Developing Wisdom in South American Schools: the Role of Big Data Strategies and Participatory Applied Research

Reynaldo Rivera

This is an unpublished conference paper for the 5th Annual Jubilee Centre for Character and Virtues conference at Oriel College, Oxford University, Thursday 5th – Saturday 7th January 2017.
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Character, Wisdom and Virtue Conference. Oriel College, Oxford, January 5 – 7, 2017

Paper TITLE: ***Developing Wisdom in South American Schools: the Role of Big Data Strategies.***

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Shorten Abstract:
In the last fifty years, Latin American countries have experienced a remarkable social and economic development, which included an expanding access to education, but that did not facilitate positive youth development, social capital generation and equality. Character and virtues education through participatory applied research and knowledge – management strategies may be innovative ways of approaching those challenges. Wisdom education may facilitate the promotion of decision-making, altruism and ethical behavior in countries with high levels of instability and corruption.
This qualitative study will explore through literature review, observation and in – depth interviews, the attitudes and praxis of experts and practitioners from South American countries regarding the education of virtues (particularly wisdom) and the usage of information technologies and knowledge – management for the improvement of youth education curriculums and processes.

Abstract:

Background: In the last fifty years, Latin American countries have experienced a remarkable social and economic development, which included an expanding access to education, but that did not facilitate positive youth development, social capital generation and equality, especially in deprived areas.
Several institutions and researchers called to policy makers, practitioners and civil society for bigger efforts in quality and results evaluation and curriculum innovation, particularly in public schools. OECD countries like Chile, Brazil and Mexico focused their efforts in the improvement of governance policies and learning results of students applying school assessment systems through student tests as a new leading mechanism. Argentina and Uruguay adopted different strategies, providing new resources for schools. However, the results of those policies based in material resources and quantitative evaluations claim for a strategic change: while Argentina and Uruguay had a decrease in PISA tests, the pressure based on results of the former group of countries generated stigmatization of poor schools, competition between schools and teachers and other negative side effects. Furthermore, there is a gap between the students' learning and socialization outcomes, and the talents and personality traits requested by labor market and society as a whole.
Character and virtues education through participatory applied research and knowledge – management strategies may be innovative ways of filling that gap.
Wisdom education may facilitate the promotion of decision-making, altruism and ethical behavior in countries with high levels of instability and corruption.
Simultaneously, big data strategies used for participatory evaluation and curriculum improvement processes may boost cross – cutting programs like those that develop character and virtues.

Objectives and research design: This qualitative study will explore through literature review, observation and in – depth interviews, the attitudes and praxis of experts and practitioners from South American countries regarding the education of virtues (particularly wisdom) and the usage of information technologies and knowledge – management for the improvement of youth education curriculums and processes.
Results: The research will provide some insights and make some proposals that will facilitate the usage of a framework of character education and big data strategies for evaluating and transforming schools in systems that learn permanently and promote youth character development through team working among colleagues and horizontal networks including families and civil society.

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Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
T.S.Eliot, 1934 (Choruses from The Rock - Eliot, 1963)

1. Introduction

The quality of education in a country is an important predictor of its economic growth and social development (Fägerlind & Saha, 2014; Sen, 1991) especially when educational systems foster adolescents' character education in social and cultural contexts that facilitate the practice of virtues and moral decision – making (Hunter, 2008). In those cases, children and young people acquire not only technical but also citizenship skills and dispositions that are vital for democratic societies (Althof & Berkowitz*, 2006). Virtues development is also related to ethical behaviors, which drive competitive advantage for nations (Donaldson, 2001).
For those reasons, effective character and moral education should be especially relevant for developing nations such as those located in Latin America.
From 2000 to 2013 they grew "*by 52.8 percent at an annual rate of 3.34 percent*" (Rivas, 2016). Social policies (like Brazilian "Bolsa Familia" program) helped millions of people to lift from poverty and increased the number of children in formal education. However, social inequalities, crime, addictions and corruption continue to increase (Rivas, 2016).
Despite of fifty years of remarkable social and economic development, which included an expanding access to training, information and values education, and bigger efforts in students' skills assessments (such as PISA), Latin America education systems do not facilitate positive youth development, social capital generation and equality, especially in deprived areas (Rivas, 2016), where more than 100 million young Latin Americans live in vulnerable conditions (Jacob, 2016; OECD, CAF, & ECLAC, 2016).
Although the lack of education systems' positive impact could be a consequence of several factors (e.g. low quality curriculums, lack of teachers' training or programs' implementation), there is a

growing number of studies showing the relevance of using evidence for education decision – making that would lead to better socio – cultural results (J. A. Marsh, Pane, & Hamilton, 2006). From this perspective, the evolution of information and communications technologies (ICT), that allow handling better and bigger quantity of qualitative and quantitative data, is a process that may improve the design, application and evaluation of different type of programs (Picciano, 2012). Albeit big data and analytics are not the solution for all the development projects pitfalls and difficulties, they may improve their impact and education leaders' practical wisdom and decision – making.
In this paper, after an introduction on data – driven decision making in education and its importance for character education projects applied in Latin America, we will explore a revised version of an standardized operative model (DataTeams) as an effective strategy to introduce applied – community research, big data and analytics in moral development programs without replacing human wisdom in the evaluation and improvement process. We will review the literature on the matter and study briefly two character development programs applied in two South American countries (El Salvador and Mexico) in order to identify the relevance of data – driven decision making for developing virtues among high – schools students from urban areas.

2. Latin American high – school after PISA: the big mountain

In the last five decades, Latin American countries have experienced profound changes. The democratic systems were stabilized, civic participation grew, unemployment decreased and infant health improved. Simultaneously, despite of the variance between their results, almost all countries applied important reforms in order to expand and improve education quality.
For example, OECD countries like Chile, Brazil and Mexico focused their efforts in the improvement of governance policies and learning results of students applying school assessment systems through student tests as leading mechanisms, while Argentina and Uruguay provided new resources for schools (e.g. textbooks and computers). Investment per student increased a 65% from 2002 to 2011 in the region and new social policies (some of them designed as conditional transfers models) supported scholarships and other relief mechanisms that should secure the access of excluded populations to the education system. Argentina, Brazil, Chile, Mexico and Peru adopted automatic promotion of children in primary education, and different efforts were done to provide more flexibility to academic regimes (Rivas, 2016). In some countries policies' reforms implied its re – centralization through curricular changes, new textbooks and quality assessments without any kind of governance or training reform. However, the "*increase in financing and education rights was a trend that ran parallel to the structural continuity of unequal societies and was not enough to revert large needs at schools …*" (Rivas, 2016, p. 8).
Quality assessment mechanisms are not completely new in the region: Chile, Brazil, Mexico and Colombia applied them since the 1990's. And besides PISA, some countries joined UNESCO tests (such as the Second and Third Regional Comparative and Explanatory Studies – SERCE and TERCE – in 2006 and 2013). But contrary to the experience of some countries participating in PISA (Programme for International Student Assessment) from its beginning (2000) that improved through evidence – based policy youth proficiency (OECD, 2012) and school – system performance (Breakspear, 2012; Grek, 2009); education programs based on comparative information about students' skills, curriculum standards and institutional performance are not a silver bullet for improving the system quality (Martens & Niemann, 2013). In Latin America, Argentina and Uruguay students' performance had a decrease in PISA tests, and the pressure based on results in other OECD countries of the region generated stigmatization of poor schools, competition between schools and teachers and other negative side effects (Rivas, 2016). Furthermore, despite of an education system oriented towards efficacy and market requirements, there is a growing gap between students' learning and socialization outcomes and the talents and personality traits requested by industries, employers and society as a whole (World Economic Forum, 2015). This is

especially the case in secondary schools' students, which were defined by Axel Rivas as "the big mountain" to climb in the path towards social inclusion and development.
Although there is only one study on the issue, the null or negative effect of data – driven decision – making in Latin American education may not be related with the assessments themselves, but with the way their results and insights are communicated and used by policy makers and educators: Argentina, Uruguay and Peru scarcely employ them (Rivas, 2016).
Data may not be the limit, but decision – makers' wisdom. In fact the most successful country in the region (Chile) in terms of students' skills (based on PISA reports), took the lead in a trend which is changing the policies' priorities: the country is investing in principals with higher salaries, better training and accountability systems.
Evidence – based education policies, based on data collected through school assessment systems, together with trained teachers and principals, high quality curriculum and learning resources, have demonstrated in some countries and schools the capacity of being an important incentive for schools' improvement, that combined with other tools like character education programs, could facilitate better learning outcomes: "*Together with the learning assessment that measured results per school and put pressure on accountability, textbooks created a reliable and practical curricular ground. This seems to have been the secret behind education reforms in Chile, Mexico and Brazil, where textbooks and evaluations became more sizeable and convergent*" (Rivas, 2016, p. 28).

3. Character education, big data and analytics: a review

Information and communications technologies (ICTs) have changed people's lifestyles and cultural practices, such as relationships, consumption and decision making (Rivera, Santos, & García, 2016). In a globalized, interconnected and accelerated society (Rosa, 2013) new mediated experiences and resources have led to profound social transformations that are claiming for interdisciplinary reflections on critical areas like character development and education.
Although it demonstrated its positive impact, much of the design and application of character education is not based on scientific evidence and evaluations are not informed by data (Berkowitz & Bier, 2004). ICTs are changing the ways of delivering knowledge and improving lives, as well as the methodologies used for designing and assessing learning and education programs (Picciano, 2012). This could be an opportunity for developing more research – based and data – driven character development. In fact, there is a growing interest and evidence on the effects of data – driven education management, which is being boosted by Internet and big data strategies development (Sin & Muthu, 2015).

3.1.Method:

Following Sin & Muthu's data collection method (2015), we focused the literature review in three main Keywords: Educational Data Mining, Learning Analytics and Big Data in Education. Google Scholar, Web of Science and Microsoft Academic were used to search and locate academic papers and industry reports. The search period was set from 2010 to 2016 and the main inclusion criteria of the papers was the availability of an analysis on the opportunities, challenges and usage of big data in education. Table 1 shows the search results for each Keyword. We consider the data from Web of Science an added value to previous literature reviews on the issue, since it allows to refine the search in specialized outlets (e.g. journals, conferences, etc.).

Keyword	Sin & Muthu, 2015	Google Scholar	Web of Science (educational	Microsoft Academic

			research)	
Educational Data Mining	5290	8580	159	2805
Learning Analytics	5890	11300	262	1163
Educational Data Mining and Learning Analytics	1370	124	34	ND
Big Data in Education	ND	324	202	ND

Table 1 - Search results for keyword

3.2.Results:

Data – driven decision making means collecting, analyzing and using data to inform experience, expertise and judgment in the process of choosing, applying and evaluating a course of action. It is a rational model directed by data insights and analytics (Picciano, 2012) that is applied in different fields and has grown in popularity with the development of big data technologies and strategies.
Big data, an elusive concept to be defined (O. Marsh, Maurovich-Horvat, & Stevenson, 2014), is "*…a generic term that assumes that the information or database system(s) used as the main storage facility is capable of storing large quantities of data longitudinally and down to very specific transactions*" (Picciano, 2012, p. 12).
Big data strategies imply the continuous (longitudinally) collection and analysis of information along with different type of transactions (operations) made by the same agents who are being studying. Instead of relying only in an unique assessment tool (such as a test or questionnaire), they use a variety of instruments and allow interviewing or getting information from subjects in different moments of the whole education process. For example, course management / learning management systems (CMS / LMS) offer possibilities of constant monitoring of students' activities as well as giving them some feedback on their progress. Real – time recording and analysis of learning transactions can be used as a critical instrument for creating opportunities of curriculum improvement, teacher – student interaction, learner personal reflection, and program quality assessment that would provide useful insights for managing an education institution. Picciano's study (2012) reports some cases in US whether higher education institutions used data – driven decision making to identify and evaluate strategies that improved students' degrees completion. Those cases confirm IBM's white paper conclusions (2001) that tried to answer schools' and boards' questions like "What are the leading indicators of and reasons behind low performance?" or "How do attendance, involvement and discipline events relate to performance?", and showed the role of data – driven efforts of longitudinal monitoring, analyzing and changing to optimize students' learning, spot outliers for early intervention, identify and develop key attributes of good teachers, test and evolve curricula.
While big data refers mainly to a collection method, educational analytics or data mining objective is to analyze and visualize data in order to give orientations and solutions to educational research issues (Romero & Ventura, 2010). In education is used to personalize learning materials and experiences, to get feedback about instruction and assess students' outcomes and behaviors, to evaluate and maintain curricula, to provide insights for students and teachers selection and training, to organize institutional resources enhancing the decision processes (Romero & Ventura, 2010).
Some reports and studies showed that big data can help to reform educational curricula, improve and enhance learning (Drigas & Leliopoulos, 2014). Big data strategies have the "*...potential for improved research, evaluation, and accountability through data mining, data analytics, and web dashboards. So-called "big data" make it possible to mine learning information for insights regarding student performance and learning approaches. Rather than rely on periodic test performance, instructors can analyze what students know and what techniques are most effective for each pupil. By focusing on data analytics, teachers can study learning in far more nuanced ways. Online tools enable evaluation of a much wider range of student actions, such as how long they devote to readings, where they get electronic resources, and how quickly they master key concepts*" (West, 2012, p. 1).

Using open source (like Hadoop, MapReduce or Orange) or proprietary tools (like SAP or IBM Watson), education professionals can apply statistical techniques (e.g. regression, clustering, latent class analysis, etc.) to predict performance, detect drop out risk, get and provide intelligent feedback, segment program audiences, adapt curricula to specific students' needs, improve plans and schedules, analyze factors related to behavior change (Sin & Muthu, 2015). Big data allow more efficient and transparent management systems, but also better matching students to curricula, programs and employment (Drigas & Leliopoulos, 2014).
Despite of the fact of the growing scientific interest on the topic, there are few cases applying big data strategies and they are usually focused on collecting and analyzing exclusively through online students' activities like those performed in discussion forums, online chats, Facebook pages, and other learning management systems such as Moodle or Courseware (Sin & Muthu, 2015).
Finally, only a small part of the research on the matter is focused on pedagogical issues and there is not any on the usage of data – driven character education: the last published literature review reported only 7 papers (in a sample of 90) that were focused on pedagogical models and any on moral development (Sin & Muthu, 2015). Albeit big data is not the answer to all education challenges, particularly in developing countries, scientific literature points out that it represents an opportunity that have to deal with several difficulties like the lack of data – driven mindset in the education sector, complexity of data integration, limited users computational skills, high development cost of user – friendly tools and data quality (Drigas & Leliopoulos, 2014; O. Marsh et al., 2014). Those challenges may be overcame if more wider perspectives are applied for data – driven decision making and research – based education.

4. The DIKW hierarchy: from big data to wiser decisions in schools

Data – driven decision making and research – based character education do not seem to be a priority in Latin American schools and educational systems. Although there are some commercial programs in Spanish on values education, some scholars pointed out that the ethical debate and the moral formation are critical pending issues in the whole region (Sen & Kliksberg, 2005). That does not mean governments did not do any investment for improving education, but they focused on skills performance's tests: since the 1990's, countries such as Chile, Brazil, Mexico and Colombia set up education assessments that had different levels of impact on the way governments organized their education systems (Rivas, 2016). Based on those results, several institutions and researchers called to policy makers, practitioners and civil society for bigger efforts in quality improvement and curriculum innovation, particularly in public schools. Chile, Brazil and Mexico improved their governance and assessment policies and tools, while Argentina and Uruguay adopted strategies focused on the provision of new resources, such as a computer for every student (Rivas, 2016). However, those policies are usually used as a control and regulatory mechanism, without any impact on the day – to – day schools' activities and management. This problem may be rooted in the role Latin American leaders' are assigning to data and information.
Wisdom (phronesis) is a virtue that, using knowledge, skills and reason, enables people decision making and action, linking moral with other intellectual virtues. From this Aristotelian perspective, it (phronesis) implies good discernment and decision making, bridging theory and practice through a path that starts with experience and returns to experience (Coulter & Wiens, 2002). But wisdom is more than knowledge: it integrates cognitive, reflective and affective qualities, implying not only a cognitive dimension but also a reflection on events and experiences, as well as a sympathetic and relational dimension that should consider other's well – being and personal development as an important aspect to consider in decisions and actions (Ardelt & Edwards, 2016; Ekmekçi, Teraman, & Acar, 2014).
Phronesis is vital for personal but also for organizational action (Schwartz, 2011): in the last ten years, based on the concept of collective wisdom or the wisdom of the multitude (Waldron, 1995), some studies have pointed out the characteristics of phronetical social research (Uggerhøj, 2012)

and wise organizations, which are those where there is embodied learning, ethical deliberation and decision making, shared sustainable vision and personal wisdom development (Jennifer Rowley & Paul Gibbs, 2008). Specifically, a practical wise education institution and system are those which are using, at individual and organizational level, data and information as basic elements to create knowledge and develop organizational wisdom to produce a positive impact in culture and society. Assessments and data (small and big) are only means to a greater end: other's well – being and flourishing.

In management research, DIKW (data, information, knowledge, wisdom) hierarchy is a model that allows the translation of individual wisdom to the organizational level: institutions are not only effective and productive but creative and socially sustainable and responsibly (Ekmekçi et al., 2014). Understanding the principles that can provide guidance to action and considering not only the individuals' and corporate's ultimate concerns (Archer, 2012), but also the moral conditions that make the decision an ethical one, organizations transform data and information into wisdom that creates personal and social value (Gu & Zhang, 2014; Jifa, 2013).

Big data and data mining are complex structures and procedures that should evolve to experts' mining through a process whether data is informed by personal and collective wisdom (Gu & Zhang, 2014; Jifa, 2013). In that process, people can transfer tacit to explicit knowledge, based on data and oriented by values: wisdom is the virtue that allows to understand what is good, collectively and personally, about the organization and its socio – cultural impact, and help to wise leaders to do what is good for their institutions and for society "*…by understanding the higher moral purpose of what they do while remaining grounded in everyday detail*" (I. Nonaka, Chia, Holt & Peltokorpi, 2014). From this perspective, socialization, externalization, combination and internalization (SECI) model of knowledge creation (Nonaka, 1991; Nonaka, Takeuchi & Umemoto, 1996) and a revised version of DataTeams procedure (Hubers, Poortman, Schildkamp, Pieters & Handelzalts, 2016; Schildkamp & Poortman, 2015; Schildkamp, Poortman, & Handelzalts, 2016) may be a way to introduce research – based in character education.

5. Knowledge – management and learning schools: SECI and DataTeams

DIKW hierarchy and knowledge creation are not useful only in business and management fields: there is a growing scientific evidence that is exploring collaborative models and procedures of collection, analysis and implementation of data and information between researchers, education leaders and teachers (Datnow, Park, & Kennedy- Lewis, 2013; Datnow, Park, & Wohlstetter, 2007).

In 1991 Ikujiro Nonaka (1991) published a seminal paper that showed how a four steps model (SECI – socialization, articulation, combination and internalization) could help to generate a spiral of knowledge among company's employees that externalize their knowhow, reflect on their own experiences, integrate them with others' and use that explicit knowledge to improve one's own tacit knowledge base. The model was proposed as a paradigm for managing and improving organizational knowledge (Nonaka, 1994; Nonaka et al., 1996) and the theoretical framework of a standardized operating procedure called DataTeams.

DataTeams are "*...groups of educators that can work and learn together as they engage in the process of using student data to examine and improve their craft*" (Wayman, Midgley, & Stringfield, 2006). They are professional learning communities using an standard data – driven procedure (Hubers et al., 2016) that includes eight stages: problem definition, formulation of hypotheses, data collection, data quality check, data analysis, interpretation and conclusions, implementation of defined improvement measures and evaluation (Schildkamp et al., 2016).

DataTeams procedure is similar to the Intervention Mapping model, applied in planning health promotion programs. It has six steps: develop of problem logic model, state program outcomes and objectives (logic model of change), develop the program plan, produce the intervention, implement it and develop an evaluation plan (Eldredge et al., 2016, p. 14). Both applied research instruments

(DataTeams and Intervention Mapping) are strategies that rely on data and community – based decision making. However, while the first is focused on knowledge generation, the second prioritize the design of model to change individuals and social behavior.
Our proposal is to simplify and incorporate to both models a phase which is essential in communication and education, the analysis and segmentation of the program's public (Rivera, 2016; Rivera, Santos, Brändle, & Cárdaba, 2016). We will introduce a revised DataTeams model in the following section, presenting two applied research cases of character education programs run in Latin American countries.

6. Analytics and applied research for character development in El Salvador and Mexico

6.1. A case in Mexico City

Character education facilitates the promotion of responsible decision making, altruism and ethical behavior. Simultaneously, DataTeams procedures that use big data strategies in participatory applied research projects would accelerate the development of virtues like wisdom in those who need them the most: the children and young people that are growing up in deprived areas in countries with high levels of social inequalities and corruption.
After designing, implementing and evaluating an applied research project in Italy and Spain that involved more than fifty schools and 6,000 adolescents (Brändle, M. Cardaba, & Rivera, 2015; Rivera & Santos, 2015; Rivera, Santos, Brändle, et al., 2016), InterMedia Social Innovation NGO (www.intermediasocialinnovation.org) launched a character education data team project called Interaxion that involved 3,758 teenagers from four Latin American countries (Mexico, Costa Rica, Colombia and Bolivia). The project model (STREP Eduqualitas ®) has five main stages:

1. **S**ituation analysis: after a brief discussion between the data team members on the adolescents' practices and problems, we run a semi – structured online questionnaire (YLS – Youth Lifestyles Survey) that map teenagers' character and culture in several key dimensions.
2. **T**eam reflection: the YLS data is analyzed using data mining techniques that include a general dashboard with the main dimensions of youth lifestyles and several focused analysis on specific indexes like Servant Leadership. The YLS report is presented and discussed with the data team members in order to make tacit the implicit knowledge and agreed an action plan.
3. **R**esources and public analysis: the action plan is adapted to the school's resources, particularly the education leaders' and teachers' talents. The YLS report includes a segmentation of the students (the education character program public), based on a cluster and latent classes analysis.
4. **E**ducational program preparation: based on previous stages, the data team select an available character education program or design a new one from scratch.
5. **P**rogram implementation and evaluation: in the last phase the program is implemented and evaluated using the dashboard design in phase 2. Evaluation provides feedback for future improvements and projects.

The STREP Eduqualitas ® demonstrated to be successful in a Mexico City school, where the project has been run twice (in 2015 and 2016). After the first YLS was run, the data team applied some strategies following the plan designed in stage 4. In reduced some problematic behaviors among girls aged 12 to 18 years old (see Figure 1), as well as increased a positive attitude (see Figure 2) like servant leadership (van Dierendonck, 2011; Wong & Page, 2003). School's leaders recognized that STREP data team model was an essential tool in the decision making and knowledge creation process that allowed them to identify the main students' problems and their possible solutions.

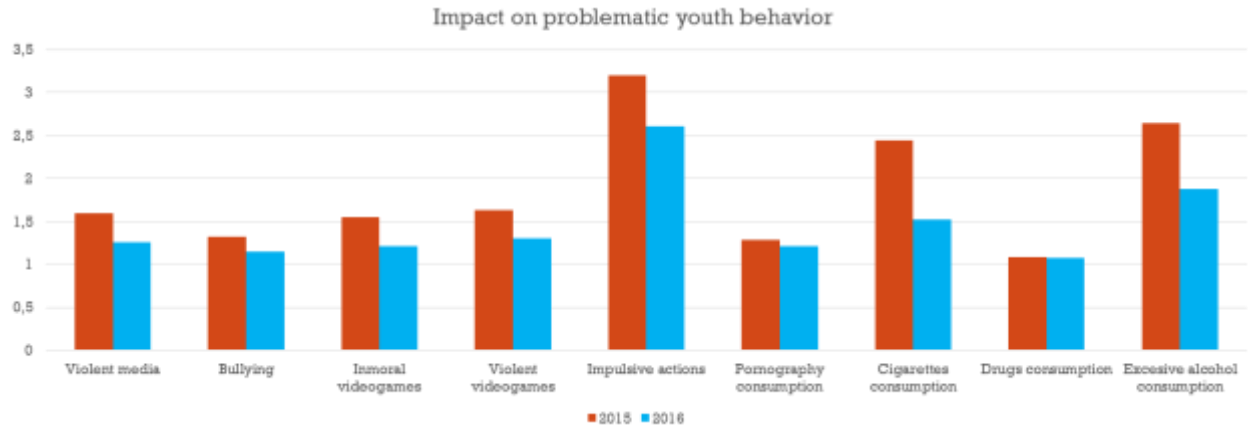

Figure 1 – Reduction of problematic behaviors among adolescents in Mexico

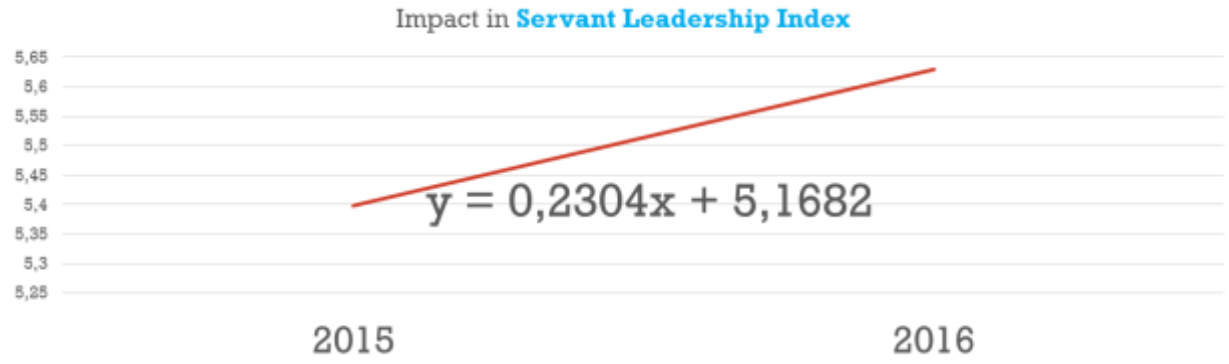

Figure 2 – Impact of data teams on positive attitudes

The model application was not designed as a randomized control trial. However, the case shows that data driven decision making is a culture that could be developed through a constant investment in human and social capital (Datnow et al., 2007), and confirms that schools are able to use organized data, although "… *most teachers do not use data to its best effect, or do not use data at all*" (Schildkamp & Poortman, 2015).

6.2.A case in San Salvador (El Salvador)

Previous research on Latin American adolescents' lifestyles and character (Corcuera, Irala, Osorio, & Rivera, 2010; Rivera, Santos, & García, 2016), we launched an applied research community based project in El Salvador, funded by the Italian Government (www.ninosprotagonistas.org). We intend to reduce the participation of teenagers in youth gangs through a character education project developed and run by a local NGO (Fundación Actúa) in collaboration with other two European partners. The project includes five main education components:

1. One to One Program or face to face meetings between a university student (in 2016 they were 288) and a secondary school adolescent (300 beneficiaries, 12 to 18 years old) whether they discuss a virtue per week and work on school assignments and interpersonal relationships.
2. Recreational Activities, such as craft workshops and boot camps: in 2016 there were 352 participants.
3. Youth Action Committee which is formed by 15 children and 15 young people who participate and support the program, co-designing some activities carried out by the local NGO.
4. Digital Literacy sessions (533 attendants).
5. Inclusive education: together with Lamatepec School, Fundación Actúa applies the four previous programs in a group of 234 middle and high school adolescents coming from public schools situated in deprived and marginalized areas. Students receive the national curricula, character formation and counseling (One to One Program) and resources for positive free time that usually do

not have in public schools. Citalá model creates through this inclusive education program a direct impact on the development of the communities where the institution operates: it stimulates the importance of academic and human excellence in public schools that want to participate in the project. Students are becoming agents of change and will help in the development of their communities.
In El Salvador we are applying STREP Eduqualitas ® and mixed research methods:

1. Semi – structured online interviews to adolescents and volunteers.
2. Weekly diaries on the field intervention (some of them are completed online).
3. Focus groups with adolescents and volunteers.
4. Round tables with stakeholders, policy – makers and community leaders.
5. Social media campaigns (such as: https://www.facebook.com/ninosprotagonistas/?fref=ts#).
6. Observational evaluations (two times a year).

The semi – structured interviews provide information to the local NGO on the problems and attitudes of the beneficiaries, as well as the competences and expectations of the volunteers. Weekly diaries are checked by project's coordinators and allow the managers to produce an annual report that audits the consistency of the activities and the effectiveness of the character development program. The data team strategy is based on data and a relational transtheoretical behavioral change model (Rivera, 2016) that is empowering young people as change agents: volunteers identify project's gaps and best practices and adopt a proactive attitude towards social change.

7. Discussion

Based on the review and cases presented in this paper we may highlight that character development programs benefit from a data – driven strategy and evaluation process. Evidence – based programs align resources better and create useful knowledge for sustainable further developments.
Building data – driven character education and wise organizational decision making go hand – in – hand with empowering trainers and teachers and building knowledge and skills: data does not produce change but wisdom in the analysis and application of it (Datnow et al., 2007).
Big data and knowledge creation based on collective wisdom and collaborative applied research are strategies that are getting momentum even in the education field. However, a few character and virtues development programs are evidence – based and only a minority were evaluated not only on their results but on their social and personal impact too. Latin American countries are not an exception. On the contrary: they invested important resources on students' assessments that have generated small changes in the quality of education.
A problem related with measurement in education is the tendency of using it only as a way of standardizing and auditing institutions and professionals (principals, teachers, etc.), without giving back to schools the necessary feedback and training that would allow to implement real changes. A decentralization process of education system, that facilitate the empowerment of principals' and parents' leadership roles in schools decision making based on a culture of continuous research, would have a positive impact in students' personal and moral development.
Finally, practical wisdom in education management includes the efforts of segmenting and targeting the curricula and strategies, in order of reaching the relevant beneficiaries in a customized way that should increase positive impact and avoid boomerang effects.
The present paper is the first output of an ongoing research. Therefore, there are some methodological limitations related to the objectives of the funding schemes used in the study's process. Literature review and case studies must be shorten to accomplish conference's requirements. Further publications should start refining the literature review and revising the theoretical framework and model.

8. Disclosure of funding sources and conflicts of interests (COI)

Research reported in this unpublished conference paper was supported by:
* Development Cooperation Agency, Italy, of the Ministry of Foreign Affairs and International Cooperation under award number AID 010307.
* InterMedia Social Innovation NGO, Italy.
* Ministry of Science, Technology and Productive Innovation, MINCyT, Argentina under award number 343/16.

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