the vicarious participation of the student with concrete classmate experiences. You could also think of the school hospital as partnering with science museums to enable children to see and interact with scientific experiments.

3.5 Individualities

In terms of Individualities 97 distinct statements were analysed (62 positive, 34 negative, 1 neutral).

Most recurring positive statements were about communication (10) assessment (10), integration (6).

> Communication: "Open discussion with the parents during the interview process…"
> Assessment: "Self-assessments are better than …"

Integration: "Art happens as a group activity …"

Most recurring problems here are about assessment (5), re-integration (4). time factors (3),

Assessment: "Assessment is difficult in this setting …"
Re-integration: "Mainstream schools have difficulties recognizing the limitations of HHE children when the return to class."
Time factors: "Staff need to have the time to evaluate …"

3.5.1 Discussion

The recognition of the individuality of each student seems adequately covered by appropriate pedagogical practices (adaptive teaching and guidance, communication, systems of self-evaluation and assessment, while being centred on the dynamic characteristics of the individual, and attention to integration). The problems identified appear to relate to the sharing of practices and procedures with the school to which they belong, or are probably linked to the rigid use in the context of the hospital school of assessment procedures of the normal school.

3.5.2 Recommendations for the LeHo project

The main line of work to be followed is in the integration and recognition of specific issues regarding education in the hospital (different times, specific evaluation procedures, psychological limitations, objective, etc.) by the child in HHE. This can be enhanced by clear regulations requiring the recognition of the hospital school within the mainstream school. The individualized teaching and expression can be further enhanced with the adoption of workshops or small groups, such as those represented in the Genius Hour (http://www.geniushour.com/what-is-genius-hour). Such activities could be done synchronously with the class of origin.

3.6 Future work in LeHo

This first round of Focus Group was designed to address issues related to the fulfilment of the Key Educational Factors in the Hospital and Home Education. A new round of Focus groups will be performed in the forthcoming months in order to address specifically how ICT can help fulfil the above mentioned KEF, and what problems still exists related to ICT use.

This chapter was first published as a LeHo internal report November, 2014.

Chapter 2

Second round of Focus Groups of the LeHo project

1.0 Method

Teachers and Hospital Care Professionals (HCP) were contacted in participating member countries (Belgium, Egypt, Germany, Italy, Spain and United Kingdom) through the use of mailing lists and direct contacts, to join FGs conducted by LeHo project staff. FGs were conducted to see how ICT solution would impact and mediate children's learning and school participation. When gathering different professional in the same time and place was not possible, individual interviews were conducted instead.

1.1 Demographic Analysis

74 doctors and teachers participated in this 2nd round Focus Groups (14 Health care professionals – i.e., HCP - and 59 teachers). The average age for Focus Group participants was 45.78, 22 were male and 51 were female and the average amount of experience across both groups was more than 18.58 years.

Table 1 illustrates the breakdown of participants by Country by Role and by Gender. The majority of teachers were female in every participating country except Belgium, which closely mirrored what was found with the previous Focus Group, while only in Germany were most of the HCPs male.

Table 1 Country by Role by Gender

COUNTRY	ROLE	FEMALE	MALE
BELGIUM	HCP	57%	43%
EGYPT	HCP	40%	60%
GERMANY	HCP	0%	100%
ITALY	HCP	66%	34%
SPAIN	HCP	50%	50%
UNITED KINGDOM	HCP	50%	50%
BELGIUM	TEACHER	50%	50%
EGYPT	TEACHER	75%	25%
GERMANY	TEACHER	69%	31%
ITALY	TEACHER	88%	13%
SPAIN	TEACHER	100%	0%
UNITED KINGDOM	TEACHER	80%	20%

Table 2 reports that most of the teachers and HCPs had work experience exceeding 15 years with only Spain's HCPs having less experience. UK HCPs and Italian teachers had the highest level of work experience. These findings mirrored those found in the first Focus Groups.

Table 2 Country by Role by Experience

COUNTRY	ROLE	EXPERIENCE
BELGIUM	HCP	19.71
EGYPT	HCP	7.8
GERMANY	HCP	NA
ITALY	HCP	18
SPAIN	HCP	13
UNITED KINGDOM	HCP	26.25
BELGIUM	TEACHER	17.67
EGYPT	TEACHER	18.18
GERMANY	TEACHER	15.85
ITALY	TEACHER	25.29
SPAIN	TEACHER	15.36
UNITED KINGDOM	TEACHER	21.2

Table 3 reports the average age by country and role. It is not surprising, considering the data reported in Table 2 it is not surprising that the UK and Italy have the highest respective ages for their roles.

Table 3 Country by Role by Age

COUNTRY	ROLE	AGE
BELGIUM	HCP	49.43
EGYPT	HCP	30.4
GERMANY	HCP	NA
ITALY	HCP	48
SPAIN	HCP	41.5
UNITED KINGDOM	HCP	54.5
BELGIUM	TEACHER	43.9
EGYPT	TEACHER	40.33
GERMANY	TEACHER	46.38
ITALY	TEACHER	51.13
SPAIN	TEACHER	44.18
UNITED KINGDOM	TEACHER	45.6

In examining the level of ICT knowledge (Table 4) we found that Belgian teachers had the most basic level of knowledge while the most advanced level was found for German teachers. These results differed significantly from what was found in the first Focus Group.

Table 4 Country by Role by ICT knowledge

COUNTRY	ROLE	ADVANCED	AVERAGE	BASIC
BELGIUM	HCP	14%	86%	0%
EGYPT	HCP	20%	80%	0%
GERMANY	HCP	100%	0%	0%
ITALY	HCP	0%	75%	25%
SPAIN	HCP	50%	50%	0%
UNITED KINGDOM	HCP	25%	50%	25
BELGIUM	TEACHER	0%	50%	50%
EGYPT	TEACHER	64%	27%	9%
GERMANY	TEACHER	0%	100%	0%
ITALY	TEACHER	25%	75%	0%
SPAIN	TEACHER	0%	100%	0%
UNITED KINGDOM	TEACHER	20%	80%	0%

Most of the teachers who participated in the Focus Groups had middle or secondary teaching experience as can be seen in Table 5 as well as experience teaching in the hospital, as can be seen in Table 6. (Note: Most teachers had experience in more than one grade level.)

Table 5 Country by grade level teaching experience.

COUNTRY	PRESCHOOL	PRIMARY	MIDDLE	SECONDARY
BELGIUM	0%	0%	20%	70%
EGYPT	8%	75%	67%	50%
GERMANY	8%	38%	69%	77%
ITALY	38%	38%	25%	50%
SPAIN	0%	0%	100%	100%
UNITED KINGDOM	40%	40%	20%	80%

Table 6 Country by type of teaching experience.

COUNTRY	HOSPITAL	SPECIAL	MAINSTREAM	HOME
BELGIUM	30%	10%	50%	10%
EGYPT	33%	83%	8%	8%
GERMANY	92%	38%	38%	15%
ITALY	75%	13%	63%	25%
UNITED KINGDOM	100%	60%	80%	80%

2.0 Focus Group data organization

Focus group was organized around 4 main themes. These were:

1. ICT Use in HHE and, for doctors, in the communication with teachers/children/families. This question addressed specifically:
   - People involved in the communication (i.e., teacher to/from pupil; pupil to pupil; teacher to/from medical staff; teacher to /from parents; teacher to /from schools administration; teacher to teacher;
   - Pedagogical purpose for the use of the ICT;
   - Frequency of use of the ICT;
   - ICT details;

2. Specific problem emerging from any ICT;
   - Problems relating to any ICT;
   - Possible solution;
   - Resources available to support ICT use by school;
   - ICT effectiveness sin reducing isolation;

3. Most relevant aspect of ICT in HHE.
Pedagogical aspect where ICT may make a difference. These where again breakdown by
   - Frequency of use of the ICT;
   - People involved in the communication (i.e., teacher to/from pupil; pupil to pupil; teacher to/from medical staff; teacher to /from parents; teacher to /from schools administration; teacher to teacher.

4. Limits of ICT in HHE, Things that cannot be replaced by ICT.
   - Irreplaceable aspects of communication;
   - Alternatives used instead of ICT;

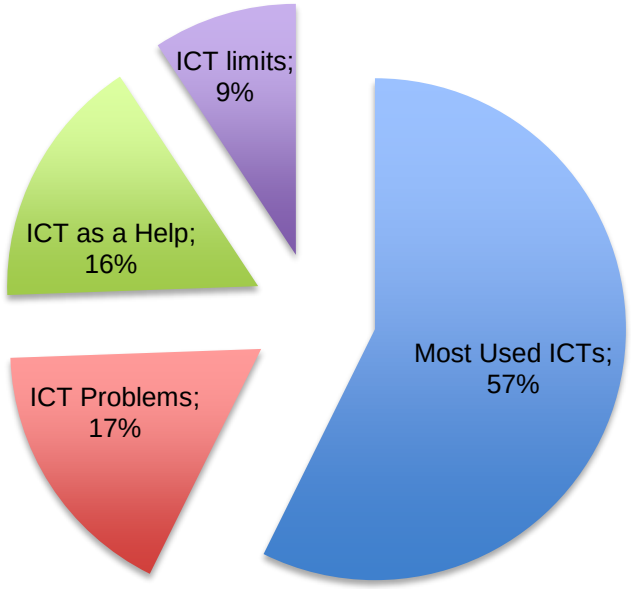
2.1 Focus Group Statements Analysis in General

485 distinct 2nd round FG statements were categorized into one of 64 categories (see Appendix B Category Glossary at the end of this document) that were inductively created by three coders after reading a subset of statements. Agreement between the three coders was between 87 and 89% with a good reliability score, i.e., α = .86 and disagreements were resolved through discussion.

As can be seen in Graph 1, of these statements 57% of them were given during the first part of the 2nd round of Focus Groups that discussed the most used ICTs. The following three

parts of the Focus Groups included 17% when participants discussed ICT problems, 16% when they discussed how ICT can be a help, while 9% of all statements were offered during the last part of the Focus Group that discussed the limitations of ICTs.

Graph 1 Categories by Focus Group Theme



3.0 How ICTs are used

A total of 278 ICT were mentioned by Teachers and HCPs during the 2nd round Focus Groups. Of those 90 distinct ICTs were described in detail see Appendix B - Glossary of ICTs most frequently used at the end of this document. The top 10 ICTs mentioned were Email (14), Skype (14), Bednet (10), PowerPoint (8), Dropbox (7), Word (7), Excel (7), Publisher (6), Robotica (6), WhatsApp (6). These top 10 ICTs represented 30.2% of all ICTs mentioned.

These 278 ICT were described as being used in 17 distinct ways (see Table 6) by Focus Group participants. Software as a learning tool (31.3%), Communication/Information sharing (14%), Increase knowledge about illness (9.4%) and Integration (9.4%) were the 4 leading use descriptors representing 64.1% of all descriptions.

Interestingly specific ICTs were described as being used in multiple ways. For example, the most frequently used ICT – i.e., Email was described as being used in 6 separate ways (i.e., software as learning tool, communication/information sharing, distance relationship, increase knowledge about illness, integration, administration) by Teachers and HCPs during the 2nd round Focus Groups.

Table 7 How ICTs are used

How used	Frequency
Software as a learning tool	31.3%
Communication/information sharing	14.0%
Increase knowledge about illness	9.4%
Integration	9.4%
Active/creative learning	7.6%
Administration	6.5%
Distance relationship	5.0%
Personalized learning and training	4.0%
Unspecified	3.6%
Device as a learning tool	3.2%
Psychological factors	1.8%
Autonomy	1.4%
Monitoring	1.4%
Teamwork	0.7%
Orientation	0.4%
Privacy factors	0.4%

During the 1st round of Focus Groups communication was found to be the 4th most common category used across all 5 KEFs (it was mentioned over 5.75% of the time). Therefore, it is not surprising that considering ICT use communication is considered the 2nd most frequent descriptor in the above Table 7. Another comparison between the 1st and 2nd round of Focus Groups worth mentioning is how important integration is for both Focus Groups.

Differences should also be noted as support was mentioned for a number of uses during the 2nd round, as support roles such as "Increase knowledge about illness", "Administration" "Integration" etc., and for more than 24% of all of the ICT use categories listed while during the 1st round only "support factors" and "children support factors" were mentioned during the 1st round.

4.0 Frequency of ICT use

As indicated in Table 8, over 69% of all the ICTs are used either Daily, Daily, depends on pupil condition or Almost every day. The most frequently used ICTs (with the frequencies indicated) from Daily to Almost every day are: Bednet (10), Robotica (6), and Cornelsen Verlag (5).

Table 8 Frequency of ICT use

Frequency of Use	% of Total	Most used
Daily	33.5%	Robotica
Almost every day	32.4%	Bednet
Occasionally	11.2%	Simon en Odil
According to requirements	10.8%	Edu 365
NA	3.6%	Google Docs
Daily, depends on pupil condition	3.2%	Moodle
Weekly	2.9%	iPads
Rarely	2.5%	PhotoPeach

5.0 Specific problems emerging from ICTs

As demonstrated in Table 9, the top three problems associated with ICT use in HHE are Technical factors, Administrative problems, and Equipment feature represent nearly 46% of all problems associated with ICTs.

Table 9 Problems emerging from ICT in HHE

Problem	Frequency
Technical factors	17%
Administration	16%
Equipment feature	13%
Connectivity factors	12%
Virtual assessment	8%
Cost factors	7%
Isolation factors	7%
Environmental feature	4%
Privacy factors	4%
Psychological factors	4%
Hospital limitations	2%
Time factors	2%
Training support	2%
Motivation	1%

Comparing the results from the 1st and 2nd Focus Groups it is clear, overall, that the hospital environment continues to be the point where most of the negative statements are concentrated.

Of the problems that were mentioned during the 1st round of Focus Groups – i.e., "isolation factors" "cost factors" and "psychological factors" – both external and intrapersonal, and "safety" were also mentioned during the 2nd round. The repetition of psychological and isolation factors in both Focus Groups helps underscore the fact that ICT, at least in its current form, is not able to resolve the fundamental issue of isolation. This aspect should be addressed with a deep pedagogical and psychological planning of the school activities before introducing any learning tool, and cannot be left alone hoping that some ICT will simply fix it. On the contrary, developing ICT solutions without taking into proper account the psychological aspects of the child with a medical condition can actually aggravate the problems. That said, as mentioned previously, the top 4 problems associated with ICTs are clearly institutional or organisational. A coordinated, institutional level, policy should be developed to ensure that, on some level, some of these problems are eliminated.

6.0 Most relevant aspect of ICT in HHE

ICT has been described by many of the 2nd Focus Group participants as being a tool that can really make a difference in HHE. The top 5 areas where the ICT can make a difference are Personalized learning, Integration, Sharing information and Student Training and they account for over 60% of all the descriptions.

Table 10 Pedagogical aspect where ICT can make a difference

Category	Frequency
Communication/ information sharing	34%
Software as learning support	13%
Increase knowledge	11%
Personalized learning	9%
Virtual assessment	8%
Unspecified	6%
Administration	4%
Technical factors	4%
Autonomy	3%
Increase knowledge about ill	3%
Creative learning	1%
Device as learning tool	1%
Monitoring	1%
Teamwork	1%
Training support	1%

Considering the results from the 1st round of Focus Groups where ICTs were perceived to be most useful in the KEFs Making sense and Constructing knowledge and what was found in the 2nd round of Focus Groups when the discussion turned to how ICTs can make a difference, ICTs are truly a tool of choice for creating a socio-constructivist path that respects the needs of the child.

7.0 Things that cannot be replaced by ICT

Of all the limits of ICT in HHE, it is clear that close, physical, in person relationships with people cannot be replaced by ICT.

Table 11 Limits of ICT in HHE

ICT cannot replace this	Frequency
Face to face interaction	45.50%
Personal relationship	18.20%
Competition between students	9.10%
Non verbal communication	9.10%
Physical sensory exploration of their surroundings	9.10%
Getting the full picture	6.10%
Taking an interest in the whole child	3.00%

Examining closely the results from the 1st and 2nd round of Focus Groups the KEF Relationships continues to be the most frequently cited when discussing negative aspects in the HHE. While isolation factors and psychological factors were discussed during the section of the 2nd round of Focus Groups that dealt specifically with problems associated with ICT use in HHE, it is therefore no surprise that when Focus Group participants are asked to discuss the specific limits of ICT that those aspects related to the KEF Relationships are so often cited.

Face to Face interaction encompass two crucial aspects of the educational relationship. The fist one is that the reality of the child with a medical condition in HHE is one where face-to face interaction with peers can really make the difference in reducing stigma associated with their illness. The second one is that education is only possible within a system of relationships, and such relationships can only be supported by ICT but cannot be created or maintained alone via ICT use. The real relationship tool is simply looking into the child's eyes.

8.0 Recommendations for the LeHo project

The use of ICT in HHE is of paramount importance. It is clear that these technologies exist in order to help improve the communication between all key figures – from the HCPs to parents to home institution.

The key role of KEF Relationships in HHE is one that similarly cannot be denied. Social bonds between students in the HHE are important as are those between the home institution and the HHE. The maintenance of these social bonds should be stable and fostered within the HHE. In practice this might mean that new social bonds between children in the HHE should

be encouraged as these new bonds might help the child as the re-integrate into their home institution. At the same time, previously existing social bonds between children in the HHE and their home institution should be part of educational projects over the long term.

The problems within the HHE associated with ICT use are clear. Too often ICT seem to be introduced without the proper support which should include network infrastructures administration, equipment and technical assistance. While the scope of these issues are clearly beyond the scope of LeHo, these issues must be addressed in future EU funded projects as standardized practices for dealing with administrative and organisational issues might be a fruitful new work area in improving the educational environment in HHE across Europe. The model set by one of the consortium partners, Bednet, could be an example.

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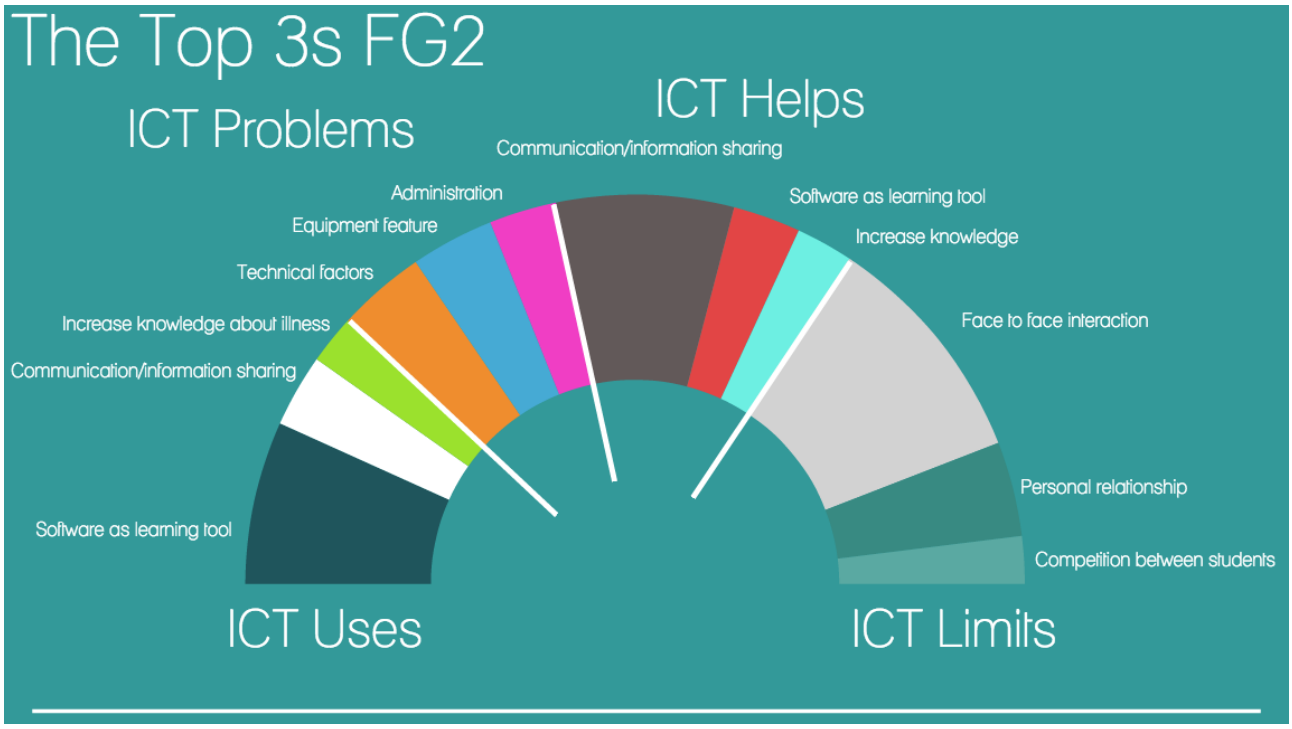
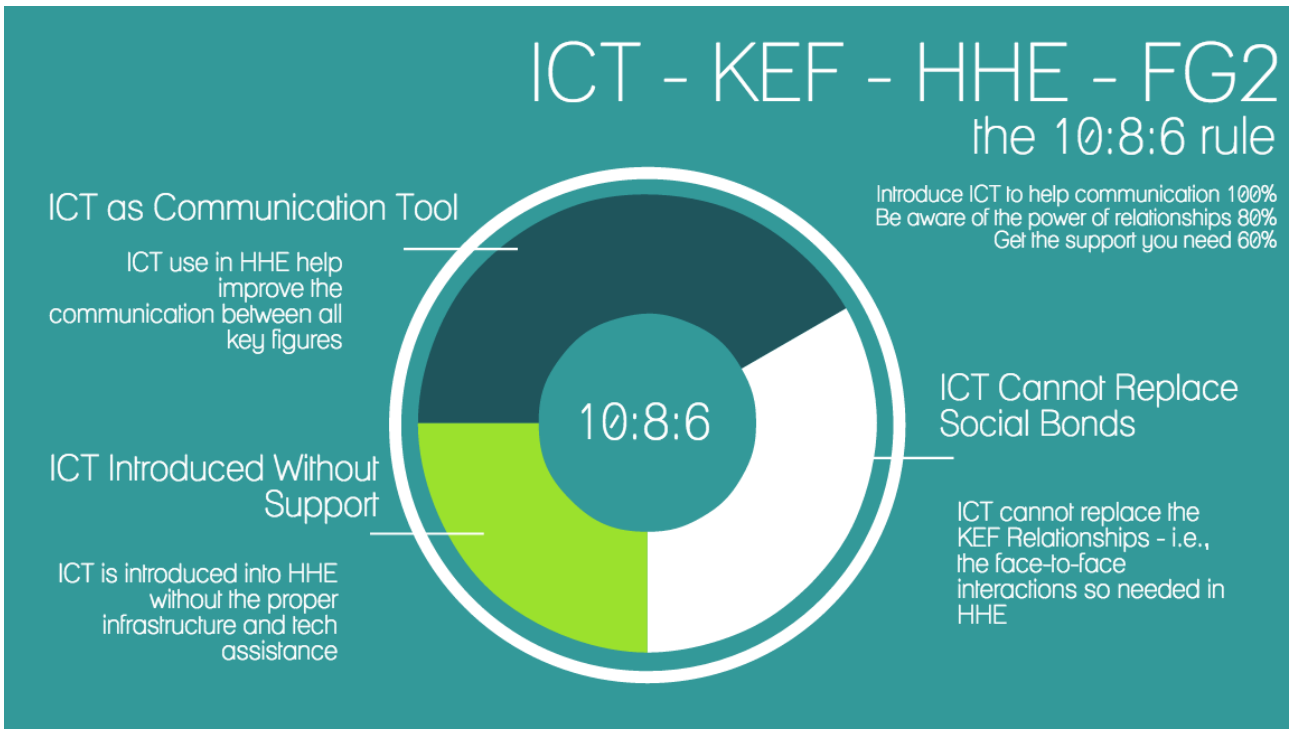

The Top 3s FG2
ICT Problems
ICT Helps
Communication/information sharing
Administration
Equipment feature
Technical factors
Increase knowledge about illness
Communication/information sharing
Software as learning tool
Software as learning tool
Increase knowledge
Face to face interaction
Personal relationship
Competition between students
ICT Uses
ICT Limits


ICT - KEF - HHE - FG2
the 10:8:6 rule
ICT as Communication Tool
ICT use in HHE help improve the communication between all key figures
Introduce ICT to help communication 100%
Be aware of the power of relationships 80%
Get the support you need 60%
10:8:6
ICT Cannot Replace Social Bonds
ICT cannot replace the KEF Relationships - i.e., the face-to-face interactions so needed in HHE
ICT Introduced Without Support
ICT is introduced into HHE without the proper infrastructure and tech assistance

LeHo
Learning at Home and in the Hospital

Lifelong
Learning
Programme

Acknowledgments

This work has been made possible by the effort and collaboration of all LeHo participating members, their staff and their institutions. For a complete list please see the LeHo website (www.lehoproject.eu). These people and institutions were invaluable in organizing, conducting and documenting the Focus Groups.

Throughout Europe and Egypt, hundreds of teachers and members of the medical community have given their time to take part in the Focus Groups. Without their dedication and collaboration this work would have not been possible.

We would like to thank all members of the coding team, i.e., Jarmila Adamove, Gabriella Pernice, Gaia Baratto, but most especially Roberto Vagnetti who continually exceeded every expectation.

Appendix A

Focus Group 1: Glossary of Categories

Category	*Definition*
Academic factors	*Something that actively contributes to the accomplishment, results or process of learning.*
Adaptive	*Changes that are made to the learning process.*
Age	*Length of life of child in HHE.*
Assessment	*Systematic collection and review of information relevant to educational process*
Autonomy	*Ability of the HHE or HCP or learner to make decisions.*
Awards	*Prize or mark of recognition for achievement.*
Children support factors	*Support for children within HHE.*
Communication	*Imparting or exchanging information.*
Cooperative learning	*Educational approach where activities are organized around academic and social learning experiences.*
Cost factors	*Amounts to be paid or spent for the obtaining of something related to HHE.*
Experiential learning factors	*Process of making meaning from direct experience.*
External psychological stressors	*Events and stimuli outside of the person that cause HCP, teachers or HHE children to experience psychological stress.*
Family factors	*Issues involving HHE children's family members.*
Goal orientation	*Desire to develop the self by acquiring new skills, mastering new situations and improving one's competence.*
HHE not valued	*HHE is not given the amount of time and resources FG members believe it should.*
ICT use	*Learning issues that ICT can either help resolve or is impossible to resolve within HHE.*
ICT learning tools	*ICT tools, i.e., software, hardware, services or applications that can, are or should be involved in HHE.*
Individual factors	*Issues particular to the individual that affect their participation either negatively or positively within HHE.*
Integration	*The bringing together or incorporating of parts into a whole within HHE.*
Intrapersonal psychological factors	*Psychological factors that occur within the mind of the individual.*
Isolation factors	*The setting or placing apart of any individual that participates in HHE.*
Lack of personnel	*Not having enough people employed (either paid or volunteer) that engaged within HHE.*

Long term factors	*Issues that occur or happen or will happen over a long period of time to anyone or anything involved in HHE.*
Mobility	*The ability of any person within HHE to move freely and easily.*
Motivation	*The reason(s) anyone within HHE has for behaving/thinking in a particular way.*
Orientation factors	*Finding for oneself or others their bearings in new HHE environments.*
Other	*Anything that not included in the other categories.*
Professional judgment	*Ability to make considered decisions by HHE professionals.*
Re-integration	*The restoration of HHE children into their mainstream school, activities - i.e., their life prior to illness.*
Reverse roles	*Someone in HHE adopting a role which is the reverse of what they normally assume.*
Safety	*Condition of any HHE member being protected from danger, risk or injury.*
Self-expression	*The expression of one's feelings, thoughts or ideas within activities.*
Setting	*The place or type of surroundings where something associated with HHE takes place.*
Stigma	*A stain or reproach for the illness associated with children in HHE.*
Support factors	*Assistance given to support HHE members financially, psychologically, and emotionally.*
Teamwork	*Combined action of HHE members towards a common goal.*
Time factors	*The planning or scheduling or arranging of events within HHE.*
Virtual community	*Community of people sharing the common interest of HHE over the Internet.*

Appendix B

Focus Groups 2: Glossary of most frequently used categories and their definitions

Category	Definition
Active/creative learning	Tools which improve a dynamic and experiential learning
Administration	Tools which help to organize, plan and coordinate
Autonomy	Tools which encourage children to learn, increasing his independence
Communication/information sharing	Tools which permit people to share information, communicate in every moment and in different place
Connectivity factors	Technical characteristics of ICT
Device as learning tool	Device which help teachers and children in the educational process
Distance relationship	Tools which connect children in hospital with the world outside, to not lose contact with their friends, family and their mainstream school.
Increase knowledge about illness	Tools which expand the comprehension of ill
Integration	Tools which connect children in hospital with the world outside
Interpersonal relationship	Interaction between people who share feelings and emotions
Monitoring	Check children's progress and his school activities
Motivation	Increase children's interest and motivation
Personalized learning and training	Tools which help children who have an impairment to learn in a different way
Privacy factors	Protect the sharing of personal information
Psychological factors	Mental statement, thoughts, feelings and other cognitive characteristics
Self-esteem factors	Tools which help children to improve their self-esteem and be secure of themselves
Software as learning tool	Software that helps teachers and children in the educational process
Teamwork	Tools which encourages the ability to work in group
Technical factors	Technical characteristics of ICT

Training support	Learn to use ICT in the better way with specific coaching

Appendix C

5.2 Glossary of ICTs most frequently used by KEF

Name of ICT	Freq.	How it is used	Country	Related Key Educational Factor					
				Relationships	Making sense	Assuming roles	Metacognition	Individualization	Inter-institutional commun.
Email	8.00%	distance relationship, increase knowledge, share information, synchronous communication, teacher support, training support	DE, IT, SP, UK	X	X			X	X
Skype	4.90%	distance relatinship, increase knowledge, integration, synchronous communication	BE, DE, IT, SP	X					
PowerPoint	3.80%	increase knowledge, personalized learning, share knowledge	SP, IT					X	

Web browser	3.50%	device as learning tool, software as support structure, synchronous communication, teacher support, training support	DE					X	
BEDNET	3.50%	distance relationship, integration, synchronous communication, technical core, training support	BE	X		X			X
WhatsApp	3.50%	distance relationship, share information, software as support structure, synchronous communication	DE, IT	X	X				X
PC	3.10%	distance relationship	IT, DE						
Dropbox	3.10%	increase knowledge, platform as teaching support, share information	DE, SP, UK	X					X

Internet	3.10%	platform as learning tools, software as support structure, training support, autonomy, distance relationship, increase knowledge, integration, sychronous communication	DE, IT, UK	X				X	X
Word	2.80%	increase knowledge, psychological factors, teacher support	DE, SP	X	X		X		
Excel	2.40%	increase knowledge, share knowledge	SP	X					X
Robotica (www.scuoladirobotica.it)	2.10%	autonomy, personaized learning, platform as learning tool, share information, teacher support	IT		X	X	X		
YouTube	2.10%	experiential learning factor, personalized learning, software as support structure	DE, IT		X	X		X	
Publisher	2.10%	increase knowledge, share knowledge	SP	X					X

Tablet	1.70%	autonomy, device as learning tool, integration	IT, UK					X	
CDs	1.70%	device as learning tool	DE, EG					X	
Cornelsen Verlag	1.70%	platform as teaching support	DE	X				X	X
Google	1.70%	software as learning tool, teacher support, training support	DE					X	X
Interactive white board	1.40%	device as learning tool, personalized learning, training support	EG, UK	X	X		X	X	
classy.be	1.00%	autonomy, integration, software as support sturcture	BE	X			X	X	
My XTEX	1.00%	autonomy, software as support structure, teamwork	SP	X				X	
xtec.cat	1.00%	autonomy, software as support structure, teamwork	SP	X				X	X
DVDs	1.00%	device as learning tool	EG					X	
Projectors	1.00%	device as learning tool	EG						

My Zone	1.00%	distance relationship, psychological factors, technical core	BE						
Jclic	1.00%	ict learning tool, software as support structure, teamwork	SP	X	X			X	
Il re della matematica (King of Math)	1.00%	ict learning tool, virtual gaming	IT					X	
Issuu	1.00%	ict learning tools, software as support structure, teamwork	SP		X			X	
Wezooz Academy	1.00%	increase knowledge, personalized learning, platform as learning tool	BE				X	X	X
didactica.org	1.00%	integration	IT	X					
Web based apps	1.00%	share information	UK	X					
SIMS	1.00%	share information, synchronous communication	UK						
llocs.xtec.cat	1.00%	software as support structure	SP						
agora.xtec.cat	1.00%	software as support structure, teamwork	SP	X	X			X	X
blocs.xtec.cat	1.00%	software as support structure, teamwork	Sp	X	X			X	X
Edu365	1.00%	software as support structure, teamwork	SP	X	X			X	X

apliense.xtec.cat/prestatgeria	1.00%	software as support structure, teamwork digital books	SP	X	X				X
Calaméo	1.00%	software as support structure, teamwork, technical core	SP	X	X				X
PhotoPeach	1.00%	working with images	SP		X			X	X
Simon en odil	0.70%	distance relationship, ict learning tools	BE	X				X	
Facebook	0.70%	distance relationship, training support	EG, IT	X				X	
Clinic clowns club	0.70%	distance relationship, virtual gaming	BE	X					
Comiclife	0.70%	increase creativity	DE				X	X	
Foreign language Apps	0.70%	increase knowledge, software as learning tool	IT					X	
VLE	0.70%	personalized learning, share information	BE	X		X		X	
Itunes	0.70%	share information, software as learning tool	DE	X					
Web chair	0.70%	share information, technical core	DE	X		X			X
Video conferencing	0.70%	synchronous communication	DE, UK	X					
Printers	0.70%	teacher support	UK						

Scanners	0.70%	teacher support, teamwork	UK						
Google Docs	0.70%	teamwork	BE		X				X
Gimp	0.70%	virtual gaming, working with images	DE	X	X			X	X
Kindle	0.30%	device as learning tool	UK					X	
Twitter	0.30%	distance relationship	IT	X					
leifi.de	0.30%	experiential learning factor	DE	X					
Phase 6	0.30%	experiential learning factor	DE					X	
Promethean	0.30%	experiential learning factor	DE	X	X	X		X	X
ego4you.de	0.30%	ict learning tools	DE					X	
Citrix	0.30%	increase knowledge	DE	X	X				X
Sensory room	0.30%	personalized learning	UK	X		X		X	
Scook	0.30%	platform as learning tools	DE					X	X
Mebis	0.30%	platform as teaching support	DE	X				X	X
Libre Office	0.30%	psychological factor	DE						
abfrager.de	0.30%	share information	DE						X
medizinfuerkids.de	0.30%	share information	DE	X	X	X			
Active inspire	0.30%	software as learning tool	DE					X	
Celeco	0.30%	software as learning tool	DE					X	

Chemistry online	0.30%	software as learning tool	IT					X	
discoveryeducation.co.uk	0.30%	software as learning tool	DE		X			X	
Elfe	0.30%	software as learning tool	DE					X	
Geogebra	0.30%	software as learning tool	DE				X	X	
kinderkrebsstiftung.de	0.30%	software as learning tool	DE					X	
Lehreronlin	0.30%	software as learning tool	DE						X
matheaufgaben.net	0.30%	software as learning tool	DE					X	
Mathswatch	0.30%	software as learning tool	UK					X	
Oriolus	0.30%	software as learning tool	DE					X	
ping.de	0.30%	software as learning tool	DE						
realmath.de	0.30%	software as learning tool	DE					X	
wegerer.at	0.30%	software as learning tool	DE				X	X	
Doodle	0.30%	synchronous communication	DE						X
Joomia 3x	0.30%	synchronous communication	DE						X

musin.de	0.30%	synchronous communication	DE	X					X
Telephone	0.30%	synchronous communication	UK	X					
Text message	0.30%	synchronous communication	UK	X					
Translating software	0.30%	synchronous communication	IT	X					
web2.0calc.com/	0.30%	teacher support	DE						
Camcorder	0.30%	teamwork	UK		X	X			
Camera	0.30%	teamwork	UK		X	X			
Fibs	0.30%	training support	DE						X
zoopetting	0.30%	virtual gaming	IT	X	X			X	