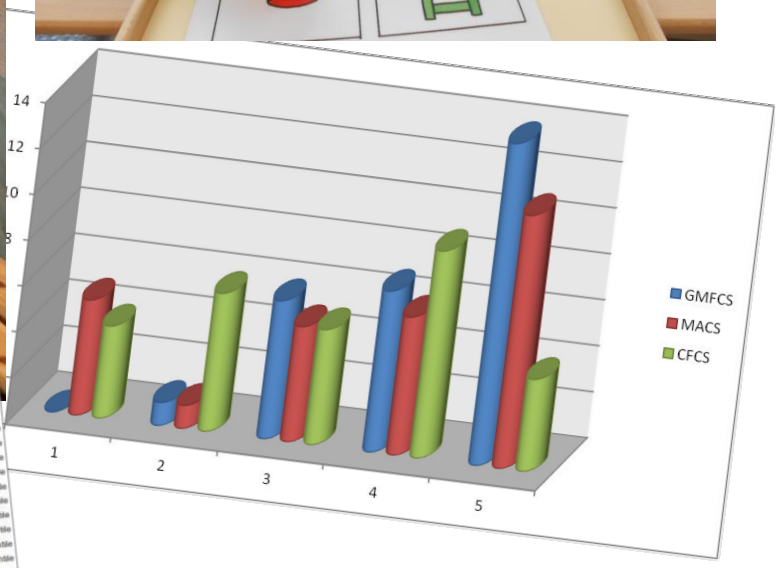

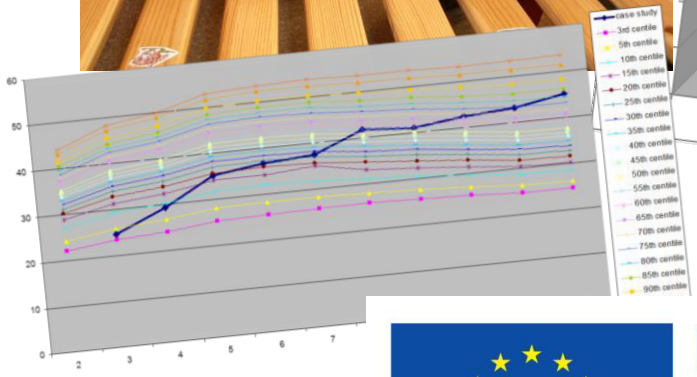

Lifelong Learning Programme

EVIDENCE BASED CONDUCTIVE PRACTICE

Towards Whole School Improvement

Handbook of a Comenius multilateral school partnership 2013 – 2015

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1. Introduction

Conductive Education is a complex educational system designed to meet learning needs in all areas of development. It is mainly for people with a neurological disorder of central nervous system origin. Conductive practice relies upon careful skills of observation in order to develop the appropriate teaching strategies. The focus of Conductive Education has until now been on practical work, with conductive observation as a key tool for planning and recording. Detailed reports are produced, but these have not been based upon standardised measurements. Observation can be subjective, and as such it can be difficult to report upon outcomes objectively to the wider professional world. An objective view would serve to improve the quality of our own professional practice, provide professional recognition and increase funding opportunities.

It should be noted that whilst there is the need for objective measurement of outcomes, this should be in addition to, rather than as a substitute for ongoing conductive observation.

This handbook offers an insight into the experiences of the consortium partners in selecting and using various standardised measurements, and seeks to draw conclusions based on these findings. We hope that this will prove useful to the practice and research of conductive education.

2. Participants

Conductive Education (CE) has been practiced for many years in some European countries.

Following previous partnerships in 2000 and 2010, a new partnership was formed to consider evidence based practice. Seven partners from six countries have been funded by the European Commission to complete a further 2 year Comenius partnership (2013 – 2015) called EVIBACE.

The consortium of partners:

2.1. FIT-Schule der ITA GmbH

Vienna, Austria (Coordinator)

ITA is a non-profit organisation and especially supports young people with disabilities and special needs in vocational (re)habilitation, supported employment and integration. The overall aim is sustainable individualised participation in society. Currently more than 60 young people, aged 16 - 30 years, attend the school and different services of ITA.

FIT-Schule (Fachspezifische Schule für Individualisierte Teilausbildungen) is part of ITA and since 2006 has been recognised by the school authorities as the first vocational special needs school in Austria. Some of the classes work in the field of Conductive Education (CE), including general educational and job-related lessons, soft skills and practical vocational training, motor activities and activities of daily living. Current branches on offer include gardening, horse care, office administration, cooking and service, kindergarten and housekeeping. Practical training takes place in associated or cooperating enterprises.

Due to the complex educational approach, teachers and pedagogues, conductors, therapists, and also specially trained professionals from different fields work together in the different school and project teams. Close cooperation with external experts such as coaches, social workers and psychologists, as well as with parents and the social environment, secure the students´ development towards sustainable integration into society.

Special features: Outdoor adventure and sportscamps to strengthen students' self-esteem, self-awareness and social competencies.

www.ita.or.at

2.2. The National Institute of Conductive Education (NICE), Birmingham, UK

The National Institute of Conductive Education (NICE) is a leading UK charity transforming the lives of disabled children and adults who have movement disorders such as cerebral palsy, Parkinson's, multiple sclerosis or recovering from a stroke, demonstrating a commitment to making a lasting change in their lives. Our work pushes the boundaries of human potential for children and adults with movement disorders by teaching them, through Conductive Education, new ways of controlling the effect of their condition.

Our services are provided across the age range from young babies to older adults. All our staff are qualified conductors and provide a flexible range of services to meet individual needs. Annually we offer services to around 500 people and their families.

Alongside service provision, through The Conductive College, we also provide a range of accredited and non-accredited training programmes. These include Conductor Assistant; Qualified Conductor Status and MA modules in CE. These courses are run in conjunction with Birmingham City University and Open College Network West Midlands.

www.conductive-education.org.uk

2.3. The Percy Hedley Foundation,

Newcastle Upon Tyne, UK

The Percy Hedley Foundation is a charitable organisation founded in 1953 that incorporates two OFSTED rated Outstanding schools on three sites, Percy Hedley Lower School, Percy Hedley Upper School and Northern Counties School.

The Upper and Lower schools currently work with 153 children aged 3 to 19 years, providing a variety of daily or residential boarding education with the highest quality education, therapy, residential care and independence training for pupils on a full or part-time basis.

We specialise in working with two distinct groups of children. Our work with children who have Cerebral Palsy is based on Conductive Education as practised at the Petö Institute in Budapest. We also provide a unique integrated approach to working with children who have complex speech, language and communication difficulties. The ethos is to provide a child centred approach, with individual integrated programmes of teaching and therapy to promote small steps to achievement.

The schools operate a multi disciplinary approach to education and therapy with each team comprising of a teacher or Conductor-teacher, Occupational Therapist, Physiotherapist, Speech and Language Therapist and specialist classroom support staff. Educational Psychology services and Family support services are also available within schools.

www.percyhedley.org.uk

2.4. Phoenix GmbH

Konduktives Förderzentrum, Munich, Germany

Pfennigparade
Das Rehabilitationszentrum in München
Phoenix GmbH
Konduktives Förderzentrum

The Conductive Education Centre Phoenix, an institute of the parent company Pfennigparade, was founded in 1995. More than 120 children in 11 groups are being prepared every day for a life that is as independent as possible (mother-child group, kindergarten groups, school and residential programme). Intensive summer camps and individual conductive training is offered throughout the year. Phoenix accepts children aged from 6 months to 18 years with movement disorders. The concept was extended to also include non-disabled children so that they can now learn and play together in inclusive settings. Special conductive training camps for adults with MS, Parkinson, CP and other physical disability are offered twice a year.

A multi- and interdisciplinary team (conductors, special educators, occupational therapists, physiotherapists, speech therapists, nurses and volunteers) works closely with social workers, psychologists, neuro-pediatricians and orthopedists. Close cooperation with parents also plays an important role.

Since 2000, Phoenix Academy also provides a two-year further training programme for professionals who wish to become a Conductor. Meanwhile there are approximately one hundred German trained conductors working in different institutions, mostly in Bavaria.

Phoenix supports the German conductor and the National Conductive Association.

Special features: “EMOKI – sports!” is an inclusive, conductive sport project which offers sportscamps to strengthen students' self-esteem and social competencies.

www.phoenix-kf.de www.pfennigparade.de www.emoki-sport.de

2.5. Pető Institute, Budapest, Hungary

The Practice Conductive School and Unified Conductive Education Methodology Institute, and the Primary Boarding School of the András Pető College (hereinafter: Pető School) provides development and education for children with special needs due to cerebral palsy (CP).

Pető School provides services for 150 children, aged from 6 to 16 years. Beside the complex conductive education development programme (including the development of motor, manipulation, cognitive, emotional, self-care, social and communication skills), our school follows the National Primary School Curriculum in its work.

A boarding school is also available for those who come from the countryside and for those who need to be prepared for living in a secondary boarding school in the near future.

The school offers adaptive sports (rowing and running, virtual wii sports, and Boccia), and choir-, drama/theatre-, and film clubs.

Conductors cooperate with Speech and Language Therapists, Special Education Teachers, Psychologists, Nurses, Orthopaedic Consultants, Child Neurologists and Paediatricians.

Within the project we also include the Practice Kindergarten of the András Pető College, to provide continuity in professional knowledge and common understanding in measurement tools.

The Pető School also provides the practice for trainee conductors in the conductive methodology training from our College.

www.peto.hu

2.6. Inkendaal Hospital School, Vlezenbeek, Belgium

Inkendaal is a special school for children in a hospital or day care setting and works as an integrated model closely with the medical and rehabilitation sector of the hospital Inkendaal.

The school accepts children from 2.5 to 13 years, divided into ten classes with a maximum of 8 children in each class. Two of these classes work according to the principles of Conductive Education. In each class there is a multidisciplinary team with a conductor, a teacher, a physiotherapist, an occupational therapist, a speech therapist and a psychologist.

The multidisciplinary team also works closely with the parents.

The team is under the direction of a management team consisting of the school principal, the child neurologist and the rehabilitation coordinator.

Pupils in Inkendaal School are mainly children with cerebral palsy, acquired brain injury or delayed psychomotor development.

The conductors train the staff in Conductive Education (CE) and some staff attend further education courses in the field of CE.

http://www.inkendaal.be/nl/ziekenhuisschool.htm

2.7. Jorielskolan - Joriel School, Stockholm, Sweden

Joriel School is a primary school of 57 students who require integrated special education, providing education from the first to the ninth school years along with day care and pre-school. An after-school program is also offered, integrated with Conductive Education/ CE. Joriel School welcomes primarily students with neurological injuries including cerebral palsy (CP) and other disabilities. The initiative to start Joriel School came, in 1999, from two parents of children with cerebral palsy. These parents had discovered new possibilities for their children to develop cognitive and motor skills through conductive education. They realised that conductive education could contribute to and strengthen an individual's self-identity and enable them to gain knowledge and abilities in other areas as well. Therefore, their goal was to integrate CE within the curriculum of the Swedish school system.

"Joriel School's vision is that pupils will enter society with the knowledge and self-confidence necessary to achieve the highest possible quality of life."

Joriel School employs conductors, assistant conductors, teachers, teaching assistants, administrators, a school nurse and kitchen staff. The majority of students also have personal assistants who work with them during the school day. These personal assistants are however not employees of the school.

Habiliteringsenheten Årsta began to work with Joriel in 2007 to provide (re)habilitation services for students such as physical, occupational and speech therapy. They are based at the school for a portion of their working week.

http://www.pysslingen.se/jorielskolan

3. The rationale behind EVIBACE:

Evidence Based Practice involves the use of existing evidence; e.g., current research and literature, as well as the systematic collection and interpretation of 'in-house' data, to inform and develop practice.

Schools in general and special needs schools in particular, including CE centres, have varying ways of measuring progress and development in different European countries. Currently there are no standardised assessments that evaluate all areas of child development.

This posed the question: how are we to refer to existing evidence in order to inform and develop our practice if no, or limited, evidence of a standardised nature exists?

This became our starting point and the motivation to begin our partnership.

There were two main challenges:

1. "Conductive Education is a holistic concept. That means, the goal is to develop all areas of the neurologically impaired person to become as independent and mature as possible". (Handbook Leonardo Partnership, 2012).

We asked ourselves: how can we measure progress or development in "all" areas?

We also questioned the amount of time required to be spent on assessment rather than the actual practice of Conductive Education.

2. Differing standards

We realised that:

- There are differing regulations across the European countries regarding the reporting of students' progress
- Not all staff are able to use all of the available assessment tools.
- Not all assessments are available in the different national languages across Europe.

As such, we asked ourselves: how can we find assessments that are appropriate for everyone to use?

4. What is Evidence Based Practice?

An Introduction to Evidence Based Practice.

Evidenced Based Practice should be at the heart of holistic educational delivery as advocated by Dawes et al, (2005). All decisions about intervention should be based on 'best available, current and relevant evidence'. This reflects the United Nations Declaration on the Rights of the Child (1989), which also stresses the need to listen to and take into account children's views for intervention.

Evidence Based Medicine has traditionally been described as 'the process of systematically finding, appraising and using contemporaneous research findings as the basis for clinical decisions', (Rosenberg and Donald 1995, p.1122).

A more recent definition states that it is 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients', (Sackett et al, 1996 p71), 'whilst integrating individual clinical expertise'.

As such Sackett et al (2000) propose that Evidence-based practice is the integration of:

- Clinical expertise
- Systematic research and
- Patient's preferences, circumstances and goals.

Rosenberg and Donald, (1995), suggested a 4 step strategy for clinicians to develop an evidence-based approach:

- Formulate a clear research question derived from the child's difficulties
- Search the literature for relevant clinical articles
- Evaluate (critically appraise) the evidence for its validity and usefulness
- Implement useful findings into practice

Sackett et al (2000) added a 5th and crucial stage:

- Evaluate the outcome.

Conductive Education as a holistic educational approach: considering the evidence.

Conductive Education (CE) was developed by Professor Petö, in Hungary in the 1950s prior to the development of evidence based practice. Petö advocated Conductive Education was a special pedagogy, using a bio-psycho-social model for working with individuals with neurological damage, in order to become 'orthofunctional', (Beck: undated). Hari & Akos (1988 p140) define orthofunction as "the capacity of individuals to respond to biological and social demands made upon them". Clark-Wilson & Gent (1989 p271) said "Conductive Education can be described as rehabilitation through learning".

Children with CP have a range of acknowledged limitations: "the motor disorders of CP are often accompanied by disturbances of sensation, perception, cognition, communication and behaviour, by epilepsy and secondary musculoskeletal problems", (Rosenbaum et al. 2006 p8) and decreased participation in activities of daily living, play and leisure, (Rosenbaum 2003). Also children with CP who have limited interactions with their environment can become passive and isolated, (King et al. 2003). As Conductive Education is a holistic approach to skills development (Darrah et al., 2004 and Chu, 1989), it focuses on all aspects of child development and personality, including academic achievement, communication and social skills, not just motor performance as is commonly perceived.

In order to critically appraise and evaluate CE practice the professional must consider the use of standardised assessment and outcome measures. This provides objective data that can be scrutinised by those working within the CE framework and without. In this way the efficacy of CE can be verified and the working practices employed disseminated to a wider audience.

5. The process

Six meetings took place within a two year period, hosted by the various different organisations involved. There was much to accomplish for such a complex topic. The participating professionals were: conductors, physiotherapists, occupational therapists, speech therapists, psychologists, medical doctors, teachers and other pedagogues. Participants reported on their practice, discussed and shared their experiences, decided on the next steps in the process, continued the work at home and trialed and experienced a range of different measurement tools.

Four classification systems were discussed, trialed and agreed upon for use within the project.

It became apparent that there is a whole variety of tests used within the different organisations; these were collected and compared and we learned that the ICF (International Classification of Functioning, Disability and Health) is the common thread. We would like to thank the PCA (Professional Conductive Association, UK) who collated a CE Core-Set and made this available to our working group.

Finally four measurement tools were chosen (see chapter 11), the combination of which cover a number of the items of the ICF CE Core-Set. These were mapped against each other. Each of the participating organisations have shared their knowledge and supported each other in developing the use of these measurements.

6. Rationale for handbook

National providers of CE are limited in number and fragmented in location. The amount of research produced each year by these providers in the field of Conductive School Education is limited by various factors:

- Inadequate numbers of children and young people participating in CE programmes
- Knowledge and awareness of appropriate research or measurement tools
- Conductors are practitioners and may have limited experience of research
- Time, money and resources
- Language barriers across countries

Hence we decided to share the results of our work and experiences with the tests, to recommend the chosen tests for European use within the conductive community and to provide some tips for easier administration of these tests. Thus we hope that more CE schools and centres can benefit from the results and that Evidence Based Conductive Practice will be given a new dimension within the European context.

7. Classification systems

It was decided to use the following classification systems to describe the population of children with Cerebral Palsy within the participating organisations. These classifications are easy to use and can be used by teachers, conductors and therapists without licence. A table summarising the classification systems follows.

The **Gross Motor Function Classification System (GMFCS)** is a 5 level classification system that describes the gross motor function of children and youths with cerebral palsy, on the basis of their self-initiated movement, with particular emphasis on sitting, walking, and wheeled mobility. Distinctions between levels are based on functional abilities, the need for assistive technology, including hand-held mobility devices (walkers, crutches, or canes) or wheeled mobility, and to a much lesser extent, quality of movement.

http://motorgrowth.canchild.ca/en/GMFCS

The **Manual Ability Classification System** (**MACS**) describes how children with cerebral palsy use their hands to handle objects in daily activities. MACS describes 5 levels. These levels are based on the children's self-initiated ability to handle objects and their need for assistance or adaptation to perform manual activities in everyday life.

www.macs.nu

The purpose of the **Communication Function Classification System (CFCS)** is to classify the everyday communication performance of an individual with cerebral palsy into one of 5 levels. Distinctions between the levels are based on the performance of sender and receiver roles, the pace of communication, and the type of conversational partner. All methods of communication performance (verbal, AAC including low tech aids and high devices, gestures, etc.) are considered in determining the CFCS level.

www.cfcs.us

The **Eating and Drinking Ability Classification System (EDACS)** provides a systematic way of describing an individual's eating and drinking, with 5 different levels of ability. The distinction between the levels in the EDACS is based upon functional ability, the need for adaptations to the texture of food and drink, the techniques used and some other features of the environment. An indication of the degree of help needed at mealtimes follows the levels:

- Independent (ind)
- Requires assistance (RA)
- Totally dependent (TD)

www.edacs.org

8. Overview: GMFCS, MACS, EDACS, CFCS

LEVEL	GMFCS	MACS	CFCS	EDACS
I	Walks without limitations	Handles objects easily and successfully	Sends and receives information with familiar and unfamiliar partners effectively and efficiently	Eats and drinks safely and efficiently
II	Walks with limitations	Handles most objects but with somewhat reduced quality and/or speed of achievement	Sends and receives information with familiar and unfamiliar partners but may need extra time	Eats and drinks safely but with some limitations to efficiency
III	Walks using a hand-held mobility device	Handles objects with difficulty; needs help to prepare and/or modify activities	Sends and receives information with familiar partners effectively, but not with unfamiliar partners	Eats and drinks with some limitations to safety, there may be limitations to efficiency
IV	Self-mobility with limitations; may use powered mobility	Handles a limited selection of easily managed objects in adapted situations	Inconsistently sends and/or receives information even with familiar partners	Eats and drinks with significant limitations to safety
V	Transported in a manual wheelchair	Does not handle objects and has severely limited ability to perform even simple actions	Seldom effectively sends and receives information even with familiar partners	Cannot eat or drink safely, tube feeding may be considered to provide nutrition

9. What is a Standardised Assessment/Test?

A standardised test is any form of test that:

(1) requires all test takers to answer the same questions, or a selection of questions from common bank of questions, in the same way

and that

(2) is scored in a "standard" or consistent manner, which makes it possible to compare the relative performance of individual (27 Apr 2015: *edglossary.org/standardized-test/)*

Also

A standardised test is any empirically developed examination with established reliability and validity as determined by repeated evaluation of the method and results (Mosby's Medical Dictionary, 8th edition © 2009, Elsevier).

To be a standardised test, the process must have been applied to a large group of subjects of varying abilities to determine the average ability when compared to age across the population tested.

The test process ensures that it is administered in exactly the same way by the administrator to ensure accurate results.

What is an Outcome Measure?

"An outcome measure is a measure of the quality of medical care, the standard against which the end result of the intervention is assessed." **(**Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier).

An outcome measure is the use of data gained from the comparison of the application of the same standardised assessment, from at least two different points in time, that demonstrates the change in an individual following a specified intervention. In the setting of conductive education the intervention includes not only medical but also therapeutic, educational and psychological aspects.

Why do we need outcome measures?

They:

- Identify optimum techniques for the best outcomes
- Demonstrate outcomes essential to securing funding from commissioners
- Show children and families and other professionals the benefits of CE
- Encourage reflective practice - has my intervention worked?

What has to be done in addition to using outcome measures?

Standardised tests are useful for providing quantitative data, looking at progress and goal setting. However, qualitative data from practical experience, observation and professional knowledge are also crucial to provide a more holistic view of the child or young person.

10. Tests considered: all tests

Abbreviation	Full Name of Test	Purpose	Considerations	Publisher
DTVP2	Developmental Test of Visual Perception	- Measures visual perception and visual-motor integration	- Not ideal for children with motor disabilities - can be used to obtain information on visual perceptual deficits as a guideline for further support	www.riverpub.com
FIM	Functional Independence Measure	- An outcome measure for the functional development as a result of rehabilitation.	- Health related. - Can only be used once specialist training has been received. - Expensive to buy and receive training. Does not provide more information that the ones we tried	www.fim-live.com Quinsey, K, Findlay, C and Willmott, L, FIM Information and Procedures Manual, Australasian Rehabilitation Outcomes Centre, University of Wollongong, [2005]
WeeFIM	Functional Independence Measure for Children	- A measure of functional ability that can be used for typically developing children, (aged 6 months through 7 years, over 7 years with disabilities and delays in functional development.) - Documents self-care, functional mobility, and cognitive abilities.	- Health related, not CP specific. - Not very specific - yes or no answers for performance.	no information
COPM	Canadian Occupational Performance Measure	- Client-centred tool - Enables individuals to identify and prioritize everday issues that restrict or impact their performance in everyday living	- Used for goal setting by Occupational Therapists. - Suitable for older children and teenagers who have insight and a reasonable level of cognition. - Manual and web based versions available for purchase. - Translated into 35 languages including Dutch and Hungarian.	www.thecopm.ca/buy/

Abbreviation	Full Name of Test	Purpose	Considerations	Publisher
CAPE PAC	Children's Assessment of Participation and Engagement + Preferences for Activities of Children	- A two part measure of children's participation in leisure and recreation activities outside of statutory schooling	- Suitable for children age 6 - 21 years. - CAPE: 55 item questionnaire to provide information about 5 dimensions of participation (diversity, intensity and enjoyment). - PAC: relates to preference. - Takes 60 -75 minutes. - Can be done over several sessions	www.pearsonclinical.com
Kidscreen	The KIDSCREEN Questionnaires - Quality of Life questionnaires for Children and Adolescents	- QOL measure for children and adolescents. - 3 versions; 52 items, 27 and a 10 item version. - 8 to 18 years - Self-complete and parent versions	- Health related - Does not focus specifically on CP - Similar to the CPQOL	www.pabst-science-publishers.com
PEGS	Perceived Efficacy and Goal Setting	- Children's self reported performance on everyday tasks to establish and prioritize Occupational Therapy Interventions	- Currently not available as a new version is under development	www.canchild.ca
KID	Kent Infant Development Scale	- Evaluate the development for babies and children up to 8 years with severe multiple impairments	- Useful for specific population	Kent Developmental Metrics
NEPSY	A Developmental NEuroPSYchological Assessment		- Only to be administered by a psychiatrist or a psychologist.	www.pearsonclinical.com

11. Assessments chosen:

Measurements and tools chosen to evaluate children with cerebral palsy.

During this project we have discussed and presented case studies of various measurements, evaluations and tools used by the participant member's institutions and organisations within the EVIBACE group. Sample data was collected, also the results and experiences of using the various measurements. A literature review was undertaken to search for evidence relating to the efficacy of CE and the use of standardised outcome measures within CE.

Schiariti et al (2014) conducted research into the use of outcomes measures in cerebral palsy using the International Classification of Functioning (ICF-CY), providing a systematic review. They recommend the use of the Gross Motor Function Measure, The Pediatric Evaluation of Disability Index and the Cerebral Palsy Quality of Life Questionnaire.

Collectively, we have chosen four measurements that cover the components of activity, participation and body functions which we consider best suited to evaluate children with cerebral palsy.

Below are brief descriptions of the EVIBACE group's recommended measurements:

Gross Motor Function Measurement (GMFM): designed to evaluate gross motor function in children and adolescents.

Pediatric Evaluation of Disability Inventory Computer Adaptive Test (PEDI-CAT): measures body functions, activity, self-care and cognitive and social participation in everyday situations.

CP QOL child/teen: measures quality of life and focuses mainly on activity, participation, environmental and personal factors. Some areas of the questionnaire include social wellbeing and acceptance, access to services and pain and the impact of disability.

KINDLE: measures body function, activity and self-care participation in everyday situations.

11.1. Tools chosen - GMFM

	GMFM
Full name	Gross Motor Function Measurement
Languages	English, French, Dutch, German, Japanese
Costs	Free, handbook ~€ 60,-
Domains	Assesses gross motor function in 5 dimensions: Lying & Rolling, Sitting, Crawling & Kneeling, Standing, Walking, Running & Jumping
Publisher	www.canchild.ca
Type	Clinical tool
Target group / age	5 months to 16 years of age
Target group / diagnoses	GMFM-66 version: ONLY children with cerebral palsy; GMFM-88 version: also for children with Down Syndrome
Purpose	To evaluate changes in gross motor function over time or with intervention (not quality of movement), measures quantity of movement
Time to administer	Approximately 45 to 60 minutes
Can be split?	Yes
Frequency	There are no guidelines provided about frequency of administration
Who can administer	Primarily by physical therapists, or other therapists familiar with the measure
ICF levels	Activity
Which classification levels most useful	Most useful for GMFCS Level II to IV
Versions	GMFM-66; GMFM-88
Justification of version	GMFM-66 requires a computer program
Standardisation information	Standardised, accepted as reliable and valid

11.2. Tools chosen - KINDL^{R}

	KINDL^{R}
Full name	
Languages	Chinese, Danish, Dutch, Finnish, Arabic, English, German, French, Italian, Japanese, Norwegian, Polish, Portuguese, Russian, Spanish, etc.
Costs	The use of the KINDL^{R} for academic researchers and non-profit organisations is free. Collaboration form needs to be completed.
Domains	Measures health related quality of life in children and adolescents
Publisher	www.kindl.org
Type	Paper & pencil version; computer assisted version (CAT SCREEN) has been developed
Target group / age	Children from 3 to 17 years
Target group / diagnoses	The generic questionnaire can be used with healthy and ill children and adolescents. Specific questionnaires are available for those children who suffer from chronic diseases
Purpose	Provides information on physical and emotional well being, self-esteem, family life and friends, and everyday functioning
Time to administer	5 to 10 minutes
Can be split?	Yes
Frequency	No restrictions
Who can administer	Parents, clinicians, child
ICF levels	Body functions, Activities and Participation, Environment
Which classification levels most useful	All as parental questionnaires can be use to obtain data
Versions	Questionnaires to download, computer aided version
Justification of version	
Standardisation information	Norm values are given

11.3. Tools chosen – PEDI CAT

	PEDI CAT
Full name	Paediatric Evaluation of Disability Inventory - computer aided
Languages	English, Spanish
Costs	$89 per year, per machine
Domains	Assesses daily activities, mobility, social and cognitive, and responsibility skills
Publisher	www.pedicat.com
Type	Computer aided assessment
Target group / age	Children and young people from birth to 20 years
Target group / diagnoses	Physical and/or behavioural conditions
Purpose	Identification of functional delay, examination of improvement for an individual child after intervention, evaluation and monitoring of group progress in program
Time to administer	30 min.
Can be split?	Yes
Frequency	Clinician´s choice, no time limit
Who can administer	Parent, clinician, child, anyone who knows the child well
ICF levels	Activity, Participation, Environment
Which classification levels most useful	All
Versions	Computer aided version windows and I-pad
Justification of version	Expanded and updated, scoring included
Standardisation information	Standardised, norm and CP referenced, accepted as reliable & valid

11.4. Tools chosen – CP QOL

	CP QOL
Full name	The Cerebral Palsy Quality of Life Questionnaire
Languages	Translated or in progress: Arabic, Indonesian, Bahasa, Malaysian, Dutch, English, Farsi, French, German, Greek, Hebrew, Italian, Korean, Mandarin, Myanmar, Polish, Portuguese, Serbian, Spanish, Tamil, Thai, Turkish (Translation guidelines online available)
Costs	Free - online, registration is requested
Domains	General wellbeing and participation, communication and physical health, school wellbeing, social wellbeing, access to services, family health, feelings about functioning
Publisher	www.cpqol.org.au
Type	Questionnaire, paper & pencil version
Target group / age	Primary caregiver versions: 4yrs-12yrs and 13yrs-18yrs; Child self-report version: 9yrs-12yrs; Teen self-report version: 13yrs-18yrs
Target group / diagnoses	Cerebral Palsy
Purpose	Measures quality of life for children/adolescents with cerebral palsy → useful for evaluating interventions designed to improve the lives of children and adolescents
Time to administer	20 min/self-report: depends on the cognitive level: 30 min → 60 min
Can be split?	Yes
Frequency	No restriction, clinician's choice as it can raise sensitive issues
Who can administer	Researchers, clinicians, health professionals, educators
ICF levels	Activity, Participation, Body functions
Which classification levels most useful	Difficult for the lower levels from CFCS, and lower cognitive levels
Versions	Questionnaires to download (face to face interview/paper & pencil version/mail-out questionnaire)
Justification of version	
Standardisation information	Statistical analysis (SPSS) - no norm values

12. Mapping PEDI –CAT, GMFM, CP QOL/KINDL with ICF-CY CE Core-Set

Conductive Education is a complex education system for motor disordered children and young people, covering all areas of development. This complexity makes it challenging to evaluate the outcomes; therefore it was decided to map the chosen measurement tools against the ICF CE core set (as identified by the PCA UK). It is however recognised that the chosen tools do not cover all of these items.

BODY FUNCTIONS	PEDI - CAT	GMFM	CP QOL/ KINDL
B114 Orientation functions	✓	✓	
B117 Intellectual functions			
B122 Global psychosocial functions	✓		
B126 Temperament and personality functions	✓		
B130 Energy and drive functions			
B140 Attention functions			
B144 Memory functions			
B152 Emotional functions			✓
B160 Thought functions			
B163 Basic cognitive functions	✓		
B164 Higher-level cognitive functions	✓		
B167 Mental functions of language	✓		
B176 Mental functions of sequencing complex movements	✓	✓	
B180 Experience of self and time functions	✓	✓	
B260 Proprioceptive functions		✓	
B310 Voice functions			
B320 Articulation functions			
B330 Fluency and rhythm of speech functions			
B710 Mobility of joint functions			
B715 Stability of joint functions			
B720 Mobility of bone functions			
B735 Muscle tone functions			
B750 Motor reflex functions			
B755 Involuntary movement reaction functions	✓	✓	
B760 Control of voluntary movement functions	✓	✓	
B761 Spontaneous movements			
B765 Involuntary movement functions			
B770 Gait pattern functions		✓	

ACTIVITIES AND PARTICIPATION	PEDI - CAT	GMFM	CP QOL/ KINDL
D110 Watching	✓		
D115 Listening	✓		
D130 Copying			
D131 Learning through actions with objects	✓		
D133 Acquiring language	✓		

D134 Acquiring additional language			
D135 Rehearsing	✓		
D155 Acquiring skills	✓	✓	
D160 Focusing attention			
D161 Directing attention			
D177 Making decisions	✓		
D210 Undertaking a single task	✓	✓	
D220 Undertaking multiple tasks	✓	✓	
D230 Carrying out daily routine	✓		
D250 Managing one's own behaviour	✓		
D310 Communicating with – receiving – spoken messages			
D315 Communicating with – receiving – nonverbal messages			
D331 Pre-talking			
D335 Producing nonverbal messages	✓		
D360 Using communication devices and techniques			
D410 Changing basic body position	✓	✓	
D415 Maintaining a body position	✓	✓	
D420 Transferring oneself	✓	✓	
D430 Lifting and carrying objects	✓	✓	
D435 Moving objects with lower extremities		✓	
D440 Fine hand use	✓		
D445 Hand and arm use	✓		
D450 Walking	✓	✓	
D455 Moving around	✓	✓	
D460 Moving around in different locations	✓	✓	
D465 Moving around using equipment	✓		
D510 Washing oneself	✓		
D520 Caring for body parts	✓		
D530 Toileting	✓		
D540 Dressing	✓		
D550 Eating	✓		
D560 Drinking	✓		
D571 Looking after one's safety	✓		
D630 Preparing meals	✓		
D640 Doing housework	✓		
D710 Basic interpersonal interactions	✓		
D720 Complex interpersonal interactions	✓		
D750 Informal social relationships	✓		
D880 Engagement in play	✓		

ENVIRONMENTAL FACTORS	PEDI - CAT	GMFM	CP QOL/ KINDL
E310 Immediate family			
E340 Personal care providers and personal assistants			
E355 Health professionals			
E440 Individual attitudes of personal care providers and personal assistants			

Areas not covered

The following tables give an overview of the areas from the ICF-CY CE core set that are not covered by the four chosen assessment tools. For every item we give a recommendation of the specific professional who can evaluate that item by administrating standardised tools. Qualitative observations can be carried out by any professional/caregiver.

BODY FUNCTIONS	Evaluation by
B117 Intellectual functions	Psychologist
B130 Energy and drive functions	Any caregiver
B140 Attention functions	Psychologist
B144 Memory functions	Psychologist
B160 Thought functions	Psychologist
B310 Voice functions	Speech therapist
B320 Articulation functions	Speech therapist
B330 Fluency and rhythm of speech functions	Speech therapist
B710 Mobility of joint functions	Physiotherapist
B715 Stability of joint functions	Physiotherapist
B720 Mobility of bone functions	Physiotherapist
B735 Muscle tone functions	Physiotherapist
B750 Motor reflex functions	Physiotherapist
B761 Spontaneous movements	Physiotherapist
B765 Involuntary movement functions	Physiotherapist

ACTIVITIES AND PARTICIPATION	Evaluation by
D130 Copying	Any caregiver
D134 Acquiring additional language	Speech therapist
D160 Focusing attention	Psychologist
D161 Directing attention	Psychologist
D310 Communicating with – receiving – spoken messages	Speech therapist
D315 Communicating with – receiving – nonverbal messages	Speech therapist
D331 Pre-talking	Speech therapist
D360 Using communication devices and techniques	Speech therapist/Occupational therapist

ENVIRONMENTAL FACTORS	Evaluation by
E310 Immediate family	Any caregiver
E340 Personal care providers and personal assistants	Any caregiver
E355 Health professionals	Any caregiver
E440 Individual attitudes of personal care providers and personal assistants	Any caregiver

Missing items

Despite the above mapping, there is still not enough information about certain areas of child development, as taught through Conductive Education:

Areas not fully covered by ICF-CY CE core set and the chosen tools

	in ICF-CY CE Core Set	covered by the chosen tools
Communication	Yes	No
Perception	No	No
Resilience	Not fully covered	Not fully covered
Motivation	Not fully covered	Not fully covered
Socialization	Not fully covered	Not fully covered
Orthofunction	No	No

The consortium of partners suggest the inclusion of items:

- B156 perception
- B730 muscle power function

to make ICF-CY CE core set more comprehensive.

13. Participant experiences of using the standardised assessments:

Using standardised assessment:

- ✓ Provides objective data
- ✓ Provides information for use as an outcome measurement to show progress over time against holistic input
- ✓ Can be used to discuss progress with child, family and other professionals
- ✓ Can be used for commissioning purposes: justifies input and cost of input
- ✓ Encourages reflective practice: what did I do and did it work?
- ✓ Encourages goal setting which is supported by motor learning theory literature: Shumway-Cook and Woolacott (2012)
- ✓ Collaborative goal setting encourages child and family centred practice as advocated by WHO: ICY - CY (2007), Rosenbaum et al (1998)

Participant experiences of using the standardised assessments (cont):

Specific Assessment	Before using the tool	Time	For the child	Scoring	Usefulness	Other considerations
GMFM	Need time and practice to become familiar with & competent to administer. Useful to attend training prior to use.	Lengthy. Can be done over several sessions within the same week.	Can be physically tiring. Try to use with games with younger children. Children may struggle to understand the instructions.	Time consuming. May be useful to film the administration for validation between professionals and discuss results.	Great for goal setting and use as an outcome measure.	Useful to have versions in other languages; French and Dutch versions available but not Hungarian or Swedish.
PEDI-CAT	Easy to learn how to use.	Needs to be done in one session. About 45 minutes.	Child need not participate. Can be observational	Easy! It does it for you. Interpreting the tables may need practice.	As above	Use longer version as more inclusive. Can be completed by child, professionals & parents to give a holistic overview. Doesn't track subtests. Available only in Spanish/English.
CP QOL	Requires established relationship with the child as very personal, also time & awareness of questions so as to use sensitively. Useful to have enlarged scales for fist pointing.	Can be very lengthy. Can do over several sessions, but need to note psychological impact.	Can be emotionally demanding for the child. Often the concepts need explaining.	Need SPSS to use properly.	It can help professionals to explore aspects relating to wellbeing and social emotional functioning.	Use with caution. Involve the family, parents to complete parental version before using with the child. Consider using CAPE/ PACS for leisure and participation measures.
KINDL	As CP QOL. Also useful to have a picture scale of standardised vocabulary for non-verbal children, (we used PCS symbols).	Can be quick or lengthy, depending on child's cognition & motivation.	As CPQOL	As CPQOL	As CPQOL	As CPQOL

14. Recommendations / TOP TIPS

Here are some useful points from our experience of using the tests:

➢ GMFM 88

- The test can be done over several periods of time within a week.
- It is not allowed to give manual facilitation to assist any movement **during the test.**
- You are allowed to demonstrate the movement and even facilitate the movement **before scoring**.
- You can have up to 3 practice movements **before scoring**.
- You must only use the words in the booklet. However you can use a toy or a stimulus to motivate movements.
- If a child is unable to participate in one or more of the domains, do not do it and score 0. This is important as it gives a true reflection of the individual in the overall scoring.
- There must be a minimum of 6 months between each re-test.

➢ PEDI-CAT

- The Manual version (PEDI) is not the same as the computer version (PEDI-CAT).
- You must buy a license to use the PEDI-CAT. This license only lasts for 1 year, then it must be renewed (if not, then all the saved data is unavailable from that time).
- The license only works on one machine.
- **Always print your reports!**
- There are 2 versions of the PEDI-CAT: the speedy and the content balanced. We suggest people use the content balanced as it will give a fuller presentation of the child.
- You have to complete the computer analysis in one session, otherwise it will close and you will lose your data.
- It does not ask the same questions on each re-test, so specific sub-skills cannot be tracked.
- Score the child at their functional level using their usual equipment and usual performance.

➢ Quality of life: CP QOL or KINDL?

- Be aware of what you want to achieve and why you are doing either of these tests before starting. Is it ethical to administer if only for research purposes?
- If you open a discussion and sensitive issues are raised, you need to be prepared to offer any support needed as a result.

- **KINDL:** this is simpler, shorter and more appropriate for younger children, or for those with a lower cognitive level. The form for parents is not appropriate for caregivers. Be aware that the questions relate to “last week”: is this a concept the child can understand?

- **CP QOL:** this provides a wider picture but takes a long time to administer and needs good conceptual understanding. It is specific for CP, not for other disabilities. It has more about general feelings.

- Both tests include parent questionnaires
- Both take a long time to score and both need SPSS to score properly
- Both outcome measures are subjective, depending on situation, mood, and experience at the time of answering the questions
- For both tests: get parents' permission to do it and tell parents on the day you have done it in case it raises any concerns for the child that they wish to discuss at home later.
- For both tests you must use the chronological age, not the developmental age, if you want to use them as an outcome measure.

➢ CP QOL

- Some questions are very personal – you need a good relationship with the child before using the measure.
- Students need a moderate to good cognitive understanding for the concepts involved, and because the scoring system changes for different sections.
- Before an intervention it is interesting to fill it out with the parents, if they are willing to do so; this alerts them to the issues that will be raised with their child in case additional support is needed.

➢ KINDL

- It is useful to visualise the scoring without changing the meaning (example PH scale)
- Repeat the child's answer to check your correct understanding (e.g., you said: " … ", – is that right?).

15. Conclusion

There is very little published evidence to support the effectiveness of CE. This project highlighted the need for C.E to use standardised assessments towards developing evidence based practice. The sharing of information and experience was invaluable. During the project, it became evident that all partners have different methods of performing evaluations. Moreover, not all partner organisations have a multidisciplinary team that is familiar with standardised assessment. As a result of this project several members of the partnership have introduced the use of standardised assessments and classification systems within their organisation.

The use of classification systems within the organisations involved will help us to describe the populations that we work with more clearly and will facilitate shared practice and future research studies.

The effectiveness of the intervention can be objectively measured and the resulting data can be compared throughout the child's development, as well as being used to influence and improve the practice of CE.

Having standardised assessments allows us to communicate about the effectiveness of CE with other professionals in education and (re)habilitation. Qualitative information from professional experience and ongoing conductive observation is equally important and should not be undervalued.

The overall consensus is that the use of standardised measurement tools within CE is to be recommended. The end of this project, however, does not signify the end of the process of developing and using appropriate measurements; rather, individual schools will need to assess their own particular circumstances and work within their own organisations to enable successful implementation.

16. Literature:

Literature Review for the Efficacy of Conductive Education:

The authors performed a literature search to consider the efficacy of CE using the terms Conductive Education, child* or paediatrics, Cerebral Palsy and effective* or efficacy using the following data bases: CINAHL, Medline, AMED & PsychInfo. (* denotes searching for additional suffixes e.g. child*ren)

566 results were found. Hand searching and internet searching were also employed. Studies published in English from Europe, Australia, America and Canada after 1990 that could be accessed from York St John University Library or the author's workplace library were considered.

Studies were published across a range of journals with widely varying reported impact factors. After analysis of original articles using Critical Appraisal Skills Programme (CASP) evaluation tools and consideration of points from systematic reviews, the authors noted that the Levels of Evidence for most articles personally reviewed, (12 of 14), as considered applicable by Greenhalgh (1997), were level III of V or lower.

Research Articles are noted in chronological order:

Original research articles

RESEARCH PROMOTING THE EFFICACY OF CE	RESEARCH SHOWING INCONCLUSIVE EVIDENCE FOR CE	RESEARCH SHOWING NEGATIVE EVIDENCE FOR CE
***Wilson (2001)** **Case description level V**	*Reddihough et al (1998) RCT level 1	*Hur (1997) Cohort Study level III
***Liberty K (2004)** **Case control study level III**	*Bochner et al (1999) Case series level IV	*Bairstow, Cochrane & Hur (1993) Cohort Study level III
***Blank et al (2008)** **Individual Cohort study B-A-B level III**	*Stiller et al (2003) RCT Level 1	
***Smith, Washington & Kuchler (2013)**	*Ődman & Őberg (2006) Quasi experimental Level IV	
***Kay S (2014)** **Case description level V**	*Wright, Boschen & Jutai (2005) Quasi experimental Level IV	
	*Effgen S & Chan L (2010) Descriptive report level V	

Systematic review articles

	French & Nommenson (1992)	***Novak et al (2013)***
	Ludwig, Legget & Harstall (2000)	
	Pederson (2000)	
	Darrah et al (2004)	
	Tuersley-Dixon & Frederickson (2010)	

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ICF AND ICF-CY CATEGORIES

Conductive Education Core Set

DRAFT VERSION 4

PCA

November 2012

The purpose of this document is to start the process of providing a unique identity for CE across the age ranges. It is not an exhaustive list of areas CE services may cover but designed to provide a framework for increasing understanding of the nature and diversity of CE as an approach to neurological conditions.

The current list has been compiled by conductors working in the field and has undergone four stages of discussion.

By considering the breadth of areas covered within a CE programme we can begin to identify the nature of CE as a biopsychosocial model of education and rehabilitation.

Each service will also add a number of ICF areas to their provision. This is essential however does not necessarily constitute the fundamental areas of CE but an age appropriate service.

NEXT STAGES

Conductors need to consider these codes in the light of their CE knowledge. They need to work with these codes to identify if this draft version does indeed represent CE as a system.

Currently there are 76 codes across three domains – body functions; activities and participation and environmental factors.

Work is also required to map validated measurement scales and evaluative tools to these codes to ensure that any evaluation truly represents the distinct nature of CE.

ICF and ICF-CY categories

B BODY FUNCTIONS

b114 Orientation functions General mental functions of knowing and ascertaining one's relation to self, to others, to time and to one's surroundings and space.

b117 Intellectual functions General mental functions, required to understand and constructively integrate the various mental functions, including all cognitive functions and their development over the life span.

b122 Global psychosocial functions General mental functions, as they develop over the life span, required to understand and constructively integrate the mental functions that lead to the formation of the interpersonal skills needed to establish reciprocal social interactions, in terms of both meaning and purpose.

b126 Temperament and personality functions General mental functions of constitutional disposition of the individual to react in a particular way to situations, including the set of mental characteristics that makes the individual distinct from others.

b130 Energy and drive functions General mental functions of physiological and psychological mechanisms that cause the individual to move towards satisfying specific needs and general goals in a persistent manner.

b140 Attention functions Specific mental functions of focusing on an external stimulus or internal experience for the required period of time.

b144 Memory functions Specific mental functions of registering and storing information and retrieving it as needed.

b152 Emotional functions Specific mental functions related to the feeling and affective components of the processes of the mind.

b160 Thought functions Specific mental functions related to the ideational component of the mind.

b163 Basic cognitive functions *Mental functions involved in acquisition of knowledge about objects, events and experiences; and the organisation and application of that knowledge in tasks requiring mental activity.*

b164 Higher-level cognitive functions Specific mental functions especially dependent on the frontal lobes of the brain, including complex goal-directed behaviours such as decision-making, abstract thinking, planning and carrying out plans, mental flexibility, and deciding which behaviours are appropriate under what circumstances; often called executive functions.

b167 Mental functions of language Specific mental functions of recognizing and using signs, symbols and other components of a language.

b176 Mental function of sequencing complex movements Specific mental functions of sequencing and coordinating complex, purposeful movements.

b180 Experience of self and time functions Specific mental functions related to the awareness of one's identity, one's body, one's position in the reality of one's environment and of time.

b260 Proprioceptive function Sensory functions of sensing the relative position of body parts.

b310 Voice functions Functions of the production of various sounds by the passage of air through the larynx.

b320 Articulation functions Functions of the production of speech sounds.

b330 Fluency and rhythm of speech functions Functions of the production of flow and tempo of speech.

b710 Mobility of joint functions Functions of the range and ease of movement of a joint.

b715 Stability of joint functions Functions of the maintenance of structural integrity of the joints.

b720 Mobility of bone functions Functions of the range and ease of movement of the scapula, pelvis, carpal and tarsal bones.

b735 Muscle tone functions Functions related to the tension present in the resting muscles and the resistance offered when trying to move the muscles passively.

b750 Motor reflex functions Functions of involuntary contraction of muscles automatically induced by specific stimuli.

b755 Involuntary movement reaction functions Functions of involuntary contractions of large muscles or the whole body induced by body position, balance and threatening stimuli.

b760 Control of voluntary movement functions Functions associated with control over and coordination of voluntary movements.

b761 Spontaneous movements *Functions associated with frequency, fluency and complexity of total and individual body-part movements, such as infant spontaneous movements.*

b765 Involuntary movement functions Functions of unintentional, non- or semi-purposive involuntary contractions of a muscle or group of muscles.

b770 Gait pattern functions Functions of movement patterns associated with walking, running or other whole body movements.

D ACTIVITIES AND PARTICIPATION

d110 Watching Using the sense of seeing intentionally to experience visual stimuli, such as *visually tracking an object, watching persons,* watching a sporting event, person or children playing.

d115 Listening Using the sense of hearing intentionally to experience auditory stimuli, such as listening to a radio, music or a lecture, *or a story told.*

d130 Copying Imitating or mimicking as a basic component of learning, such as copying a gesture, *repeating a facial expression,* a sound or the letters of an alphabet.

d131. Learning through actions with objects *Learning through simple actions on a single object, two or more objects, symbolic and pretend play, such as hitting an object, banging blocks and playing with dolls or cars.*

d133. Acquiring language *Developing the competence to represent persons, objects, events and feelings through words, symbols, phrases and sentences.*

d134. Acquiring additional language *Developing the competence to represent persons, objects, events, feelings through words, symbols, phrases and sentences, such as in an additional language or signing.*

d135 Rehearsing Repeating a sequence of events or symbols as a basic component of learning, such as counting by tens or practising the recitation of a poem.

d155 Acquiring skills Developing basic and complex competencies in integrated sets of actions or tasks so as to initiate and follow through with the acquisition of a skill, such as manipulating tools or playing games (like chess).

d160 Focusing attention Intentionally focusing on specific stimuli, such as by filtering out distracting noises.

d161. Directing attention *Intentionally maintaining attention to specific actions or tasks for an appropriate length of time.*

d177 Making decisions Making a choice among options, implementing the choice, and evaluating the effects of the choice, such as selecting and purchasing a specific item, or deciding to undertake and undertaking one task from among several tasks that need to be done.

d210 Undertaking a single task Carrying out simple or complex and coordinated actions related to the mental and physical components of a single task, such as initiating a task, organizing time, space and materials for a task, pacing task performance, and carrying out, completing, and sustaining a task.

d220 Undertaking multiple tasks Carrying out simple or complex and coordinated actions as components of multiple, integrated and complex tasks in sequence or simultaneously.

d230 Carrying out daily routine Carrying out simple or complex and coordinated actions in order to plan, manage and complete the requirements of day-to-day procedures or duties, such as budgeting time and making plans for separate activities throughout the day.

d250. Managing one's own behaviour *Carrying out simple or complex and coordinated actions in a consistent manner in response to new situations, persons or experiences, such as being quiet in a library.*

d310 Communicating with - receiving - spoken messages Comprehending literal and implied meanings of messages in spoken language, such as understanding that a statement asserts a fact or is an idiomatic expression, *such as responding and comprehending spoken messages.*

d315 Communicating with - receiving - nonverbal messages Comprehending the literal and implied meanings of messages conveyed by gestures, symbols and drawings, such as realizing that a child is tired when she rubs her eyes or that a warning bell means that there is a fire.

d331 Pre-talking *Vocalising when aware of another person in the proximal environment, such as producing sounds when the mother is close; babbling; babbling in turn-taking activities. Vocalising in response to speech through imitating speech-sounds in turn taking procedure.*

d335 Producing nonverbal messages Using gestures, symbols and drawings to convey messages, such as shaking one's head to indicate disagreement or drawing a picture or diagram to convey a fact or complex idea.

d360 Using communication devices and techniques Using devices, techniques and other means for the purposes of communicating, such as calling a friend on the telephone.

d410 Changing basic body position Getting into and out of a body position and moving from one location to another, such as getting up out of a chair to lie down on a bed, and getting into and out of positions of kneeling or squatting.

Includes lying down, squatting, kneeling, sitting, standing, bending, moving centre of gravity, rolling over.

d415 Maintaining a body position Staying in the same body position as required, such as remaining seated or remaining standing for work or school.

Includes lying position, squatting, kneeling, sitting, standing, head position.

d420 Transferring oneself Moving from one surface to another, such as sliding along a bench or moving from a bed to a chair, without changing body position.

d430 Lifting and carrying objects Raising up an object or taking something from one place to another, such as when lifting a cup or *toy, or carrying a box or* carrying a child from one room to another.

d435 Moving objects with lower extremities Performing coordinated actions aimed at moving an object by using the legs and feet, such as kicking a ball or pushing pedals on a bicycle.

d440 Fine hand use Performing the coordinated actions of handling objects, picking up, manipulating and releasing them using one's hand, fingers and thumb, such as required to lift coins off a table or turn a dial or knob.

Includes: picking up, grasping, manipulating, releasing.

d445 Hand and arm use performing the coordinated actions required to move objects or to manipulate them by using hands and arms, such as when turning door handles or throwing or catching an object

Includes: pulling, pushing, reaching, turning or twisting arms and hands, throwing, catching.

d450 Walking Moving along a surface on foot, step by step, so that one foot is always on the ground, such as when strolling, sauntering, walking forwards, backwards, or sideways.

Includes: walking short distances, long distances, different surfaces, obstacles.

d455 Moving around Moving the whole body from one place to another by means other than walking, such as climbing over a rock or running down a street, skipping, scampering, jumping, somersaulting or running around obstacles.

Includes: crawling, climbing, running, jumping, swimming, scooting and rolling, shuffling.

d460 Moving around in different locations Walking and moving around in various places and situations, such as walking between rooms in a house, within a building, or down the street of a town.

d465 Moving around using equipment Moving the whole body from place to place, on any surface or space, by using specific devices designed to facilitate moving or create other ways of moving around, such as with skates, skis, or scuba equipment, *swim fins,* or moving down the street in a wheelchair or a walker.

d510 Washing oneself Washing and drying one's whole body, or body parts, using water and appropriate cleaning and drying materials or methods, such as bathing, showering, washing hands and feet, face and hair, and drying with a towel.

d520 Caring for body parts Looking after those parts of the body, such as skin, face, teeth, scalp, nails and genitals, that require more than washing and drying.

d530 Toileting *Indicating the need for,* planning and carrying out the elimination of human waste (menstruation, urination and defecation), and cleaning oneself afterwards.

d540 Dressing Carrying out the coordinated actions and tasks of putting on and taking off clothes and footwear in sequence.

Includes: putting on clothes, taking off clothes, putting on footwear, taking off footwear, choosing appropriate clothing

d550 Eating *Indicating the need for,* carrying out the coordinated tasks and actions of eating food that has been served, bringing it to the mouth and consuming it in culturally acceptable ways, cutting or breaking food into pieces, opening bottles and cans, using eating implements, having meals, feasting or dining.

d560 Drinking *Indicating the need for,* taking hold of a drink, bringing it to the mouth, and consuming the drink in culturally acceptable ways, mixing, stirring and pouring liquids for drinking, opening bottles and cans, drinking through a straw or drinking running water such as from a tap or a spring; feeding from the breast.

d571 Looking after one's safety *Avoiding risks that can lead to physical injury or harm. Avoiding potentially hazardous situations such as misusing fire or running into traffic.*

d630 Preparing meals Planning, organizing, cooking and serving simple and complex meals for oneself and others, such as by making a menu, selecting edible food and drink, getting together ingredients for preparing meals, cooking with heat and preparing cold foods and drinks, and serving the food.

d640 Doing housework Managing a household by cleaning the house, washing clothes, using household appliances, storing food and disposing of garbage, such as by sweeping, mopping, washing counters, walls and other surfaces; collecting and disposing of household garbage; tidying rooms, closets and drawers; collecting, washing, drying, folding and ironing clothes; cleaning footwear; using brooms, brushes and vacuum cleaners; using washing machines, driers and irons.

d710 Basic interpersonal interactions Interacting with people in a contextually and socially appropriate manner, such as by showing consideration and esteem when appropriate, or responding to the feelings of others.

d720 Complex interpersonal interactions Maintaining and managing interactions with other people, in a contextually and socially appropriate manner, such as by regulating emotions and impulses, controlling verbal and physical aggression, acting independently in social interactions, and acting in accordance with social rules and conventions.

d750 Informal social relationships Entering into relationships with others, such as casual relationships with people living in the same community or residence, or with co-workers, students, playmates or people with similar backgrounds or professions.

d880 Engagement in play *Purposeful, sustained engagement in activities with objects, toys, materials or games, occupying oneself or with others.*

e ENVIRONMENTAL FACTORS

e310 Immediate family Individuals related by birth, marriage or other relationship recognized by the culture as immediate family, such as spouses, partners, parents, siblings, children, foster parents, adoptive parents and grandparents.

e340 Personal care providers and personal assistants Individuals who provide services as required to support individuals in their daily activities and maintenance of performance at work, education or other life situation, provided either through public or private funds, or else on a voluntary basis, such as providers of support for home-making and maintenance, personal assistants, transport assistants, paid help, nannies and others who function as primary caregivers.

e355 Health professionals All service providers working within the context of the health system, such as doctors, nurses, physiotherapists, occupational therapists, speech therapists, audiologists, orthotist-prosthetists, medical social workers.

e440 Individual attitudes of personal care providers and personal assistants General or specific opinions and beliefs of personal care providers and personal assistants about the person or about other matters (e.g. social, political and economic issues), that influence individual behaviour and actions.