Education is a coconut

What is quality education and how could we measure it?

- The hard shell represents the conditions for (quality) education: infrastructure (buildings, classrooms), furniture and equipment, curriculums, textbooks, tests and exams, teaching aids, budgets and salaries, support structures and teacher training, management and leadership, etc.
- The soft inner and nourishing part represents the core element of education: the teacher – learner interaction in classrooms: the so-called "*Primary Process*" in education.

Quality learning or education implies that the learners achieve the competences to become citizens who contribute to their society and who effectively enter the world of work, for earning a decent living for themselves and for those who are depending on them. Competences contain three elements: knowledge, skills and attitudes:

- Most knowledge is subject related;
- Most skills and attitudes are also subject overarching;
- These subject overarching skills and attitudes include the following: safe cooperation, communication and leadership skills, being pro-active, being able to take initiative, critical self-reflection, accountability and responsibility, being flexible, being able to overcome challenges, etc.

Direct Instruction and Inquiry Based education ("Scaffolding")
For teaching subject related knowledge and skills *Direct Instruction* (DI) is proven to be an effective teaching and learning approach. DI teaches by explicit instruction by teachers who are experts on the subject at stake. DI relies on a systematic curriculum design delivered by implementation of a prescribed behavioral script. It includes tutorials, laboratory classes, recitation, seminars, workshops, practical and / or internships. Well-guided "scaffolding" (see below) could be used for further developing the necessary subject related knowledge and skills.

For the subject overarching skills and attitudes as well, or cross cutting issues, so called "Twenty-first century life skills" or "Entrepreneurial skills" appear to be effective. This *Inquiry Based* (IB) or "Scaffolding" approach of teaching and learning is rooted in validated constructivist approaches. Constructivist teaching and learning takes the mental framework and the context of the learner as its starting point: the already existing views and ideas, experiences, norms and values, opportunities and hindrances, etc. Then the learner is challenged in a safe and conducive environment to expand those views to a next level of development, step by step, to reflect on the achievements, and then to improve him or herself further by constructing new knowledge, skills and attitudes. Teaching and learning is highly interactive and participatory, with active teacher support to the learners, and with workshops, discussions, role plays, etc., also taking real life situations as starting point. The curriculum is not fully pre-described: a comprehensive set of flexible modules and guidelines supports the teaching and learning process.

Testing and examination
When it comes to testing and examination (assessments) of the outcomes of teaching and learning, a more *summative* assessment with perhaps some formative elements is recommended for DI, while a more *formative* assessment with perhaps some summative elements is advisable for IB. Summative assessments evaluate student learning at the end of an instructional unit by comparing it against a

standard or benchmark, like exams. Formative assessments monitor the student learning by providing ongoing feedback, helping students to identify their strengths and weaknesses and target areas that need work, and where students are still struggling and addressing problems immediately. Examples are portfolio's, presentations of products manufactured / created, interviews and observations.

The same applies to nonformal adult education. Mere (functional) literacy courses are proven to be ineffective, since neo-literates easily loose the capacity of reading and writing if they do not exercise these on a daily basis, being the case in many disadvantaged environments. Participatory approaches on the other hand are far more effective and sustainable. These approaches focus on achieving awareness and competences on the context related issues that matter to the learner (see Paulo Freire). In such approaches acquiring literacy is not a goal in itself but just one of the means for achieving the necessary knowledge, skills and attitudes for active and fruitful participation in society.

Many employers throughout the world complain that many young job seekers lack necessary basic skills and foremost attitudes, and they are therefore rather reserved and hesitated hiring them. This is due to the fact that traditional teacher centred approaches merely focus on the acquisition of knowledge. Testing is foremost on knowledge, often neglecting necessary skills and attitudes. It is even worse: because of rigid testing practices teachers being trained in constructivist teaching feel enforced to fall back on inefficient rote learning, because of the requirements of these tests and exams. As a result, many young people are excluded from the world of work.

Inquiry Based (constructivist, participatory, scaffolding) teaching and learning on its turn, comprehensively focuses on the acquisition of relevant knowledge, skills and attitudes on subjects and on subject overarching aspects, and are related to the context of the learner, next to acquiring specific subject knowledge and skills by Direct Instruction. This is quality education, since education experts and scientist generally consider the interaction between teacher and learner (the "Primary Process") on all aspects of teaching and learning (knowledge, skills and attitudes), as the determining factor for the quality of education, for its effectiveness and (potential) impact. This way people acquire the competences to take control over their own lives and resources, they become *empowered*[1].

Coconut consequences

Training teachers on those effective teaching approaches is indispensable for providing quality education within a safe and conducive learning environment. But for being effective the heart of the coconut, the primary process with the teacher at its centre, also needs sufficient and coherent support by the hard shell. Only with an effective support structure in place, it will be possible for the teacher to provide for quality education. Next to a sufficient infrastructure, salaries, support, supportive school leadership, etc., it will therefore also be of utmost importance to tune curriculums, textbooks and not the least tests and examinations to those effective teaching approaches. Otherwise training teachers on effective approaches will be practically useless, since teachers will still feel the need to adapt to the existing examination requirements by exercising ineffective teacher centred approaches, to a large extent based on rote learning.

Towards an indicator for quality education and empowerment

Quality education enhances the acquisition of empowerment. Empowered people take control over their own lives and resources[2]. In other words: they are able to organise themselves effectively for facing challenges and for solving problems. This problem solving capacity is the indicator for quality education, embedded in constructivism. It includes the following sequential elements[3]:

[1] Rood, Rogier A. van 't (1996/7).
[2] Rood, Rogier A. van 't (1996/7).
[3] Rood, Rogier A. van 't (1999/2010/2015).

- Identification and analysis of a problem / challenge
- Settling of a problem solving goal
- Development of a problem solving strategy
- Mobilisation of resources (human, physical)
- Implementation of the strategy
- Reflection on the achievements (self-evaluation), for developing further improvements and next steps.

EMPOWERMENT INDICATOR			
General goal of this qualitative outcome indicator is to assess effectiveness and (potential) impact of the educational intervention at stake.			
Theme Description and Implementation	**Output and Indicators**	**Measuring indicators**	**Evidence**
Learners / students acquire effective subject related and subject overarching competences.	Learners / students are enabled to solve assigned challenges / problems, well guided by their teachers.	1. Identification and analysis of a challenge / problem; 2. Settling of a problem solving goal; 3. Development of a problem solving strategy; 4. Mobilisation of resources (human, physical); 5. Implementation of the strategy; 6. Reflection on the achievements (self-evaluation) for further improvements and next steps.	For learners / students: Portfolio's, presentations, discussions, interviews and observations. For teachers: Participatory performance assessments.

This quality indicator and its elements could be implemented for formative testing at all levels and types of education, and for every age, but each time geared towards the relevant social, cultural and economic context at stake, also taking the developmental stage of the learner into account.

Validation instruments will be (a combination of) portfolio's, presentations, interviews and observations.