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Experiences as a Student in Chile with only Pre-Computer Technologies

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Abstract: This chapter takes the form of a narrative and describes a mix of experiences dealing with exclusion, poverty, teaching methods, and reforms in the school system in Chile, which not only included monetary injections but also the consideration and research into the use of ICTs in its early manifestations, such as TV as a teaching tool. The chapter also describes some of the experiences during the early days of the Pinochet Dictatorship as a student. The events experienced by the writer, as described in this chapter, took place between 1966 and 1975.

Teaching methods in the 1960s in Chile, as experienced as a primary school student in Arica, were repetitive and required a good memory rather than striving to engage the young eager student. Despite the increased emphasis on improving education during the 1960s in Chile, whilst attending a rural school, a new reality was presented which in retrospect, seemed to reveal that there was still much more to be done and/or that the measures were missing the intended mark. However, as a child, the realities faced by the rural students were evident, even to a young student who had never attended a school outside Arica before. Computers were unknown to us at the time and I could not have imagined those students from a low socio-economic background having easy access one, had they been around back then. I can state though, that the earliest mathematical tool, I used as a student, was an abacus that we made as part of a project.

By the 1970s education and the socio-economics aspects of it took centre stage and new reforms and an increased budget was allocated to it. Yet, there was no silver bullet to solve those socio-economic deformities that existed at the time. Thus, the lack of Social Inclusion and Social Capital remained an issue and which was bound to marginalise students from a low socio-economical group, especially those in rural school. Later on, the Pinochet coup was to change the whole of the education landscape.

Keywords: social inclusion and education; education in Chile; ICT, education, teaching method; learning; rural education; actor-network theory; innovation translation.

1. Arica – A Very Brief History

I was born in Arica, Chile. Arica is a port city with a current population of just over 196,000. The city is the northernmost city in Chile, sharing a border with Peru and Bolivia Arica is also the capital of the Arica Province and the Arica and Parinacota

Region (Wikipedia Contributors; 2013a). In 1970, Arica had a population of 92,500 (Instituto Nacional De Estadísticas - Dirección Regional Arica y Parinacota 2003). In Arica, it is common to see Chileans, Peruvians and Bolivians co-existing. Apart from those that consider themselves as 'Chileans', the region of Arica-Parinacota has a significant number of Aymara people, who have inhabited the region since pre-Columbian times and their descendants have continued to live in the region (Wikipedia Contributors; 2013b). According to the 2002 census, 4.6% of the total population was considered to belong to an indigenous ethnic group. Out of those that belonged to an indigenous ethnic group, the Mapuche encompass just over 87%, being the biggest ethnicity of the eight recognised original indigenous inhabitants. The next group is the Aymara, with 7% (Instituto Nacional De Estadísticas 2008).

Arica has a long history, in fact, the people of the Chinchorro culture are the first known inhabitants of the region who made Arica their centre and who are well known for the mummification of their dead. Their mummies date from around 7020 BC to 1050 BC (Colaboradores de Wikipedia; 2013) and preceded the Egyptian mummies. However, the Chinchorro people are sometimes considered an oddity, given that their society was mainly hunter-gatherer and did not appear to have an advanced society, such as the Egyptians' during the peak of their culture.

The Arica Culture followed the Chinchorro and dated from 1050 to 1350 DC. The Arica culture was tied to the Tiwanaku Culture, mainly centred in what is now Bolivia. The Arica people developed irrigation techniques, relied on agriculture and trade. The Arica culture is also known for their textiles and ceramics (Colaboradores de Wikipedia; 2003).

Arica was later occupied by the Spanish in 1536 (known as the Viceroyalty of Peru) and after the rich silver mines of Potosi were discovered it became an important port and in 1570 Arica was given the title of city by the Spaniards and was named 'La Muy Ilustre y Real Ciudad San Marcos de Arica' (Colaboradores de Wikipedia; 2003). Due to the amount of riches being shipped from Arica, it was not uncommon that it soon attracted a myriad of pirates. Amongst those that 'visited' Arica, we come across such names as, Drake, Cavendish, Hawkins, van Spilbergen, Watling, Sharp, Cordes, Dampier and Clipperton, to name a few (Colaboradores de Wikipedia; 2003). To this day, the cemetery in Arica has a tombstone bearing the name of Sir Francis Drake. I do not know who put it there or why but I remember my Father taking us to see the burial place of the famous Pirate Drake. I doubt that Drake is buried in Arica but for some obscure reason, a tombstone bears his name and remains in place in Arica's Cemetery.

Eventually, Peru was liberated from Spanish rule and became a republic (Colaboradores de Wikipedia; 2003) and thus, it was the end of the Viceroyalty of Peru (Harvey 2002). Arica was then designated as a Province of the Department of Arequipa, which is in Peru (Colaboradores de Wikipedia; 2003).

Later when the Industrial revolution was in full swing, the nitrate rich lands of Bolivia and to some extent Peru, attracted many Chilean workers to work in the 'Salitreras'. However, due to foreign interests, Chile declared war against Peru and Bolivia (Galeano 2004). The conflict lasted from 1879 to 1883 (Punto Final 2003) and eventually annexed Arica to its territory. The reasons behind the conflict, to this day, remain hotly contested and Peru together with Bolivia still disputes the outcome. Bolivia is now landlocked and wants access to the sea. Peru has never given hope on

reclaiming Arica. The fact remains though that Bolivia lost their access to the sea and one of the most mineral rich areas on the planet.

2. My Early School Years in Arica

I attended school in Arica during the late 60s until early 1975. During that time, I attended three different schools, namely, Escuela No.18 – Escuela Republica de Israel (Escuela Republica de Israel, 2013), Colegio No. 1 or otherwise known as Colegio Modelo and now named ‘Colegio Integrado Eduardo Frei Montalva’ and a rural school in San Miguel de Azapa, which is 13 kilometres from Arica and which has now has been classed as an agricultural school and named ‘Liceo Agrícola Jose Abelardo Nuñez M.’ (Departamento de Administración de Educación Municipal de Arica, 2013) catering from pre-school to high school level education.

I first attended Escuela No. 18. This was a mixed primary school close to home and originally built to cater for the children of teachers who lived in this area of Arica. The school was located in the Magisterio suburb and was two short blocks from our home.

I remember that my first teacher was a former classroom friend of my mother when she was at high school. We called him Señor (Mr.) Fonseca. His full name was Leonardo Fonseca Alday. Some years ago I wanted to find the whereabouts of past students from Escuela 18 only to find out that Señor Fonseca had passed away. I learned that most of his students referred to him, as the ‘memorable Profe Fonseca’. The term ‘Profe’ being short for ‘Profesor’, which translated to English means ‘Professor’, which is how teachers are usually referred as in Chile. Just to clarify, Profesor is used to address male teachers and Profesora is used for females. The Castellan language has gender-differentiated words, but I will not delve into the language semantics to confuse the reader.

3. The Learning Process

As I remember, my first year was spent learning to write and read. For the lessons we used a text titled the ‘Silabario HispanoAmericano’. This textbook, which had been used for many years before, was the preferred textbook for teaching students to read and write. At this point, I must make a small deviation and dedicate a few lines to the Silabario HispanoAmericano. This text was first published in 1945 by Adrian Duffloq Galdames (Wikipedia Contributors; 2012) and was based on an earlier text first published by Claudio Matte in 1884 (Millas 2010). Needless to say, the textbook had been around for a while and it still appears on the list of recommended textbook by the Ministry of Education and which, to this day, has not been surpassed in its effectiveness in the use of the Phonetic-Sensorial-Objective-Synthetic-Deductive method of teaching students to read and write (Ministerio de Educación 2013). I personally found it easy to associate the pictures with the sounds and words that the book was trying to teach the avid learner. Nowadays, in keeping up with the changes,

the textbook has mainly been updated in the pictorial sense to include pictures which would be easily identified by the young learner (Ministerio de Educación 2013).

The lessons in the classroom were mainly based on memorising letters, sounds and short words. The process was repetitive and we had to repeat the sounds of vowels, consonants and basic words. The same process was replicated when learning basic numbers. The teacher would then test the class by writing a letter or number and we had to put our hands up if we knew the answer. As the months progressed we could read short phrases and started to write. However, most of the first years were spent learning the intricacies of the Castellan language. In addition to our learning in the classroom, it was not uncommon to be tested on our progress. This involved being asked question during class or made to stand in front of the class and then answer a variety of questions related to previous lessons. This meant that we had to devote some time after school doing homework.

In later years, the testing during classes translated to a mere exercise in remembering key dates of events that took place in Chile's history or other events related to the Greeks, Romans and Carthaginians, to name a few. It must be noted that while lessons were being imparted there was minimum or no interaction with other students; teachers demanded absolute attention and the students listened. It was not uncommon for some teachers to physically punish students and some had a reputation of being strict teachers. Fortunately for me, Profe Fonseca was not one of those. I cannot imagine how much of an effort it must have been for those students, who found it hard to remember or had learning difficulties not yet identified. In retrospect and even when my education was in need of change and as argued by Hopenhayn (2003) that education requires a:

“Paradigm shift in the style of education: from memorizing to understanding, from absorbing information to discriminating between messages, from the encyclopaedic acquisition of knowledge to a selective approach, from mechanical discipline to responsible autonomy, from learning to learning to learn.” Hopenhayn (2003, p. 171)

In hindsight, I can infer that my earlier years in school had been spent doing a lot of memorising, absorbing and learning. Dewey (1958) argued that as societies become more complex, there is an increased need for formal and intentional teaching and learning. He also argued that students tend to perform better in an environment where they can interact with their curriculum and be active in their own learning (Wikipedia contributors; 2013c) and which Hopenhayn (2003) also reiterates. However, it seems that these arguments may to have been missed during my early schooling years (Cazanga Moncada, 1999).

At his point, I must add that in Chile, during my school years, you needed to satisfy a minimum standard, which was measured by regular testing, homework, as well as semester and a final year exam. If students did not satisfy the minimum standard and passed the required tests and completed the required work during the year, they would repeat the year. And so, it was not uncommon for students to repeat even at grade 1 level. I do remember in later years that some students who were frequent repeaters, stood out from the rest of the grade, as they were usually older and taller than the rest of younger students in their grade. Somehow, the lessons and testing and was not having an impact on these students, rather, it appeared to be

accentuating other issues which were not being adequately addressed by the educational system at the time (Cazanga Moncada, 1999).

4. Not Always Relying on Memory Alone

Another aspect of my education was the fact that at Escuela 18 and like most schools still do around the world; it taught arts and craft lessons, where you would be shown how to paint and make a variety of objects from bits of wood, cardboard and paper. Unfortunately, you also got graded on some of the work done in these classes. I must admit that I was really bad at drawing, painting and crafts in general. And finally, after many years of silence, I must come clean and admit to the fact that my mother helped me with many of the drawings and other objects that I had to do for arts and crafts. Perhaps, I was not the only one being 'helped' with my work artwork. In any case, I still cannot draw better than a ten year old. I must clarify that have nothing against art. In fact, I do love the arts in all forms and expressions but I'm just awful at expressing myself through art. I have no aptitude for painting and as I would not enjoy doing something I do not like. I found it hard all those years ago doing something I had no aptitude for or interest in doing.

5. The Interesting Maths Class

I do remember with interest is one particular maths lessons, we were told to bring a piece of board (wood) with some long nails through it. Careful instructions were given, so that our parents could make this for us. Well, at least for me, I could actually say that my dad had helped me out with my work and not be penalised for it. All we had to do was to get some small pasta tubes of about a 1 cm each (almost found in every kitchen in the country) and paint a number of them in the colours that were we told. In fact, what we were making was an abacus. This was so interesting because the teacher seemed to have deviated from the usual format of imparting lessons. Using the abacus, we were taught to count and perform various exercises using this simple yet very capable instrument used by Sumerians, Egyptians, Romans and the Chinese, to name a few, a few thousand years early. I was in awe, at how easy it was to perform many mathematical exercises using this simple, early day's calculator.

I cannot imagine how much more we could have learned, had we been allowed to continue using abaci for learning math. We learned to use the abacus and its history but as education was very rigid, we had to accomplish our mathematical exercises using our heads and not much room was allowed for making mistakes or using a calculator, in our case the abacus. Electronic calculators were not around then in their smaller versions we know nowadays. Thus, the closest we could get to technology was an instrument created a few thousand years before our time. A case in point was the fact that as students, we were also required to hand in, from time to time, our exercise books and marked for tidiness. We were not allowed to have many eraser marks on our books. However, as a gesture of flexibility, were allowed to only use pencils and a rubber. Ink pens were not part of the school utensils until much later

into the life of the Chilean students. In fact, I was only asked to use ink pens sometime in 1970 or 1971, if my memory does not fail me.

6. Studying at a Rural School

In 1970, my grandfather, decided to buy a property in San Miguel de Azapa. Azapa is a small valley that has been carved out by the perennial San Jose River and is home to small farmers, who tend to olive groves as well as a variety of other vegetables, poultry and small animals, destined for the local market.

During the late sixties and early seventies, San Miguel seemed a far away place. So much that we considered it and referred to it as being located in the country. Even though, it was a mere 13 kilometres from the centre of Arica.

As soon as our grandfather had renovated the property, my brother and I decided to spend our summer vacations in San Miguel. During which, we made many new friends. Our new friends were in their majority poor and the majority from the Aymara ethnicity. As children I remember that we could identify their status by their torn clothes, some did not wear shoes or runners and their houses resembled old and worn out houses. Towards the end of our holidays, we had become really close to our new friends and so we asked our parents to enrol us at the 'country' school (San Miguel), which close to our grandparents' house. Fortunately, one of our aunts was also a teacher at the school and so we had no problem in enrolling. Usually, the student has to leave within a certain distance from the school to be able to enrol, but exceptions are always possible. For the next two years we would spend six months at the country school and the next semester at our original school back in Arica. We were happy at the school and we were willing to commute the distance from Arica every morning to arrive at the school by 8.30 am. On other occasions we would stay for a few days at my grandparents' place.

I do not have figures dating back from the early seventies that would give us the ratio of Aymara students at the school. But I can only infer that it may have been a greater proportion of what it is now. San Miguel had an influx of new inhabitants during the eighties under the Pinochet years in which people from other cities moved to usually country locations with the promise of jobs and a better life. During a visit to San Miguel in 1994 and speaking to a few of the new residents, most indicated that the jobs never materialised. On the other hand, the original inhabitants resented the new arrival and indicated that there were sometimes antagonistic attitudes amongst the different inhabitants. Getting back to the San Miguel School, figures from 2009 indicated that from a total of 420 students, 210 were Aymara and 4 Mapuche. Therefore, the school had 51% of students classified as indigenous (MINEDUC 2009).

What was interesting about the school in San Miguel, was the fact that although the students in my grade were mostly of the same age group, that is, very few repeaters, there were differences in the learning capacity by some of the students. I remember my aunt (I was not allowed to call her Aunt) spending extra time with some students in particular, so that they would catch up to the rest of the students, whereas, in my school in Arica, most students were at the same level. What was also striking,

was the fact that some students, did not have proper exercise books, rather, they used books that were made by their parents from paper that had been recycled from cement bags. In my school in Arica, I wore a navy blue blazer, white shirt, tie and grey pants. In San Miguel's school we could wear a navy blue knitted cardigan, grey pants or jeans, but this was not overly enforced. Some students had very old shoes and old cardigans. It was easy to see that their parents were not, in my understanding at the time 'well-off'.

7. Social Capital and Exclusion as a Result of Belonging to an Ethnic Minority

Of the new friends that I made, I remember one of them in particular. He did not live in San Miguel, he came from further up in the valley (eastward). We became friends at school and he was undoubtedly the smartest student in the class. He was clearly of Aymara descent but unusually tall for his age, if not the tallest in the classroom. When I arrived at the school, he always sat towards the back of the class and was a quiet student but often smiling. I sat towards the front of the class and through competing for the best marks, we became really good friends. I must admit that most often than not, he would get better grades than me. Needless to say, but my aunty never showed any favouritism. I have often wondered whatever happened to my friend. Did he go onto study further or was he did he end up as many had before him? Work in the fields in the valley? I cannot answer that question but I hope that Doroteo has had a good life.

In retrospective, I believe that the time spent at San Miguel's school was to enabled me to see a bit more than the usual circle I was used to. It also showed me the unfair situation these students were forced to exist in. I started to question, compare and talk about my experience in the 'country' school with my friends and schoolmates in Arica. I then started bringing some of my friends from Arica to San Miguel, so that they could meet my other friends.

It can be disconcerting, looking back on those years, that a mere 13 kilometres from the centre of Arica made so much difference in perception, inclusion and mobility. By perception, I refer to the learned idea that San Miguel was far and isolated and we called it as being in the 'country'. Yet in a city like Melbourne (Australia), that same distance can be negligible. In addition, this distance from Arica appeared to hinder the students' ability to be included as part of the greater society. For me it was odd that very few of them would make trips to the beach, yet I failed to realise that this would be an extra cost for them. Also, most of their lives revolved around the valley and a trip to Arica was not the norm. Having said that, clearly the better schools were in Arica. Therefore, the students in San Miguel were not able, due to financial and or distance reasons, to access the schools that may have given them an opportunity to progress further with their studies. Openhayn (2003) argues that education is regarded as a crucial link in the chain of cultural integration, social mobility and productive development (Hopenhayn 2003). In addition, Warschauer (2003) indicates that social capital can be derived from the interpersonal relations that people have in their families and communities. For example, as explained by Lin

(2001 as cited in Warschauer, 2003), these relations can provide social credentials, influence, information and reinforcement. An example of social credentials can be interpreted in the point of view that an elder holds a position of respect within a particular community. The same can be said for influence that can be excerpted by certain members of a tribe or commune. With reference to reinforcements, including group, personal or emotional support in times of crisis or need, Warschauer (2003) mentions an important factor to social capital, referred to as 'Norms' which relate to the general expectations of the groups around the individual and provides an important example, whereby, 'a child benefits greatly if he or she attends a school where everybody is expected to attend college'. With these arguments in mind, I find that the students in San Miguel lacked the basics of social capital from a very early age.

Following the above quote, two types of social capital are explained, one of these is, bonding social capital and the other is bridging social capital (Warschauer, 2003). The former relates to the ties that are shared by close-knit, inward-looking social networks, such as, among family members, a church group or an ethnic fraternal organisation. The latter, refers to the ties that are formed with those from other social circles. According to, Warschauer (2003), bridging social capital is an important factor for social and economic development, since it provides links to other sources of information and support, yet, this was absent from very early days within the San Miguel kids. For example, Glaeser, *et al*, (2006), Sen (1999) and Kurey (2006) (as quoted in United Nations Educational Scientific and Cultural Organization 2009) argue that education is conducive to democracy, enabling people with skill, being a crucial determinant by which the marginalised can participate in society.

8. On the Road to Inclusion

The rest of my school years were at Escuela Numero 1 or otherwise known as Colegio Modelo (Model School). The 'model' term was based on the premise that it produced good students and had very good teachers for a public school. During the 70s the school had an influx of young teachers who I felt were better than the older, stricter and rigid teachers who in their majority were conservative and opposed the Popular Unity government of Dr Salvador Allende. Their opposition to the government was made clear at every opportunity. I remember one teacher in particular who would frequently go into a diatribe of the government and liken it to crooks and criminals. I'm not sure how that fitted our curriculum but we would make jokes about the teacher, who to his detriment had a keen interest in shoving pens into his ears to scratch them, this was a constant routine, which we would mimic the moment he stepped out of the classroom.

As indicated above, the new teachers brought with them more dynamic teaching and I welcomed this approach and in turn, it awakened a new willingness to learn. For example, I struggled with math classes. Not that I struggled with the content but with the boring uninterested teacher and the repetitive lessons. Whereas, the new teachers were more engaging, did not pressure those students that struggled with math, rather, they would engage with them and show them various manners by which to solve

mathematical problems. On the other hand, it was not uncommon for some of the older teachers to single out students who struggled with a particular subject and then test their knowledge in front of the class. This practice often ended in ridiculing the student and putting more pressure, rather than motivating the student. I'm not sure how Dewey would have interpreted these sessions, had he been a fly on the wall.

9. Education in a Time of Change and the Reality Faced by Governments

Cazanga Moncada (1999) writes that the Chilean education system of the late 1960s was, despite being on the margin of a scientific and technological world revolution, still almost invariable since the 19th century. In addition, the mechanisms for qualifications were based on a regime of exams, requiring the memorising of the subjects being imparted in the classroom (Cazanga Moncada, 1999). Which in turn, were highly frustrating to the students. Furthermore, the participation in the school system did not guarantee the progression nor the permanency in the system to lead to higher education (Moncada Cazanga, 1999). Freeburger (1964) provides some figures, which are indicative of the percentage of the national budget being spent on education by the governments of the time:

Year	Percent
1955	10.95
1956	17.52
1957	18.38
1958	17.59
1959	19.76
1960	14.34
1961	21.09

Adapted from (Freeburger 1964, p. 8)

The amount spent on education in 1961 was the highest ever spent on education in the nation's history. However, it is important to note that that the previous year, 1960, this figure had fallen to 14.34% (Freeburger 1964)

10. Government Initiatives to Improve Education at the Time I Attended School

10.1 President Eduardo Frei Montalva

In October 1964, a new Chilean president assumed power, Mr Eduardo Frei Montalva (from 1964 to 1970) and immediately, a commission is established to assess the state of the education system and its outcomes at the time (Cazanga Moncada 1999). The new government found itself with a high number of children marginalised from the school system. Figures estimated the number to in excess of 180,000. About 32% of

those that entered primary school completed only six years of schooling. The number of illiterate over the age of 15 was almost 1.5 million. The siblings of blue-collar workers and rural workers who entered university did not reach 3% of the total number of students who entered tertiary education. These are only some of the figures and the reality that faced the new government and the environment in which I started school in 1966.

To tackle the problem, as mentioned by Cazanga Moncada (1999) the government embarked on a number of reforms to make education accessible to all the social sectors and in 1968 reforms were implemented to the existing educational laws and new grants and scholarships were now available, as well as an increase to the education budget. And so, it meant an increase in the food programs, clothing and utensils which were given freely to students and medical and dental programs which were to cater for students, to name a few. Apart from the changes that involved capital expenditure, other structural changes were made to the schooling system, namely the primary school years were extended from 6 to 8 years. Thus, these years could be from 6 or 7 years of age to 14 or 15 years of age.

President Frei did recognise the need to reduce illiteracy, improve the quality of education and expand the educational facilities in the country. Whilst, at the same time, the demand for these services increased, especially at the primary school level, it was necessary to implement a fast track course for primary school teachers that resulted in an additional 2,668 teachers by the end of 1966 (Cazanga Moncada 1999). This influx in the primary school level created also demands on the secondary level and thus it was necessary to create 511 new classes to cater for 20, 440 students. In addition, Cazanga Moncada (1999) explains that it was also necessary to create 265 first year (secondary level) classes to absorb 10,000 students that were once again reincorporated into the education system. Furthermore, Cazanga Moncada (1999) describes how the government also implemented important measures to educate the adult population by which new audio visual methods were used to teach. As a result, Cazanga Moncada (1999) explains that by 1965, basic education of adults increased by 56.5%, high school level for the same population increased by 228.5% in the sciences and humanities subjects. Perhaps, one of the more important contributions of President Frei's government to education was that by the end of his term, funding to universities had increased by 143% being 29% of the education budget, whereby the university population for this period was of 3.5% of the total school population (Cazanga Moncada, 1999). The increases in the funding to did not however, materialise entirely from a government initiative. Rather, during the tumultuous 1960s, university students exerted tremendous pressure, seeking modernization and democratisation (Austin 1997). In general, most student representative bodies concurred that universities should be open, democratic, universal and autonomous (Austin 1997). A series of strikes took place, with one lasting 50 days in 1967 by the university students in Valparaiso (Austin 1997). The students, as a result, became an organised force and were able to converge different populist ideals in their ranks giving rise to unprecedented elections at the Valparaiso University of all the administrative authorities of that establishment, but on a bigger scale, they made possible through the instigated changes, that the access to university was now possible to a wider range of students, as opposed to being the realm of the elites (Austin 1997).

10.2 President Salvador Allende Gossens

President Salvador Allende (1970 - 1973) was elected with a populist agenda and was the first elected Marxist government in Latin America (Fundación Salvador Allende 2013), at a time when revolutions were common in the American zone (Galeano, 1976). President Allende, who was also a Medical Doctor, gave great emphasis to education and health. And so, he designated a teacher as the new Minister of Education, Mr. Mario Astorga Gutierrez (Cazanga Moncada, 1999). Cazanga Moncada (1999) describes how President Allende criticised previous governments' measures in education, which placed too much importance on the expansion of school places whilst ignoring the socio-economic realities that existed within the classes that translated into inequalities in the educational system.

To combat these gaps that existed within the country, the government allocated 20% of the national budget towards education, the highest amount as compared to that of the other Ministries (Cazanga Moncada, 1999). Per capita spending on education, as compared to 1970s figures, showed an increase of 65% by 1973 (Cazanga Moncada, 1999). It is also described by Cazanga Moncada (1999) that by 1973, 37% of the Chilean population was studying. In addition, university places were doubled from 18,827 in 1970 to 40,000 in 1973 (Cazanga Moncada, 1999). Furthermore, Cazanga Moncada (1999) explains that by 1971, the government had fully funded the construction of 2,000 new classrooms.

Not only was the government concerned with improving the education, but also the dietary deficiencies that were present in the country's school population. Thus, from 1971, the breakfasts provided at school surpassed 64% student population (Cazanga Moncada, 1999), as well as, over 700,000 lunch rations being provided (Cazanga Moncada, 1999). Dr Allende also ensured that every student had half a litre of milk per day. For this measure, the government provided powdered milk to every student to take home on a regular basis (Cazanga Moncada, 1999). Amongst the many changes and improvement to education during President Allende's government and the continued preoccupation with improving education and the quality of teachers; the government pursued new technologies in order to impart better education (Cazanga Moncada, 1999). As Cazanga Moncada (1999) describes, how the government envisaged using television as an educational tool. As a result, a project with convened agreements with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the Organizacion de Estados Americanos (OEA and in English, Organisation of American States) was developed and via the Centro de Perfeccionamiento, Investigaciones y Experimentaciones Pedagogicas where expert personnel were also trained in the use of television as an educational tool. Other measures also included the availability of books. The Allende government concentrated on intellectual production and more importantly in reclaiming the cultural aspect being influenced from the North (Austin 1997). As a result, Quimantú, the state publishing house (Quimantú is a Mapuche words which means 'sunshine of knowledge') published 5 million books in two and half years (Austin 1997). This record figure, as Austin (1997) states, doubled what had been published in Chile over the previous 70 years.

Evidently, the efforts to combine expenditure on infrastructure, human resources and new methodologies, was aimed at improving education and making it relevant to

the times. Yet at the same time, some analysts argued that radio and television as educational tools were destined to wither away (Carnoy, Martin 2004). An early form of information and communication technology (ICT), television was considered as an educational tool that could provide content rich lessons. Livingstone (2011) argues that ICT can expand the quality of teaching and learning, thus, leading to raising standards. We must bear in mind that nowadays, ICT is misunderstood to only include digital technologies, mostly centred on the Internet and includes, computers, tablets, whiteboards and so forth. However, during the 70s in Chile, computers were far from the horizon of every student. Unfortunately, the government of Dr Salvador Allende was short lived. A violent military *coup d'état* overthrew the government on the 11th of September 1973. Therefore, there are no known records of any results or outcomes or if Television was ever used in any school during the short three years of the government. It may have been interesting to juxtapose the results in Chile to results of more integrative and interactive ICTs. If we refer to Livingstone (2011), who indicated that ICTs can have positive outcomes, whilst at the same time, offers examples of negative outcomes where computers are involved. Thus, arguing that a simple introduction of and or investment on ICTs do not necessarily mean an increase in educational performance (Livingstone, 2011). At this point, the reader notes that we have jumped across decades to make comparisons. In the same vein, let us proceed to more recent years and consider what Tatnall (2011) describes with reference to investigating the adoption of technological innovation. Tatnall (2011) indicates that not all innovations are adopted in their originally intended manner and that not all are without change (Tatnall 2011). Interestingly, Cullingford and Gunn (2005) offer a similar premise in their discussion concerning the implications of Globalisation and change by arguing that change can either be assimilated, modified or rejected by those groups or individuals faced by these changes. Thus, to summarise, the idea to use television as an educational tool may have been innovative, however, it would have been interesting to see how it was adopted, had the technology been implemented as a teaching tool.

11. The School Experiences under a Dictatorship

As indicated earlier, a violent military coup overthrew the Government of Dr Salvador Allende. Initially, a Military Junta took charge of the country and in later years, General Pinochet took control.

On the day of the *coup*, school was suspended for a few days. When we went back to school, our mother walked us to school that first day. By that time she had was not walking us to school anymore. However, for some reason, she thought it safe that she did on that day. Anyway, when we arrived at the school, at the entrance, there were two army soldiers on each side of the school gates, armed with a rifle held across their chests. As usual, just before the lessons were about to start, we lined up in the playground. This time a military officer, not our school principal, addressed us. We were told that *things* would change, that we needed to cut our hair short, that our task to help the motherland was to study. Then we proceeded to our classrooms.

Later, we found that the school Principal and some of the new teachers were no longer at the school. In fact, very few of the new teachers were at the school. The only ones that remained were those had opposed to the Allende Government. I cannot elaborate on what happened to the teachers and Principal but I imagine that they were expelled. In later years, the reality of the Military Junta and the Pinochet dictatorship became known and has been well documented. I can only hope that no worse fate than being expelled from the school befell on those teachers.

During one of our lessons, on the first day at school after the *coup*, the same officer who addressed us earlier came into the classroom with two armed soldiers and he interrupted the lesson. He addressed us using the same phrases he had used earlier. However, this time he singled out students, who in his opinion had long hair. They were instructed to cut their hair and that only women used the hair long. Whilst he was addressing us, suddenly the classroom above us, started shouting “Allende, Allende, long live Allende” and banging on their desks. The officer instructed one of his armed soldiers to see what was going on upstairs. Shortly after, the shouting stopped.

When the officer finished, he left the classroom and proceeded to visit the rest of the school to most likely repeat the process. More than addressing us, he scared us. He came in the room, armed and with two armed soldiers and he sounded very serious.

Later on the day, when I was coming back to my classroom after lunch break. I saw that on the ground level, the students from the classroom above ours, were lined up facing the wall, with their arms against the wall and legs wide apart. The officer was overseeing how the soldiers were punishing them for what they had done earlier. The students were being slapped and kicked from behind between their legs. Once they realised that some of us had seen what was going on, we were told to leave and come back later.

Despite of what was going on in Chile, school life went on, we got used to the same tired lessons with the only difference that this time, there was much more content based on the history of Chile and its military conquests. There were contests on Chilean history where students had to answer correctly, dates, names, battle locations, et cetera. In short, memorise a lot of military history.

My time as a student in Chile was being decided by other events and so it was coming to an end. Later on, one of the most significant changes took place in education. This was the introduction of the voucher system in 1981 that had been conceptualised by economist Milton Friedman (Carnoy, M. 1998). These reforms were the initial base for subsequent reforms that were to follow in the 1990s. The basis for the adoption of this voucher system, as argued by Friedman in Carnoy, M. (1998) was to improve school quality, control spending on education and privatise education delivery. However, in the case of Chile, the aim was to, put a price in education, eliminate or reduce the teachers’ union bargaining power and to free school from following the national school curriculum and standards, create incentives for parents to choose schools for their children and to further deregulate the market (Carnoy, M. 1998).

12. Education Changes during Pinochet

During the Pinochet dictatorship, one of the most significant changes that took place in education during this time was the introduction of the voucher system in 1981. This model had been conceptualised by economist Milton Friedman (Carnoy, M. 1998). Chile's educational system began a process of decentralisation (Hinojosa, JE, Guzmán & Isaacs 2002) and these reforms were the initial base for subsequent reforms that were to follow in the 1990s. The basis for the adoption of this voucher system, as argued by Friedman and explained in Carnoy, M. (1998) was to improve school quality, control spending on education and privatise education delivery. However, in the case of Chile, the aim was to eliminate or reduce the teachers' union bargaining power and to free school from following the national school curriculum and standards, create incentives for parents to choose schools for their children and to further deregulate the market (Carnoy, M. 1998; Schiefelbein (2000). As described by Carnoy, M. (1998) under this proposal, students would receive an entitlement (a voucher) from the government and which could be used in any school, either private or public. In order to implement the decentralisation measures, Schiefelbein (2000) explain that 150 'Chicago Boys' were employed by the Pinochet regime to lead the government elite staff to carry this vision forward. According to Carnoy, M. (1998) to evaluate these reforms, 4th and 8th grade students were tested in 1982. These tests would be conducted annually on the same grades in order to compare the figures (Carnoy, M. 1998).

According to Carnoy, M. (1998) and Schiefelbein (2000) the results and analysis of these tests for the period from 1982 to 1988 showed that average overall scores in Spanish and Mathematics declined for 4th graders. Carnoy, M. (1998) also describes that an increased in the scores was recorded in the 1990s. However, this was after a new democratically elected government had decided to spend substantially more on education and in particular to low-income schools (Carnoy, M. 1998). And despite the alleged and expected outcomes, Chile's education has featured as an important political agenda for the subsequent governments that have followed the dictatorship of General Pinochet. But despite these efforts, as reported in the *El Mercurio* (2004) and by Zuniga (2004) Chile's education continues to demonstrate the fallacies of the system when a comparison in university entrance scores are compared between students from private and public schools and also between school in the capital to school in the outer regions of the country. For example, Alvarez (2005) argues that despite increases in educational expenditure, the country still lacks the schools which can counter these differences, which are based on family and social background.

13. ICTs in Chilean Schools

Chile's education system has been going through reforms since the 1980s with the introduction of the voucher system previously mentioned (Carnoy, M, 1998; Schiefelbein, 2000). The second wave of reforms originates from the transition to a democratic government and focused on improving teachers' working conditions (Schiefelbein, 2000) and most importantly, the recognition by the new democratic

governments that ICTs could bring prosperity, as well as create a digital divide (Alvarez 2005). Therefore, as indicated by Alvarez (2005) the government implemented, as part of the educational policies, the Enlaces Program to be an essential component to improve the quality of education. This program (Enlaces Program) was created to introduce ICTs in both public and subsidised schools and by 2002 more than 70% of schools (primary and secondary) participated in the program and also received hardware and software, unlimited internet access and specially created content (Hinostroza, EH, Pedro; Cox, Christian 2009; Hinostroza, JE, Guzmán & Isaacs 2002). The third reform was implemented in 1994 and as argued by Schiefelbein (2000) was focused on the effectiveness of the classroom, better teaching material and improved learning/teaching process.

Since my time at school in Chile, it is evident that massive changes have taken place. Notwithstanding the changes made during the dictatorship years, the introduction of ICTs has been a major change compared to using blackboard and chalk, an abacus and repetitious methods. Most Chilean students can access a computer at school, although, some schools may have limited ICT resources. However, the impetus has been driven by government policy that recognises the benefits of ICTs. Albeit, the issue of social inclusion and the gaps within the education system remain present. For example, during a visit to two rural school in Chile in 2010. I was able to see not much difference in the situation that I saw at San Miguel School all those years ago Arica. I learned that the majority of the students were considered at 'risk' in terms of poverty line, came from very poor families, in most cases, their parents had not completed secondary school and some, not even primary level. Their level of performance, as compared to urban schools was lower and according to the teachers at the school, they predicted that finishing secondary school for these students would be great feat. On the other hand, the classrooms had from one to two working computers to share between 16 and 34 students. To date, the expected improvements had not materialised in the form of better grades on these students.

14. Conclusion

About a year and half after the *coup*, my family left Chile and I did not go back to visit until almost twenty years had passed. In meantime, I completed my education in Melbourne having survived high school. Later on I completed my University Degree, then a Master and currently I'm progressing with a PhD. The doctoral work investigates the impacts and challenges as a result of introducing and using ICT in schools for Mapuche students. I'm also using Actor Network Theory (ANT) to identify the human and non-humans actors, as well as, an innovation translation approach to understand how ICTs are being adopted, as Tatnall (2011) argues that not always, innovations are adopted as originally intended.

In hindsight, the years that I lived in Chile and spent at the different schools, in particular, the rural school at San Miguel, made me ask a lot of questions and sparked an inquisitorial longing for finding out what are the realities being faced by students in Chile and in particular, those starting their education in rural schools. Having

visited a rural school in the south of Chile in 1994 and two other rural schools in 2010, I observed the state of the classrooms, the teaching methods, the lack of resources, as compared to urban schools, the level of poverty of the students, the poor nutrition of the students and their performance, as compared to those in urban schools. Those images from the 1960s and 1970s came back. These students were now part of the voucher system implemented by the Pinochet Dictatorship and were now having some access to ICTs in their classroom. Yet, the realities remain the same as I had experiences all those years ago. Evidently, much needs to be done and not necessarily the cash injection that manages to be accentuated by the government of the time. Rather, the problem requires a more holistic view and further research is required to understand the underlying issues, which continue to accentuate exclusion, the actors involved and the possible solutions that may be found. On the other hand, young students require to be motivated and integrated. Today's students need new a teaching and learning approach, one that engages them and teaches them to learn. As opposed to dictate and instruct as a one-way communication model and which would appear to prepare students for a time that is no longer in existence, that is, yesterday.

References

- Alvarez, C 2005, 'ICT as a Part of the Chilean Strategy for Development: Present and Challenges', in M Castells, Cardoso, G (ed.), *The Network Society: From Knowledge to Policy*, Center for Transatlantic Relations. The Paul H. Nitze School of Advanced International Studies The Johns Hopkins University, Washington DC, USA, p. 434, viewed 05 May 2011, <http://www.umass.edu/digitalcenter/research/pdfs/JF_NetworkSociety.pdf#page=28>.
- Austin, R 1997, 'Armed Forces, Market Forces: Intellectuals and Higher Education in Chile, 1973-1993', *Latin American Perspectives*, vol. 24, no. 5, pp. 26-58.
- Carnoy, M 1998, 'National voucher plans in Chile and Sweden: did privatization reforms make for better education?', *Comparative Education Review*, vol. August 1998 v42 n3, p. 309(29), viewed 9 Jun 2004, via Academic Search Elite, <<http://0web36.epnet.com.library.vu.edu.au:80/citation.asp>>.
- Carnoy, M 2004, «*ICT in Education: Possibilities and Challenges.*» In: *Inaugural Lecture of the UOC 2004-2005 Academic Year (2004: Barcelona)* viewed 7 Mar 2008, <<http://www.uoc.edu/inaugural04/dt/eng/carnoy1004.pdf>>.
- Cazanga Moncada, O 1999, *Notas Para Un Curso De Historia De La Educacion Publica Chilena*, Ediciones Logos, Santiago - Chile.
- Colaboradores de Wikipedia; 2003, *Historia de Arica*, Wikipedia, La enciclopedia libre, viewed 01 Dec 2013, <http://es.wikipedia.org/w/index.php?title=Historia_de_Arica&oldid=69517941>.
- ; 2013, *Cultura Chinchorro*, Wikipedia, La enciclopedia libre, viewed 01 Dec 2013, <http://es.wikipedia.org/w/index.php?title=Cultura_Chinchorro&oldid=68373690>.

- Cullingford, C & Gunn, S 2005, *Globalisation, education and culture shock*, Monitoring change in education., Ashgate Pub., Aldershot, Hants, England ; Burlington, VT.
- Departamento de Administración de Educación Municipal de Arica, 2013, *Liceo Agrícola Jose Abelardo Nuñez*, viewed 01 Dec 2013, <<http://www.daem-arica.cl/site/web.php?page=22&establecimiento=Jose%20Abelardo%20Nuñez>>.
- El Mercurio 2004, 'Prueba de Selección Universitaria: Se mantienen las diferencias educacionales', *El Mercurio*, viewed 23 Dec 2004, <[http://www.serme.cl/sitios/d4/nuestraescuela.html](http://diario.elmercurio.com/2004/12/22/_portada/_portada/noticias/A6FC8E29-62BD-47CE-9BEB-2302B93F59CE.htm?id={A6FC8E29-62BD-47CE-9BEB-2302B93F59CE}>>.</p>
<p>Escuela Republica de Israel, 2013, <i>Escuela Republica de Israel</i>, viewed 01 Dec 2013, <.
- U.S. Department of Health Education and Welfare 1964, *Education in Chile - Studies in Comparative Education*, by Freeburger, AR, Haugh, C.C., U.S. Government Printing Office, viewed 29 Mar 2013, <<http://files.eric.ed.gov/fulltext/ED046812.pdf>>.
- Fundación Salvador Allende 2013, *Línea de Tiempo*, viewed 14 Nov 2013, <<http://www.fundacionsalvadorallende.cl/salvador-allende/linea-del-tiempo/#>>>.
- Galeano, EH 2004, *Las venas abiertas de América Latina*, 21a edn, Siglo Veintiuno, Mexico, Buenos Aires.
- Harvey, R 2002, *Liberators - Latin America's Struggle for Independence*, The Overlook Press, Peter Meyer Publishers Inc., Woodstock, New York, USA.
- Hinostroza, EH, Pedro; Cox, Christian 2009, 'National Policies and Practices on ICT in Education - Chile (Enlaces)', in TA Plomp, Ronald; Law, Nancy; Quale, Andreas (ed.), *Cross-National Information and Communication Technology: Policies and Practices in Education*, 2nd (revised) edn, IAP-Information Age Pub., pp. 157 - 70, <<http://books.google.com.au/books?id=blJW2IfgVN8C>>.
- Hinostroza, JE, Guzmán, A & Isaacs, S 2002, 'Innovative uses of ICT in Chilean schools', *Journal of Computer Assisted Learning* (2002), no. 18, pp. 459-60.
- Hopenhayn, M 2003, *Education, communication and culture in the information society: a Latin American perspective*, CEPAL (Comision Economica para America Latina y el Caribe).
- Instituto Nacional De Estadísticas 2008, *POBLACIÓN Y SOCIEDAD • ASPECTOS DEMOGRÁFICOS*, Instituto Nacional De Estadísticas, viewed 02 Feb 2013, <http://www.ine.cl/canales/chile_estadistico/demografia_y_vitales/demografia/pdf/poblacion_sociedad_enero09.pdf>.
- Instituto Nacional De Estadísticas - Direccion Regional Arica y Parinacota 2003, *Base Datos Regional INE - Arica y Parinacota*, viewed 01 Dec 2013 2013, <http://www.inearicayparinacota.cl/archivos/files/xls/bancodedatos/base_datos_X_V_region.xls>.
- Livingstone, S 2011, 'Critical reflections on the benefits of ICT in education', *Oxford Review of Education*, vol. 38, no. 1, pp. 9-24.
- Millas, H 2010, *La Sagrada Familia*, 4th Edition Sept 2010 edn, Editorial Planeta Chilena S.A. Avda. 11 Septiembre 2353, piso 16, Santiago, Chile Santiago, Chile.
- Programa de Educación Intercultural Bilingüe 2009, *BD_Escuelas_Matricula_Indigena2009.xls*, by MINEDUC, Ministerio de

- Educación, viewed Received via email from Mr. Rodrigo Alejandro Carvajal Aceituno on the 29 Apr 2010.
- Ministerio de Educación 2013, *Catalogo de Textos*, Textos Escolares - Unidad de Currículum y Evaluación - Ministerio de Educación, viewed 02 Aug 2013, <http://w4app.mineduc.cl/catalogo2013/catalogo_2013/catalogo_pub.php#app=afd&1aa8-selectedIndex=0&4eb3-selectedIndex=0&f5ca-selectedIndex=1>.
- Punto Final 2003, 'Chile y Bolivia - La Guerra del Salitre', no. 555, viewed 02 Dec 2013, <<http://www.puntofinal.cl/555/chileybolivia.htm>>.
- Schiefelbein, E, & Schiefelbein, P; 2000, *Three decentralization strategies in two decades: Chile 1981-2000*, 5, Emerald Group Publishing Limited, 22 Mar 2010, <<http://www.emeraldinsight.com/journals.htm?issn=0957-8234&volume=38&issue=5&articleid=839183&show=abstract>>.
- Tatnall, A 2011, *Information Systems Research, Technological Innovation and Actor-Network Theory*, Heidelberg Press.
- The EFA Global Monitoring Report Team 2009, *Overcoming inequality: why governance matters*, by United Nations Educational Scientific and Cultural Organization, Oxford University Press jointly with UNESCO Publishing.
- Warschauer, M 2003, *Technology and social inclusion : rethinking the digital divide*, MIT Press, Cambridge, Mass.
- Wikipedia Contributors; 2012, *El silabario hispanoamericano*, Wikipedia, The Free Encyclopedia., viewed 30 Sept, 2013 2013, <http://es.wikipedia.org/wiki/El_silabario_hispanoamericano>.
- ; 2013a, *Arica*, Wikipedia, The Free Encyclopedia., viewed 01 Dec 2013, <<http://en.wikipedia.org/w/index.php?title=Arica&oldid=582950722>>.
- ; 2013b, *Aymara People*, Wikipedia, The Free Encyclopedia, viewed 07 Dec 2013, <http://en.wikipedia.org/w/index.php?title=Aymara_people&oldid=578039034>.
- ; 2013c, *John Dewey*, Wikipedia, The Free Encyclopedia., viewed 02 Dec 2013, <http://en.wikipedia.org/w/index.php?title=John_Dewey&oldid=584781263>.
- Zuniga, V, Cerda R, Reed, P, Correa T. 2004, 'Calidad de la enseñanza: Se mantiene inequidad entre colegios públicos y privados', *El Mercurio*, viewed 23 Dec 2004, <[http://diario.elmercurio.com/2004/12/22/nacional/nacional/noticias/526B39B8-57E6-4077-8344-FE22F5E407B5.htm?id={526B39B8-57E6-4077-8344-FE22F5E407B5}](http://diario.elmercurio.com/2004/12/22/nacional/nacional/noticias/526B39B8-57E6-4077-8344-FE22F5E407B5.htm?id={526B39B8-57E6-4077-8344-FE22F5E407B5}>)>.