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Issues in measurement of learning to learn competencies

For practical empowerment interventions

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This presentation

- Exemplar projects measuring L2L\(^1\) in Europe;
- Current methodologies for measuring L2L competencies;
- Issues in measuring L2L with current methodologies;
- Principal pitfall: L2L conceptualization;
- Process and outcome model of L2L;
- Exemplar practices for individual empowerment.

L2L = Learning to learn
Exemplar projects measuring L2L in Europe

- EU pre-pilot study;
- ELLI project in UK and beyond;
- L2L project in Finland.
Current methodologies for measuring L2L competencies

Two main categories:

a) self-reports and check-lists;

b) performance assessments and PISA-like tests.
Issues in measuring L2L with current methodologies

- Self-reports miss out actual performance;
- Performance misses personal characteristics...
- According to L2L EU pre-pilot study, Alpha is approx 50% higher in the self-report (affective) part of the test;
- For low-stakes empowerment interventions, self-reports seem a promising tool. Open question on L2L measurement for high stakes decisions.
2 pitfalls of EU experience:

a) L2L conceptualization

b) Test development

A “test, based on a common European framework but adopting tasks from tests rising from different theoretical backgrounds and conceptualisations of learning to learn, has lead to an instrument marked by the paradigmatic differences between these earlier endeavours. “


A test that is being assembled from different other tests may not be optimal.

→ Need to work on L2L concept.
What L2L is not

- Not just learning, but higher order learning;
- Not only metacognition, but also affective, and biological dimensions;
- Not just school-related skills, but also lifelong and lifewide learning skills;
- Not just study strategies, learning strategies or cognitive styles (cognitive dimension);
- Not only SRL, but also social aspects involved;
- Not just cognitive problem-solving, but a reflective methodology useful to evaluate solutions also in affective-motivational and experiential learning domains.

Is it an intelligence?

Thorndike: Intelligence = ability to learn
Learning to learn components

**Personal domain**

- **Inherited assets**
  - Innate desire to learn
  - Aptitudes
    - Genetic/fluid abilities
  - Use of various learning methods
  - Learning goals
  - Learning styles
  - Skills acquisition
  - Practical thinking

- **Cognitive dimension**
  - 3Rs/basic competencies
  - Knowledge in different domains
  - Knowledge of scientific method
  - Cognitive self-management as a learner

- **Metacognitive dimension**
  - Learning by self-regulation
  - Meta skills
  - Self-appraisal
  - Insight into own learning style

- **Affective - motivational dimension**
  - Personal beliefs
  - Attitudes towards learning and self-improvement
  - Affective self-management as a learner
  - Effort in learning

- **Learning dispositions**
  - Personal values
  - Strategic awareness
  - Resilience

**Social domain**

- **Social dimension**
  - Understanding of learning environment
  - Social values
  - Growth orientation (change and learning)
  - Interpersonal relations
  - Learning with peers
  - Learning in groups

- **Proactive dimension** (action on and with learning)
  - Meaning making
  - Critical curiosity
  - Resilience
  - Strategic awareness
  - Creativity

**Developmental LLL dimension** (time, age, stages of development)

- Skills transfer
- Knowledge transfer
- Skills acquisition
- Problem solving
- Use of various learning methods
- Control strategies
- Use of various metacognitive methods
- Meta knowledge
- Learning motivation

Stringher, 2014.
L2L process and outcome model: the learner in time and context

1. **Mental assets** (cognitive, socio-affective, motivational)
2. **Estrinsic needs / Environmental demands**
3. **Social Values**
4. **Biological, intrinsic needs and values**

- **Time**
- **Learning knowledge and repertoire**
- **Meaning making**
- **Learning actions**
- **Learning products**
- **Self-evaluation**
- **Self-reflection**
- **Metacognition**

Stringher, 2014.
L2L process and outcome model: the learner in time and context

Environment

Resources

Home

Work

Education

Learner

Metacognition

Self-evaluation

Self-reflection

Learning actions

Meaning making

Learning products

Learning knowledge and repertoire

Time

Mental assets (cognitive, socio-affective, motivational)

Biological, intrinsic needs and values

Estrinsic needs / Environmental demands

Social Values

Stringher, 2014.
L2L: a meta-definition

“Executive process of control of learning, conceivable as a disposition to engage deeply in learning, which bestows individuals with increasingly higher command over modes, time and spaces of their own learning. Such a process evolves in a developmental and lifelong trajectory, with the ultimate goal of making sense of reality.

Such management function in learning appears to mobilize different energies of the individual-in-context (...) to produce knowledge and improvement in learning through variations in learning experiences and reflection upon them.

[Its] lifetime functions are youth development, individual adaptability in working and domestic life the development of balanced personalities and social well-being.

Inherited assets, self-regulated learning (cognitive and metacognitive), learning dispositions, affective-motivational, social and active dimensions of learning contribute to learning to learn in a lifelong trajectory.”

Stringher, 2014.
L2L functions

- learner self-improvement;
  - guide of concrete learning and optimization and regulation of learning processes;
  - youth development;
  - adaptation to working and domestic life up to the creation of a balanced personality;
  - search and development of (self-) meaning;

- social functioning and well-being of individuals and society.

Stringher, 2014.
Exemplar practices for individual empowerment

- Italian readiness study framework;
- The case of the master for coordinators of early childhood services of Roma Tre University;
- ELLI project in schools and with aborigen populations in Australia (Willis, 2014);
- EU training of trainers project (Kloosterman, 2014).
Readiness conception matrix

**School adapts to child learning needs**

- **Short time-span, highly strategic**
  - **Readiness for learning** (ex.: child to be able to learn)
  - **Readiness for lifelong learning** (ex.: child to improve ability to learn over time)

- **Short time-span, low strategic**
  - **Readiness for school entry** (ex.: child to sit still and quiet)
  - **Readiness for school adaptation** (ex.: child to adapt to school needs over time)

- **Long time-span, highly strategic**
  - View of child to become innovator vs compliant

- **Long time-span, low strategic**
  - School adapts to child learning needs

Stringher, in preparation.
Master degree students case

- ELLI questionnaire administered at start;
- 2 hour discussion on own learning and theory on L2L;
- One-to-one profiles discussed and “owned”;
- Individual suggestions on how to improve learning dimension, based on ELLI material;
- Learning diaries compiled about once a month during master on own difficulties and strengths in mastering content;
- End of year qualitative evaluation and feedback from participants.
Essential references

- Barbieri & Stringher, 2008;
- Candy in Smith et al, 1990;
- Deakin Crick, Broadfoot & Claxton, 2004;
- Demetriou, 2014;
- Hoskins & Fredriksson, 2008;
- Kloosterman, P. 2014;
- Kupiainen, Hautamäki & Rantanen, 2008;
- McKiechies, 2000;
- Montessori, 1948/1999;
- Rao et al, 2014;
A science of education does not only have the task to «observe» but also to «transform» children, to make them better humans. Otherwise, pedagogy remains a study of childhood subject to traditional schools that remain unchanged.

Montessori, 1948/1999, 33; 43.

... transforming children into better humans is not possible if we do not transform ourselves first.

Thank you!

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EU pre-pilot test dimensions

- **The cognitive dimension**
  - Identifying a proposition
  - Using rules
  - Testing rules and propositions
  - Using mental tools

- **The affective dimension**
  - Learning motivation, learning strategies and orientation toward change
  - Academic self-concept and self-esteem
  - Learning environment

- **The metacognitive dimension**
  - A metacognitive monitoring task
  - Metacognitive accuracy
  - Metacognitive confidence
2 paradigmatic definitions

1. An efficient learner needs five elements: a) motivation to employ learning abilities and techniques; b) an organized knowledge base, providing a structure for new knowledge; c) skills for future learning; d) strategies for the optimal use of those learning skills; e) meta-cognitive strategies (planning and control in the first place).” McKiechie, 2000.

2. [Learning to learn] is a developmental process in which people’s conceptions of learning evolve and become consciously available to systematic analysis and review. It involves the acquisition of a repertoire of attitudes, understandings, and skills that allow people to become more effective, flexible, and self-organized learners in a variety of contexts. It occurs both prior to, and coincidental with, learning endeavors. It may be enhanced through processes of formal schooling and the way in which the curriculum is constructed and is therefore a viable – perhaps crucial – objective for educational systems at all levels. It involves entering into the deep meaning structures of material to be learned and, in its most advanced forms, may lead to critical awareness of assumptions, rules, conventions, and social expectations that influence how people perceive knowledge and how they think, feel, and act when learning. It has both generic and context-specific components. It is a multidimensional entity whose meaning varies according to the meaning given to the word learning.

(…) if learning means roughly ‘an interpretative process aimed at the understanding of reality’, then ‘learning-how-to-learn’ means something like ‘an interpretative process aimed at understanding how to interpret and understand reality’.

Candy, 1990.
aggressiveness; prolonged and sustained selective attention in tasks; autonomy; self-knowledge, self-awareness, self-representation, flexibility; cognitive self-regulation; empathy; emotional recognition and expression; emotional self-regulation; capacity to solve social-relational problems; effort, engagement and involvement in tasks; intrinsic motivation; awareness of own strengths and areas of improvement; inhibitory control; cooperation; creativity and inventiveness, imagination, curiosity, sense of initiative and self-initiation of tasks; parallel elaboration; self-confidence; delayed gratification; interpretation of phenomena and of own work; leadership; short-term memory; monitoring of own mental processes, monitoring and regulation of own representational capacity; perseverance, persistence on tasks; resilience in difficult tasks; observation of rules; (learning) relationship with adults, and between peers; request of help if and when needed; reflection upon own learning and upon own mistake; inferential schemata

... Stringher, in preparation.