



Why Feuerstein Remains Important in the 21st Century:
to Improve Thinking Skills and Inclusive Education – Reflections
at the Occasion of the 100th birthday of Reuven Feuerstein
**Perché Feuerstein nel 21 secolo è ancora importante:
per migliorare le abilità di pensiero e l’educazione inclusiva –
Riflessioni in occasione del centenario dalla nascita**

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ABSTRACT

Although Feuerstein’s theory of Structural Cognitive Modifiability and Mediated Learning Experience and its applied systems Learning Propensity Assessment and Instrumental Enrichment are already 70 years old, and do not have modern 21st century looks, Feuerstein’s approach remains highly relevant for the needs of teachers and learners in our times: inclusive education, the need to attend to a diversity of pupils at school, increasing numbers of children with learning or behaviour difficulties, ADHD or otherwise, the increasing digitalisation of society, the loss of social cohesion. These are hard challenges for teachers. This article starts making a critical cultural-historical reflection on the so-called “21st century cognitive challenges” and of characteristics of the Feuerstein programme. Then three case studies are presented were LPAD followed by a cognitive-mediational intervention made a turning point in their educational trajectory: a child and an adolescent with Down syndrome, and a recent African immigrant. The case studies underpin a further reflection why the Feuerstein approach offers a suitable answer to the discussed challenges.

Benché le teorie di Feuerstein (la Modificabilità Cognitiva Strutturale e l’Esperienza di Apprendimento Mediato) e i relativi sistemi applicativi (la valutazione della propensione all’apprendimento LPAD e il Programma di Arricchimento Strumentale) abbiano già 70 anni, e non abbiano un’apparenza “moderna” in linea coi dettami del XXI secolo, essi sono ancora importanti per indirizzare i bisogni di insegnanti e studenti. Da un lato essi rispondono alle necessità di un’educazione inclusiva, sapendo accompagnare gli studenti nella loro diversità, in contesti educativi che vedono numeri crescenti di discenti con difficoltà di apprendimento o comportamentali, a volte affetti da iperattività o altre patologie. Dall’altro lato essi rispondono ai bisogni delle nostre società sempre più digitalizzate, e alla mancanza di coesione sociale. Il contributo intende indirizzare queste sfide appena evidenziate; si inizia con una riflessione critica e storico-culturale sulle “sfide cognitive del 21 secolo” e sul metodo Feuerstein. Successivamente si illustrano tre casi di

studio dove la valutazione LPAD e il successivo intervento di mediazione cognitiva hanno rappresentato un punto di svolta nella traiettoria educativa dei discenti (un bambino e un adolescente con sindrome di Down, e un adolescente immigrato recentemente dall’Africa). Questi tre casi di studio offrono una base ulteriore per una riflessione su come il Feuerstein si proponga come risposta alle sfide mostrate sopra.

KEYWORDS

Mediated Learning Experience; inclusive education; Down syndrome; cultural deprivation; 21st century learning skills; Feuerstein Instrumental Enrichment.

Esperienza di Apprendimento Mediato; educazione inclusiva, sindrome di Down; deprivazione culturale; abilità di apprendimento del 21° secolo; Programma di Arricchimento Strumentale di Feuerstein.

1. The way the author came across Reuven Feuerstein’s tracks

When I was doing my PhD on brain-damaged children and their educational ecology at the end of the eighties, I was looking for children who had “outgrown” their negative prognoses. In one of the focus groups, there was a mother of a child with autism and intellectual disability. Her daughter was hardly able to speak and in many ways very dependent, but she was able to read in four languages. Her mother showed me a magazine where several psychologists were interviewed about their views on intelligence, among others Howard Gardner on multiple intelligence. His theory could explain this mother’s “strange” experience, which has become generally known as “savant”. One of the other scholars interviewed was Reuven Feuerstein. He called this phenomenon “islands of intelligence”. He particularly attracted my attention with his scientifically evidence-based theory of modifiability and mediated learning experience. Moreover, it was not just a theory but it had some practical applications. During our training as medical doctors, intelligence in our minds was a measurable, fixed, largely genetically determined characteristic of an individual. Feuerstein said the opposite. I wanted to know more about his ideas, which were more compatible with my professional and personal experience, and those of the parents I interviewed.

Incidentally, Reuven Feuerstein was a speaker at the same conference in Budapest, where I presented my PhD research containing images of brain plasticity (Lebeer, 1994; Lebeer, 1998). Afterwards, he asked to see my results with the children’s brain scans and their unexpected developments, which I tried to explain by ecological neuroplasticity (Lebeer & Garbo, 1997). In Feuerstein’s theory of SCM and MLE, I found the “perfect” pieces of the puzzle, which could explain the results of my investigations. The man and his theories fascinated me. He invited me to come and study in Jerusalem. I went for the international summer course for the first time in 1990, and I returned every year during the following 10 years. After training, I continued to collaborate with the Institute after the year 2000 when the summer courses were organized in different European cities. We founded the European Association for Cognitive Modifiability and Mediated Learning to organize a series of European conferences (Lebeer & Garbo, 1994; Martinez-Beltrán et al., 1996). We also created research and training projects with different European partners, always dealing with the subject of learning enhancement and

inclusion¹ (Lebeer et al., 2003; 2006; 2011; 2013; 2017). After all these years, my enthusiasm has never stopped.

2. Feuerstein in socio-historical cultural context

Reuven Feuerstein was thoroughly a “product” of the twentieth century: born in Romania-Moldova, he fled during WWII to what was then Palestine; after the war, he studied with Jean Piaget in Geneva; he developed his theory and methods through his experience with refugees after the holocaust; he made a doctorate at the University of the Sorbonne in Paris, and he lived and worked in Jerusalem, where he helped children and adults with barriers to learning. Since the 1980s, his methods became gradually more known through the international workshops. He knew all the «great» psychologists of the twentieth century and they knew him. At the occasion of the celebration of his 100th birthday, we wonder how relevant his theory and methods are in the 21st century.

The Instrumental Enrichment Program (FIE) originated in the 1950s, intended as a systematic program to train thinking and improve independent learning for young people in a situation of school failure and/or deprivation. It has changed little in all that time, except for a slightly more modern-looking colour version. It is still a pencil and paper program, consisting of 14 “instruments” to “enrich the mind”, containing about 330 worksheets. At the beginning of this century, a so-called “basic” version was added for use from a (mental) age of about 5 years, where new instruments were added which are particularly suitable to train social-emotional cognition, and prerequisites for literacy and numeracy. However, the “Basic FIE” is still mainly a pencil and paper version.

In a time of almost complete digitalization of society, including education and leisure, laptops in the classroom, serious or non-serious games, 3D VR glasses, Wii and play stations, sticking to paper and pencil work looks rather obsolete. Moreover, the FIE does not look modern at all: the drawings of cars are those of classic cars of the sixties. The worksheets do not look flashy like most of today’s schoolbooks. The program also is not freely available; you can only purchase it after a thorough training. It is also not “in the market” like many current “fast-food” courses.

On the other hand, the Feuerstein approach has some characteristics, which make it “ahead” of our times: it is a metacognitive programme, training transversal thinking skills needed in many academic subjects as well as in daily life. Nowadays, techniques and knowledge have become universally readily available, but also continuously change. Humankind has been using watermills and wood fires for centuries, but the technical specificities children learn in school today are obsolete by the time they get into working life. This requires a strong adaptability: in real professional life, people have to learn new techniques, and learn to look up information themselves; to be able to solve problems, to work in teams, to adapt to changing techniques and social circumstances (OECD, 2004). In an internet full of fake news, false advertisements and the power of photo-shopped images, students must learn to critically deal with an abundance of information, learn to se-

1 INSIDE project (www.spill.uantwerpen.be/inside-project-summary), IN-Clues project (www.spill.uantwerpen.be/inclues-project-summary); Daffodil Project (www.spill.uantwerpen.be/daffodil-project-summary); Distinct project (www.spill.uantwerpen.be/distinc-project-summary), Enablin+ project (www.spill.uantwerpen.be/enablin-project-summary); ASUMIE project (www.asumie.eu)

lect, compare, plan and make conclusions. They must also learn to control their tendency to impulsivity. The internet lives on cookies thanks to our impulsive clicking behaviour, but before you realize it, you have a virus in your computer. The FIE claims to develop precisely these so-called “21st century skills”: flexible thinking, adapting, critical thinking, good observation, taking the time before doing, systematic search, making connections, etc.

Another cultural and educational evolution is inclusive education: there is a growing awareness of the need to involve children with disabilities in mainstream school life, and later in society, to make schools more inclusive, i.e., to be able to teach a variety of children with a variety of needs. The inclusive education “movement” started as a “grassroots development” with organizations of people with disability. Italy and Norway were the first countries to generalize inclusive education in the whole country. Since the 1994 UNESCO Salamanca conference, and the 2006 UN Convention on the Rights of People with a Disability, inclusive education has become a right endorsed by most of the world’s governments. Governments have an obligation to realize this right and make support available in mainstream schools. Since then, laws have been adapted throughout the world.

To put inclusive education, however, into practice, has been a challenge and an on-going process. Teachers have to learn to deal with differences, to adapt curricula and requirements according to individualized learning plans. Pupils have to learn to deal with different peers, to work together; they have to learn social responsibility and social dialogue. Inclusive education is an ethical project (Allan, 1999). It puts a serious challenge to “classic” instructional, homogeneous pedagogy. These are also social 21st century skill. The Feuerstein programme has a number of “in-built” social objectives: the teacher learns how to mediate; the pupils learn how to dialogue and to reflect on their own attitudes. Feuerstein et al. (1988) in his early writings, favoured inclusive education, arguing that educating a child with a disability in a “mainstream” environment increases its exposure to a variety of heterogenic stimuli, cognitive challenges and mediated learning experiences, which he termed the “active modifying environment”. In this way, inclusive education and inclusive living would enhance a child’s learning opportunities and modifiability.

2.1 Reflective questions

There has been some controversy in the scientific literature regarding efficacy of the FIE approach (Savell et al., 1986). Some studies in the U.K. and France on large-scale applications did not show a significant effect of FIE on cognitive as well as educational progress (Blagg & Spitz, 1994; Loarer & Huteau, 1995). On the other hand, there are many studies which demonstrated a positive effect on learning outcomes (for a recent overview, see Howie, 2020). Some questions remain: is the Feuerstein approach not too old? Is it adapted to the needs of 21st century education? How relevant is Feuerstein for today? Why not modernize FIE a bit by digitalizing it? In what way does Feuerstein’s approach and practice contribute to inclusive education?

3. Methods

Rather than trying to answer these questions with systematic literature reviews and statistical analysis – which has been done elsewhere -, we opt for a qualitative method of some relevant case studies, because we want to understand in what

way the Feuerstein approach is relevant nowadays. The case studies have been selected with purposive sampling from a series of 775 consecutive cases in the same clinical-pedagogical practice in Belgium; their parents had referred children because they had an experience of failure at school (in regular education or special education) and with a request: how could their learning be improved, preferably in an inclusive context. One should know that in Belgium, inclusive education is far from easy-going. Belgium, according to the European Agency for Development of Special Needs Education (EADSNE, 2020), has the highest percentage of children with special needs in special schools. It also has a relatively high percentage of school failure as well as referrals to special education of socio-economically deprived children (Franck & Nicaise, 2021). Although Belgium ratified the UN convention in 2009, and introduced (at least in the Flanders Region) two laws on inclusive education, the practice of inclusive education is lagging behind and meets a lot of resistance, especially for children with cognitive impairments and learning disabilities.

4. Results

4.1 Case study 1

Yolande is a 19-year-old girl with Down syndrome. She learned to read thanks to the tenacity of her illiterate father. She was in a special school until she was 13 years old. Her parents were disappointed in her secondary special school because the programme was not challenging enough and hardly contained any further academic programme. A dynamic assessment of learning potential using Feuerstein's LPAD method at the age of 13 years revealed that her learning potential was in fact very good, despite that she had substantial gaps in conceptual vocabulary, logical thinking, fine and gross motor difficulties and persistent reading and writing difficulties. She switched to mainstream secondary education because her parents thought there were more learning opportunities there. She received a lot of extra mediation and support by many committed people: a school-based "inclusive education" team (led by an inspired principal); plus an external therapeutic team with cognitive/mediation therapists, a speech therapist, a volunteer retired teacher; and not to forget, her parents. During her secondary school years, her reading and writing improved dramatically, as did her social and daily life autonomy skills. She learnt to read well; her handwriting improved so well that it was nicer than most of her classmates. The regular school environment was a real "active modifying environment". She learned to take public transport. She participated in practical apprenticeships in kindergarten and in retirement homes.

She also has been working with the FIE programme. One of the tools we have worked with is "Temporal Relations". We used this because she had little insight into time relationships, despite her ability to read the clock and know the date. However, she did not understand the division of time and had trouble seeing things in proper time perspective. The first page of "Time Relations" shows several clocks. They all seem like clocks from a bygone era. However, that does not matter. After all, the purpose of the page is to learn how you can measure time, which instruments are used for this, and more generally, which things one can measure, with which instruments, etc. As a mediator, one can then make a link with more up-to-date instruments and pictures via the internet are a welcome source. Such a page is an occasion to talk about all kinds of things. New concepts such as "measurement", "instrument", "parameter", "precision & accuracy", are discussed. In

other pages, other relevant topics regarding time are presented: the division of time (from years to seconds); the linking of events to seasons, the sequencing of events, categorization and causal relationships. Not only did she learn all these concepts, at the same time, she improved reading, writing and math skills. Another useful instrument was “Know and Identify”, one of the instruments of FIE-Basic, which deals with characteristics and classes of objects, animals and humans. This instrument also offers a very good opportunity to exercise reading, writing and logical thinking. The instrument “Orientation in Space” was extremely useful as well, not only to learn to become more aware of “left” and “right”, but also to “turn representationally”, to go from concrete to abstract, to understand the concept of a map (and transfer this to learn to use Google Maps), to find a way and to explain a way. It remains an on-going process. Now she is about to obtain a certificate in elderly care.

4.2 Case study 2

Odilia is a 12-year-old girl with Down syndrome. So far, she has attended regular primary school. She has a big delay in language; the language at home is different from the school’s language. She is now learning to read, count and write. The “Know and identify” instrument of the FIE basic program is of great help in this regard. Using different pictures, she also learns about groups and their characteristics, she learns to read, to construct and pronounce sentences, to learn the order of letters in a word. Such an instrument «kills several birds with one stone». New knowledge is also introduced; e.g., what things are made of; what is wood, what is metal. Children learn to think and make connections. With the help of a search engine on a tablet, illustrations are found for new concepts. In addition, “Learning to ask questions for Reading Comprehension” has been very helpful in this respect. The logical sequence of events is mediated, as well as syntax of proper sentences. Her vocabulary expanded, reading improved dramatically, which had a positive effect on pronunciation. Impulsivity and fine motor coordination improved mainly through Organisation of Dots (Basic version), which has a considerable effect on handwriting.

4.3 Case study 3

Gerben is a 15-year-old African immigrant who recently came to live in Belgium. He had completed primary school in Spain with difficulties and there said he was told that after primary school he would have to go to a special school. Once in Belgium, he first went to a “language immersion class” for a year, where it was noted that he was not learning well. A non-verbal IQ test gave a result of a total IQ of 70, at the verge of intellectual disability. His mother did not believe this and sought for help. An LPAD assessment revealed that he had much more potential than he showed in the IQ test and at school. It turned out that he was severely deficient in conceptual vocabulary and a bit too impulsive. It sufficed to mediate concepts he needed in the tasks, as well as self-regulation techniques, to get better scores on the post-tests. Although the LPAD already had a positive effect on his learning, it was insufficient in the end. The LPAD also served to show the school staff that he had more potential than shown by the static tests. We started to work using Instrumental Enrichment at school, also to establish contact with the school. In this way, he could continue to participate in regular education.

5. Discussion

The above case histories are of course no scientific evidence that the Feuerstein approach is effective – case studies never can be. As to scientific evidence of the Feuerstein method, we refer to the work of others (Howie, 2020; Keung et al., 2022, Kozulin et al., 2010; Tzuriel, 2011) and to a Special Issue of the *Transylvanian Journal of Psychology* (Lebeer, 2014). However, case studies illustrate several important aspects. First, inclusive and cognitive education go “hand in hand”. Cognitive education with mediated learning can reinforce and engender learning processes and make inclusive education more beneficial.

Second, the method of dynamic-interactive assessment of learning potential, which role is to reveal the potential of children to themselves, their parents and their teachers, can be a tool towards inclusion, as well as a step towards a life-changing trajectory. Standardized tests, yielding e.g. a low IQ score, tend to “paralyze” belief systems. The Pygmalion effect of Rosenthal & Jacobson (1968) is still actual. Failure to meet standards, “imposed” through standardized tests, is a path to exclusion. LPAD is a true paradigm shift in the psychological research landscape, which is still dominated by psychometrically standardized testing. Not surprisingly, the LPAD method still encounters resistance and continues to be pioneering work (Karpov & Tzuriel, 2009). True paradigm shifts take at least two centuries to become accepted, and Feuerstein’s is only 70 years old. Third, modifiability is possible at all ages. It is the capacity of an individual to become a more autonomous learner in more unknown circumstances. Modifiability is enhanced by mediated learning experiences. Fourth, learning and inclusive education are realized through the construction of active learning environments, which are stimulating, encouraging, supportive, and induce transfer of learning (Bransford et al., 2000).

However, it remains difficult to “pinpoint” the causal effect of the application of Feuerstein’s Instrumental Enrichment. There are many influences which “synergize” to obtain the results described in the above case studies: parents, pupil’s and teachers’ motivation, relationship between pupil and teachers and between pupil and mediator; the role of volunteers; the role of the principal, intensity of learning opportunities, learning transfer, etc... All contribute to creating an “active modifying environment” in Feuerstein’s terms. Cognitive activation through mediated learning certainly helps to construct learning processes. However, one can imagine that there are many other ways to realize cognitive activation.

5.1 Mediation as key

Mediation is the key to modifiability. Mediation is what makes us human. It is about transmitting culture from one generation to the next. A lack of mediated learning experiences is a common problem, according to Feuerstein. It is a modern cultural phenomenon, although of course it has always existed. Feuerstein discovered a link between a lack of mediation and impaired cognitive development while working in the refugee camps just after WWII. We now see many self-regulation problems in children and adults as well. This likely plays a role in rude behaviour in public transport, social media, game addictions, and an increase in ADHD and autistic spectrum disorder. Feuerstein linked this to a general cultural tendency to neglect rituals that mediate self-regulation and meaning. According to him, it is impossible to leave mediation to machines such as television or computer. One can use whatever modern technology to mediate, but one cannot de-

legate mediation to technology. The human mediator is the key. Children who have acquired sufficient mediated learning experience, even without having access to computers or whatever modern technology, will be able to adapt later when circumstances force them to do so.

5.2 Mediation in inclusive education

In inclusive education, children learn together, regardless of their diversity. A child with a disability has a right to “reasonable accommodations”, and support needed to be able to participate. Schools need to re-organize. That poses a tremendous challenge to teachers. Feuerstein’s theory and methods are particularly suitable for the needs of inclusive education. Teachers who are good mediators will depart from a “one recipe for all” style of teaching, when they understand mediation criteria, in particular: mediating feeling of competence, sharing, individuation, challenge, optimism, belonging, awareness of change. Feuerstein’s conceptual system of the “cognitive map” is an interesting tool to differentiate educational materials relative to content, modalities, degree of complexity and abstraction, and efficiency, to widely differing abilities of students. Teachers, who understand the cognitive map and know how to mediate, will know how to differentiate. Moreover, a cognitive approach, which orients the students towards learning how to learn, is beneficial to all learners. In addition, the belief in modifiability of every child is crucial: teachers, who are convinced that every child can become modified, will do more efforts to mediate children, as was shown in the “Pygmalion effect” (Rosenthal & Jacobson, 1968).

Gerben is a typical example of what Feuerstein calls “cultural deprivation”: children who lack the transmission of their own culture, in this case, because of the precarious economic existence of the parents. Mediation is the key to reversing this process so that it benefits learning and development.

5.3 Mediation, modifiability and plasticity

The discovery of the “experience-dependent plasticity” of the brain, which is triggered by activity, is giving neurobiological evidence to SCM theory (Kleim & Jones, 2008; Lebeer, 2014). Mediated learning experience is the drive of neuroplasticity. Parents and teachers, anyone who mediates a child, not only help to establish cognitive development, but they help to create meaningful brain connections. In fact, parents and teachers could be considered “closed-brain” neurosurgeons.

5.4 Does FIE need a modernization?

The FIE programme as such does not have the “looks” of a 21st century programme. Most cognitive activation programmes and modern education materials are computerized and have looks that are more attractive, and hence are more “fashionable”. Of course, being fashionable is no guarantee for better quality. First, content validity is more important than face validity, i.e. the content of a programme is more important than its looks. Second, it is not because a programme is delivered in a digitalized way, that it can boast on more scientific evidence. For example, working memory training, which is usually done in a computerized way, as, e.g., in the Cogmed programme, has not shown to be effective (Hulme &

Melby-Lervåg, 2012). A more broadly oriented metacognitive training, which is used in a mediating way, such as FIE, has a better evidence (Partanen et al., 2015). Feuerstein has always resisted digitalisation of the FIE programme arguing that the goal is not to fill in the worksheets or to do exercises, but to use it as a way to mediate and to apply the discovered principles and ways of thinking in real life, i.e. to ensure transfer. FIE is, as its name says, an instrument, a tool, or in Feuerstein's words even a "pretext" to convey mediated learning experience. That is why FIE is not a self-study programme, but is taught under the supervision of a trained "mediator". The paper-and-pencil way of working remains an important way, also in the 21st century. It is slower, but it induces more metacognitive reflection and dialogue. The mediator "mediates" between students and the worksheets, or more broadly, between student and the world, so that the stimuli are better processed and an appropriate response can be given.

That being said, some of the instruments of FIE could benefit from an adaptation to the 21st century world. E.g., the instrument "Orientation in Space" should at least mention the use of GPS. Family relations could incorporate a variety of more modern family relations. However, mediators of the FIE programme learn that they should not apply the materials in a recipe way, but as tools for reflection. They can - and have to - refer to application in current daily life.

6. Conclusion

For those who want to look beyond appearances – the lack of 21st-century «looks» – Feuerstein's theory and methods appear to be very much suited to the needs of our time: diversity in society and education, inclusive education, need for critical thinking, adaptability, learning how to learn. This has important consequences for education, formal as well as non-formal. Schoolteachers need to become mediators of better thinking skills, next to transferring knowledge or teaching academic skills. Teachers who are better mediators will be more inclusive and less exclusive, because they will know how to differentiate. They will teach how to gather and assess information, problem solution skills, creative thinking, dialogue, metacognitive skills such as planning, critical reflection, feedback and dealing with errors. These "transversal" skills are needed in whatever future profession, in professions that are more intellectual as well as in vocational training. They are also needed to prevent people from running after false beliefs and promises, and to become true socially engaged and democratic citizens.

The mediation theory remains an important theory even today. In other words, it is a compass for the 21st century, where people often feel lost. Mediation also has ethical aspects, in the sense that ethically «high» behaviour - e.g., respect for other people, for things of value, empathy - are the result of sufficiently mediated learning experience.

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