GLOBAL INFORMATION SOCIETY WATCH 2019

Artificial intelligence:
Human rights, social justice and development

Association for Progressive Communications (APC),
Article 19, and Swedish International Development Cooperation Agency (Sida)

Global Information Society Watch

2019

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We would like to extend a special note of thanks to a number of authors who have made ad honorem contributions to this edition of GISWatch.
We gratefully acknowledge the following:

Philip Dawson and Grace Abuhamad (Element AI)
Anita Gurumurthy and Nandini Chami (IT for Change)
Rasha Abdul Rahim (Amnesty International)

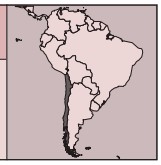
APC would like to thank the Swedish International Development Cooperation Agency (Sida) and ARTICLE 19
for their support for Global Information Society Watch 2019.

Published by APC
2019
Printed in USA

Global Information Society Watch 2019 web and e-book
ISBN 978-92-95113-13-8
APC Serial: APC-201910-CIPP-R-EN-DIGITAL-302

CHILE

BIG DATA IN PUBLIC EDUCATION IN CHILE: BUILDING A PLATFORM FOR EQUAL EDUCATION



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Introduction: The digital transformation of the public sector

Chile, like most countries in the Latin American region, is moving towards the so-called "Fourth Industrial Revolution" without a specific public policy to guide the process that takes into account the social and cultural implications and challenges of this transformation. As a result, artificial intelligence (AI) technology is a challenge for both the private and public sector looking to develop new services and innovations. This is particularly the case when it comes to the implementation of technologies using big data systems.

This report discusses the challenges of a big data platform that has been designed and developed for the public education system in Chile. It aims to identify social inequalities that occur in different regions and at the local level. The platform has been set up by the Ministry of Education in order to strengthen decisions made in line with the New Public Education (NEP) policy that was implemented recently. The task of improving the quality of and access to education for the more than one million students in the public education system in Chile is one of the biggest challenges facing the current administration of Sebastián Piñera.

Transforming public education in Chile

Speaking at the VI Annual Meeting of the Chilean Society of Public Policies in 2018, Pasi Sahlberg, a Finnish academic and researcher specialising in educational policies, had this to say about the Chilean education system:

> Chile is an international example of a widely privatised system that operates according to free market principles, which brings with it a decreasing equity in learning outcomes, a lower than expected quality of general education, and a growing dissatisfaction of parents towards the educational system.[1]

Since the military dictatorship (1973-1990), Chile has had a mixed system of education, with three different models for schools administered by the public sector: municipal or public schools which are funded with public money; schools subsidised through public funds, but where fees are also paid by the parents; and private schools, where the fees are paid in full by the parents or families. The so-called "municipalisation of public education" – under which schools were managed by municipalities rather than the Ministry of Education – was one of the most drastic changes made by Pinochet's dictatorship. The return to democracy did not modify this system, and several national and international reports[2] and measurements have identified critical weaknesses and shortcomings, ranging from the quality of learning to the need to increase the role of the public sector in the country's education system.[3] Some of this data indicates that the budget for primary education in Chile is one of the lowest among member countries of the Organisation for Economic Co-operation and Development (OECD), along with Mexico, and that between 17% and 16% of students in Chile do not complete schooling.[4]

The NEP is an unprecedented strategy for the Chilean education system. As mandated by Law No. 21,040 (2019), the publicly run kindergartens, primary schools and secondary schools in 345 municipalities will now be run by 70 new Local Public Education Services (SLEPs). These services will replace the municipalities in the administration of public education at the local level, not only in relation to administration and financial or infrastructure management, but also in relation to pedagogical and technical advice on improving the quality of learning.

1 https://www.eldinamo.cl/educacion/2018/01/10/desigual-segregadora-y-con-poca-calidad-academico-de-harvard-hace-lapidario-analisis-de-la-educacion-chilena

2 See, for example, OECD. (2018). *Education at a Glance 2018: OECD Indicators*. https://www.oecd-ilibrary.org/education/education-at-a-glance-2018_eag-2018-en (Chile has been a member of the OECD since 2010); UNICEF. (2018). *An Unfair Start: Inequality in Children's Education in Rich Countries*. https://www.unicef.org/publications/index_103355.html; and the reports of the OECD's Programme for International Student Assessment (PISA), which tests 15-year-old students from all over the world in reading, mathematics and science every three years. https://www.oecd.org/pisa

3 The role of the public sector is relatively weaker than the role of the private sector in primary, secondary and university education.

4 OECD. (2018). Op. cit.

Pilots have been launched in two communities, which will allow for the impact of the implementation process to be assessed. The roll-out of the new system will then continue until 2025, with the long-term objective of encouraging participation and freeing resources to develop locally relevant projects that improve the quality of education and provide opportunities for students.

The digital platform used for this new education system is called the "Public Education Information, Monitoring and Evaluation System" (*Sistema de información, seguimiento y evaluación de la educación pública*). The aim of the platform is to improve decision making regarding the implementation of the new public policy in education by providing objective, timely and up-to-date information. The system was developed by the Centre for Advanced Research in Education (*Centro de Investigación Avanzada en Educación* – CIAE) at the Universidad de Chile and by the Territorial Intelligence Centre (*Centro de Inteligencia Territorial* – CIT) at the Universidad Adolfo Ibáñez. Its development was funded by the National Commission on Science and Technology. The system was delivered a year ago, in 2018, to the Public Education Division of the Ministry of Education.

A big data platform for improved decision making in public education

How many schoolchildren in Chile travel between communes (the smallest administrative subdivision in Chile) to access their education? What is the sort of coverage public schools offer local areas? How many girls and how many boys drop out of the system and what are their educational trajectories? And what relation do these variables have with the educational experience that Chilean children have and will have in their future? These are some key questions that needed to be answered in the implementation of the NEP system.

"The education system does not operate in a vacuum, and the characteristics of the local territories and of the students who study there, or how the public provision of education in a given territory is, condition what we can do from the public policy point of view," explained Patricio Rodríguez and Luis Valenzuela, academics from the CIAE and CIT, when the digital platform was presented to the media in 2018.[5] "These factors are usually invisible to the design and implementation of public policies. For this reason, the platform provides objective, timely and updated information for correct decision making regarding the implementation of public policies in education," they said.

In this way, the platform seeks to obtain answers to strategic questions that guide public policies in education, including information on the local context, socio-demographic data, or statistics on the school drop-out rate.

The design and development of the platform was carried out in several stages, and drew on evidence collected in two previous projects focused on the management of schools. For example, in regions such as the Santiago Metropolitan Region, where Santiago, the capital of Chile is located, children from the peripheral communes, which are the poorest, have to travel a long distance to their schools because for many families, there are no good-quality public education institutions in their areas. Rodríguez explained:

> The idea is that with this platform, decision making and the elaboration of strategic plans for the new services have information about what is happening in their territories, because urban and rural areas are not the same, and the most important thing is that decisions are made based on evidence. What we hope is that this platform can enhance and strengthen the promise of equity of public education in the territory, which ultimately means that the authorities invest more resources and budgets where there are more needs.

The challenge of designing big data with the right questions

The phrase "data is the new oil" points to the value that social and economic development gives to data that is already collected and mined for platforms and systems that are set up to solve diverse needs. A great challenge faced by big data systems, however, is the need to draw on different data sets created by systems set up in the public and private sectors.

In this case, the platform uses available data from various sources of public information, such as the Population and Housing Census, student enrolments from the Ministry of Education, and the results of the Quality of Education Measurement System (*Sistema De Medición de la Calidad de la Educación* – SIMCE)[6] tests conducted by the Education Quality Agency, among others, which it

5 www.ciae.uchile.cl/index.php?page=view_noticias&id=1370&langSite=es

6 SIMCE was first implemented in 1988, and evaluates learning achievements in the subjects of language and communication (reading and writing comprehension), mathematics, natural sciences, history, geography, social sciences and English. The SIMCE tests are conducted with students in grades 2, 4, 6, 8 (primary) and II and III (secondary) in Chile.

analyses and visualises using interactive graphs and maps. As Rodríguez highlighted:

> "What data do we need to make decisions?" will also be a key question to build this evidence-based approach to public sector decision making. There must be what is called a chain of quality from its collection, capture, use and reuse, especially when it is taken from other databases, so that no bias is generated.

In this context, he pointed out that the skills and capacities of state employees implementing the system are critical:

> The most important thing has to do with [their] competencies. [...] They must make decisions based on the evidence that these systems deliver. Thinking about an automatic or automated decision-making process is risky [...] if we treat it like a black box and do not know how machine learning works in the processing of this data. There are ethical and technical problems that can occur.

This point will be key in the political decisions on how and why to use this data to make decisions that have an impact on citizens.

The protection of personal data in Chile in the face of the big data challenge

Big data solutions and platforms are generally presented as the solution to diverse challenges faced in the delivery of public and private services. However, a key issue is that citizens are not aware of the data that the systems have on them, and are also typically unaware of the laws and regulations that protect their personal data.

According to a recent report on so-called "data trusts":

> Individuals have little control over their data – how it is collected, who collects it, and for what it is used. For many, the common experience with online platforms, mobile apps and other digital services is blindly accepting whatever demands they make of our data, which are often a necessary condition of use. Yet a new public awareness has grown amid news of scandals around the misuse of data and major data breaches, and it is clear that the private sector has failed to protect individual privacy rights through self-regulation.[7]

It is only since 2018 that data protection has been constitutionally recognised in Chile.[8] This guarantee is the power to control one's own information as opposed to its automated processing. However, we are governed by an old data law (Law Nº19.628), passed in 1999. Although this law has been modified, it is still not specific enough to comply with international standards, nor to offer due protection of the rights and freedoms of individuals.

For example, the law does not allow for independent oversight of the processing of data, such as an independent public body that supervises those who process data. This body should not only have powers of intervention, investigation, inspection and sanction, as has been established in current legislation, but also of promotion, dissemination and assistance. The definitions, principles and basic rules of data processing contained in the law, and the self-regulation of the private sector, are not sufficient to protect individual privacy rights.

A new personal data law is currently being discussed in the Chilean Congress, which will also be key in the development of technologies that will use data as the basis for development.

The challenge of new approaches to big data: Diversity and citizenship

The case presented in this report is one of the first public sector initiatives in Chile that proposes a solution based on big data. It will be important to understand its impact, as this is relevant to the future adoption of AI in the public sector. Although Chile does not yet have a specific national policy or plan for AI, a commission of politicians and scientists has been set up to develop a proposal for a National AI Strategy.

In this context, the so-called "datafication" of life needs an informed and critical public debate and analysis. There is a need for transparency on how these platforms and systems are designed and configured, and how the algorithms that will be used to make key decisions in a person's life will be programmed and built. It is not only about fundamental human rights (such as privacy), the security of sensitive data, or the promise of the benefits of "digital transformation" using AI in the development of services and systems with social impact. It is also about the structural transformation of society.

7 Element AI, & Nesta. (2019). *Data Trusts: A new tool for data governance.* https://hello.elementai.com/rs/024-OAQ-547/images/Data_Trusts_EN_201914.pdf

8 Article 19.4 of Chile's Constitution enshrines respect for and protection of the privacy and honour of individuals and their families, as well as the protection of their personal data. The processing and protection of this personal information is regulated by a law which establishes the manner and conditions in which these are carried out.

A perspective along these lines was proposed by Milan and Treré[9] after the Big Data from the South Initiative invited academics, researchers, practitioners, activists and civil society organisations from a variety of areas and regions of the world to discuss the issue. The discussion raised uncomfortable questions about the consequences of big data for social justice, such as new forms of surveillance of people who use public systems. It is also a challenge for academics and researchers who seek to design new solutions using big data and AI, and emphasises the need to promote participation at the local level, with citizens not as users or consumers of digital solutions, but as intrinsically a part of the construction of societies and democracies.

Action steps

The following steps are necessary in Chile:

- Advocate for the inclusion of the civil society sector, representing different groups, interests and minorities, in the National AI Strategy discussion process. They should not only be consulted right at the end of the development of the strategy.
- Build the knowledge, understanding and competency of civil society actors on issues to do with datafication and digital transformation in an alliance with academia, considering the diversity of disciplines and specialties in the academic sector. This is important to understand the social impacts and challenges these imply, particularly in relation to human rights, privacy, ethics, equality and inclusion.
- Share the knowledge and experiences from other countries that have developed strategies for AI.
- There is also a need to share the experiences of civil society in research and activism, such as designing new methodologies for research that create "data activists" at the grassroots level.

9 Milan, S., & Treré, E. (2017, 16 October). Big Data from the South: The beginning of a conversation we must have. *DATACTIVE*. https://data-activism.net/2017/10/bigdatasur

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Artificial intelligence (AI) is now receiving unprecedented global attention as it finds widespread practical application in multiple spheres of activity. But what are the human rights, social justice and development implications of AI when used in areas such as health, education and social services, or in building "smart cities"? How does algorithmic decision making impact on marginalised people and the poor?

This edition of Global Information Society Watch (GISWatch) provides a perspective from the global South on the application of AI to our everyday lives. It includes 40 country reports from countries as diverse as Benin, Argentina, India, Russia and Ukraine, as well as three regional reports. These are framed by eight thematic reports dealing with topics such as data governance, food sovereignty, AI in the workplace, and so-called "killer robots".

While pointing to the positive use of AI to enable rights in ways that were not easily possible before, this edition of GISWatch highlights the real threats that we need to pay attention to if we are going to build an AI-embedded future that enables human dignity.

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2019 Report
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