Large scale principle-based transformations with embedded knowledge building processes

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Abstract: A framework to analyze the consistency of principle-based transformations is presented and applied in three different cases. Limitations in implementation, evaluation and professional development are identified for the three cases. It is argued that principle-based large scale transformations depend on cultural capacity for innovation and the change model must include a "knowledge building" component at the teachers´ level.

Keywords: large-scale transformation, principle-based transformation, knowledge building, creativity, critical thinking, evaluation, change model

Introduction

Technology has allowed large scale movements that would be unthinkable a few decades ago (Nunes, 2013). From MOOCs to coordinated fights for democracy in several countries it is possible to identify the role and power of connectedness for emergent behaviors triggered by isolated facts and forces. Large scale transformations happen in highly complex social contexts. Competing forces, interests and beliefs are mixed and influence acceptance and resistance to change. The old model of small scale pilot-implementation and evaluation is not able to take into account such social complexity and most innovations fail when brought to large scale.

It is argued here that when transformations are based on first principles it is possible to create a shared vision that works as a driving force bringing coherence to actions and allowing the "social messes" (Horn, 2001) to evolve in the desired direction respecting and benefiting from known characteristics of self-adapting complex systems (Kelly, 1994), collaborative innovation networks (Gloor, 2006), and diffusion of innovations (Rogers, 1995).

There is a vote of trust on people in this paper. It is assumed that most people are not mad, lazy, or unethical: if they knew how to do better they would do it. However, to do better one must be open to learn. That means, everyone in the collective process of transformation should learn. Advancing collective knowledge (Scardamalia, 2002) is crucial for large scale transformations.

A Framework to Analyze Transformations

The set of questions and diagrams shown below do not aim to be considered a change model (Kotter, 2012). The framework is presented to provoke broad reflections on the consistency of educational programs when brought to large scale, not necessarily whole system reforms (Fullan, 2011b; Hargreaves & Shirley, 2012). Affirmative answers to the questions would a necessary condition for a program to be considered consistent and coherent with a principle-based transformation.

1. Is the transformation based on first principles?

Some principles are hardly disputed: democracy, justice, autonomy, etc. Others are only more recently be given the status of "principles" as desired outcomes of education, e.g. the so called 21st century skills (Ananiadou & Claro, 2009; Fadel, Lead, & Systems, 2008): collaboration, critical thinking, intercultural diversity, problem solving, communication … Also, recent years longitudinal research on carrier, happiness and social well-being have brought the development of social-emotional skills to the status of first principles for education (Tough, 2013).

Although we do not want to enter in well-known disputes, we point out that in our vision improving scores or income is not a principle (Fullan, 2011a) while, e.g. teaching for understanding (Darling-Hammond et al., 2008; Wiske, Franz, & Breit, 2005; Wiske, 1998) or making learning whole (Perkins, 2009) are. Some "deep instructional practices" (Hattie, 2012) would deserve the "principle-based" label. Advancing knowledge and nurturing knowledge builders is one of the most central principles for human development (Bereiter & Scardamalia, 2003).

2. Are the principles themselves values in the system?

Agreeing with first principles is the easy part. Acting accordingly is much more difficult (Dubet, 2010; Reimer, Paolitto, & Hersh, 1990). When considering the design and implementation of programs one of the most common sources of difficulties and inconsistencies is that the principles are not adopted as values in the system itself: e.g. it is desired that students become intellectual and moral autonomous citizens, but teachers and principals have limited autonomy and must follow prescribed and closed programs; democracy is a goal for students in the future, when they leave school, but there is little room for democratic decisions in the schools or in the implementation of the program itself; students should collaborate, but teachers and principals do not need; future citizens should be critical thinkers, but teachers and principals must accept top down programs designed by experts. Attributing value to actions based on first principles does not mean that a reward system must be implemented: no extrinsic marks or bonus must be given for people to be autonomous or democratic. Instead, attributing value means eliminating obstacles and creating conditions for people to act accordingly the principles.

3. Do stakeholders buy the principles as central values for themselves?

Michael Fullan list eight key drivers for sustainable changes (Fullan, 2004). Engagement of people´s moral purposes is the first and most important of them. Agreeing with a principle does not mean that a person will act in accordance. It is very common in a given situation to conflicting values (Dubet, 2010) (e.g. I want and believe in the transformation, it takes effort and perseverance, but I also want my rest and comfort) and only when principles become central values are we able to take preference in actions that will contradict more peripheral values. Creating a shared vision, discussing conflicting values, understanding changes, becoming aware of feelings, emotions, implications of actions, are all important to gradually conquer and keep people engaged with the transformation. Program actions must be designed, implemented and monitored taking such engagement process into account.

4. Is the program evaluation consistent with the scope and kind of transformation?

It is interesting here to make an analogy to claims that educators do on students´ evaluations. The multiple choice test format is not suitable to evaluate the development of 21st century skills, moral development, deep understanding (Nunes, Nunes, & Davis, 2003)… but is something we know how to do and implement at large scale. We create a reinforcing cycle of doing more of the same, looking for incremental improves without substantial innovation (Hargreaves & Shirley, 2012). Something parallel happens at the level of program evaluation: people keep assuming that the only rigorous evaluation is the experimental evaluation, with experimental and control group. Such evaluation model does not evaluate the process of building capacity for system and cultural changes.

Assuming that program evaluation must evaluate worth and merit, large scale principle-based transformation must go away from restricted "question and methods" approaches, or accountability evaluation approaches to social agenda and advocacy evaluation approaches (Stufflebeam, 2001). Such approaches are participatory in nature, e.g. Robert Stake´s responsive evaluation (Stake, 2004), and can be modernized by the use of technology to overcome some of the known weaknesses. Most important, such models are formative at a program level and include and inform all stakeholders.

5. Who has to change and who is accountable? Are interdependencies considered?

Are the teachers the only ones that receive new technology, resources and curricula, have to use and are accountable for results? Or is it recognized that new roles for students, teachers, principals etc. are expected? Is it taken into account that new assessment models are necessary and such models depend on a new culture, including follow up of parents? The deeper the change, the more interdependencies are generated among people in transforming existing cultures (Elmore & Elmore, 1996; Hargreaves & Shirley, 2012; Ritchhart, 2015; Sahlberg, 2011).

6. Is there a change model or is it a one-shot training and implementation model?

Principle-based transformations are qualitative and depend on cultural changes. Large scale implementations deal with several distinct and complex realities. It is impossible to have "one-size fits all" (Horn, 2001). It is necessary to allow for experimentations, adaptations, learning from errors, acknowledge the non-linearity of the transformation. Teachers must receive feedback. Differentiation at the teacher´s level is as important as it is at the student level (Sousa & Tomlinson, 2010). Training should follow the "learning for action, in action and from action model" (Wilson, 2009). Spirals of implementation and reflection must exist

(City, Elmore, Fiarman, & Teit, 2009). New knowledge on strategies, tools, theories, practices … must be constantly generated. Knowledge advancement is key.

7. Are there references and models or are there straightjackets?

References and models are necessary and useful (Ritchhart, Church, & Morrison, 2011; Ritchhart, 2015; Tishman, Perkins, & Jay, 1994). People that have and demonstrate the desired skills that teachers should develop with their students serve as model on how to handle situations, solve problems, use vocabulary, be respectful, finding convergence departing from different opinions in complex situations, etc. It is very common that even for principle-based transformations materials and curricula come ready-and-closed to schools and no one in the chain – teachers, principals, coordinators - fells responsible in demonstrating the skills and values we want students to develop. Being critical and incentivizing critics, being creative and incentivizing creativity, being autonomous and incentivizing autonomy, etc. all show that models and reference must work as such, not as straightjackets. This is again a source of inconsistency in many programs and the cause of resistance or skepticism.

8. Are experimentations and trials welcome as part of the process? Do program designers and implementers have a growth-mindset for teachers?

The one size does not fit all lead naturally to acknowledge new activities, adaptations and exploration in teachers´ practices. This must be welcome, valued and supported (Donovan, 2014; Elmore & Elmore, 1996). It satisfies Rogers´ condition of trialability for the diffusion of innovations (Rogers, 1995). However, there is a common vision that teachers are not good enough, there is a fixed-mindset (C. Dweck, 2006) with respect to them in most of the "first principles" listed before (they are not creative, they do not have to be critical because the best activities were already provided for them to implement, they would do a bad use of more autonomy …). It may be true for a few teachers that are in the wrong profession, but most of them want and are able to develop! And they are the people responsible for serving as models of having a growth-mindset for the students (C. S. Dweck, 2010). The same way it happens with students, teachers depart from different levels, learn at different pace, and follow different paths (Sousa & Tomlinson, 2010).

9. Is the transformation based on open knowledge or is there "copyrighted" knowledge at different levels?

Most top-down programs buy resources, activities and technologies from "experts" and teachers must use them as they are. No permission for changes, adaptations, or sharing. Several recent programs and initiatives benefit from open educational resources and MOOCs. One of the best ways to advance knowledge in large scale transformations is to use viral dissemination for good practices (Morris & Hiebert, 2011). Making educational practices open and visible is the key. It is the third leg in what should be called "open education" (Camilleri & Ehlers, 2011) and satisfies Rogers´ condition of observability for the diffusion of innovations (Rogers, 1995). Care must be taken with students privacy issues, but existing collaborative and knowledge building environments are good enough to catalyze such kind of transformation based on good and visible practices. It is the analogous of making thinking and making learning visible that is being promoted in the "Visible Thinking Project" Harvard´s umbrella project (Ritchhart et al., 2011; Ritchhart, 2015). Co-creation of self-assessment rubrics for teachers practices and collaboration must be open and evolve along the time and maturity of the groups (Nunes, 2013).

10. Do people participate in a learning community and a community of practices? Are there knowledge advancement? Should knowledge building principles be considered?

Carl Bereiter and Marlene Scardamalia have pioneered and for a long time fostered an international community (Bereiter & Scardamalia, 2015) that promotes knowledge building as a first principle for education (Bereiter & Scardamalia, 2003). To advance knowledge they propose some "principles" that any group could follow in assisting and being aware of the quality of the knowledge building processes (Scardamalia, 2002). The complete list of the twelve principles is not presented here, however, some crucial issues from the list for this discussion are:

- every idea can and should be improved. Taking it to the level of program implementation we could say that every educational practice can and should be improved;
- for the advancement of knowledge to take place there must be epistemic agency during the process. Teachers, students, principals … all must become epistemic agents of change (worrying about arguments, vocabulary, critical thinking, building and improving theories …);

- diversity of ideas matters and is necessary. In the case of a large scale program implementation it translates also to diversity of practices matters and is necessary;
- collective responsibility for the advancement, meaning that teachers try to improve their own practices, their reality, their community, … but also feel responsible and take actions to help others to improve theirs.

A diagram containing all these aspects is shown in Figure 1. It takes the perspective of a teacher. Diagrams for principal or other stakeholders are similar.

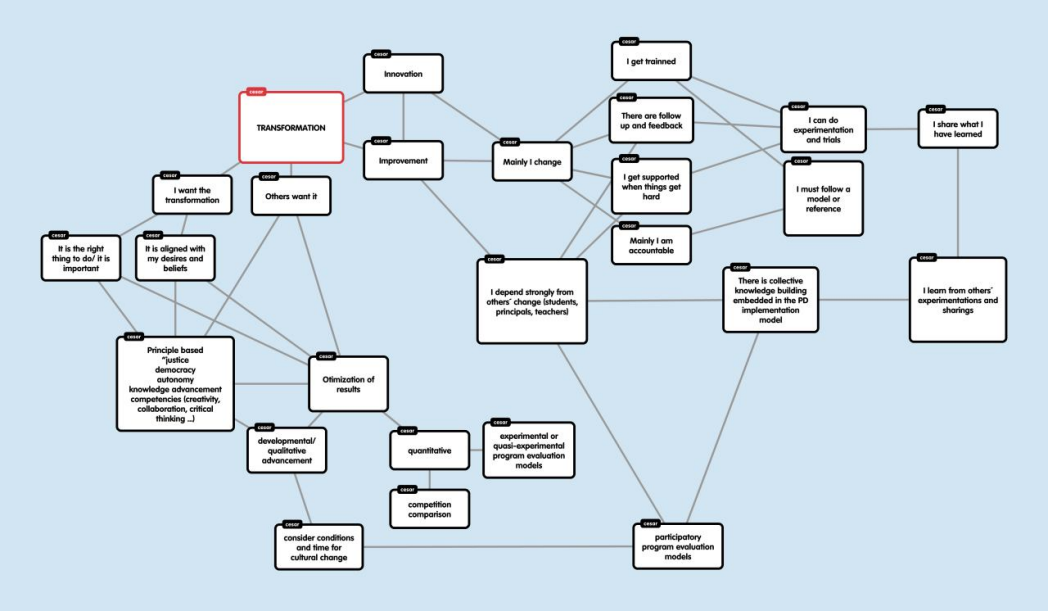

Figure 1. Consistency analysis of the transformation process. Teacher´s view. This figure with possibilities for zooming and navigation can be accessed in http://popplet.com/app/#/2793629

Use of the framework to analyze three different programs

The first program analyzed is a program designed to promote moral development, in particular, ethics in social well-being. It is in its initial phase of implementation in 12 K-9 schools and builds on a previous one year pilot in two schools (Vinha et al, in press). Some constraints in the design of the program were identified when the framework was used with the designers and implementers of the program and are discussed here.

The program is clearly based on first principles. There are actions to continuous engagement of teachers but not as a whole culture. A "reference" teacher was chosen in each school to be reference for the development of the moral aspects and activities with the students. After discussions using this framework as a background for reflection a revision was done to also engage all teachers, not just the reference teacher, and to include development of social skills also in collaborative problem solving and projects inside every discipline.

Responsive evaluation is applied from the beginning and the involvement of all stakeholders was pushed after discussions based on this framework. Probably the main difficulty is still to incorporate different evolution levels of teachers in the training model and give them freedom and responsibility to design and apply new activities involving moral aspects (accepting a grow-mindset in a subject – moral - that the implementers are experts and teachers not). The program is in its initial stage and the whole process is being very insightful for all stakeholders. The analysis made using this framework had already a clarifying and contributing role.

The second case briefly commented upon is one that was created to, in one side to develop students autonomy, and the other to be the testbed for the application of a diagnostic tool to measure socioemotional skills (Primi, Santos, John, & De Fruyt, 2016). Although the focus was the evaluation tool, after seeing first results (two year after the program started) and knowing this framework, the role of: formative assessments, the autonomy of the teachers themselves, and formative processes are changing. In this program external experts design activities and teachers implement. There is no participatory evaluation. Cycles for development and

collective knowledge building are slowly being implemented, partially accounting for the right hand side of the diagram.

The third case briefly commented upon is an international collaboration involving an international agency and fifteen countries in the effort to create a formative instrument to assess creativity and critical thinking and to promote its development. It builds on a previous pilot study (Lucas, Claxton, & Spencer, 2013). Each country has autonomy to implement and adapt the instrument and activities to its own context. The case analyzed with the framework is a large scale implementation in one of those countries that involves three networks of schools, volunteer participation, K-12 grades, teachers who create and share activities, there is knowledge building processes built in, and besides the responsive evaluation there is also a quasi-experimental evaluation being applied in several countries that is also applied in this mentioned case. The use of the framework was done before the project started and therefore most of its "recommendations" were taken into account. This programs was started six months ago, has already got moral engagement, initial teacher training, co-creation of rubrics for teacher self-assessments in the realm of a true formative assessment process (Wiliam, 2011), identification of good practices among old practices, and just started to work with students in the school calendar year of 2016.

Conclusions and implications

The framework presented here is useful in analyzing existing programs and also informing the design and implementation of new ones. Three different programs were analyzed with the framework, in two cases also involving designers and implementers. The impact on refining the program and creating implementation and evaluation actions were enormous. It changes the paradigm for program implementation and evaluation in the sense that it takes large scale as an advantage and not a problem as in the usual approach of pilot projects. Collective knowledge building is the key component to allow scale, quality and cultural change.

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