

Notes on the Discussion by Caterina Calsamiglia on “Measurement of Soft Skills” at the ECNAIS conference MODERN SOFT SKILLS IN VALUE BASED SCHOOL PROGRAMMES in Rome 20 April 2017

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Economists have become increasingly relevant in determining educational policy. The main reason is because their analysis is quantitative, which may seem more rigorous and objective, and their emphasis is in trying to infer causal relationships which are of high interest for policy. The use of data for policy has also increase the amount of testing being done to evaluate students, teachers, schools, countries, etc. Same data is used with a rich set of purposes. In this talk I want to emphasise that being able to provide measures for evaluations is important to have a fair society and an improving education system. But that we need to be ambitious and creative in constructing measures that capture skills about individuals that are good predictors of life outcomes.

In order to do that I would like to start by briefly discussing the origins of evaluation and what the unintended consequences of these origins are today.

Evaluation for selection

Origins of standardized testing (See Heckman and Kautz: The Myth of Achievement Tests)

- 150 years ago, elite universities wanted to search for talent beyond friends of friends.
- They asked a team of psychologists and pedagogues to create scalable test that most students could take in order to identify a subset of people of interest.
- Created the first and very imperfect tests (they themselves complained that they were missing the largest part of what is relevant of an individual, but argued that they could not create a test for these other things!). Having imperfect tests once is problematic because you miss some of the talent, but may be better than doing nothing.

But now I want to think about the implications of the imperfections of these tests over time. Schools, parents, children care about their performance in these tests since it is the only way in which they are allowed to signal their value, so they will prepare for them! Slowly the whole education system starts redirecting it efforts toward performance in those tests. So it is not only that these tests miss most of what is important, but over time, they also lead to all the efforts being devoted to those measures. School start asking what is in the tests, student do too, slowly everything is targeted to exams and the capacity to resolve those exams. Lack of measurability of other skills has led to the education system ignoring them to a large extent.

The education system works on what is measurable, because this what can be shown to the outside world: college, firms, etc. To resolve this, we need to find measures of these other aspects so that schools, parents and children can focus on them again. The world has changed, but we have not changed how we measure skills at all! We need to use new methods to evaluate what back then seemed unmeasurable.

Evaluation for policy design: Main policy issues discussed and studied that have led to changes in educational policies:

- A) **Early childhood education:** Perry School Project, Head Start. Large amounts of resources were invested to investigate the impact of intervening early to reduce inequalities. Results: small impacts in the short run. Small impact on IQ tests that fade away in a few years. These programs were mostly criticised by its lack of effectiveness.
- B) **Reduction in class size:** STAR was an experiment on class size that showed that class size reduction would be effective. But the results were not too large.
- C) **GED:** one year program to get secondary school, implemented to reduce dropout. Children spend a year learning to solve that test that will certify they will know what secondary school children know.

30-40 years after the first experiment on early childhood education or class size: these children have

- better health outcomes
- more structured families
- stable jobs...

What about the impact of GED on future outcomes? None. Heckman and coauthors show that passing these tests has no impact on the future outcomes of children.

What is going on? Why did we not see the impact of these policies in the short run? These policies did not have an impact on IQ, which is how we measured impact before. But some measures indicate that these children do much better on soft skills... but measures are quite poor.

We will not be able to detect good practices if we cannot measure the skills that are so important to determine outcomes! As an economist, I was frustrated because we do not have quantitative measures of the relevant aspects in determining children success. As a person who cares about education and how to improve it... it does not seem like at this point we are understanding what education aim for and how we should measure it.

Evaluation in the 21st century

- **DATA:** The amount of information available to all of us has increased enormously: since we started registering data up until 2003, 5000 million gigabytes of information were collected. In 2013 IBM calculated that this is the amount of information collected in 2 days. Hence 90% of the information we had in 2013 was created in the last two years. Data from google maps, facebook,, tweets, health records, etc.
- **AI:** Technology and Artificial Intelligence: our capacity to use that information to create intelligent machines has also exploded in the recent years. In 1997 Deep Blue (IBM machine) won against Garri Kasparov , world chess champion, because it computed the optimal play using very many games that had already been played. Nature last year published that DeepMind from google had created, AlphGo, which had won the world champion at the game GO, which has many more options than chess does. The algorithm used by not only used previously played games, but actually generated new games by having the machine compete against simulated agents.
- **DATA+ AI:** Report on the future of employment Oxford Martin Programme on Technology and Employment, where calculations indicate that in the next two decades 47% of the Jobs today in the US shall be automated. The risk to the labor force is larger than ever.
- **Inequality is increasing!** College Premium is exploding! But not so much because having a degree increases career prospects, but because not doing so leaves you in very bad conditions. What schools are preparing for is not useful in the labor market!

EDUCATION is a key instrument that shall help workers be prepared for the labor market. But what are schools doing that today? Are we providing students with the skills to be useful in the future, to be able to provide added value and to be happy in this changing world?

Teachers come in, present to you a series of facts and may help you understand some logics behind them, and then asks you whether you understood exactly what was just said to you. Teachers may be blamed if the exam asks something that is too far from what was given in class. There is no question that the teacher asks you that google will not answer. Is that coherent with the previous paragraph?

In the Delors report and more recently in *Rethinking education*, UNESCO has long emphasized the importance of changing the focus of education and arguing that no small changes will help achieve that goal.

Escola Nova 21: an movement of schools aiming to achieve those goals

Escola Nova 21 is a movement that has as its main objective to find the best people in the present school system who can help think about how a school may make the best out of our children. In particular how could we make sure we make use of what we know about how learning happens, as described in the OECD report *the nature of learning*:

- 1) Learners at the center
- 2) The social nature of learning
- 3) Emotions are integral to learning
- 4) Recognizing individual differences
- 5) Stretching all students
- 6) Assessment for learning
- 7) Building horizontal connections (between areas of knowledge and with reality)

Schools that had really presented itself with these goals and thought about how to design school with that goal we identified.

- 26 schools who had already changed the way they organized themselves (all of them within the public system).
- Opened a call to select 30 more school who want to change, create a protocol of change, and learn about its success.
- 500 schools signed up!

Very little private money and private initiative has led to a major movement in the public system in Catalonia. The public system faces many difficulties when wanting to change...

- changing everything is risky and costly
- in which direction...?

Most laws already mention the nice objective that education shall pursue, but the gap between what the preface of the law says and practice is very large.

Why is change so difficult? I am a firm believer that one of the biggest bottle necks is standardized testing: PISA, national college entry exams, We need to be able to show to parents and society as a whole that the the outcomes are better, that they are doing a better job in preparing students.

Psychologists have measures of these non-cognitive skills that have been proven to be relevant for future life outcomes, but these measures are created from answers on self assessment tests. Such tools are useful for self-assessment, to guide your progress, but are not useful to proof your effectiveness (teaching children how to answer these self reports is extremely easy and clearly does not reflect students having improved those skills).

I am currently working with schools in Catalonia to construct new measures of cognitive and non-cognitive skills that will measure such skills in a way that is based on their observed behaviours in school through the computer and all kind of registered data, big data! The more schools are willing to innovate in creating those measures, the better.

I am most willing to collaborate with schools within the ECNAIS network that share these concerns and want to innovate in the way they measure these soft or non-cognitive skills and how they evolve over time.