

Graduate School of Economics
Osaka City of University
Osaka – Japan

Human Capital Development and Its Effect on Economic Growth
in Algeria:
Lessons to learn from South Korea

By

Samia Dokali

In Partial Fulfillment of the requirements for the degree of
Doctor of Philosophy in Economics

Supervisor: Prof. Wakimura Kohei

June 2016

Acknowledgment

I would like to express my gratitude to all those who gave me the possibility to complete this thesis, and whose support and encouragements were precious.

I would like to thank my advisor Professor Wakimura Kohei, to whom I am deeply indebted for his continuous support for my Ph.D study and related research, for his patience, motivation, and immense knowledge. His guidance and insightful comments and encouragement, but also for the hard question which incited me to widen my research from various perspectives. I could not have imagined having a better advisor and mentor for my Ph.D study.

I would like also to express my gratitude and special thanks to Professor Riichi Tabata, whose enthusiasm, support and advice were valuable throughout my research and my seven years in Japan. He was always available whenever I needed his help and guidance. I would like also to thank Professor Charles Weathers for his kind assistance and advice.

I am also indebted to my student colleagues for assisting and helping in various matters. They also provided me with a stimulating and a fun environment to learn and grow. I am especially grateful.

Many Friends have helped to stay sane during all these years of research. Their support and care helped me overcome setbacks and keep persevering. I greatly value their friendship and I deeply appreciate their belief in me. Special thanks to my very best friend since high school, Hakima Saadi, for being such a wonderful, special and unique friend. I wish also to thank my very good friends: Hugues Ogiers without whom studying and living in Japan would have been unthinkable, Christina Mihaela

and Jiyeon Omori and Dr. Ayat Makki for their encouragements and support. My special thanks also go to Dr Djedaa Fella, Lehtihet Souad and Ouhenia Nadia.

Most importantly, none of this would have been possible without the love and patience of my family. My mom and my late father, to whom this dissertation is dedicated to, has been a constant source of love, concern, support and strength all these years. My sister Amina was particularly supportive and helpful. My uncles and grandmother for their love and caring.

My thanks to the staff of the faculty of economics and the office of the international students affairs, especially Mrs Fujimaki Takako whose “smiling” help and support were very important for my moral and the good achievement of my studies.

Table of Contents

Acknowledgements	ii
Abstract	iii

Chapter I: Introduction

1. Introduction
 - 1.2 Human capital and Economic Outcomes
 - 1.3 Education and Economic Growth
 - 1.4 Contribution and Context

Chapter II: Effect of Education on Economic Growth: Empirical Analysis

1. Introduction
2. Human Capital and Economic Growth: Overview of Major theories and models
 - 1.1 Swan and Solow Model
 - 1.2 Romer model
3. Empirical Regression Analysis
 - 3.1 Educational attainment in Algeria
 - 3.2 The Model
 - 3.3 Estimation and Source Data

3.4 Regression Analysis and Results

Chapter III: Education System under Colonial Rule

1. Introduction

2. Historical Background of the Algerian Education System

2.1 Education System Before French Colonization

2.1.1 *Kuttab* or *Msid*

2.1.2 Madrassas and Zaouias

2.1.3 Free School

2.2 The Role of the Association of Algerian Muslim Ulama

2.3 Education Under French Colony

2.4 Strict Selection and Ethnic Segregation

2.5 Effects of the French Colonial Education Policy

3. Historical Overview of Education in Korea

3.1 Korean Educational system before Japanese Colonialism: Some Historical Legacies

3.1.1 The Influence of Confucianism

3.1.2. Western Missionaries Influence

3.2 Education System under Japanese Rule

3.2.1 March First Independence Movement and Its Effect on Colonial
Education System

Chapter IV: Post-Colonial Education System in Algeria and South Korea

1. Introduction

2. The Economic Situation in Algeria at Independence

3. The legacy of post-independence socialism

3.1 The Industrialization Strategy under “Socialism”

3.2 Rapid Population Growth

3.2.1 Algeria’s Growing Population of 15 to 24 Years Old

4. Post-Independence Educational Policy in Algeria

4.1 Post –Independence Educational System (1962-1970’s): Mass
Education

- 4.1.1 Primary and Secondary Education
- 4.1.2 Post-colonial Higher Education System
- 4.1.3 Effect of the Post-independence Education Strategy

- 4.2 Education Performance in a “Socialist” Economy
- 4.3 Science and Technology through the Foundation School
- 4.4 The New Secondary Education
- 4.5 The Remodeling of Higher Education

5. Effects of the Foundation Schools Program and Higher Education Reforms: Quantitative Results

6. Arabisation Policy and the Performance of the Education Sector

- 6.1 Renaissance of Arabic Language with the “Ulama
- 6.2 Socio-Political Context of Arabisation
- 6.3 Principal Phases of the Implementation of Arabisation: From
Bilinguism to Monolinguisism
 - 6.3.1 Arabisation of Education
 - 6.3.2 Arabisation of the Economic Sector
 - 6.3.3 Arabisation Waves in Public Enterprises
- 6.4 Effects of Arabisation on the Quality of Education

6.5 Impacts of Arabisation on the Professional Qualifications and Labor Market

7. Education Between Economic Crisis and Market Reforms

7.1 Market Reforms

7.2 Educational System Under Difficult Economic Situation

8. The New educational Strategy

9. Weak Education and Growth Link in Algeria
Education and Economic Development in South Korea

9.1 South Korean Economic Development Stages

9.1.1 Post liberation and Post War Economic Disorganization:
1945-1961

9.1.2 South Korea Rapid Development under Park Chung Hee

9.1.3 From Government Intervention to Market Oriented
Economy

9.1.4 1997 Economic Crisis and Reforms

9.2 The Role of Educational Policy in South Korea's Economic
Development

- 9.2.1 Education at Independence 1945
- 9.2.2 The Establishment of School System
- 9.2.3 10.2.3 Alignment between Education Strategy and Economic Development
 - 9.2.3.1 First Period: 1945 -1960
 - 9.2.3.2 Second Period 1961- 1980
 - 9.2.3.3 Third Period 1981 –Present
 - 9.2.3.4 The Role of Information Communication Technologies in the Korean Education System:

10. Where do Algeria and Korea Stand

Chapter V: Conclusion and Recommendation

1. Conclusions
2. Recommendations

References

Abstract

The concept of linking human capital and economic growth was diffused throughout the world in the 20th century. Human Capital development through educational attainment is more and more considered as a positive contributor in the economic development. Advanced countries have responded to the need of industries by expanding education at all level. Empirical analysis dealing with the benefit of human capital development through education and training have flourished and continue today to be a major focus for economists, researchers and policy makers. These research and debates investigate the contribution of education to the growth of national wealth.

This dissertation investigates the human capital development through education attainment in Algeria and South Korea, and its link with their economic growth. The study chose Algeria and South Korea cases that exemplify two countries, who share common historical background and were at the same low economic level decades ago, became today separated today by very large gap caused by the economic, industrial and technological achievement of South Korea who became today one of the richest OECD countries, while Algeria despite its potential in terms of natural and human resources failed to achieve sustainable growth. The study tackles the human capital development factor which played an important role in South Korea and which Algeria could not take fully advantage of its young population.

This study analyzed the pre-colonial, post-colonial and post-colonial period of Algeria and South Korea in terms of economic development plans and education policies. Through the historical analysis the study attempts to show to highlight the common points in terms of colonialism and civil war, and how at independence both countries

started their nation building starting from low level of GDP, and Korea GDP was even lower than Algeria and Soudan.

The study collected a panel data about educational attainment from for a period from 1975 to 2005 for in Algeria, South Korea and other selected advanced and less advanced countries and conducted two models of empirical analysis to measure the significance of the education variable on growth. In result, human capital is significant for South Korea and other advanced countries, while it is insignificant for Algeria and other less developed countries.

The dissertation concludes that the issue in Algerian education lies in the quality of the human capital and the education system and its weak linkage with the economic development plan. For a better understanding of the causes and reasons behind a weak link between education and economic growth, this study suggest a deeper investigation particularly in higher education and vocational training in Algeria.

Chapter I: Introduction

1. Introduction

Recent debates and discussions about knowledge-based economy led to an increasing interest of researchers in the role knowledge plays in economic development. Development of human capital, the main mechanism for knowledge creation and management, is becoming a central issue of policy makers in the world, particularly of the developing countries.

Human capital development has a substantive relationship with economic development, which has changed over time in terms of characteristics and intensity. Today, in technological societies, human capital is more and more linked to the economy. Levels and growth rates of productivity depend on many factors, and human capital—educated and skilled labor force—is one factor that is becoming increasingly important. The observation that human capital is becoming increasingly important has recently attracted considerable attention from experts and economists as they try to influence policy makers and convince them to invest in education and training.

The development of human capital through education is widely recognized as a leading instrument for promoting economic growth. An analysis of economic development throughout history indicates that few countries have experienced very long periods of persistent growth of per capita income; however, countries like the United States, Japan, and many European countries have had their continuous

growth of per capita income. According to Gary Becker¹, Professor of Economics and Sociology at the University of Chicago, this long period of growth is possible because of the expansion of scientific and technical knowledge that helps raise the productivity of labor and other inputs in production. With this expansion, the value of education, schooling, vocational training, and on the job training has greatly increased, “as the growth of knowledge has become embodied in people—in scientists, scholars, technicians, managers and other contributors to output.”

Among the many countries that have achieved economic growth in the twentieth century, East Asian countries have been given particular attention by development scholars. Outside of the Western countries, Japan was the first country to become industrialized (Bawumia, 1998). Lucas (2002) refers to Korea as a model for economic growth, comparing its success to the success of Michael Jordan in basketball. Both countries have become developed countries in a relatively short period of time—over the course of several decades. Researchers from different disciplines examined the factors that drive economic growth in Japan and South Korea, and policy administrators in other countries are interested in the educational systems in Japan and South Korea and pay particular attention to them in order to uncover implications for their own educational and economic development². Most advanced countries, as well as currently emerging countries, have in common one particular characteristic: In conjunction with their development strategy, they have an efficient and well-performing educational system. For example, this holds true for both South

¹ Gary Stanley Becker, professor of economics and sociology at the University of Chicago, is among the foremost exponents of the study of human capital. Becker's research was fundamental in arguing for the augmentation of human capital.

² Goodman,.R., and Hatakenaka,.S., and Kim,T., “The Changing Status of Vocational Higher Education in Contemporary Japan and the Republic of Korea”, *UNESCO-UNEVOC Discussion Paper, International Centre for Technical and Vocational Education and Training*, Bonn, Germany 2009, p 6.

Korea and Japan.

As the global economy shifts towards more knowledge-based economic sectors, skills and human capital development become a central issue for policymakers in developing countries who still have to face many challenges such as increasing productivity, eradicating illiteracy, achieving economic growth and social prosperity. These aforementioned challenges are currently the main concerns of Algeria, where improving education and developing a knowledge-based economy are necessities and the starting point for future reforms.

Through a comparative study of Algeria and South Korea, this thesis performs a closer investigation into the relationship between education and economic development. Some of the questions that this thesis will address are as follows: Why do some developed countries or some post-transition countries achieve economic growth? How did human capital accumulation contribute to their growth? What is the role of education in human capital accumulation? Why did the education system in Algeria not contribute to economic growth? What are the major issues in the Algerian educational system? What are the lessons to draw from developed countries' experience in developing human capital that contributed to their economic development?

From teaching at Algiers University and from talking to university teachers and recruiting agents in Algeria, it became apparent that the education quality in Algeria has deteriorated. Both the quality of graduates and the workforce the system produces are evidences of this deterioration. The education quality in Algeria is dropping, significantly affecting the economy and the future of the country. Parents are dissatisfied with the education system, and those who can afford it send their

children abroad to continue their studies, which leads to a serious brain drain issue. As a result, the labor market is faced with an unfit workforce. The case of Algeria is aggravated by the inability of the Algerian education system to deal with globalization, the increasing emphasis on knowledge in the development process, the country's enormous youth bulge, and the additional financial resources required for expanding higher levels of instruction. This dissatisfaction has been equally felt by many researchers (K. Taleb-Ibrahimi, 1993, 1995, 1997, 2000; Miliani, 2003; and Grandguillaume, 1979, 1983, 1997, 2002, 2004, 2006; to name only a few), and has led many Algerian and foreign economists and organizations to decry the education system.

The development of human capital in Algeria has seldom been explored, and there has been no attempt from Algerian scholars and specialists researching about Algeria to analyze and compare Algeria case with successful cases of human capital development in order to draw lessons from other countries. This thesis argues that analyzing other countries in such a way would help Algeria and other developing countries that face the same issues, especially the ones composing MENA³, effectively plan future reforms. The thesis also aims to increase awareness about the issue and provide guidance for institutions and educational and economic policy makers in order to help improve human capital and further develop a knowledge-based economy.

The originality of the present research is the statistical analysis and the idea of comparing Algerian and Korean past and present through a historical data analysis,

³ The term MENA is the acronym for Middle East and North Africa

and an empirical study which contains a comparison of their growth strategy with a main focus on their development of human capital through education.

Although the decline in standards in Algeria is abundantly referred to and deplored in the literature, little research has been concretely devoted to this issue in Algeria. In recent years, there has been many articles and analyses of Algerian economic and education system and policy, such as the book “Algerie, Bresil, Coree du Sud: Trois experiences de development” written by Abdelouahab Rezig (Algerian University professor). He analyzed and compared three development policies and attempted to draw some development lessons for Algeria. In regard to education, K. Taleb-Ibrahimi, (1993, 1995, 1997, 2000), Ahmed Djebbar (2007), Hocine Khelfaoui (2000, 2003) have focused most of their researches on the Algerian education system and have highlighted its poor quality and its inconsistency with the market need. They have all called for urgent corrections, reforms and development of a knowledge-based economy. However, no comparative studies or empirical analyses were conducted to confirm and prove the importance of human capital development through education attainment in Algeria.

Korea's growth strategy is the perfect example of a human resources-oriented strategy. Korea's growth strategy combines the factors that contribute to the acquisition of basic needs and an equitable distribution of income among all individuals in the society. Algeria is an excellent example of a developing country, rich in natural as well as in human resources that has committed more resources than other similarly-situated developing countries since its independence.

From the historical point of view, both Algeria and South Korea have experienced colonialism and civil war. From the economic point of view, following independence,

GDP per capita in Algeria and South Korea were both comparable with levels in the poorer countries in Africa and Asia, with USD 244.8 and USD 155 respectively⁴. However Korea has consistently achieved industrialization and human capital accumulation which resulted in the current noteworthy accomplishment. Unfortunately, Algeria's outcomes of all these efforts were not followed by sustained economic growth.

The shortcomings of past efforts in Algeria lie in the weak link between the improvements in the level, quality, and distribution of human capital and economic growth. Past investments have not generated the maximum benefits possible to Algerian people and society. Thus, the case for education reform is compelling.

This introduction offers an overview of the literature on the relationship between human capital and economic growth. Following the overview is a summary of the subsequent chapters of the thesis, which traces the history, reforms, successes, and the upshots of the education system in Algeria and South Korea, and attempts to draw lessons from South Korean experiences. In addition, the thesis tries to identify future educational reforms for a sustained economic growth in Algeria.

1.2 Human capital and Economic Outcomes

In his definition of human capital, Bas van Leeuwen (2007) wrote: "The notion of human capital rose out of the awareness that physical capital alone was not enough to explain long run growth". The term human capital combined many social

⁴ World Bank Databank
[<http://databank.worldbank.org/data/reports.aspx?source=2&country=&series=NY.GDP.PCAP.CD&period=>]

indicators such as educational enrollments, life expectancy and health costs. Human capital became popular in historical research after the rise of growth theory in the 1950s and the human capital theories advocated by Theodore Shultz (1971), Jacob Mincer and Milton Friedman and other associates from University of Chicago. Yet, as noted by Japanese economist Nakamura (1981, 263) “Historians, from the time that they began to ply their trade, have tended to feature the human factor as the central and critical instrument for the achievement of progress and the betterment of life”.

In the 1980s, human capital theories were introduced into new growth theory. In these theories knowledge and human capital are regarded as production factors, and human capital is found to have positive effects on economic development. According to Fagerlind and Saha (1997), human capital theory is a basic justification of large public budget allocations to education by developing and developed countries. The theory was in line with the democratic and liberal ideologies in Western countries as it was based on presumed economic return of investment in education both on the macro and micro levels.

Rapid economic growth was for many countries the result of investments in human capital. Many economists agree that economic growth and the pace of social development are determined by the nation’s human resources and not by its material capital or material resources. Psacharopoulos and Woodhall (1997) asserted that “human resources constitute the ultimate basis of wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agencies who accumulate capital, exploit natural resources, build social, economic

and political organization, and carry forward national development.”⁵

Later, additional theories were developed by economists such as Gary S. Becker and other scholars. Becker’s book published in 1964 and entitled “Human Capital” became a standard reference for many years. In his view, “expenditures on education, training, medical, etc., are investments in capital. However these produce human, not physical or financial capital because you cannot separate a person from his or her knowledge, skills, health, or value.” He further describes investment in human capital as activities that will increase money and material income in the future by increasing human resources i.e., improving the quality of human resources will increase peoples’ ability to access, use, and convert science technology, which is the engine of growth for developing countries like Algeria.

In October 1992, Becker was awarded the Nobel Prize in Economic Sciences. A big part of the work he was rewarded for was his research on human capital and, specifically, the return on investment of education and training. Since then he has inspired hundreds of books, articles, and treatises of other scholars and commentators who extended or challenged his original thinking. According to Becker (1975) the most productive individuals are those who have large stocks of human capital—broadly defined as skills, experience, knowledge, and ability. Productive individuals are also healthier (Sillies 2009, Kenkel 1991, Grossman 1973, Perri 1984) and more likely to raise high-ability children (Currie and Moretti 2003, Oreopoulos, Page and Stevens 2003, 2006, Chevrier 2004, Black, Devreaux and Slavanes 2005, Mincer 1974, Angrist 1995, Harmon and Walker 1995, Blundell et al.

⁵ Olaniyan, D.A, and Okemakinde.T., “Human Capital Theory: Implication for Educational Development”, *Pakistan Journal of Social Sciences*, Vol.5, 479-483, 2008, p 2.
<http://medwelljournals.com/abstract/?doi=pjssci.2008.479.483>

2000) than individuals who are less well-endowed.

The microeconomic literature provides clear evidence that increased spending on education leads to significant returns. The cross sectional analysis (Barro 1991; Mankiw Romer and Weil, 1992) using enrollment rates as the proxy for human capital, reports large and significant effects of human capital on economic growth.

1.3 Education and Economic Growth

Education is a key component of human capital to which researchers have paid particular attention. Specifically, researchers have focused on the relationship between a particular level of education and the economy.

Conducting research dealing with literacy rates and economic growth, Azariadis and Drazen (1990), use a dataset of seventy-one countries and ultimately conclude that higher education could explain part of the difference in recent economic performance among the most economically advanced countries.

In human capital theory, education is an investment of current resources, such as the opportunity cost of the time involved as well as any direct costs, in exchange for future returns. A classic pattern to estimating return to education is by the level of economic development and level of education⁶. Psacharopoulos (1994) conducted a cross-country comparison to examine the rate of return to education by level of schooling in seventy-eight countries. The study showed that the return to investment in primary education ranged from 42 percent per year in Botswana to 2 percent per year in Yemen. The scope of the return from secondary education varied from 47.6

⁶ George Psacharopoulos and Harry Anthony Patrinos, "Returns to Investment in Education: A Further Update", *Education Economics*, Vol 12, No 2, August 2004, p 2.

percent per year in Zimbabwe to 2.3 percent per year in the former Yugoslavia. The return of higher education was rather narrow ranging from 24 percent per year in Yemen to -4.3 percent per year in Zimbabwe⁷.

Some studies in the last couple of decades assumed that secondary education was important to increase economic growth and found evidence of its effect on the economy. For example, Mankiw et al. (1992) divided the labor force into an educated group and an uneducated group. They defined the educated workforce as the labor force which finishes secondary education. They found that an accumulation of educated workforce contributed to growth. Other studies argued that the level of development in a country determines what kind of education was the most beneficial for economic development. Wolff and Gittleman (1993) have examined the effect of different types of education on economy. They conducted a regression analysis and explained growth in output per capita on the basis of the share of GDP invested, the initial level of GDP per capita, and the varying levels of education present in various groups. They used enrollment rates in each of primary, secondary, and higher education, and the workforce attainment rates with each of these types of education at a date close to the date from which economic growth was measured.⁸ They also categorized countries into two groups: the industrial and upper-middle income countries as defined by the World Bank, and the lower-middle income and poor countries. In upper-middle income countries, higher education explained economic growth more than primary and secondary education. In addition, only higher education had a statistically significant effect on economic growth. In lower-middle

⁷ Steven Philip, and Weal Martin, "Education and Economic Growth", *National Institute of Economic and Social Research*, London SW1P 3HE August 2003, p.7.

⁸ Geraint Johnes, and Jill Johnes, "*International Handbook on the Economics of Education*", Edward Elgar Publishing, Jan 1, 2007, P.179.

income and poor countries, primary education was statistically significant to explain economic growth, while higher education provided little explanation.

Similarly, Keller (2006) analyzed the effects of the three indicators of education on economic growth along with enrollment rates, expenditure per student, and public expenditure in education. The effect of secondary education on per capita growth was identified in both developing and developed countries. However, there was no significant effect of higher education on enrollment rate. Furthermore, Keller argued that public investment should first focus on basic education (i.e., primary or secondary, depending on the degree of universalization of primary education) before focusing on higher levels of education.

Regarding the development stage, Kiso (1993) and Esim (1994) stressed the importance of secondary education on the economic growth of Asian countries. For developing economies in the initial stages of development, McMahon (1998) observed that primary education enrollment was highly significant. He argued that once primary education became universal, secondary education became more significant for economic growth by contributing to the production and the manufacture of goods to export.

The objective of this thesis is to emphasize the important role of human capital, specifically its educational aspect, on economic growth. The positive effect of human capital on economic growth is not automatic, however, and mass education is not sufficient unless educational policy is aligned with economic policy and social needs. Therefore, the main focus of the subsequent chapters is the cases of Algeria and South Korea, two countries that have had completely different returns on their investments in education for their respective economies. Both countries had the

same goal of producing a qualified and educated workforce, developing the economy and achieving social prosperity, but their approaches and planning differed.

1.4 Contribution and Context

The following chapters of the thesis explore and examine educational and economic policies in Algeria and South Korea, comparing their respective strategies and outcomes. In addition, the chapters that follow analyze the similarities and differences between Algerian and South Korean human capital development in terms of their respective contributions to economic growth.

As already mentioned, this chapter includes the introduction as well as a literature review of human capital contribution to economic growth. The analysis goes through a number of human capital theories and studies that link human capital through the attainment of education to economic growth. Going even further, the review looks at the effect of each level of education on economic growth.

The second chapter explains empirically the link between human capital through schooling ratio and economic growth across countries, again looking at the role of education at all levels of instruction. This chapter first reviews the empirical studies that support the positive link between human capital and the contribution of education to economic development. Building on that groundwork, the analysis undertakes an empirical study to measure the significance of education-related economic growth in select developed and developing countries, including Algeria and South Korea. By using education attainment data from Barro and Lee, and the Penn World Table, we conduct two empirical models which confirm that schooling ratio is

significant on the levels of GDP growth. This thesis further concludes that even though Algeria has allocated important budget resources for the education sector, because the progress and achievement was based on quantity rather than quality, Algeria differs greatly from developed countries. As a result, this thesis confirms that education quality is an important component of human capital development and is a large determinant of whether or not the human capital development will have a positive effect on growth.

Chapter three thoroughly investigates Algeria and South Korea by looking at the historical factors that led both countries to draw their specific policies and choose the paths they have taken to build their nations. The chapter reveals the historical similarities between Algeria and South Korea. They were both colonized and both witnessed, even though at different levels, discrimination and difficulties to access education. This chapter describes both the economic and educational systems in Algeria and South Korea during colonization. Under French colonization, very few Algerians could reach higher education, and the language of instruction was mainly French, with Arabic considered a secondary language. When South Korea was under Japanese rule, schools were completely under Japanese control, and like Algerians, South Koreans also faced discrimination. However, unlike the French government, the Japanese government from the beginning of colonization introduced modern schools, which reportedly played an important role in the future of the South Korean educational system.

In chapter four the investigation continues through the post-independence era of Algeria and South Korea. This chapter examines the differences between economic and educational policies and reforms adopted by Algeria and South Korea from

independence to present time. Throughout this chapter, the analysis demonstrates how Algeria emphasized quantity and neglected quality. Furthermore, the chapter explores how some of Algeria's key decisions were politically-oriented rather than economically-oriented, compared to South Korea whose policies were consistent with its economic development plans and with the country's needs in terms of an educated and skilled workforce.

Chapter five concludes the research by summarizing the analyses and findings. This chapter also attempts to draw lessons from South Korea and to make some recommendations for future reforms and policy-making in Algeria, especially educational reforms.

Overall, this thesis provides for the first time a thorough study of human capital development in Algeria by scrutinizing its policies and reforms. This thesis is also the first comparative study of Algeria and South Korea, and is specifically the first comparative study between the two countries in the field of human capital and economic growth.

Chapter II: Education and Economic Growth: An Empirical Analysis

1. Introduction

Human capital development, particularly attained through education, has long been viewed as an important determinant of economic growth. There are very basic reasons why education is linked to economic growth. Since the industrial revolution, education and high skills labor has played a crucial role in the transformation of developed countries. Technological progress and the high standard of living enjoyed in OECD countries was not observed in the illiterate societies that have gradually merged into the world economy over the last two hundred years.

Many observers over the years have emphasized the crucial role of human capital in obtaining economic growth, as attained through education. Barro Robert J. and Lee Jong-Wha (2010) said “An abundance of well-educated people goes along with a high level of labor productivity”⁹. The more workers are skilled, the more ability they have to absorb advanced technology from developed countries.

The Algerian economy has enjoyed macroeconomic stability for the past five years with an economic growth of averagely 4.5% between 2000 and 2005, and has made gains in reducing poverty, universalizing education, and achieving gender equality¹⁰. There has been a significant public investment allocated to the education sector which had enabled the country to increase the literacy rate and has generated an educated and young labor force. Such a labor force, along with Algeria’s natural resources represents a significant potential to build a prosperous economy. However, these educational outcomes were not followed by a sustained economic growth as

⁹ Barro Robert J. and Lee Jong-Wha, “A New Data Set of Educational Attainment in the World”, 1950-2010, *National Bureau of Economic Research working paper No. 15902*, April 2010. [<http://www.nber.org/paper/w15902>]

¹⁰ World Bank Group, *Country Brief*, April 2011 (<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/ALGERIAEXTN/0,,print:Y~isCURL:Y~contentMDK:20188043~pagePK:141137~piPK:141127~theSitePK:312509,00.html>)

witnessed in South Korea whose economic development level was lower than that of Algeria and other poorer African countries in the 1960's with a GDP per capita at \$110¹¹, yet it succeeded in catching up with industrialized countries in large part as a result of their well-educated and hardworking labor force that increasingly made use of modern technologies.

Even though developing and developed countries differ in myriad of ways other than schooling levels, and even if their development strategies and policies differ, however many studies and analyses support the implication and the crucial role of human capital in the sustained period of rapid economic growth. Therefore the objective of this chapter is to provide evidence through a cross-country analysis that education is a driving force of economic development.

While human capital includes education, health and aspects of "social capital," the main focus of the present study is on education. Thus, in this chapter we conducted a quantitative analysis across a group of developed and developing countries and we measured the effect of schooling variables as well as other variables on growth. We will in the first part review selected key studies in the empirical literature on the contribution of education to economic growth. The studies were selected after conducting a literature search on empirical studies of economic growth emphasizing human capital through education attainment. We also perused several chapters of Aghion and Durlauf (2005), especially Benhabib and Spiegel (2002) and Durlauf, Johnson and Temple (2004). We also review the estimation conducted by Haouss and Yagoubi to measure human capital as a source of productivity in Middle East and North Africa (MENA) region.

¹¹ Pundy Pillay, "Linking higher education and economic development: Implications for Africa from three successful systems", *Center for Higher Education Transformation (CHET)*, 2010, p.71.

In the second part we make a descriptive analysis of education attainment data in Algeria and a group of developed countries including South Korea and the US. We used data from Penn World table as well as education attainment data from World Bank for a set of countries for a period from 1975 to 2005. Lastly, we conduct a regression analysis and measure the significance of the education variable on growth using 2010 Barro and Lee data.

2. Review of Empirical Studies that Supports Education as a source of Economic Growth

During the 1980s there were important advances in the theory of economic growth, and many endogenous-growth models developed. A key feature of these models is the theory of technological progress which is viewed as a source that lead to better productivity methods and better products. Later in early 1990s further empirical estimation on growth models were conducted, with emphasis on government policies and institutions and the accumulation of human capital. One of the most influential works and empirical studies on growth and human capital were conducted by Barro (1991, 1997), Romer and Weil (1992) and Levine Renelt (1992), using Penn World Tables Data that became available in 1980s.

Much of the work of Barro (1991, 1997) has focused on some measure of human capital as a determinant of growth¹². He examined the data from Penn World Table to find “some empirical regularity” in the cross-country data. It is worth noting that

¹² Haouas Ilham and Yagoubi Mahmoud, “Openness and Human Capital as Sources of Productivity Growth: An Empirical Investigation from the MENA Countries”, IZA Discussion paper, from the *Institute for the Study of Labor (IZA)*, No 1461, Germany, 2005, p.1.

he did not use any model of economic growth to draw his econometric specification, but he regressed growth rates on explanatory variables that have been emphasized in various theoretical models. His studies focused mainly on initial level of GDP (in the year 1960), initial levels of human capital through primary and secondary schooling rates in 1960, fertility rates and investment ratios.

The results of Barro's regression analysis show that primary and secondary schools gross enrollment rates have significant effects of economics growth. Furthermore, by showing the primary and secondary students-teachers ratios in 1960 have marginally significant negative coefficient, Barro gives evidence of the role of school quality on economic growth¹³.

Endogenous model of Romer (1990) was based on the assumption that the creation of new ideas is a direct role of human capital, which takes the form of knowledge. As a result investment in human capital led to growth in physical capital which in turn leads to economic growth. Mankiw, Romer and Weil (1992) estimated the determinant of economic growth using and modifying the neoclassical (Solow) model. An important empirical result of their analysis is the investment in schooling coefficient which appeared very positive and strongly significant.

Levine and Renelt (1992) ran a large number of regression analyses and confirmed the results of Barro regarding the impact of human capital on the rate of real growth of output per capita. They showed that human capital measured by the secondary enrollment rate is a robust variable in growth regression¹⁴.

¹³ Glewwe Paul and Maiga Eugenie and Zheng Haochi, "The Contribution of Education to Economic Growth: A Review of the Evidence, with Special Attention and an Application to Sub-Saharan Africa, *World Development*, Vol 59, pp 379-393, 2014, p15.

¹⁴ Alfred Greiner, "Human Capital formation, Public Debt and Economic Growth", *Journal of Macroeconomics*, Vol.30, Issue 1, 415-427, March 2008, p.12.

Since the development of growth models in 1990s, hundreds of papers have been written dealing with the determinants of growth, especially education. The two basic frameworks with which to model and analyse the relationship between human capital formation and economic growth are (Benhabib and Spiegel, 1994) (Aghion and Howitt, 1998). The first approach is originally from Becker's (1964) theory of human capital which is based on the idea that growth is primarily driven by the accumulation of human capital. Differences in the rates at which the economies accumulate human capital are a major element that increase the growth rates of per capita income across economies. The second approach was introduced by Nelson and Phelps (1966) and it contends that the stock of human capital determines the economy's capacity to innovate or catch up with more advanced economies, which in turn drives economic growth¹⁵.

Based on the Cobb Douglas production function, Benhabib and Spiegel (1994) conducted a simple regression where the change of log per capita income is regressed on changes in the log of the physical capital stock, changes in the log of the human capital stock and changes in the log of labor. All the data were measured from 1965 to 1985. Their finding was that changes in the stock of human capital have no significant impacts on changes in per capita per income, however human capital plays a role as a factor that allows the adoption of technology and makes physical capital more productive.

Furthermore, Banhabib and Speigel also adopted and documented the idea of human capital and its role in facilitating technology adoption. They used cross-

¹⁵ Descy Pascaline, Manfred Tessaring , "The Value of learning: evaluation and impact of education and training", *Third Report on vocational training research in Europe, synthesis report., Luxembourg Office for Official Pulications of the European Communities*, 2005 (Cedefop Reference series, 54)

country data, investigating the Nelson-Phelps hypothesis and concluded that “technology spills over from leader nations to followers, and that the rate of the flow depends on levels of education”.

As a source of productivity growth, Haouas and Yagoubi (2005) investigated the impact of openness to trade and human capital on economies in Middle East and North Africa region (MENA). They used panel data on 16 countries covering the 1965- 2000 period. The results show a significant impact of openness on productivity growth, as well as an effect, significant at the ten per cent level, of the level of human capital on the level of income but no effect on underlying productivity growth. In their paper, Haouas and Yagoub assume that one of the reasons why education did not have the expected effects on the macro level might be the low quality of education¹⁶.

According to Haouas and Yagoubi, the results of their estimation suggest that the growth pay-off of education in the MENA countries highly depends on the adaptation of education to the changing demands and economy. In addition, despite the achievements of the MENA region in the education system, and although educated labor received high wages, most of which were government employees, it did not reflect any effect on productivity nor were there any signs of government employees’ contribution to growth. Therefore, Haouas and Yagoubi concluded in their paper that for the MENA countries quality of education, not quantity, is the key to creating human capital which will allow them to enjoy gains in productivity.

3. Educational Attainment in Algeria

¹⁶ Ilham Haouas and Mahmoud Yagoubi, *op. cit.*, p.10.

In this section we describe and examine education attainment in Algeria with comparative data for two developed countries including South Korea and the US. We used the data collected from Barro and Lee education attainment dataset for the period 1960 to 2010, as well as the macro data from Penn World Table, Center for International Comparison.

The figures in Barro and Lee dataset show the distribution of educational attainment of the adult population over age 15 and over age 25 by sex and at 4 level of schoolings, no schooling, primary, secondary and tertiary for each country. Penn World Table (PWT) provides a set of economic data based on national accounts covering most of the countries in the world. We also used the latest Barro and Lee data which extends statistics until 2010.

Data in table 1 shows the percentage of the total population aged 15 and over in Algeria and the highest educational level attained between 1960 and 2000. The percentage of the population without schooling decreased from 80% in 1960 to 31.3% in 2000. The average years of schooling also increased from 0.98 in 1960 to 5.3% in 2000. The percentage of population attending first level, second level and post-secondary level in 2000 reached 33.3%, 29.3%, 6.1% respectively, while 11.4% completed first level, 8.5% completed secondary level and 2.1 complete post-secondary level. The average year of schooling has increased from 0.98% in 1960 to 5.37 per cent in 2000.

Table 1: Algeria Educational Attainment of the Total Population Aged 15 and Over									
Year	Population over age 15 (1000s)	No Schooling	Highest level attained						Average Years of School
			First level		Second Level		Post-Secondary		
			Total	Complete	Total	Complete	Total	Complete	
			(Percentage of the population aged 15 and over)						
1960	6073	80	17.1	4.9	2.6	0.5	0.3	0.2	0.98
1965	6374	81.9	13.7	4.4	3.9	1.2	0.4	0.2	1.04
1970	7097	73.7	19.2	6.4	6.7	2.3	0.3	0	1.56
1975	8392	66.5	24.3	8.3	8.4	2.5	0.8	0.2	2.01
1980	10026	57.6	29.1	10	11.7	3	1.6	0.4	2.68
1985	12254	50	30.4	10.4	16.9	4.2	2.7	0.8	3.46
1990	14465	43.2	30.9	10.6	21.8	6.3	4	1.4	4.25
1995	17125	37.4	31.6	10.9	26	7.5	5	1.7	4.83
2000	20087	31.3	33.3	11.4	29.3	8.5	6.1	2.1	5.37

Source: Barro-Lee: Education Attainment for Population Aged 15 and Over.

(<http://www.barrolee.com/data/newtest.jsp>)

Table 2 is a comparative data that describes the percentage of population aged 15 and over by educational attainment in Algeria as a developing country and two developed countries we selected; South Korea and United States. The data shows the percentage of completion by level; primary, secondary and tertiary over a 5 year period from 1975 to 1995.

The table shows that complete rate of primary education in Algeria has increased from 6.6 per cent in 1975 to 27 per cent in 1995. In South Korea and United States the primary schooling recorded a rate of 40.8 per cent and 33.8 per cent respectively.

In 1995, 2.6% of the Algerian population age 15 and over completed secondary level, and 2.3 per cent completed tertiary education. The same year 13.4 per cent and

10.5 per cent in South Korea and United States respectively completed secondary schooling, and 4.4 per cent and 20.7 per cent respectively completed tertiary education.

Table 2: Comparative Data: Percentage of population (age 15+) by educational attainment									
	Algeria			South Korea			United States		
Year (interval of 5 years)	Completed primary	Completed secondary	Completed Tertiary	Completed primary	Completed secondary	Completed Tertiary	Completed primary	Completed secondary	Completed Tertiary
1975	6.6	3.5	0.3	18.5	35.1	3.5	47	4.7	13.9
1980	10	3.7	0.6	26.1	27.1	4.7	50.5	2.4	16
1985	15.4	3.5	1.1	32.99	20.2	6.9	39.9	4.3	19.7
1990	21.3	3.1	1.8	39.9	1.1	11.7	34.7	4.9	20
1995	27	2.6	2.3	40.8	13.4	10.5	33.8	4.4	20.7

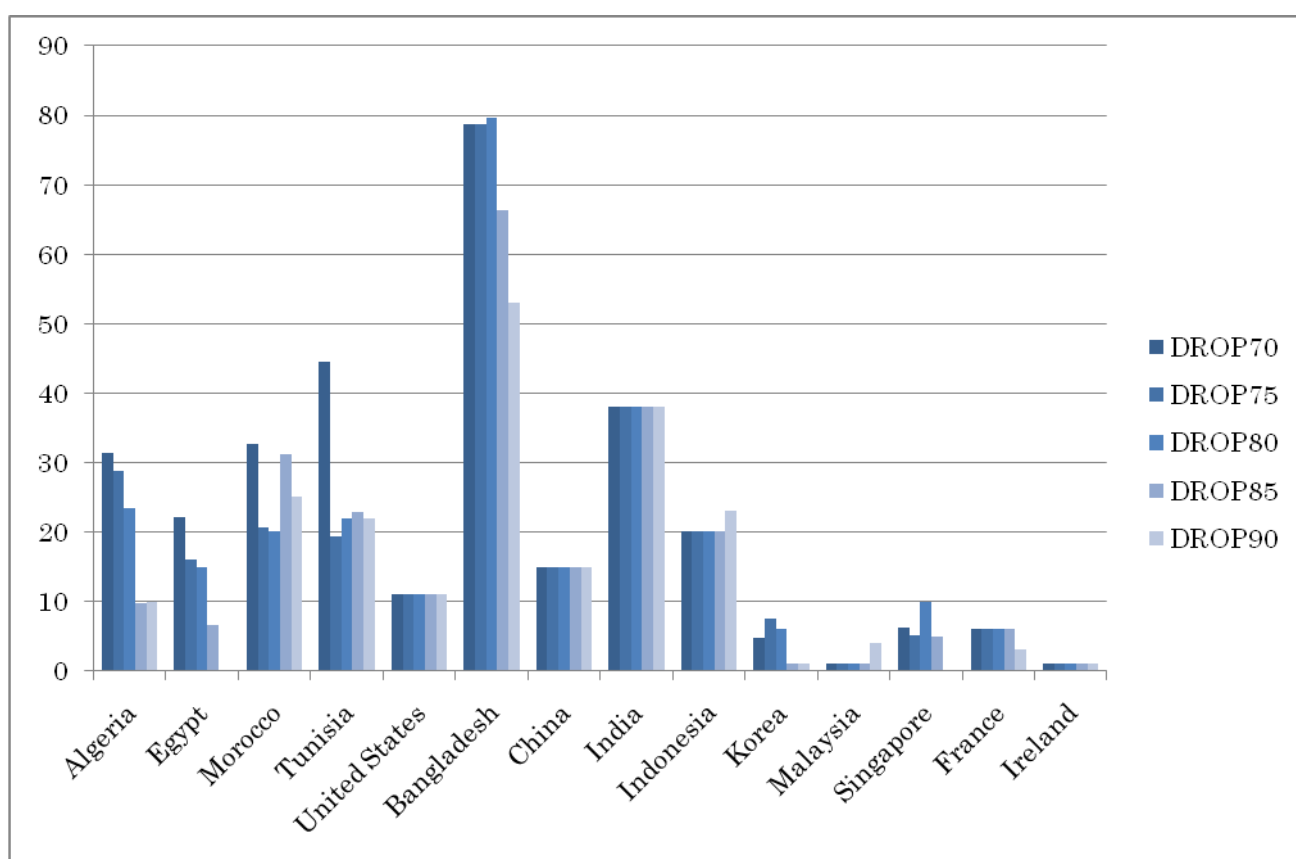
Source: Barro-Lee: Educational Attainment for Total Population: Country Report.

(<http://www.barrolee.com/data/newtest.jsp>)

Graph 1 describes drop out of school rate. We collected data from Barro and Lee measures of the schooling quality in a cross-section of countries over a 5 year period. The data refers to a selected group of developed and developing countries including Algeria. The graph indicates a decreasing drop out of school rate for many countries. In Algeria percentage of drop out went from 31.3 per cent in 1970 to 10 per cent in 1990, and in Korea it decreased from 4.8 per cent in 1970 to 1 per cent in 1990. The

same trend is noticeable in France, Singapore and Egypt where the drop out rate in 1970 decreased from 6 per cent, 6.3 per cent and 22.1 percent respectively to 3 per cent for France and 0% for Singapore and Egypt in 1990.

Graph 1: Drop out of School Percentage (1975-1990)



Source: Barro- Lee : Schooling Quality in a Cross-Section of Countries.

The latest dataset of Barro and Lee provides educational attainment results up to 2010 for a population at age 15. Table 3 is a comparative data of school attainment for Algeria and South Korea in 2010. The table shows that no schooling rate in Algeria stands at 11.4 per cent and in Korea it is 3.6 per cent. The percentage of population that completed primary school in Algeria is 1.5 per cent out of a total of 38.8 per cent who attended primary level. In Korea 9.2 per cent out of 9.4 per cent completed primary level. At the secondary level 39.1 per cent of the population in Algeria attended school and 36.1 per cent completed the level.

In tertiary level 10.6 per cent of the population attended while 5.6 per cent completed their studies. In Korea 37.8 per cent completed secondary school out of

40.1 per cent who attended school, and 16.2 completed tertiary out of 40.1 per cent.

Table 3: Educational Attainment for Total Population of 15 and over (Algeria and South Korea)									
Country	No schooling	Highest level attained						Average Years of schooling	Population (1000s)
		Primary		Secondary		Tertiary			
		Total	Completed	Total	Completed	Total	Completed		
		(% of population aged 15 and over)							
Algeria	11.4	38.8	1.5	39.1	36.1	10.6	5.6	7.702	25853
Korea	3.6	9.4	9.2	46.8	37.8	40.1	16.2	11.848	40868

Source: Barro-Lee: Educational Attainment in the World 1950-2010.

(<http://www.barrolee.com/>)

4. Empirical Analysis: Model and Methodology

4.1 Model 1: Cross-Country Analysis

Educational attainment data are constructed by Barro and Lee (2010). For human capital investment we use the schooling ratio. The other data are from Penn World table. Rows [i] and [ii] in Table 1 provide descriptive statistics of variables for developed economies and less developed economies respectively. Developed economies include the US, the UK, Canada, Australia, France, Germany, Italy, Japan and South Korea. Less developed economies include Iran, Algeria, Tunisia, Iraq, Egypt, Morocco, Indonesia, Pakistan, and Sudan, which we consider Islamic countries.¹⁷ Thus, the number of developed economies is nine, and the number of less developed economies is nine.

¹⁷ We do not consider less developed economies in which GDP per labor unit in 2005 is less than 5000 US dollars. When we include poor economies in growth regression, it was difficult to obtain robust results.

The mean of GDP per labor unit in 1975 is considerably higher in the developed economies than in the less developed economies. Because the mean of economic growth rates is also higher in the developed economies than in the less developed economies, the gap in the GDP per labor unit in 2005 between them further widens. The variance in economic growth rates is large in the less developed economies.

Although the mean of secondary schooling ratios is close to unity in the developed economies, it is less than half in the less developed economies. The investment ratio measures the ratio of investment to GDP. The mean of investment ratio is higher in the less developed economies than in the developed economies. However, its variance is larger in the less developed economies. The mean of population growth rates is higher in the less developed economies than in the developed economies where it is negative, whereas the variance is large.

We try to explain the differences in economic growth rates among economies. We consider human capital investment, physical capital investment, population growth, and the initial GDP per labor unit as the explanatory variable. We estimate the following growth regression by using ordinary least square (OLS) estimation:

$$\begin{aligned}
growth_i = & \beta_c^d d_i^d + \beta_c^{ld} d_i^{ld} + \beta_{edu}^d d_i^{ld} + \beta_{edu} ln edu_i + \beta_{inv} ln inv_i + \beta_{pop} pop_i \\
& + \beta_{y75} ln y75_i + \epsilon_i,
\end{aligned}$$

i = 1, 2, ..., n. (1)

Where $\epsilon_i \sim N(0, \sigma^2)$ is an error term which is mutually independent of all i, $growth_i$ is the growth of GDP per labor unit from 1975 to 2005 for country i, edu_i is

the average ratio of secondary schooling from 1975 to 2005 for country i , inv_i is the average investment ratio from 1975 to 2005 for country i , pop_i is the population growth rate from 1975 to 2005 for country i , and $y75_i$ is the GDP per labor unit in 1975 for country i .¹⁸ $d_i^d(d_i^{ld})$ takes a value of unity (zero) for the developed economies and a value of zero (unity) for the less developed economies. The sample size is 18, i.e., $n=18$.

We allow different constant terms between the developed economies and the less developed economies. We expect the following parameter signs $\beta_{edu} > 0$, $\beta_{inv} > 0$, and $\beta_{pop} < 0$. Additionally, we expect $\beta_{y75} < 0$ because we assume diminishing returns in physical and human capital. Column [i] of Table 2 shows the results.

The secondary ratio is positive and significant. The investment ratio is also positively significant. Thus, we can confirm that both human capital investment and physical capital investment play important roles on economic growth. The GDP per labor unit in 1975 is negative and significant. This implies that the initial GDP per labor unit is negatively related to economic growth. Although we expect the negative effect of population growth on economic growth, the population growth rate is significantly positive. Population growth might have different effects on economic growth between developed and less developed economies. Because we include developed and less developed economies in (1), it might not be possible to obtain robust results with respect to population growth. We test the equality of constant terms between the developed economies and the less developed economies, i.e., $\beta_c^d = \beta_c^{ld}$.

We examine the Chow test which is distributed as $F(1, 12)$ under the null

¹⁸ Because the population growth rates take negative values in some developed economies, it is impossible to obtain logarithmic values.

hypothesis of no structural change. As shown in column [i] of Table 2, the constant term of the developed economies is significantly higher than that of the less developed economies. That is, the growth of total factor productivity is significantly higher in the developed economies than in the less developed economies.

We examine the possibility that the effect of human capital investment between developed and less developed has on growth:

$$growth_i = \beta_c + \beta_{edu}^d d_i^d lnedu_i + \beta_{edu}^{ld} d_i^{ld} lnedu_i + \beta_{inv} lninv_i + \beta_{pop} pop_i + \beta_{y75} lny75_i + \epsilon_i,$$

$$i = 1, 2, \dots, n. \quad (2)$$

Column [ii] of Table 2 shows the results. The secondary schooling ratio is strongly significant in the developed economies, whereas its ratio is also significant in the less developed economies. When we test the equality, $\beta_{edu}^d = \beta_{edu}^{ld}$ by the Chow test, its equality is strongly rejected, meaning is that the effect of human capital investment is stronger in the developed economies than in the less developed economies. The investment ratio is positively significant. The initial GDP per labor unit is negatively significant. However, there would be little effect of population growth on economic growth.

We also examine the effect of physical capital investment between developed and less developed economies:

$$growth_i = \beta_c + \beta_{edu} \ln edu_i + \beta_{inv}^d d_i^d \ln inv_i + \beta_{inv}^{ld} d_i^{ld} \ln inv_i + \beta_{pop} pop_i + \beta_{y75} \ln y75_i + \epsilon_i,$$

$$i = 1, 2, \dots, n. \quad (3)$$

Column [iii] of Table 2 shows the results. The investment ratio is strongly significant in the developed economies, whereas its ratio is also significant in the less developed economies. The Chow test shows that the equality, $\beta_{inv}^d = \beta_{inv}^{ld}$ is strongly rejected. That is, the effect of physical capital investment is stronger in the developed economies than in the less developed economies. The secondary schooling ratio is positively significant. The initial GDP per labor unit is negatively significant. However, there would be little effect of population growth on economic growth.

Finally, we examine the possibility that the effect of population growth between developed and less developed economies explains economic growth:

$$growth_i = \beta_c + \beta_{edu} \ln edu_i + \beta_{inv} \ln inv_i + \beta_{pop}^d d_i^d pop_i + \beta_{pop}^{ld} d_i^{ld} pop_i + \beta_{y75} \ln y75_i + \epsilon_i,$$

$$i = 1, 2, \dots, n. \quad (4)$$

Column [iv] of Table 2 shows the results. The population growth rate is negatively significant in the less developed economies. However, it would not be possible to obtain negative effect of population growth in the developed economies. The Chow test shows that the equality, $\beta_{pop}^d = \beta_{pop}^{ld}$ is rejected at the 5% significance level. Thus, population growth might have different effects on economic growth depending

on development stages. When economies have sustained growth, there would exist various patterns of fertility and economic growth. The secondary schooling ratio is positively significant. However, the investment ratio is positive but insignificant. The initial GDP per labor unit is negatively significant. The goodness-of-fitness is similar among the specifications (1), (2), (3), and (4).

Table 1 Descriptive Statistics

[i] developed	$y05_i$	edu_i	inv_i	pop_i	$y75_i$	$growth_i$
<i>mean</i>	77407	96.30	22.77	-0.627	39435	0.733
<i>s.d.</i>	9575	3.62	6.45	0.805	11341	0.380
<i>range</i>	30244	10.17	21.74	1.684	38647	1.205
[ii] lessdeveloped	$y05_i$	edu_i	inv_i	pop_i	$y75_i$	$growth_i$
<i>mean</i>	15619	48.77	26.90	0.858	13335	0.416
<i>s.d.</i>	8718	12.00	10.86	0.217	13192	0.571
<i>range</i>	26478	30	35.84	0.603	35659	1.850

Note. *developed* represents the sample of developed economies, whereas *less developed* represents the sample of less developed economies. The sample size of developed economies is nine, whereas the sample size of less developed economies is nine. *s.d.* represents the standard deviation and *range* represents the gap between the maximum and the minimum. $y05_i$ is the GDP per labor unit in 2005 for country i , $growth_i$ is the growth rate of GDP per labor unit from 1975 to 2005 for country i , edu_i is the average ratio of secondary schooling from 1975 to 2005 for country i , inv_i is the average investment ratio from 1975 to 2005 for country i , pop_i is the population growth rate from 1975 to 2005 for country i , and $y75_i$ is the GDP per labor unit in 1975 for country i .

Table 2. Estimation of growth regression

[i] (1)		[ii] (2)		[iii] (3)		[iv] (4)	
$\hat{\beta}_{edu}$	0.600	$\hat{\beta}_{edu}^d$	0.799	$\hat{\beta}_{edu}$	0.719	$\hat{\beta}_{edu}$	0.714
	(1.99 [*])		(2.98 ^{**})		(2.35 [*])		(1.95 [*])
		$\hat{\beta}_{edu}^{ld}$	(0.599)				
			(1.97 ^{**})				
$\hat{\beta}_{inv}$	0.338	$\hat{\beta}_{inv}$	0.341	$\hat{\beta}_{inv}^d$	0.505	$\hat{\beta}_{inv}$	0.137
	(2.85 ^{**})		(2.84 ^{**})		(3.22 ^{**})		(1.09)
				$\hat{\beta}_{inv}^{ld}$	0.265		
					(2.21 [*])		
$\hat{\beta}_{pop}$	0.0626	$\hat{\beta}_{pop}$	0.0594	$\hat{\beta}_{pop}$	0.0308	$\hat{\beta}_{pop}^d$	0.0660
	(0.84)		(0.790)		(0.40)		(0.71)
						$\hat{\beta}_{pop}^{ld}$	-0.712
							(-2.74 ^{**})
$\hat{\beta}_{y75}$	-0.633	$\hat{\beta}_{y75}$	-0.635	$\hat{\beta}_{y75}$	-0.615	$\hat{\beta}_{y75}$	-0.550
	(-7.43 ^{**})		(-9.39 ^{**})		(-8.61 ^{**})		(-6.56 ^{**})
$\hat{\beta}_c^d$	3.642	$\hat{\beta}_c^d$	2.741	$\hat{\beta}_c^d$	2.368	$\hat{\beta}_c^d$	2.859
	(3.19 ^{**})		(2.81 [*])		(2.41 [*])		(2.20 [*])
$\hat{\beta}_c^{ld}$	2.728						
	(2.83 [*])						
∂	0.196	∂	0.198	∂	0.188	∂	0.208
\bar{R}^2	0.865	\bar{R}^2	0.873	\bar{R}^2	0.858	\bar{R}^2	0.825
<i>Chow</i>	14.29 ^{**}	<i>Chow</i>	13.90 ^{**}	<i>Chow</i>	11.18 ^{**}	<i>Chow</i>	6.86 ^{**}

Note. \wedge are the estimates. The number in () is the t -value which distributed as t_{12} .

^{*}, ^{**} represent significance at the 5 and 1% levels, respectively. \bar{R} is the adjusted R^2 .

The *Chow test* is distributed as F (1,12) under the null hypothesis of no structural change. The sample is 18.

4.2 Model 2: Algeria and South Korea

Education attainment data are from Barro and Lee (2010). In our second model we use the percentage of population aged 15 and over who completed secondary school. We do not use the schooling ratio because in South Korea this ratio has exceeded 90% since 1995, which is considerably high. The other data are from Penn World Table.

Rows [i] and [ii] in Table 3 provide descriptive statistics of variables for Algeria and South Korea, respectively. As we take the span of five years from 1960 to 2000, the samples sizes of Algeria and South Korea are nine. The mean of GDP and its standard deviation are higher in South Korea than in Algeria, whereas the ratio of standard deviation to mean is also higher in South Korea than in Algeria. GDP per labor unit was higher in Algeria than in South Korea between 1965 and 1985. Although the growth of GDP per labor until from 1985 to 2000 turned to be negative in Algeria, South Korea experienced rapid growth. Thus, GDP per labor unit in South Korea aged 15 and over who completed secondary school is higher in South Korea than in Algeria, whereas there is no much difference in the standard deviation of the two economies. The mean of investment ratios is lower in South Korea than in Algeria. Thus, investment to physical capital is relatively high in Algeria. The mean of population growth is lower in South Korea than in Algeria, whereas the standard deviation is larger in South Korea than in Algeria. This is because the population growth rate has been considerably declining in South Korea.

Although we tried to estimate growth regression using the time-series data of

Algeria and South Korea, we could hardly obtain significant results. Nakamura (2001) found that it might be worthwhile only for a low initial income and high growth rate subsample to estimate the convergence process¹⁹. Therefore it might be impossible for Algeria to investigate the convergence properties.

We try to explain the differences in GDP per labor unit between the two economies. We consider human capital investment, physical capital investment, and population growth as the explanatory variables. We estimate the following growth regression by using ordinary least squares (OLS) estimation:

$$\ln \gamma_{At+5} = \beta_C^A + \beta_{edu} \ln edu_{At} + \beta_{inv} \ln inv_{At} + \beta_{pop} \ln pop_{At} + \epsilon_t, \quad (5)$$

$$\ln \gamma_{Kt+5} = \beta_C^K + \beta_{edu} \ln edu_{Kt} + \beta_{inv} \ln inv_{Kt} + \beta_{pop} \ln pop_{Kt} + \epsilon_t, \quad (6)$$

where $t=1960, 1965, \dots, 2000$. $\epsilon_t \sim N(0, \sigma^2)$ is an error term which is mutually independent of all t . the sample size is 18. γ_{it+5} is GDP per labor unit in year $t+5$ for country i , in which the abbreviations A and K stand for Algeria and South Korea, respectively, edu_{it} is the percentage of population aged 15 and over who completed secondary school in year t for country i , inv_{it} is the investment ratio in year t for country i , pop_{it} is the population growth rate from years $t-5$ to t for country i . The sample size is 18.

We allow the different constant terms between Algeria and South Korea. We expect the following parameter signs: $\beta_{edu} > 0, \beta_{inv} > 0$, and $\beta_{pop} < 0$. Column [i] of Table 4 shows the estimation results of regressions. The percentage of population aged 15 and over who completed secondary school is positive but insignificant. The investment ratio is positively significant. Thus, we can confirm the importance of

¹⁹ Nakamura, H., "An empirical reexamination of the solow growth model", *Journal of Japanese and International Economics*, 15, 323-340, 2001

physical capital investment on GDP per labor unit. The population growth rate is negative and significant. Population growth would negatively affect the accumulation of per labor unit physical capital, and thus, GDP per labor unit. We test the equality of constant terms between Algeria and South Korea, i.e., $\beta_c^A = \beta_c^K$. We examine the Chow test which is distributed as $F(1,13)$ under the null hypothesis of no structural change. As shown in column [i] of Table 4, there is no significant difference between them. That is, the base of GDP per labor unit is similar between the two economies. When we allow the different variances of disturbances between the two economies, we obtain similar results. We also examine the likelihood ratio (LR) test to test structural change in the constant terms. The LR test shows no difference of the constant terms between the two economies.

Let us examine the possibility that the effects of human capital investment are different between Algeria and South Korea:

$$\ln Y_{At+5} = \beta_c^A + \beta_{edu}^A \ln edu_{At} + \beta_{inv} \ln inv_{At} + \beta_{pop} \ln pop_{At} + \epsilon_t, \quad (7)$$

$$\ln Y_{Kt+5} = \beta_c^K + \beta_{edu}^K \ln edu_{Kt} + \beta_{inv} \ln inv_{Kt} + \beta_{pop} \ln pop_{Kt} + \epsilon_t, \quad (8)$$

where $t = 1960, 1965, \dots, 2000$.

Column [ii] of Table 4 shows the results. The percentage of population aged 15 and over who completed secondary school is positive and significant in South Korea, whereas it is significant in Algeria. Thus we can confirm the importance of human capital investment of GDP per labor unit in South Korea, but not in Algeria. When we test the equality $\beta_{edu}^A = \beta_{edu}^K$ by the Chow test distributed as $F(1, 12)$ under no

structural change, it is rejected at the 10% level. Additionally, by using the LR test, it is rejected at the 5% significance level. Thus the effect of human capital investment is stronger in South Korea than in Algeria. The investment ratio is positive but insignificant. The population growth rate is also insignificant.

We also examine the possibility that the effects of physical capital investment are different between Algeria and South Korea:

$$\ln Y_{At+5} = \beta_c^A + \beta_{edu} \ln edu_{At} + \beta_{inv}^A \ln inv_{At} + \beta_{pop} \ln pop_{At} + \epsilon_t, \quad (9)$$

$$\ln Y_{Kt+5} = \beta_c^K + \beta_{edu} \ln edu_{Kt} + \beta_{inv}^K \ln inv_{Kt} + \beta_{pop} \ln pop_{Kt} + \epsilon_t, \quad (10)$$

where $t = 1960, 1965, \dots, 2000$.

Column [iii] of Table 4 shows the results. The percentage of population aged 15 and over who completed secondary school is insignificant. The investment ratio is positive and significant in Algeria, whereas its ratio is also significant in South Korea. When we test the equality $\beta_{inv}^A = \beta_{inv}^K$ by the Chow test, its equality is not rejected. Thus, there would be no difference in the effects of physical capital investment on GDP per labor unit between the two economies. Population growth is negative and significant.

Finally, we examine the possibility that the effects of population growth differ between Algeria and South Korea:

$$\ln Y_{At+5} = \beta_c^A + \beta_{edu} \ln edu_{At} + \beta_{inv} \ln inv_{At} + \beta_{pop}^A \ln pop_{At} + \epsilon_t, \quad (11)$$

$$\ln Y_{Kt+5} = \beta_c^K + \beta_{edu} \ln edu_{Kt} + \beta_{edu}^K \ln inv_{Kt} + \beta_{pop} \ln pop_{Kt} + \epsilon_t, (12)$$

where $t=1960, 1965, \dots, 2000$.

Column [iv] of Table 4 shows the results. Neither human capital investment nor physical capital investment is significant. The population growth rate is negatively significant in South Korea, although it is significant in Algeria. The Chow test shows the equality $\beta_{pop}^A = \beta_{pop}^K$ is strongly rejected. Thus, population growth might have different effects on GDP per labor unit. The decline in the fertility rate observed in South Korea might have a negative effect on GDP per labor unit. The goodness-of-fit is similar among the Column [i], [ii], [iii], [iv] of Table 4.

Furthermore, we compared economic growth between Algeria and Japan. The base of GDP per labor unit was significantly higher in Japan than in Algeria because GDP per labor unit in Japan was already high in 1975. Human Capital investment was positive and significant in Japan, whereas it was insignificant in Algeria. Physical capital investment was positively significant in the two economies. Population growth was negative and significant in Japan, whereas it was insignificant in Algeria. Therefore, we obtained similar results with the comparison between South Korea and Algeria.

Table 3: Descriptive statistics of Algeria and South Korea

[i] Algeria	$\ln Y_{Kt+5}$	$\ln edu_{Kt}$	$\ln inv_{Kt}$	$\ln pop_{Kt}$
mean	16411	13.12	35.45	10.5
s.d	2824	11.05	11.62	2.65
[ii] Korea	$\ln Y_{Kt+5}$	$\ln edu_{Kt}$	$\ln inv_{Kt}$	$\ln pop_{Kt}$
mean	2321.23	24.76	28.94	7.13
s.d	14318	12.48	13.5	3.51

Note. *s.d.* represents the standard deviation. The abbreviations A and K mean Algeria and South Korea, respectively. y_{it+t} is GDP per labor unit in year $t+5$ for country i , edu_{it} is the percentage of population aged 15 and over who completed secondary school in year t for country i , inv_{it} is the investment ratio in year y for country i , pop_{it} is the percentage of population growth rate from years $t-5$ to t for country i . We take the span of five years from $t=1960$ to $t=2000$. Thus, the sample sizes of Algeria and South Korea are nine.

Table 4: Estimation of regression including Algeria and South Korea

[i](5), (6)		[ii](7), (8)		[iii](9), (10)		[iv] (11), (12)	
$\hat{\beta}_{edu}$	0.0096	$\hat{\beta}_{edu}$	-0.0019	$\hat{\beta}_{edu}$	0.010	$\hat{\beta}_{edu}$	0.001
	(0.18)		(-0.04)		(0.18)		(0.02)
		$\hat{\beta}_{edu}^X$	0.768				
			(1.88 [*])				
$\hat{\beta}_{lrv}$	0.64	$\hat{\beta}_{lrv}$	0.289	$\hat{\beta}_{lrv}$		$\hat{\beta}_{lrv}$	0.199
	(5.68 ^{**})		(1.35)		(2.57 [*])		(1.24)
				$\hat{\beta}_{lrv}^X$	0.601		
					(2.55 [*])		
$\hat{\beta}_{pop}$	-0.536	$\hat{\beta}_{pop}$	-0.103	$\hat{\beta}_{pop}$	-0.58	$\hat{\beta}_{pop}$	0.185
	(-4.04 ^{**})		(-0.39)		(-2.20 [*])		(0.76)
						$\hat{\beta}_{pop}^X$	-1.10
							(-5.50 ^{**})
$\hat{\rho}_{edu}^2$	8.660	$\hat{\rho}_{edu}^2$	8.918	$\hat{\rho}_{edu}^2$	8.595	$\hat{\rho}_{edu}^2$	8.563
	(14.32 ^{**})		(15.63 ^{**})		(12.13 ^{**})		(18.66 ^{**})
$\hat{\rho}_{lrv}^2$	8.749	$\hat{\rho}_{lrv}^2$	6.754	$\hat{\rho}_{lrv}^2$	8.96	$\hat{\rho}_{lrv}^2$	11.255
	(16.34 ^{**})		(5.75 ^{**})		(7.43 ^{**})		(12.96 ^{**})
$\hat{\rho}_{pop}^2$	0.182	$\hat{\rho}_{pop}^2$	0.166	$\hat{\rho}_{pop}^2$	0.189	$\hat{\rho}_{pop}^2$	0.138
\hat{R}^2	0.923	\hat{R}^2	0.916	\hat{R}^2	0.916	\hat{R}^2	0.916
Chow	0.45	Chow	3.50	Chow	0.04	Chow	10.65 ^{**}
LR	0.11	LR	4.06 [*]	LR	1.85	LR	11.45 ^{**}

Note. $\hat{\cdot}$ are the estimates. The number in () is the t-value. *, ** represent significance at 5, and 1% levels, respectively. \hat{R}^2 is the adjusted R^2 . The Chow tests are distributed as F(1,13) in Column [i] and as F(1,12) in Column [ii], [iii], and [iv] under the null hypothesis of no structural change. The LR test is distributed as $\chi^2(1)$ under the null hypothesis of no structural change. The sample size is 18.

What is consistent across each above regression is that education is most likely to have a beneficial effect on the levels of GDP growth. Above data and tables shows that Algeria in terms of quantity and literacy has made great achievements since independence. However, when considering the economic achievements and the

current economic situation in Algeria, we assume that there was a mismatch between education policies and economic need of the country.

Chapter III: An Overview of Education System in Algeria and South Korea Under Colonial Rule

1. Introduction

Algeria and South Korea have a common long history of colonial rule. Although colonization in Algeria lasted longer than in Korea in terms of length of rule, Korea experienced same political, economic and social collapse as a result of the Korean War and the 36 years of Japanese colonial rule.

When France colonized Algeria in 1830, it was not seeking only a political domination and an economic exploitation but also a cultural elimination through a comprehensive annexation. For a hundred and thirty two years, the harsh acculturation program imposed by the French colonial system profoundly de-structured the Algerian society and created a cultural crisis. This cultural crisis very much influenced the educational policy making of independent Algeria regardless of the economic development strategies.

During colonialism, Korean educational system was governed and controlled by the Japanese colonial government and were subject to a limited access to education. However, compared to Algeria where schools were mostly accessible to the French, Korea could however benefit from modern schools and education which Japanese colonial government established.

As such, Algeria and Korea share the same pains from colonial rules and civil wars. At independence both countries' formulation of economic and educational policies and reforms was influenced by their colonial period. However, Korea could overcome its colonial legacy and marched towards progress rather rapidly by introducing major reforms - both educational and economic - and was able to catch up with worlds' most advanced countries, as opposed to Algeria who is today lagging far behind.

In this chapter we aim at reviewing the colonial period in Algeria and Korea in order to better understand their respective choices of educational and economic policies and strategies - which we will analyze in the following chapter. We briefly review the educational system in Algeria and Korea before the colonial period. We then mainly focus on the educational system under the colonial rule, especially the role of the colonial governments in educating the population, their policies and the effect of such policies on the indigenous population, which led to resistance and demonstrations both in Algeria and Korea. While the analysis points out to the historical similarities, it also reveals the differences in how the colonial period influenced both countries.

2. Historical Background of the Algerian Education System

2.1. Education System Before French Colonization:

Prior to French invasion in 1830, Algeria was under the Ottoman Empire. Education had not been a state responsibility but rather a collective responsibility of the society. Education was controlled by the Ulema and was directed toward

religion.

Algeria had many higher-learning institutions where scholars had a well-developed knowledge strongly based on Islamic sciences and its auxiliary subjects²⁰.

In the early decades of the 19th century, Algerian education system consisted of Quranic schools, primary and secondary schools called *Zaouias*²¹. Higher education institutions did not exist in Algeria and students attended universities abroad.

There were three types of Islamic schools:

2.1.1 *Kuttab* or *Msid*

Like most Muslim countries, education and teaching in Algeria were given in local Quranic schools known as *Kuttab*. They were traditional Islamic schools attached to an endowed mosque, and provided elementary level education for children. They were usually located in big cities. The *Kuttab* curriculum consisted essentially of memorizing the Quran, learning the fundamentals of Islamic belief and practice and Prophet's life, sayings and devotional practices. The memorization of Quran was through dictation, recitation and writing. In addition, discussions about legal matters and poetry were also held at the *Kuttab*. The teachers of the *Kuttab* known as *mouadeb* cumulated the function of teacher, *muezzin* (a man appointed to call to prayer) and *imam* (the worship leader of a mosque and the Muslim community). Every *mouadeb* had 20 to 30 boy students aged between 6 and 10 years old to whom he would teach writing and reading through Quran. Students could continue for

²⁰ Attieh Aman, "Algeria Higher education Profile" (http://www.bc.edu/bc_org/avp/soe/cihe/inhea/profiles/Algeria.htm) viewed 2011/06/22

²¹ A term used in the Maghreb or West Africa referring to an Islamic religious school or monastery.

higher studies in mosques circles called *Madrassas* and *Zaouias*.

2.1.2 Madrassas and Zaouias

Spread mainly in villages and remote areas, Madrassas and Zaouias were largely centered on the study of Islamic jurisprudence (fiqh) at higher level. The teachers known as *mouderres* cumulated the function of professor, *cadi* (judge) and *mufti* (scholar who was an interpreter or expounder of Islamic law). Madrassas and Zaouias received state support and parents donations and had endowed professorships and residential facilities. They were also attached and located within mosques throughout the country, and the teachers were Muslim legal scholars known as Ulemas. They were expert in several fields of Islamic studies and religious sciences.

Zaouias were operating as primary and secondary schools, and also as institutions where Ulema held meetings to discuss scientific and religious matters, comments about prophet's sayings and to interpret Quran verses²². After their training and studies at the Zaouia, the students - boys between 10 and 15 years old - obtained their *idjaza*²³ and then usually returned to their village or hometown to teach in a *Kouttab*. There were about 2000 Quranic schools in Algiers Regency²⁴.

Many Madrassas and Zaouias provided higher education, and the best students

²² Depont Octave and Coppolani Xavier, *Les Confréries Religieuses Musulmanes*, Typographie et Lithographie Adolphe Jourdan, Algiers 1897, p.231.

²³ An *ijazah* is a certificate used primarily by Muslims to indicate that one has been authorized by a higher authority to transmit a certain subject or text of Islamic knowledge

²⁴ Regency of Algiers is the name of Algeria during the ottoman period.

would complete their studies overseas in Karawiyine University in Fes, Zitouna University in Tunis or El Azhar University in Cairo. The main subjects included in 7 years of higher education were Arabic grammar, geometry, arithmetic, philology, physics, and astronomy, fiqh (law), *tafsir* (theology), and Hadith (Prophet's sayings and practices).

The Zaouias has enjoyed great esteem and respect up to today. Its fame and influence is especially due to the lineage of the institutions and the high level of its founders. The graduate of these institutions played very often a determinant role in their respective towns or villages.

2.1.3 Free Schools

In addition to the above-mentioned institutions, graduates or teachers created free schools independent from the government funding. The creation of such schools was an individual initiative of teachers which showed the people's attachment of their mother tongue.

2.2. The Role of the Association of Algerian Muslim Ulama

The Association of Algerian Muslim Ulama or Association des Ulema Musulman Algeriens was a body of Muslim religious scholars (ulama) founded in 1931 and formally organized on May 5, 1935, by Sheikh Abd Al-Hamid Ben Badis. The Association advocated the restoration of an Algerian nation rooted in Islamic and Arabic traditions, and promoted efforts to provide modern style Arabic Islamic

education at a national level.

The association undertook reforms of the educational system that had perpetuated a medieval mentality in the country. More than 200 schools were opened, the largest at Constantine with about 300 students, and the idea of a Muslim university was introduced but never realized. The Algerian Ulama stressed the importance of studying Arabic, the language of Algerian Muslims, and fought for its compulsory teaching in the Algerian elementary and secondary schools. The main goal of the Association of Algerian Ulama was to give the Algerian Muslim an identity and tradition rooted in the Islamic community (*Ummah*²⁵) and distinct from the French colonizer.

The association met with opposition from Algerian Muslims, known as *évolués*, Arabs by tradition and Frenchmen by education, insisted that Islam and France were not incompatible, and that Algeria had for generations been identified in terms of its economic and cultural relations with France.

However, the popular reaction to the programs of the association was nonetheless considerable. To counteract the growing influence of the Ulama, the French government issued the *circulaire Michel* to forbid members of the association from preaching in the mosques. The association continued in its activities, even with the arrest of Ben Badis in 1938. During the Algerian war of independence against France (1954-62), the association aligned with the National Liberation Front (1956).

2.3. Education Under French Colony

²⁵ Ummah is an Arabic word meaning “community” or nation. It is also used to define the Arab world. In the Islamic context Ummah refers to the community of believers, thus the whole Muslim world

At the beginning of the French conquest in 1830, French authorities' objective was to expand education among the Algerian population. However, a few years later they had a better knowledge and understanding of the country and they concluded that many Algerian young men had at least a primary education level and that an average of 40% in the 3 biggest provinces were literate (could read and write) which was the same as in France²⁶. A hundred years later illiteracy level of the Algerian Muslim adults increased to 90% in 1948 and 86% in 1954, while education amongst French population was expanding²⁷.

By 1830, there were 100 schools in Algiers and 86 in Constantine. Tlemcen province had 50 *msids* and 2 medersas and 1 Zaouia for about 12000 to 14000 inhabitants. There were 2000 secondary school students and 600 students for higher education. Algiers and Constantine had 6 to 7 secondary schools. In total Algeria had about 349 Zaouias²⁸, and every village had its own school. Between 1830 and 1850 the number of *msids* in Algeria decreased from 80 to 15. In Constantine, between 1837 - the year of the capture of Constantine - and 1847, the number of students decreased from 1350 to 350. Before the colonization there were 176 mosques in Algiers. In 1899 there were only 5 left.

The closing down of schools, the destruction of Madrassas and Zaouias, the emigration of teachers and confiscation of land and particularly of *hubus*²⁹ and *mosqs*, the flight of significant numbers of religious notable and lettered families out of Algeria, and the repressive measure taken against religious infrastructure gave a

²⁶ Antoine Leon, Colonisation, *Enseignement et Education: Etude historique et comparative*, l'Harmattan, 1991, p.92.

²⁷ Guy Perville, *Les Etudiants Algériens de l'Université Française 1880 – 1962*, Casbah Edition, Algiers 1997, p.16.

²⁸ Depont Octave and Coppolani Xavier, op.cit, p.214.

²⁹ The religious foundations that constituted the main source of income for religious institutions, including schools.

fatal blow to the Algerian Muslim education during the 20 years following the beginning of French colonization, and contributed to the cultural impoverishment of the Algerians. The colonial system maintained strict control on traditional educational structures. Arabic, which was the language of cultural and spiritual life, was excluded from all forms of official education.

The colonial authority's aim was to destroy any institutions that played a role in the preservation of the Arab-Muslim civilization which represented the value of the Algerian people. This policy contributed to the decline of the literacy and educational level of the Algerian people and the reinforcement of the colonial administration. In a report sent to Napoleon III, a French general summed up the determination of the French administration to fight the Algerian cultural institutions, saying: "We are required to create barriers to Muslim schools ... whenever we can ... In other words, our goal must be to destroy the Algerian people materially and morally".

2.4. Strict Selection and Ethnic Segregation

The schooling rate of Algerian Muslims is an indicator of how opposed the French colonizers were to the education of the Algerians. In 1954, 85.4% of Muslim children could not access French schools. The hope for education depended on the number of available school which was very unequal from region to region, and this was not a coincidence. In Kabylia, the rate of schooling was the highest, while in the Philippeville city there was no school for Muslims. Actually in 1954, the schooling rate depended on the European population living in the region, city or village compared to the Muslim population. This policy of discrimination gave very little

chances to Algerian Muslim to go further than certificate of primary school.

The cultural gap was increasing year by year. In the elementary school there was 1 Muslim student out of any 4 students. In higher education schools there was 1 Muslim out of 6 students, and at the final exam for completion of college only 1 Muslim out of 7 students graduated. In 1954, only 11.4% of Muslims were registered at the University of Algiers.

The Algerian Muslim students were completely isolated from schooling. This was aggravated by the gender discrimination. In 1954 there was 1 girl out of 4 Muslims in elementary schools, 1 out of 6 in secondary schools and about 1 out of 20 in the higher education schools. The first Algerian Muslim graduates were teachers, then midwives. This gender discrimination was also linked to the conservatism of the Muslim society, reinforced by the force of reaction.

In addition to limited schooling and studies, the French government conducted social segregation within Algerian Muslims in the selection process. Algerians from rich families would pursue a normal schooling from elementary level up to Baccalaureate level (junior high school) which gave them a title of “bourgeoisie”. Teaching at junior high school was totally different from primary schools in terms of ideas and objectives. Junior high schools prepared students for supervisory functions or managerial positions in companies.

Children from modest and low income families could not go further than secondary school and thus be oriented towards “short-term schooling” at primary schools as well as additional teaching which would grant them elementary or secondary certificate³⁰. Junior high schools were accessible for excellent and gifted students

³⁰ Perville Guy, *Les Etudiants Algériens de l'Université Française 1880 – 1962*, Casbah edition, Algiers 1997, p.25.

from poor families, were exempted from schooling fees since 1930 and were granted scholarships. However, scholarships were mostly for “higher-primary” studies and ambitious students could continue their studies at the training college for primary school teachers, which would lead to primary teacher jobs for Algerian Muslims.

An ethnic segregation was also part of the French colonial policy from 1892 to 1948. The public primary schools in Algeria were divided into two branches: teaching A, which was according to the Metropolitan standards, and teaching B, which specifically adapted to Algerian Muslims. Certificates, degrees and even teachers were different. However, to avoid criticism from the Algerian “Arabic-speaking” population, teaching A was open to Algerian Muslims. In 1944 there were 40000 Muslims out of 60000 students. Teaching B was focusing mainly on handicraft and common knowledge, and textbooks were elaborated accordingly. Students from teaching B had limited choices in pursuing further studies, while students from teaching A had access to junior high schools and universities and more important jobs. In 1948 Teaching A and B were merged as an action to reduce ethnic segregation, which was taken by French Minister of Education Marcel Demon Naegelen after the Algerian Muslims had claimed it ardently.

2.5. Effects of the French Colonial Education Policy

Thus, caught between the school rejection from Algerian Muslims and the obscurantism policy of the colonizers, French schools progressed slowly. In 1857, with the attempt to reduce the big gap which resulted from the French colonial

education policy, the first French-Arabic College was created. Another two colleges in Constantine and Oran then opened. In 1852, when Napoleon III came back to military control to Algeria, he was shocked by the self-service attitude of the colonial leaders and their educational policy. He wanted to put an end to it and created the first French-Arabic College in 1857 and a teacher's training school. Napoleon III believed that this new college would reduce the big gap between French and Arabic and could work as a preparatory institution leading to a peaceful coexistence between the French and the Arabs. The college offered elementary and advanced classes both in French and Arabic languages, and produced the first generation of the Algerian bilingual elite.

However, the idea proposed by Napoleon to promote equality with the French settlers did not yield the expected result, and instead the French government opened indigenous and restored four *medersa* for the instruction of both Muslims and civil servants in Islamic Affairs. Moreover, in 1895 a university was created in Algiers, and while it was open to all, it was reserved only to European students³¹.

Attempts to institute bilingual, bicultural schools, intended to bring Muslim and European children together in the classroom, were a conspicuous failure, rejected by both communities and phased out after 1870. Providing teaching and education to Muslim students in special institutions was also highly criticized by the Algerian Muslims. According to one estimate, fewer than 5 percent of Algerian children attended any kind of school in 1870.

In 1880 there were 1150 Muslim students in the Arab-French schools, and 3172 in

³¹ Pierre, Vermeren, The North African Educational Challenge: From Colonization to the Current Alleged Islamist Threat, *Mediterranean Journal of Educational Studies*, Vol. 14(2), pp. 49-64, 2009, p.50.

French schools. The Jules Ferry Laws enforced in 1890 provided for the schooling of 10 000 Muslim students (1.9% of the population at school age). Schooling rate reached 5% in 1914 with 47200 students, and 6% in 1930 with 33400 students, and 8.8% in 1944 with 110000 students, 14.60% between 1953 and 1954 (302000) and 15.4% in 1955 with 307000 students (Table 1). Education remained a scarce privilege as only 13.7% of the adults were literate (knew how to write and read) in 1954 and three quarters of them were literate in French.

Table 1: Number of Algerian Muslim At Primary Schools During French Colony								
	1880	1884-90	1908	1914	1930	1944	1953-54	1955
Number of Algerian Muslim At Primary Schools	3172	10 000	33 400	47 200	68 000	110 000	302 000	307 000
Percentage among Population at School Age		1.9	4.3	5	6	8.8	14.6	15.4

Source: Guy Perville, *Les Etudiants Algériens de l'Université de Français 1880-1962*, Casbah Edition, 1997, p18.

Access to secondary schools for Algerian Muslim came very late. In 1870 there were 270 students in the Arab-French secondary schools of Algiers and Constantine.

In the French secondary schools there were 81 Algerians in 1889 and 69 in 1893 and the number remained at about 85 students until 1900, and then it started to increase to 125 in 1905, 180 in 1910 and 386 in 1914 (Table 2). By that time, Algiers Academy had only 67 Algerians who completed their secondary schooling since 1880, out of which only 29 students before 1910. From then the number increased: 1358 students in 1940, 1800 between 1945 and 1946 and 4192 in 1951-52, 6260 in 1954. The number of students completing their secondary schooling also increased to more

than 300 by 1954.

Table 2: Number of Algerian Mulsims at Secondary Schools During Colonization											
	1870	###	1893	1900	1905	1910	###	1940	1945-46	1951-52	1954
Number of Algerian Mulsims at Secondary Schools	271*	81	69	85	125	180	386	1358	1800	4 192	6260
Completion of secondary schools	-	-	-	-	29	-	67	100	-	-	300-350

* Data include the city of Algiers and Constantine.

Source: Ibid.

In 1880 some Algerian Muslims were able to continue their higher studies overseas and at University of Montpellier and Paris, or at Military schools of Saint Cyr especially in France. By the end of the 19th century there were about 10 Algerian Muslim doctors in total. According to a French historian, in 1909 there were 19 graduates in Arabic and two in Berber, six law graduates, one pharmacist, two midwives but no graduate in either science or the humanities (arts). In total, the tiny Muslim graduate elite in 1910 included only 25 doctors, lawyers, teachers and officers.

Very few farmers had access to modern agricultural techniques as no training was provided. The earliest cases of people gaining access to modern techniques were in the field of processing agricultural products, flour milling, weaving, barrel manufacture, the production of beverages and liqueurs, masonry and mechanics. There were a wide range of activities but a tiny number of Muslims accessing

trainings.

University was also hard to access for Muslims. In 1916 there were only 61 students, which then increased to about 100 between 1929 and 1939. During the Second World War, the number increased to 147 between 1940 and 1941, reached 360 between 1945 and 1946, and eventually 589 in 1954-1955. The immigration of students to France also accelerated at the same period, with about 30 students in 1928, which increased to 53 between 1934 and 1935 and to 250 in 1954.

At the beginning of the 20th century there were 215 Algerians employed in primary education, of whom 184 were teachers, assistants and monitors. They were staff of the Ecole Normale d'Instituteurs, the training college for primary school teachers. As for women staff, there were four primary school teachers, two in Algiers, one in Miliana (East) and another in Kabylia (North).

The French government went as far as passing a law in 1930 declaring Arabic as a foreign language and prohibited its use in schools and official documents. Consequently, and despite all the rooms given to Arabic language, French remained the dominant language. Such policies had led Algerian Muslims, who felt deprived of their heritage, to unite against French power and French language. In 1954, at the declaration of liberation war on November 1st, there were only 6240 Algerians that accessed secondary schools. Access to university remained, however, very difficult.

The Algerians resisted and rejected the French schooling system and preferred either the traditional schools (*Zaouias*) or attending universities overseas. The Muslim reformist movement was created in 1930 to fight against the assimilation policy and restore the Arabic language and identity. Private schools network was

organized throughout the country, cultural circles were created and Arabic curricula were introduced.

The attitude towards education in French started to turn into acceptance and then into a vehement claim for more primary schools³². In August 1958, the newly formed French government, tackled the issue of public education in Algeria and signed an ordinance which announced the dramatic acceleration of education in an 8-year plan. The objective was to increase the place and number of those to be educated. However, it was too late for these reforms as they very little, if not at all, improved the education of Algerian Muslims. Consequently, the literacy rate at independence in 1962 was about 25% and Algeria was left with an acute shortage of educated and skilled workforce to manage and develop the new nation.

3. Historical Overview of Education in Korea

3.1 Korean Educational System before Japanese Colonialism: Pre-Modern

Legacies

³² Bessaoud-Alonso, Patricia, “*Les Enjeux Educatifs des Memoires Algeriennes Coloniales et Post-coloniales: Fabrications et Construction des Objectifs*”, PhD diss. Paris VIII Vincennes Saint Denis University 2008, p.133.

Education in pre-colonial Korea was heavily influenced by Confucianism and Christianity. The Confucian educational system was characterized by formal education, which focused on teaching and promoting Confucian ideology, classics and literature. It was based on the state examination system (Kwa Keo), which was very important for the selection of government officials. Confucian education lasted until the late 19th century when the Choson dynasty opened the doors to foreign powers who brought with them a modern, Western educational system. By the end of the 19th century and early 20th century, Western missionaries founded many schools in order to spread Christianity in Korea. Missionaries changed the Korean educational system from a system focused on public and private schooling to a system which became available to all and at all levels of education.

3.1.1 The Influence of Confucianism on Educational Planning

The fervor for learning and for education in Korea has deep roots in its traditional respect for knowledge and deep belief in continuous, life-long human development. This fervor derives mainly from the age-old Confucian belief³³ that the government and administration of the nation could only be entrusted to a moral and a properly educated elite³⁴.

³³ Strong demand for education had been a tradition in Korea for more than six hundred years prior to the post-colonial period because Korea had been heavily influenced by Confucianism. Confucian tradition emphasized education, respect for teachers, and prestige of public service.

³⁴ Confucius, in the major collection of his thoughts and sayings, *The Analects*, emphasize on education, its nature and its role in society. For example: The love of humanity without the love of learning degenerates into silliness. The love of intelligence without the love of learning degenerates into frivolity. The love of chivalry without the love of learning degenerates into banditry. The love of frankness without the love of learning degenerates into brutality. The love of valour without the love of learning degenerates into violence. The love of force without the love of learning degenerates into

Confucianism entered Korea from China's Han dynasty³⁵ more than fifteen centuries ago and played a role in the formation of political ideology and government policy. During the Three Kingdoms of Korea (57 B.C.E – 668 C.E), Chinese culture and Buddhist and Confucian teachings were assimilated into the Korean society and culture. In 372, the first Confucian academy was established, and Korean scholars became proficient in Confucian literature.

But it was during the Koryo Dynasty (918 – 1392) that Confucianism really began to play an important role in society and gained much popularity as a guiding principle for everyday life. Confucian learning, in part, gained momentum during this time period because of the concern for education that grew as men had to prepare for a series of highly competitive examinations (Kwa Keo) which were very important in order to be selected for the limited government posts. To achieve this goal, the government established a national academy, Kukchagam in 982, and in 1127 King Injong ordered the establishment of schools in each prefecture and district³⁶.

When the Choson dynasty succeeded the Koryo dynasty (1392 – 1910), Confucianism further strengthened, and Korea became one of the most Confucian countries. The Choson dynasty saw Confucianism, or what Westerners referred to as Neo-Confucianism, as the foundation of Korean culture and society. Confucian shrines and Confucian schools were established in every community to facilitate the training of Confucian scholars whose major study was Confucian classics. As scholars studied Confucian ideology, they were taught that education is considered

anarchy. (Confucius, *The Analects*, Book 17, Chapter 8)

³⁵ Kyung Ryu. "The role of Confucian Cultural Values and Politics in Planning Educational Programs for Adults in Korea", *the University of Georgia*, Athens, 2008, p.39.

³⁶ Michael J.Seth. *Education Fever: Society, Politics, and the Pursuit of Schooling in South Korea*, Hawi'i Studies on Korea, University of Hawaii Press, 2002 p. 9.

a way of self-cultivation and a way of achieving status and power, and to attain such status and power, Koreans put immense efforts into mastering literary and scholarly works.

During the Choson dynasty, educational institutions were extremely widespread in the country and were divided into public and private institutions. The basic Choson schooling was set up in the early fifteenth century and witnessed significant changes during subsequent centuries. Basic education was provided by village schools known as *seodang* or *sojae*, which were usually located at the house of the teacher and consisted of a small number of neighborhood boys³⁷. The *sodang* remained the most common educational institutions in Korea until the late twentieth century. At more advanced level, there were the state-sponsored local schools known as the *hyanggyo* to prepare students for the civil examination. They included the four *sahak*, located in administrative centers. The highest institution was the National Confucian Academy (*Songgyun-gwan*) founded in 1398, and until the Japanese annexation in 1910, it was the most prestigious university.

The Choson education system is described as pre-modern South Korean schooling. Only those who took civil service examinations could hold major positions of power. For Koreans, the ideal leader was a scholar-official such as King Sejong, sage king and inventor of the Korean alphabet³⁸.

The educational system and the competitive examinations were considered the ultimate means to maintain the *Yangban* class, which formed the governing class during the Choson dynasty. The *Yangban* monopolized politics, the economy of the

³⁷ Ibid, p 10.

³⁸ Kim-Renaud, Youn-Key and Grinker, Richard R., and Larsen, Kirk W (eds). "Korean Education", *The Sigur Center Asia Papers No 24*, The George Washington University, 2005, p.5.
[<https://www.gwu.edu/~sigur/assets/docs/scap/SCAP24-KoreanEd.pdf>] viewed 05/12/2012

country, and education. Their educational enthusiasm contributed to maintaining the ruling class's socio-political interests and power³⁹.

Towards the end of the nineteenth century, Confucian education started to decline when foreign powers were allowed into the country and introduced Western education. In 1876 when Korea signed the Kanghwa Treaty⁴⁰ with Japan, it marked the official opening of Korea to foreign trade and diplomacy, and this led to Western powers beginning to trade with Korea⁴¹. As a result, Western civilization was introduced to Korea, new types of schools appeared, and new patterns of thought and learning were brought to the country. These new ways of learning were brought mainly from Koreans who travelled abroad, especially to Japan, and from American missionaries who settled in Korea to spread Christianity.

3.1.2. Western Missionaries Influence

Between 1882 and 1910, Christian missionaries introduced the second type of educational system available in Korea before Japanese colonization. The missionaries that have enormously influenced and reshaped Korean education from the pre-modern to the modern era were the American missionaries.

Following the signing of the US-Korea treaty in 1882⁴², the first Christian

³⁹ Lee Jeong-Kyu, "The Establishment of Modern Universities in Korea and Their Implications for Korean Education Policies", *Education Policy Analysis Archives*, Volume. 9 No. 27, 2001, p.4.

⁴⁰ The treaty of Kanghwa, also known as the The Japan-Korea Treaty of Amity was signed on February 27, 1876 made between representatives of the Empire of Japan and the Joseon Dynasty. **The treaty**

⁴¹ Ki-Baik Lee and Edward W. Wagner and Edward J. Schultz, *A New History of Korea*, Harvard University Asia Center 1988, p.269.

⁴² When Korea established a trade treaty with Japan, treaty negotiations with the Americans and with several European countries were made possible in 1882. The treaty established mutual friendship and mutual assistance in case of attack; and the treaty also addressed issues such as extraterritorial rights for American citizens in Korea and most favored nation trade status.

missionaries from the United States arrived to Korea and founded a number of schools which produced many influential figures of the Korean independence movement. While traditional Confucian education was male-dominated and inaccessible to many individuals, missionaries created an educational system accessible to everyone at every socio-economic level. Prior to the establishment of missionary schools in Korea, only private primary and secondary education existed, and the state provided only one form of higher education, which provided higher learning only to selected youth⁴³. American missionaries founded schools, and introduced the Western four-year college. Among the missionaries that arrived to Korea was Dr. Horace G. Underwood, who published the first Korean-English and English-Korean dictionaries and later established the Choson Christian College in 1915. American missionaries also established numerous hospitals that provided and taught Western medicine.

Some Koreans started to travel to the United States, forming a small intelligentsia that experienced the American educational system firsthand. Among these students was Syngman Rhee, the future South Korean president.

Christian missionaries also founded girls schools and worked to promote literacy among women and encouraged them to learn Han'gŭl. Traditionally, Confucian schools were only for men and Confucian society saw no benefit in educating women⁴⁴, so this was a clear departure from the way the educational system had been set up before.

Through education, missionaries left their fingerprint on South Korea. They used

⁴³ Hugues Brendan, "A Mission of Education and Creation: The Work of Christian Missionaries in Korea from 1882 Through 1910", *Historia*, Volume 18, 2009, p 3.

⁴⁴ Crumley Jaimie D., "The Origins of the Twentieth Century Explosion of Christianity in Korea: Changing Heaven's Landscape", *Honors Thesis Collection*, Paper 44, 2012, p.24.

medicine and educational activities as a means of transmitting Christianity to Korean society. Moreover, they developed higher education which greatly contributed to awakening the national spirit, disseminating Christianity, increasing awareness about the importance of Western practical and scientific knowledge, and opening democratic education.

While missionaries were mainly interested in converting Koreans to Christianity, they had a great effect on Korean students by helping provide them with a Western education. At the same time, the Korean government became concerned with bringing in Western educated individuals who could contribute to building Korea's strength and wealth.

By 1894 many Japanese merchants and their families settled down in Korean cities and towns and in some cases established Japanese schools. In fact, most of the reformers of the Korean educational system had spent some time in Japan as part of the 1881 inspection team. The inspection mission was a technical mission to survey Japan's modernized facilities⁴⁵. Some of the reformers even had a close relationship with Japanese educational reformers such as Fukuzawa Yukichi⁴⁶ and his Keio Academy. The Choson Modernization Faction considered him one of the greatest Japanese collaborators.⁴⁷

In August 1st, 1894, the first Sino – Japanese war that was fought between the Qing Dynasty from China and Meiji Japan begun. The war between the two countries grew for supremacy in Korea that had a strategic location opposite the Japanese

⁴⁵ Lee Ki-baik, *A New History of Korea*, Ilchokak, Seoul 1984, p.270.

⁴⁶ Fukuzawa Yukichi, was a Japanese author, teacher, translator, entrepreneur and journalist who founded Keio and the Institute for Study of Infectious Diseases. He is regarded as one of the founders of modern Japan.

⁴⁷ Kang Jae-Eun, *The Land of Scholars: Two Thousand Years of Korean Confucianism*, Hangilsa Publishing, Korea 2003, p.483.

islands and natural resources of coal and iron. In addition, the Japanese policymakers believed that any dominance over Korean peninsula by a great power would threaten the national security of their nation. The Japanese won victory over land and sea, defeating the Chinese. In April 1895, Japan called upon China to recognize Choson's independence by signing the Japanese dictated Treaty of Shimonoseki⁴⁸. This treaty marked the end of Choson's century-old political relationship with China, and at the same time established Japanese dominance in East Asia and paved the way to the annexation of Korea in 1910.

During and after the Sino-Japanese war, the Japanese sought to enhance its position in Korea, expelled the pro-Chinese faction out of the Korean government and restored the Tawewon'gun⁴⁹ to power. In July 1894, the new Prime Minister Kim Hong-Jip and the pro-Japanese Korean reformers launched and pressed ahead a series of educational reforms program known as the Kabo Reform Movement.

Through these reforms, the Korean government strived to emulate the Japanese adoption of Western institutions. The assembly in charge of implementing the reforms passed over 200 sweeping resolutions which not only set up a new system of government but also eliminated slavery⁵⁰, the exclusive Confucian educational system, and the traditional examination system.

The Kabo reforms reorganized Korean institutions. During that period Korean officials and intellectuals acknowledged that education must be at the center of any solution, and that the means to get wealth and strength was through learning. They

⁴⁸ Kim Jimwung, *A History of Korea: From "land of the Morning Calm" to States in Conflict*, Indiana University Press, 2012, p.304.

⁴⁹ Taewŏn-gun, also called Yi Ha-ŭng (born 1821—died 1898), father of the Korean king Kojong.

⁵⁰ Yuh, Kimberley Leighanne, "Education, the Struggle for Power, and Identity Formation in Korea, 1876 – 1917", *University of California*, Los Angeles 2008, p.137.

also identified the need for knowledge and technology. As a result, previously neglected areas of training became prestigious, particularly foreign languages, legal studies, commerce, economics, history and politics. In addition to opening more schools, the reforms led to a significant increase in student enrollment and in promoting education for girls. Moreover, the Korean government established a Japanese language school in Inch'On in 1895 because of the increase of trade with Japan, and also established a military school to train military officers.

The new Korean educational system reflected the influence of Japan and foreshadowed the modern education system that would soon emerge during the colonial period.

3.2 Education System under Japanese Rule: The Beginning of Modern Legacies

Although American missionaries' influence on Korean education was significant, it was modest compared to that of Japan. Japan became the model for a younger Korean generation.

Four decades of Japanese rule greatly shaped Korea's educational system, and several researchers and specialists in Korea's history argue that Japan's occupation contributed greatly to the modernization of Korean education. Japanese colonial authorities built about 5,000 schools.⁵¹ Scholars such as McGinn et al (1980, pp81-82) assert that South Korea's modern school has its roots in the Japanese colonial

⁵¹ Oh, Seun-Cheol, and Kim, Ki-Seok, "The Increase of Educational Opportunity in Korea under the Japanese Occupation: For Whom the Bell Told?", paper presented at the Korean- American Symposium on Korea Colonization and Social-Cultural Formation : In search for New perspectives, University of California-Berkeley, 1997.

period. The colonial regime sequentially developed modern education with a focus on basic education. Later, the Japanese colonial government slowly developed secondary and tertiary levels of schooling⁵².

It was during the forty years of Japan's colonization of Korea, first as a protectorate (1905-1910) and then as a colony under direct rule (1910-1945), that a comprehensive, modern national system of education was established. The Japanese colonial government, similar to Korean intellectuals and missionaries, promoted formal education, which helped bring about modern system⁵³.

During the first ten years after the annexation of Korea in 1910, the Japanese government, educators and reformers sought to reorganize Korean education based on moral instruction and disciplinary techniques. They promulgated the Korean Education Ordinance in 1911, known as "the Chosen Educational Ordinance" which defined the objectives of the Japanese colonial government in providing education and building a new state school system:

Article I: The first principle of education is to cultivate loyal subjects in accordance with the Imperial Rescript on Education.

Article II: Education should be as best suits the trends of the times and the standards of the people⁵⁴.

The goal of the new ordinance was to inculcate moral character and general

⁵² Kim-Renaud Young-Key and Grinker Richard, R. and Larsen Kirk W., op.cit., p 6.

⁵³ Alice H.Amsden, *Asia's Next Giant: South Korea and Late Industrialization*, Oxford University Press, New York, 1989, p 33.

⁵⁴ Abe Hiroshi, "Higher learning in Korea under Japanese Rule: Keijo Imperial University and the "People's University" Campaign", *The Developing Economies*, Vol. 9, issue 2, 1971, p.175. [onlinelibrary.wiley.com/doi/10.1111/j.1746-1049.1971.tb00468.xlpdf] viewed 2011/05/23

knowledge in the younger generation of Koreans. The new ordinance established and regulated the educational system in Korea, which consisted of various levels of schooling from the elementary level to higher levels. The system consisted of elementary schooling which was four years of common school (futsu-gakko), followed either by four years in the secondary school or “higher common school” (koto futsu-gakko), and four years of vocational schools (jitsugyo-gakko). The professional schools served as post-secondary schooling. Regulation regarding creation, operation, and admission to professional schools (senmon-gakko) was only enacted in 1915.

In the beginning of colonization, the Japanese government opted to close down many of the private schools that already existed with the aim to expand basic education with a strict and controlled curriculum. The Japanese administration was characterized by a high degree of centralization, careful planning and professionalism⁵⁵. On October 20, 1911, the administration of Governor General Terauchi Masatake issued the “Regulation for Private Schools” placing all private schools under the supervision of the Bureau of Education, and because of the number of restrictions placed on schools through this regulation, the number of private schools declined between 1911 and 1920. Foreign missions were also tightly controlled and regulated by the Japanese colonial government, which was necessary in order to ensure that a uniform curriculum was followed.

By the end of the 1910s, elementary education had not yet spread substantially, but it would soon spread quickly. The progress of expansion of the colonial educational facilities is shown in Table 5. In 1912, there were 343 of elementary schools throughout Korea. By 1942, this number had increased to 3,263. For

⁵⁵ Adrian Buzo, *The Making of Modern Korea*, Routledge 2002, p.20.

secondary schooling including high schools, the number of schools increased from 64 to 400, and for post-secondary schooling including university the number increased from 2 to 21 between 1912 and 1942. Most of these elementary schools were public educational institutions, while the proportion of private educational institutions out of total educational institutions was less than 5%. However, in the case of secondary and post-secondary level, it was about 15% and 50% respectively.

Table 5: Number of Schools for Korean by Level and Founder :									
Year	Elementary			Secondary			Post Secondary		
	Total	Public	Private	Total	Public	Private	Total	Public	Private
1912	343	343	0	64	63	1	2	2	0
1913	368	368	0	92	91	1	2	2	0
1914	404	384	20	99	94	5	2	2	0
1915	429	412	17	107	102	5	2	2	0
1916	447	428	19	121	114	7	5	5	0
1917	461	437	24	127	118	9	7	5	2
1918	507	471	36	130	119	11	7	5	2
1919	570	537	33	131	119	12	7	5	2
1920	681	643	38	115	99	16	7	5	2
1921	794	758	36	110	93	17	7	5	2
1922	947	903	44	111	96	15	8	5	3
1923	1,099	1,043	56	134	118	16	8	5	3
1924	1,141	1,090	51	138	122	16	9	6	3
1925	1,254	1,189	65	145	127	18	10	6	4
1926	1,342	1,266	76	160	138	22	11	6	5
1927	1,425	1,345	80	182	159	23	11	6	5
1928	1,510	1,430	80	200	176	24	11	6	5
1929	1,589	1,507	82	205	181	24	12	6	6
1930	1,727	1,646	81	214	188	26	14	6	8
1931	1,861	1,781	80	221	193	28	14	6	8
1932	1,978	1,898	80	230	200	30	14	6	8
1933	2,105	2,022	83	234	203	31	16	8	8
1934	2,221	2,135	86	234	202	32	16	8	8
1935	2,363	2,276	87	251	217	34	16	8	8
1936	2,504	2,419	85	277	237	40	16	8	8
1937	2,601	2,509	92	297	255	42	16	8	8
1938	2,707	2,607	100	317	273	44	16	8	8
1939	2,853	2,736	117	339	298	41	19	9	10
1940	2,995	2,861	134	360	309	51	19	9	10

Source: Oh, Seong-Cheol and Kim, Ki-Seok, "Japanese Colonial Education as a Contested Terrain: What Did Koreans Do in the Expansion of Elementary Schooling?", *Asia Pacific Education Review*, Vol. 1, No. 1, 75-98, 2000, p.3.

In order for a school to be properly founded, it had to have its curriculum approved by the government. One of the goals of the policy was to restrict the use of the Korean language and spread the teaching of Japanese language and culture. During this time, education spread greatly and the enrollment of young men in school jumped accordingly. In 1912, enrollment rates were at about 20% of eligible young men.

Although education did not grow much during this middle period of colonization, following the 1919 March movement, a more comprehensive effort at educational development began in the late 1920s.

3.2.1 March First Independence Movement and Its Effect on Colonial Education System

On March 1, 1919, Koreans, young students and Christians, led a major anti-Japanese protest. They expressed their discontent and resistance to Japanese colonialism through a public demonstration known as the March First Independence Movement or the Samil Movement⁵⁶. During this movement, Korean students studying in Tokyo, teachers and civic leaders in tens of thousands of villages throughout Korea read a declaration of independence, patterned after the American version, demanding freedom from Japanese rule. Japanese authorities responded

⁵⁶ The name refers to the movement held on March 1st, 1919.

and suppressed the demonstrations. Thousands of people died and a large number were arrested before the independence movement was put down. However, as a result of these demonstrations, the Japanese government allowed, for a time, greater Korean cultural and political expression. However, calls for outright political action against colonial rule were still forbidden. The March 1st Movement has remained a touchstone for Korean nationalist sentiment up to the present.

As a result of the March 1st Movement, Japan made changes to colonial education policies and equalized the colonial education system of Korea with the Japanese public schools at home⁵⁷. In 1922 the Japanese colonial government enacted the new Chosen Educational Ordinance. The new ordinance allowed the reopening of the Seoul Teacher's School to train the Korean teachers of the new schools, extended elementary education from four to six years and secondary education to five years. The new Ordinance also provided for a three year college preparatory or advanced technical school, and extended vocational school from three to five years and professional schools from three to four years. Through this new ordinance the Japanese government replaced the previous eleven-to-twelve year system with a sixteen-to-seventeen year system. Most importantly and for the first time, the colonial government laid the foundation for university education (a two year preparatory program plus a three-to-four year main program)⁵⁸. As part of this new policy, the Japanese sought to expand the common school program to six years, the

⁵⁷ Oh, Seung-Cheol & Kim, Ki-Seok, "The Increase Of Educational Opportunity in Korea Under the Japanese Occupation: For Whom the Bell Told?", *SNU Journal of Education Research*, Vol. 8, pp. 83-95, 1998, p.3.

⁵⁸ Park, Namgi, John, Weidman, *Higher Education in Korea: Tradition and Adaptation*, Falmer Press 2000, p.28.

high school program to five years, girl's high school to four years and vocational school to three or five years. As a result of these reforms, elementary schooling started to take off again, while middle and secondary schooling started to grow slowly after the 1930s. The expansion of higher education remained however restricted by the colonial government. The only university established during the colonial period was the Keijo University (Kyungseong Imperial University), which is known today as Seoul National University. Established by Japan in 1922, the university admitted Japanese students and children of high-ranking Korean officials⁵⁹.

With the outbreak of the second Sino-Japanese war in 1937, the Japanese colonial government issued a new educational ordinance, which revised the structure of education and increase Korean assimilation to the Japanese culture. The Ordinance reorganized Korean schools, curriculums and subjects to make them identical or similar to the Japanese ones.

3.3 Effects of Japanese Colonial Education Policy

Japanese colonial government record on building schools and providing education opportunities to Koreans are summarized in Table 6 and 7. By 1944, 29.99 per cent of Koreans aged 15 received primary education and 0.99 per cent reached college level or more. The development of higher education and university was slower. Only 0.25 per cent of Koreans were attending university in 1944 (Table 7).

On the other hand, a number of Koreans sought schooling in Japan. In 1935 about

⁵⁹ Gerard A. Postiglione and Jason Tan, *Going to School in East Asia*, The Global School Room, 2007, p.324.

47.3 per cent of Koreans were attending schools in Japan and grew to 61.5 per cent in 1940. In 1942, there were 6771 Korean students attending higher education in Japan while only 4234 Korean students in Korea. Furthermore, an impressive number of Koreans attended secondary schools in Japan. In 1940, 71.6 per cent of the 20,824 Koreans students in Japan were attending secondary schools.

Table 6 Number of Schools and Students Enrolled for Selective Years												
	Primary School*				High School*				College		University	
		Number of Students				Number of Students			Number of Students		Number of Students	
Year	No of Schools	Total	Male	Female	No of Schools	Total	Male	Female	Schools	Students	Schools	Students
1910	171	20,174	-	-	32	1,631	1,237	394	3	315		
1915	429	60,690	55,027	5,663	107	4,429	4,151	378	3	490		
1920	681	109,365	94,939	12,426	114	5,386	4,673	713	7	454		
1925	1322	385,687	327,603	58,048	147	18,591	16,383	2,208	10	1,115	1	46
1930	1831	459,457	379,752	79,705	130	27,753	22,724	5,029	13	1,761	1	190
1935	2361	720,757	571,595	149,162	241***	39,231	32,671	6,557	15	2,824	1	210

Source: Chang, Yunshik, "Growth of Education in Korea 1910-1945", *Bulletin of the Population and Development Studies Center*, 4, November 1975 40-53, p.12.

Table 7: Percent of Korean Population Educated, age above 15 in 1944							
	Population	None	Some but not graduate	Primary or more	High school or more	College or more	University
Male	10,995,268	76.78	9.45	22.62	5.06	0.85	0.25
Female	11,798,138	95.03	2.62	7.37	1.4	0.14	0
Total Population	22,793,406		12.07	29.99	6.46	0.99	0.25

Source: Ibid.

The Japanese colonial education system had an important impact on the post-liberation development of education in South Korea. From the Japanese colonial administration South Korea inherited a number of features which later became part of the South Korean education. South Korea inherited the Japanese impressive level of professionalism with which education was managed and controlled. Teachers were of high standards, which led the Koreans to adapt to the same standards for teachers training and qualifications⁶⁰. The importance of creating social ties and doing extra-curricular activities emphasized by the Japanese colonial administration are features which remained emphasized by the South Korean government in their education development policy. The strong ties between the students reduced the number of students dropping out of schools. Other important features inherited from colonial education included the competitive entrance examination and the system to finance education by underfunding and shifting costs to parents.

The above historical facts show that Algeria and South Korea have both fought colonialism and the colonial education system. Even though many scholars have been reluctant to associate modernity in South Korea with colonialism, an in-depth comparison of the literature suggests that South Korea benefited more from colonial educational policies than Algeria did. In 1955 about 370000 Algerians attended primary schools compared to 1385944 Koreans in 1940. In 1954, at the declaration of liberation war on November 1st, there were only 6240 Algerians that accessed secondary schools and only 300 to 350 completed the secondary level, while Korea had 68291 students in high schools in 1940, in addition to the Koreans attending secondary schools in Japan. At Independence there were only 250 Algerians

⁶⁰ Michael Seth.J. *Education Fever: Society, Politics, and the Pursuit of Schooling in South Korea*, Hawii Studies on Korea, University of Hawaii Press, 2002 p.29.

attending universities in France, while more than 6771 Koreans attended institutes of higher education in Japan.

Colonial education in both Algeria and South Korea was tightly controlled by the colonial government, which tailor-made the curriculum; however, the above facts and the number of schools founded under Japanese rule show the development efforts made by the Japanese government in contrast to the harsh French colonial government. Legacies from colonial administration in South Korea were very important to the future of South Korean education compared to Algeria where education administration was left in chaos. The following chapter highlights the influence of colonial education systems in shaping the post-independence education in Algeria and South Korea.

Chapter IV : Post-Colonial Education System in Algeria and South Korea

1. Introduction

For the exclusive purpose of furthering their own interests, the French colonizers developed the economic system and various other projects in Algeria. Furthermore, the French educational system was solely reserved for the French and other Europeans living in Algeria. Only a small elitist group of Muslims had access to schools. Because of their exclusion from the educational system, Algerians were untrained and excluded and barred from managing the economy. The disastrous outcomes of this discrimination became apparent following independence in 1962, when less than one-third of Algerian Muslims at school-age were enrolled in schools and only about ten per cent of the total native Algerian population was literate⁶¹. Upon achieving independence, Algeria was left with a devastated economy. Millions of young people of working age were unemployed, and ninety percent of the population was illiterate. Skilled manpower and qualified instructors were in short supply. In light of these dismal circumstances, the newly independent government began to focus on education and literacy as a main determinant of economic growth and social prosperity

Similarly, in 1945 when South Korea was liberated from thirty five years of Japanese rule, there was a shortage of skilled workers and seventy-eight percent of the population was illiterate⁶². In addition, the country had a shortage of teachers. In order to combat the negative effects of these educational constraints, Koreans embarked on a major educational overhaul, producing drastic changes in both the

⁶¹ Merouche, Ouarda, Long term impact of French Settlement on Education in Algeria, *Department of Economics, Uppsala University; Working paper* 2007:2, December 2006, p.2.

⁶² Sorensen, Clark W., Success and education in South Korea, *Comparative Education Review*, Vol 38, No 1., 1994, p.7.

quantity and the quality of education.

In this chapter we will first review the strategy for rebuilding the educational system and the economy, and the reform path taken by Algeria since independence. We will describe the state of the economy after the period of French colonization, and we will discuss the policies and the development strategies adopted by the new government, particularly with regards to the educational system. We will then assess the impact of these educational policies on the economy. Finally, we will examine the South Korean case and the trajectory it took after independence, once again with a special focus on educational policy and how it was shaped to meet the economic demands of the newly independent country.

2. The Economic Situation in Algeria at Independence

According to Miriam R. Lowi, author of in-depth investigation of Algeria's post-independence trajectory, "It was with millions of impoverished, uprooted, culturally deprived and bewildered ex-peasants that independent Algeria would begin the difficult task of restructuring itself."⁶³ In 1962 French settlers began their exodus, returning to France by thousands every day, leaving behind them destroyed archives, obliterated installations and machinery⁶⁴ as a result of their "scorched earth policy"⁶⁵. As the people of Algeria regained power, they were faced with the difficult

⁶³ Lowi R. Miriam, *Oil Wealth and the Poverty of Politics: Algeria compared*, Cambridge Middle East Studies 32, 2009, p.74.

⁶⁴ Hermasi El Baki, *Leadership and National Development in North Africa: a comparative study*, University of California Press 1972, p.27.

⁶⁵ "Scorched fields" policy (la terre brulee) is the policy adopted by colonizers destroying anything that might be of use to the enemy and starving the natives into submission. In the case of Algeria, France used this policy both at invasion and also before leaving the country following the independence.

task of redressing the situation and establishing a new economic policy.

Among the 900000 Europeans who left Algeria within the space of one year, were most of Algeria's professionals, technicians and entrepreneurs⁶⁶. The country was left thus with a large shortage of highly skilled manpower, a loss of the entrepreneurial class and a lack of technological know-how. The economy was in distress, and within one year industrial output dropped sharply, the GNP decreased by thirty-five per cent, and investment in the country fell by 200 per cent. The private sector, run by members of the old middle class who traded in tea, coffee and sugar, was small and weak. After independence, some "ancient combatants" could start their new businesses⁶⁷; however, they were not characterized as a typical capitalist class with entrepreneurial skills.

Human capital was also very weak. Illiteracy vacillated around ninety per cent, and only 0.1 per cent of the population graduated from university. However, hundreds of Algerians who had been studying engineering and economics abroad returned to Algeria after independence. They formed the intellectual corps and took part in building the new Algerian nation.

3. The Legacy of Post-Independence "Socialism"

Soon after independence and like many post-colonial developing countries, Algeria

⁶⁶ Tlemcani. R., and Hansen, W., Development and State in Post-colonial Algeria, In Joseph G.Jabbar, eds., Bureaucracy and Development in the Arab World, *International Studies in Sociology and Social Anthropology*, Vol 51, 1989, p.116.

⁶⁷ It is the name given to those who served as gunmen, bombers and couriers during the liberation war in Algeria. Today they are mainly known as Moudjahidine. The state gave them money to start their business and stay away from politics. The most notorious new capitalists include Abdelhafid Bousous head of intelligence services during liberation war, and Messaoud Zeggar also from intelligence services. They had strong financial ties with state.

chose to address its political and economic hardships by adopting a system known as “socialism”⁶⁸. The new leadership became preoccupied with developing the country economically, building up infrastructure, educating the population, and creating employment opportunities, while at the same time consolidating power and authority. These major projects required radical changes. The Algerian government of the newly founded state designed a development strategy characterized by a series of planned stages and vast industrialization. This development approach was viewed as the first strategy in order to reduce economic inequalities, promote economic growth and meet social needs.

The Tripoli Program⁶⁹, one of the most important documents in modern Algerian history, was adopted with a "socialist option" as a strategy for Algeria's development. The program projected the nationalization of foreign interests, the establishment of an industrial economy, agrarian reforms, Arabisation and independent foreign policy.

The Tripoli Program was complemented in April 1964 by the Algiers Charter⁷⁰. In 1976 President Boumedienne submitted a new national charter for discussion and referendum in order to evaluate the nation's progress and plan its future⁷¹. It was soon followed by a new constitution.

⁶⁸ Under socialist system commercial and economic activities are undertaken by the state. Major means of production were owned by the state but managed in a capitalist manner. It is characterized by the large dominance of state owned enterprises, while the private sector both in industry and agriculture remain important and grows.

⁶⁹ In June 1962 leaders of the Front de Liberation National (FLN) met in Tripoli (Libya) to define the political and economic platform for independent Algeria. They unanimously adopted the Tripoli program which dictated the ideological orientation of Independent Algeria: The armed struggle must be followed by the ideological combat, and the struggle for national independence must be followed by the people's democratic revolution . . . [which] is the conscious construction of the country within the framework of socialist principles and with the power in the hands of the people.

⁷⁰ At its first congress in April 1964, the FLN adopted the Algiers Charter which outlined the structure of the state and government, as well as the program as envisioned by first Algerian President, Ahmed Ben Bella.

⁷¹ Ruedy John, *Modern Algeria: The Origins and Development of a Nation*, Indiana University Press, 2005, p.22.

The socialist program projected expansive industrialization especially through intensive exploitation of hydrocarbon, and substantial investment in human capital. This economic strategy was implemented in three-year (1967-69) and four-year development plans (1970-73 and 1974-77) that subordinated agriculture despite the Agricultural Revolution of 1971. In order to implement this strategy, the Algerian government imported new technologies and machineries that would help increase the productivity of labor.

The program also included the nationalization of foreign capital and the rapid development of the state sector. As the government implemented this program, it focused on accumulation of capital over consumption, industrialization over agricultural development and capital goods sector over consumer goods. The nationalization of large-scale productive enterprises and financial and trading institutions including agricultural lands resulted in large-scale state ownership of capital goods that were managed by state-owned enterprises.

When the Algerian government embarked on a policy of mass nationalization, the attention fell on domestic gas and oil operations, and all oil assets were nationalized. On February 24, 1971, President Houari Boumedienne announced the nationalization of all French oil and gas holdings operated in the country. He further announced that Algeria's National oil and gas company, Sonatrach⁷², had been fully integrated as part of the national government structure of Algeria. The company was to play the crucial and leading role in the development of the economy, by serving other economic sectors.

⁷² SONATRACH is an Algerian government-owned company formed to exploit the hydrocarbon resources of the country. It is responsible not only for oil and gas production, distribution, refining and processing but also for oil and gas industry's engineering and exploration

The massive redistribution achieved until the mid-1970s was made possible by the oil revenues and abandoned colonial properties⁷³. Between 1966 and 1971, oil sectors and all foreign concerns were completely nationalized. To achieve rapid growth, oil revenues were invested in far reaching development projects. They were also allocated to provide welfare programs: free education, health care and housing, subsidized foodstuffs and public transportation.

During the first years of independence between 1968 and the mid 1970's Algeria enjoyed its highest level of economic growth. By both investing forty-five per cent of its national income and using hydrocarbon export revenues, the government was able to finance several projects. These projects included the creation of a large network of public enterprises, the construction of infrastructure, and the achievement of social progress by reducing illiteracy. Furthermore, the four-year plans enabled unprecedented economic development especially in areas such as heavy industries, construction, mining and hydrocarbon.

However, on the other hand the agricultural sector was declining, and because of an increasing lack of skilled labor, the government could not meet its objective to modernize the sector. Farms that were organized on a self-management basis and that possessed fertile soils were facing a decline in productivity. Consequently, these farms were unable to supply a sufficient quantity of food for the growing population or the raw materials and investment capital needed for industrialization. The agricultural sector was both quantitatively and qualitatively inadequate not because of a lack of investment but because of the shortage of labor necessary for the effective utilization and management of the available investments. Furthermore, the

⁷³ Known as "*bien vacant*", these colonial properties consisted mainly of houses and apartments which were abandoned by the French and taken over by Algerians at virtually no cost.

government neglected the agricultural sector and reduced the budget allocated to that sector. The first development plan allocated more than fifty-four percent to the industrial sector and only ten percent to agriculture. For the second development plan the share of the budget allocated to agriculture decreased to six percent compared to fifty-six percent for the industrial sector. The deterioration of the sector led to acute food shortages, forcing Algeria to become a large foodstuff importer⁷⁴.

3.1 The Industrialization Strategy under Socialism

The national development strategy was based on building an industrial base that would stimulate economic growth. Between 1966 and 1971, the oil sector and all foreign entities were completely nationalized. The choices of industries to be developed were based on the notion of “industrializing industries”⁷⁵. All of the projects were designed to build a heavy industry that would transform the poor, traditional economy that Algeria inherited from colonization to an industrialized modern, and productive economy.

These industries, which included cement, chemical, fertilizers, mechanical, steel, petrochemicals and phosphate, were to reinforce the integration of the national economy through the effects they produced both “upstream” and “downstream”. Moreover, these industries were expected to increase productivity and allow executives and employees to become trained in a modern and technological advanced

⁷⁴ Le Sueur James D., *Algeria Since 1989: Between Terror and Democracy*, Global History of the Present Series, Zed Books 2010, p.21.

⁷⁵ It is a concept introduced by French economist and Professor Gerard Destanne de Bernis. This theory is that certain industries may drive the development of an economy due to stronger linkage effects with other industries as well as growth enhancing effects. It is the integration of the economy by creating a network of prime industries to provide maximum use of the natural resources.

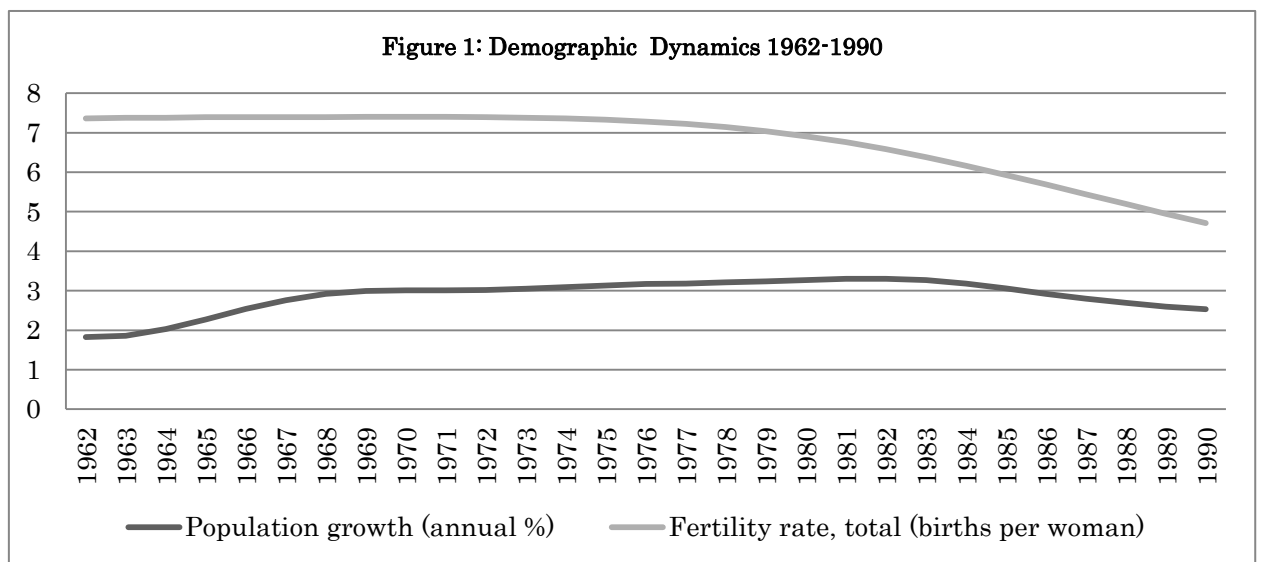
environment. The first sector to be nationalized was the oil and gas sector as the benefits of this sector would carry over into other sectors of the Algerian economy. The implementation of industrialization policy required a highly skilled and educated workforce. A report prepared by UNESCO for the government of Algeria in 1968 to identify educational projects essential for the economic and social development of Algeria, concluded that by 1973 Algeria would require the following additional personnel: 20000 highly educated, 95000 of middle and office employee level and 50000 skilled worker level of education⁷⁶. In addition to lacking enough qualified personnel, the country was facing a rapid population growth and an increasing rate of unemployment among the younger population.

3.2 Rapid Population Growth

The post-independence period was also characterized by its rapid population growth, and this continued for two decades. On the eve of the War of Independence in 1954, the Algerian population was 8.7 million people. During the hostilities, the population grew very slowly. Then at independence in 1962 the population grew to eleven million. Population growth resumed following the independence, and in 1966 the growth rate rose to 3.3 per cent. Algeria's population growth continued during the 1970s and the early 1980s with 3.1 per cent and 3.2 per cent growth respectively, one of the most rapid growth rates in the world. Although the population was growing, the birth rate only saw a short growth period before quickly decreasing. The crude birth rate between 1965 and 1970 reached fifty births per one thousand

⁷⁶ United Nation Economic and Social Cooperation Organization, "*Priority Projects for Educational Development*", UNESCO, Paris 1968, p5

inhabitants⁷⁷ and continued to increase until 1985. In 1995 it decreased to 24.77 births per thousand in habitants. The total fertility rate (TFR) was also decreasing, going from 7.4 children to 5.6 children per woman between 1970 and 1985 (Figure 1). Despite this decline in the birth rate and decreasing total fertility rate, Algeria's population grew rapidly because of its low mortality rate, one of the lowest in the Maghreb region.



Source: World Bank Databank [<http://data.worldbank.org/country/Algeria>]

3.2.1 Algeria's Growing Population of 15 to 24 Years Old

During the period of rapid population growth in Algeria, the segment of the population consisting of fifteen to twenty-four-years-olds represented twenty percent of the total population⁷⁸. Between 1950 and 1990, the number of individuals

⁷⁷ Data through 1987 were derived from censuses, while data from 2000 to 2012 are as per United Nation Population Division and World Bank.

⁷⁸ Kouaouci Ali, "Population Transition, Youth Unemployment, Postponement of Marriage and violence in Algeria", *The Journal of North African Studies*, Vol.9, No.2 (Summer 2004) pp 28-45, p7.

comprising this segment increased from 1.63 to 5.13 million. To put into perspective, this segment of young people grew by a multiple of 3.14 times, while the total population grew by a multiple of 2.85 times. As this group grew, it exerted a burden on the state and an unbearable pressure on the Algerian labor market. The Algerian government had to overcome this structural problem and ensure education, employment and decent living for a young and dynamic population.

4. Post-Independence Educational Policy in Algeria

4.1 Post –Independence Educational System (1962-1970's): Mass Education

4.1.1 Primary and Secondary Education

The education system adopted by the colonial government was aimed essentially at serving the interest of France. The system was designed to meet the educational and training demands of the French minority and to supply the developed sector of the colonial system with highly skilled workers⁷⁹. During the colonization, about sixteen percent of the population at school age population (consisting of individuals six to fourteen years old) had an opportunity to attend school⁸⁰.

The illiteracy rate at independence stood at about ninety percent in 1966, a survey revealed that 85.9 percent of women were illiterate, while 63.3 percent of men were illiterate. Illiteracy was higher in rural areas with 88.4% per cent, compared to 59.6

⁷⁹ Jacon Klaus & Elenore, "Education and Training in the People's Democratic Republic of Algeria, Asia, Africa Latin America" *special issue* 16, Berlin 1985, p.99.

⁸⁰ Kateb Kamel, "The expansion of access to education and the demography of Algeria", *Paper commissioned for the EFA Global Monitoring Report 2003/4*, p.2.

per cent in urban areas.⁸¹ Independent Algeria was left with 354 lawyers, twenty-eight engineers, 185 secondary school teachers and 165 doctors, pharmacists and dentists⁸². At independence all French teachers had left Algeria (eighty percent of the entire teaching staff), and native teachers had to be trained as quickly as possible. Algeria was left with a deficit of 300.000 highly trained people, especially engineers, skilled workers, teachers and administrative workers. Only fifteen percent of the highly trained workforce employed was comprised of Algerians.

The authorities were faced with a chaotic environment, characterized by fractured policy and divided society. In light of this environment, the newly independent government turned to educational reform in order to rapidly develop the necessary human capital for a modern nation-state. The reforms' objectives were to enhance national identity, expand enrollment to eligible children and adults in formal education, and improve the quality and efficiency of delivering educational services. In the wake of independence, national identity and mass education were made a priority.

The first fundamental provisions regarding eradication of illiteracy, education policy and the creation of new structures to go along with new methods to be applied in education were stated in the Program of Tripoli (1962), the Charter of Algiers (1964), and National Charter (1976). They clearly emphasized the fight against illiteracy, universal application of mass education methods and the development of national culture.

The Tripoli program adopted in June 1962, highlights in its second article "wiping

⁸¹ Serge Koulytchizki, *l'Autogestion, l'homme et l'etat : l'Experience Algerienne*, Paris.Mouton 1974, p.362.

⁸² Perville Guy, *Les Etudiants Algeriens de l'Universite Francaise 1880-1962*, Casbah Edition 1997, p.53.

out illiteracy and developing national culture”. It sets forth the following objectives of the new educational policy⁸³:

- Restoring national culture and progressive Arabisation
- Preservation of national heritage and culture
- Algerianization of the teaching program adapted to the country’s reality
- Mass education to fight against illiteracy and educate all citizens

Chapter 2 of the Algiers Charter in 1964 entitled “Education and Fight against Illiteracy”, laid the basis and foundation of the education system. It stated that, “to ensure the social and cultural promotion of the population, and to provide the country with the executives needed in all fields, wiping out illiteracy and the development of education represent are necessities”. Furthermore, it stipulated that schools must be accessible to all citizens and higher education students will be oriented towards studies that meet the country’s needs for qualified staff⁸⁴.

Access to free education as a right was also codified in Article 53 of the Algerian constitution as follows:

“The right to education is guaranteed. Education is free within the condition defined by the law. Fundamental of education is compulsory. The state organizes the educational system. The state ensures equal access to education and professional training”⁸⁵

⁸³ Projet de Programme pour la réalisation de la révolution démocratique et populaire (adoptée à l’unanimité par le C.N.R.A> à Tripoli en juin 19629 (<http://www.el-mouradia.dz/arabe/symbole/textes/tripoli.htm>) viewed 2010/12/10

⁸⁴ La Charte d’Alger (<http://www.el-mouradia.dz/francais/symbole/textes/charte%20d%27alger.htm#mouvementnational>) viewed 2011/11/29

⁸⁵ Conseil Constitutionnel, Chapter IV (<http://www.conseil-constitutionnel.dz/constitution-fr-2008-2.htm>) viewed 2011/12/13

The Algerian government adopted a very centralized education system and assumed all of the key functions of implementing that system, including policy-making and financing. The government trained and employed teachers, designed syllabi, developed national exams, regulated education and set policy. Schools and universities and training centers were the property of the State. School books and other material were produced by the Ministry of Education. In addition, teachers were considered civil servants. The main challenge facing the government during this first time of reform was the mixing and the matching of old and new components of mass education. In the beginning, the organization of the education system remained almost the same as the one established by the French colonial government simply offering a few additional subjects in Arabic (reading and mathematics).

Primary education lasted for six years and was divided into three parts: two years of preparatory school (*cours preparatoire*), two years of elementary school (*cours elementaire*) and two years of middle school (*cours moyen*). Primary education was finished upon receipt of a school completion certificate (*Certificat de fin d'Etude*) and/or the examination for entry into 6th grade, which marked the beginning of intermediate education. Intermediate education lasted four years and included the 3rd, 4th, 5th and 6th grades and culminated with the certificate of intermediate education (*Brevet d'Enseignement Moyen*, or BEM). This certificate was necessary in order to begin secondary education⁸⁶. Secondary education was and is still for three years (i.e the 1st, 2nd and final (*terminale*) grades), and it is led to the final exam - the university entrance exam called "baccalaureate". Further exams were

⁸⁶ Grandguillaume Gilbert," Country Case Study on the language of instruction and the policy of basic education: Policy of arabization in primary and secondary education in Algeria", Background paper for the Education for all global monitoring report 2005, p.3.

required for medical and engineering programs.

To face the large shortage of teachers and instructors, young Algerians who had completed college and obtained the French school exam, known as Brevet d'Etude du Premier Cycle (BEPC) were appointed as directors of elementary schools. Some school teachers were appointed either as directors of schools in large urban areas or as inspectors and academic advisors, and others were offered jobs as teachers in secondary schools.

Training centers were established to provide intensive courses for teachers, academic advisors, and students from medersa to ensure the teaching of Arabic language. Former French Army infrastructures such as barracks and old building were transformed into training and cultural centers.

Distance learning programs and evening classes were also made available to accelerate teachers' training. Evening classes were actually compulsory in order to teach at secondary schools. At the end of the training, which lasted between two and four years, the trainees had to pass an elementary teaching exam or the professional certificate in order to be officially recognized as a teacher. Additional allowances were offered for those who would relocate to teach in the Sahara region.

The need for qualified staff was so urgent that the Ministry of National Education had turned to international sources to fill its teacher void. Many Egyptian, Syrian and Iraqi teachers were hired to fill the shortage of Arabic language teachers. For scientific subjects, the government opted for cooperation with the Soviet Union and Yugoslavia. Protocol agreements were signed with French-speaking countries such as Canada and Belgium for teachers of the French language and other subjects to be

taught in French⁸⁷.

As part of public accountability and incentive measures, the Ministry of Education had also established a professional trained body of inspectors who visited schools on a regular basis and filed reports to the central authority. The reports contained an evaluation of the teachers' performance and it was very important for the future careers of teachers.

From 1963 onward, as demand for schooling was growing, educational infrastructure (schools, centers, universities) projects were launched and granted to young entrepreneurs or even to qualified bricklayers in order to accelerate the completion of the projects. Schools deserted by the French at independence were converted into colleges or cultural centers where secondary teaching level was provided.

4.1.2 Post-Colonial Higher Education

At independence, there was only one university of Algiers, which was founded in 1909, on the French model in order to merge the schools of medicine (created in 1857), pharmacy, sciences, letters, and law (created in 1879). A tiny minority of rich Algerians who were influenced by the French culture had the privilege of attending university, and it was only in 1946 that Algerian students at large began to attend higher education.

The number of Algerian students at higher education institution declined from 589

⁸⁷Boudia Mohamed, *Reflexion sur l'Education en Algerie*, Collection Plumes au Bout des doigts, France, 2008, p.15.

in 1954 to 267 in 1956 and then rose to 814 in 1959 and 1372 in 1961⁸⁸. In 1962, about 3,718 Algerian students were registered at university⁸⁹.

In response to the lack of high level technicians and professionals necessary for rapid economic development, a number of measures were put in place to promote the demand for higher education. These measures included government scholarships and other form of subsidies, in addition to a guarantee of employment in the public sector. In their pursuit to expand higher education the authorities faced a shortage of teachers as the number of doctorates could not meet the demand. Attracting qualified individuals was challenging and required offering teachers the status of civil servants, which ensured stable employment conditions.

Within four years, in 1966, a number of universities and schools were created: two universities of science and technology, five universities, an agronomic institute, a veterinary institute, and a telecommunications institute, a school of architecture and town planning, and one École Normale Supérieure⁹⁰. In order to train technical, managerial and administrative personnel to help run the economy, several specialized institutes and schools of higher education were also set up, such as the Algerian Center for Hydrocarbon and Textile Studies and the Institute of Management and Planning. Between 1963 and 1968 enrolment at higher educational institutions had tripled rising from 3700 to 9700 students. A high portion of students choose to enroll in literature and the social sciences despite the government efforts to promote the study of natural science and technology.

⁸⁸ The sharp decrease of students was a result of students' strikes during liberation war, as the Algerian student association called higher school and university student to give up studies to join the rank of the FLN and army in the liberation movement.

⁸⁹ Bennoune Mahfoud, *The Making of Contemporary Algeria, 1830-1987*, Cambridge Middle East Library, 1988, p.228.

⁹⁰ Algeria: Higher Education, (<http://education.stateuniversity.com/pages/24/Algeria-HIGHER-EDUCATION.html#ixzz1eWTIyK8k>) (viewed 2010/12/20)

As the population was growing at 3.2 per cent in the 1970s, demand for education and especially higher education was increasing and the authorities who were initially racing student into universities were faced with overexpansion and were forced to shift their policy for higher education.

4.2.3 Effects of the Post-independence Education Strategy

Results of the post-independence educational reforms are shown in Table 1. The percentage of school age children accessing schools increased from ten percent at independence in 1962 to 51.10 per cent between 1966 and 1967 and to 55.8 per cent between 1969 and 1970. On average, the figures were much lower for girls and in rural areas. As a result of this rapid increase in school attendance classes were crammed with an average of forty-six pupils per class. In some areas of Algiers, the capital, there were sixty-six to ninety-nine pupils in one class⁹¹

Table 1: School Entrance Rates (1966 - 1983) %									
	1966-1967	1969-1970	1970	1975-1976	1977	1977-1978	1979-80	1981-1982	1982-1983
Total	51.10%	55.8	54.7	73.4	70.9	72.5	72.2	77.5	85
Boys	58.5	67.4	66.3	83.8	81	80.8	82.4		
Girs	37.8	45	43.2	58.3	60.3	59.6	61.6	56	
Urban areas	53.7	81.4	81.4	96.2	88.5	88.5			
Rural Areas	32.7	46	46	52.3	53.1	53.1		53	

Source: Klaus and Elenore Jacob, "Education and Training in the People's Democratic Republic of Algeria", Asia, Africa Latin America special issue 16, Berlin 1985, p108

In the early stage of independence between 1962 and 1970, the Algerian people were trying to find their national identity while also trying to meet the educational and training needs necessary to acquire qualified staff to help run the economy. This

⁹¹ Jacob Klaus and Elenore, op.cit., p.108.

first period of restructuring, which initiated mass schooling reforms, was marked by incoherence and disorganization as a result of importing and mixing educational ideas from Europe, the United States, Canada and the Middle East. The goal of providing schooling for all school-age children was initiated in difficult context as the country was lacking facilities, trained teachers and instructional materials.

Furthermore, higher education was not meeting the economic demand of the country. Despite the creation of technological and training institutes only seventy engineers and forty doctors were graduating each year, while Algeria needed 21000 senior managers by 1973. Further compounding this problem, most of the students were choosing to study subjects such as law and literature rather than earn technical degrees⁹². The government was burdened with new problems.

In addition to the rapid population growth, a mass dropout phenomenon was developing and the unemployment rate of young people was increasing. Furthermore, graduates in scientific and technical fields from public institutions often were inappropriately trained for employment in their respective industry.

4.2 Education Performance in a “Socialist” Economy

Access to knowledge and the development of human capital became the Algerian government’s priority in implementing the economic development policies of industrialization. To this end, in the 1970s the authorities undertook educational reforms that imposed the following three objectives on schools⁹³.

⁹² Serge, Koulytchizki, op.cit, p.374.

⁹³ Journal Officiel April 23 1976 p 428. (<http://www.joradp.dz/jo6283/1976/033/FP432.pdf>) viewed 2011/03/30

1. Enforce universal schooling through democratization of education
2. Implement Arabisation
3. Promote the acquisition of science and technology so as to facilitate its transfer from developed countries

This second decade of reforms was more intense and specific than the first and had more quantitative goals than the two pre-planning periods. The policies adopted were to nurture justice, equality and solidarity. All Algerian children without distinction should have an equal right to education and culture without any other limitations than those stemming from their own abilities. To achieve this goal of educational equality the government tried to meet its quantitative demands and to provide all children with the same chances and opportunities regardless of gender (same chances for girls as for boys) or place of residence (urban or rural). The “democratization of education” had two objectives: (1) enrolling school-age children and (2) keeping them in the education system until the age of fifteen. Those who did not attend secondary education would be provided vocational training.

The 1976 National Charter provided for the compulsory 9-year standard elementary education for all children and young people and further required the highly centralized control of Algerian education. This latter requirement was intended to politically unify all or nearly all of the educational institutions. By this time, the public education system was virtually the only education provider, in large part because of the diplomas, titles, and certificates it awarded. The government sought to stress the need to consolidate the Algerian national identity and promoting cultural development at all levels, as well as continuously increase schooling and

technical competences in accordance with the socialist principles⁹⁴. The text also highlights the importance of the Arabic language and outlined the strategy to progressively shift from a French curriculum to a complete Arabization.

4.3 Science and Technology through the Foundation School

To satisfy the needs of the economy, the government sought to implement a school system that favored science and technology. A new ordinance No 76-35 provided for the organization of the educational and training system and designed the new system known as the “Fundamental Teaching” (Ecole Fondamentale). Under this new system, primary and secondary school were combined and scientific and technical literacy was emphasized. All classes were taught in Arabic⁹⁵, and French was the first foreign language.

Under the law No 76-35 the Fundamental Teaching is a compulsory basic educational program for all children between the ages of six and sixteen. The program consists of nine consecutive years of education, which correspond to the first educational cycle referred to as 1st through 9th AF⁹⁶. The cycle is further divided into three three-year cycles. During the first three years the fundamentals of Arabic are taught. These skills are strengthened in the second cycle when students are introduced to mathematics, natural and social sciences and the French language. The third cycle introduces polytechnic knowledge and widens students’ knowledge

⁹⁴ Dr Abdlehamid Hosna, Identite et systeme educative: d’un fait laic a une orientation religieuse, *Sciences Humaines* No.25, June 2006, p.2.

⁹⁵ Kaplan Robert B., and Baldauf Richard B., *Language Planning and Policy in Africa Vol.2: Algeria, Cote-d’Ivoire, Nigeria and Tunisia, Multilingual Matters*, 2007, p.90.

⁹⁶ AF refers to fundamental teaching grade

of the natural and social sciences. The whole cycle leads to the certificate of basic education (Brevet d'Enseignement Fondamental, or BEF).

Following the development of Fundamental Teaching new syllabuses and new teaching programs and methods were introduced. This new system was expected to improve the quality of higher education and training, thus securing the integration of education into the development of society and economy.

4.4 The New Secondary Education

Scientific and technological knowledge became more emphasized during secondary education. The 1976 reform plans provided for a three-year secondary education level referred to as 1st through 3rd AS⁹⁷. The secondary level is organized in three core curricula in which courses are grouped into three general areas: *accala* (languages and social sciences), *des sciences* (natural and physical sciences and mathematics), and *technologies* (mathematics, physical science, design and technology). Extracurricular activities, sponsored by the school or parents associations, were important and included music, painting and sports. Sports, music, and physical education were also part of the curriculum. At the end of the second year based on their academic records, students choose whether to enter general secondary education or technical secondary education. Secondary education culminated in the baccalaureate, and based on their performances, students were granted admission to the university. The technical /vocational branches of education led to the technical baccalaureate⁹⁸.

⁹⁷ AS refers to standard teaching which existed before “fundamental teaching” was introduced.

⁹⁸ Journal Officiel April 23 1976 p 429. (<http://www.joradp.dz/jo6283/1976/033/FP432.pdf>) viewed

4.5 The Remodeling of Higher Education

As the government was pursuing intensive implementation of its industrialization development strategy, the need for more qualified and highly-skilled human resources was increasing.

In 1971, in order to mobilize the full potential of the Algerian universities so that they would be in position to support the ambitious economic, social and cultural transformation and development of the country, the government introduced one of the most important reforms⁹⁹ of the higher education system. This reform highlighted three main objectives: the Algerisation of the teaching staff, the Arabisation of the instruction language, and the democratization of the university. The reforms also included changing the teaching and learning methods, the teaching contents, and the structure and organization of the educational system. Furthermore, the management of the university needed to be reformed and new specialties had to be created in order to better respond to the need of the economy.

The remodeling of higher education represented a major stage in the creation of Algerian university. The system which had been limited to only some of the Algerian elite, opened to all levels of society. Furthermore, the university network expanded to fifty universities all over the country. The 1971 reforms also provided the institutional basis for promoting research in Algerian universities, which resulted in the first Algerian national research policy and the creation of the “Organisme

2011/03/25

⁹⁹ Saad Mohamed et *al.*, Issues and challenges arising from a greater role of the university in promoting innovation and developing countries: a comparative study of experiences in Malaysia, Algeria and Ethiopia, *Working Paper ID: A321, Starthclyde University*, 2005, p.10.

National de la Recherche Scientifique” (National Institution for Scientific Research), which was in charge of the coordination between industries and research institutions.

5. Effects of the Foundation Schools Program and Higher Education Reforms: Quantitative Results

The government expenditures in education and the results yielded by the reforms are illustrated in tables 2 and 3, respectively. Table 2 reveals that the percentage of school-age children entering schools has continued to increase from 54.7 percent in 1970 to 8 percent in 1982/83 (table 2). The number of elementary students had more than quadrupled from 778000 in 1962-63 to 4.7 million pupils in 1982-83. There was also a significant increase in the number of secondary school students from 19999 in 1962-63 to 285000 in 1982-83, as well as the number of university students from 3718 students to 90382 students in 1982-83. However, the gap between the percentage of pupils in the urban areas and rural areas was large at about 88.5percent and 53.1percent respectively.

Table 2 Progress Made in education and Training (1962 –1983)							
	1962-1963	1967-1968	1977-1978	1979-1980	1980-1981	1981-1982	1982-1983
Elementary	778,000	1,462,000	2,894,000	3,061,000	3,119,000	4,070,000	4,780,000
%	93.4%	89.2%	77.1%	74.2%	72.6%	90.2%	89.9%
Teachers	13,000	33,100	77,008	85,499	88,481	128,012	150,000
Schools	4,045		8,377	9,034	9,263	9,399	
Intermediate and Secondary Schools							
Intermediate level pupils	30,790	148,744	586,017	735,716	802,482	-	-
%	3.70%	9.10%	15.60%	17.80%	18.70%		
Secondary level pupils	19,999	-	155,944	197,619	211,948	249,245	285,000
%	2.4%	-	4.2%	4.8%	4.9%	5.5%	5.4%
Teachers (local and foreigners)		7,704	27,764	37,288	41,137	12,400	14,292
Schools		560		1,376	1,444	1,515	
Universities							
Students (undergraduates and postgraduates)	3,718	9,720	54,637	61,001	79,351	79,631	90,382
%	0.5%	0.6%	1.4%	1.5%	1.8%	1.8%	1.7%
Lecturers	298	693	5,856	7,903	9,145	9,778	8,800
Trainings							
Students		17,000	63,680	69,796	84,738	112,000	161,000

Source: Klaus and Elenore Jacob, *“Education and Training in the People’s Democratic Republic of Algeria”*, Asia, Africa Latin America special issue 16, Berlin 1985 p 109.

Reforms of education and training depended heavily on the funds allocated by the government. Between 1967 and 1984, in an effort to provide compulsory and free educational opportunities to all children, the Algerian government allocated between nine and almost 12 per cent of total investments to education and training, which is much more than what other developing countries invested in similar programs (table 3).

Table 3: Investment in Education and Training (1967 - 1984)	
Year	% of total investments
1967-1969	9.4
1970-1973	11.9
1974-1977	9
1980-1984	10.5
Program underway (1979/80 figures)	17.4

Source: Ibid p 109.

Higher education reforms resulted in the rapid expansion of enrollment over years, as shown in Table 2. Efforts to coordinate between education, training and economic development were quantitatively noticeable. The various training institutes created were biased to train high-level senior managers, however, it was done on the detriment of technicians, especially laborers¹⁰⁰, and the economy could not be supplied with the required qualified and skilled labor. Moreover, masses of young people, most of them the product of the new educational system were entering the workforce while the economy was shrinking substantially and had no jobs to offer.

Despite government's efforts, students who did not obtain the baccalaureate were reluctant to join vocational training. As a result, facilities were under-enrolled, and the unemployment rate was higher for young people who attended vocational training. Moreover, there was a total mismatch between the training received and the jobs offered¹⁰¹.

At the end of the second four-year development plan, the Algerian economy was facing a tension between strong demand for investments in all sectors and limited

¹⁰⁰ Dr Lamiri Abdelhak, *Crise de l'économie algérienne: causes, mécanismes et perspectives de redressement*, Les Presses d'Alger, 1999, p.120.

¹⁰¹ Mena Development Report, "The Road Travelled So Far in Mena, Education Reform in the Middle East and North Africa", *World Bank 2008*, Chapter 5, p.145

resources. These limited resources included the unavailability of materials, a shortage of qualified workers (Table 4) and a shortage of contracting firms. Consequently, projects and production programs were delayed and costs were increasing. Moreover, the remuneration system was distorted, and qualified workers were dispatched unevenly without consideration of relevant needs, resulting in inefficiency¹⁰².

Table 4: The Growing Shortage of Manpower 1970-7			
	Senior Staff and Engineers	Technicians and Foremen	Qaulified Workers
Technical cooperation	14 200	1 500	3 400
Needs of the Economy	67 140	94 000	243 000
Planned training projects	(67 180)	(48 680)	(232 030)
Achieved goals	48 940	27 950	169 040

Soucre: Bennoune Mahfoud: «*The Making of Contemporary Algeria, 1830-1987*», Cambridge Middle East Library 1988 p 58.

6. Arabisation Policy and the Performance of the Education Sector

All countries that emerged as new nations in Asia and Africa during the period following World War II faced soon after independence the dilemma whether to keep the ex-colonial language besides the national language, which would make it a bilingual country or reinstate and maintain the nation's language as the only language for the society¹⁰³.

¹⁰² Benziane Abdelbaki, Economic Reforms in Algeria and their Impact on Higher Education and Students Benefits, *The Journal of North African Studies*, Vol.9., No 1, 2004 p.104.

¹⁰³ Benghida, Sonia, Language planning and Policy Attitudes in Algeria, *Journal of Science*, Vol.1., No 2 July 2006 (<http://www.ibscientific.net>)

During 130 years of colonial oppression, Algeria's national culture was almost denied and Arabic language was treated as a foreign language and French language has been imposed. In reaction to the colonial attempt to forge a new identity to the Algerian population, Algerian government followed the most aggressive approach of Arabisation in the Maghreb region. Thus at independence it seemed natural to restore the national language and replace French language in all aspects of education, administration and everyday life.

6.1 Renaissance of Arabic Language with the "Ulama"

By confiscating the land and *hubus*¹⁰⁴ that was funding Quranic education, the teaching of Arabic language and paid the upkeep of schools¹⁰⁵, between 1830 and 1844, the colonial authorities had undermined the structures. Only few Quranic schools in villages were providing classes in Arabic language. For higher education studies, Algerian Muslims went outside of Algeria such as Tunis, Morocco and Middle East.

In the context of nationalism awakening, the movement of Ulama, led by Cheikh Abdelhamid Ben Badis¹⁰⁶, advocated and campaigned for the awakening of an Algerian nation opposed to the assimilation ideology. Ben Badis is famous for his declaration: "Islam is my religion, Arabic my language, Algeria my fatherland." In 1924 Ben Badis brought together in Constantine a group of reformists to discuss

¹⁰⁴ Land holdings of Islamic foundations

¹⁰⁵ Merouche Ouarda, *The Long Term Impact of French Settlelement on Education in Algeria*, EU RTN Network in Micro Data Methods and Practice, May 2005 p4.
(http://www.eui.eu/Personal/Researchers/merouche/public_html/algeria.pdf) viewed 2012/02/12

¹⁰⁶ Ben Badis (1889-1940) was the leader of The Islamic Reforms Movement in Algeria between the two world wars. With his followers he vigorously affirmed the cultural and historical distinctness of the Algerian nation.

plans to promote Algerian nationalism and Arabic language. Many schools (medersas) were created to teach Arabic language outside school hours and a majority of public school pupils attended the classes. In addition, conferences under the theme of renovating the Muslim religion were organized for adults¹⁰⁷. Ben Badis was very eloquent and would raise interests and enthusiasm of a whole crowd.

Restoring classical Arabic language and culture was emphasized and was viewed as introduction to independence spirit. The reformist movement of Ben Badis aimed at strengthening the link between Algeria, Islam and Arabic language - a link which is still deeply rooted in the Algerian society. The leaders of this movement have joined the Liberation Front Movement (Front de Liberation Nationale, FLN) and have been influential in the independent Algeria.

The over evaluation of the classical Arabic compared to the existing spoken languages has marked the linguistic policy after independence, with an unreasoning hostility to the spoken Arabic (daily Arabic spoken in the street, at home or suk) and especially Berber languages. It is also worth pointing out that because of its close relationship with Islam, Arabic is, more than any other language in the world, considered by its users as sacred and thus benefits from a “quasi-idolatry”¹⁰⁸.

6.2 Socio-Political Context of Arabisation

At independence, Algeria was a multilingual country, using simultaneously the classical or Quranic Arabic, French which was dominant and the main language of

¹⁰⁷ Grandguillaume Gilbert, L'Arabisation en Algérie des « ulema » à nos jours, [<http://books.openedition.org/enseditions/1272>], viewed on 12/06/2011

¹⁰⁸ Majumdar Margaret A. and Saad Mohamed, *Transition and Development in Algeria: Economic, Social and Cultural Challenges*, Bristol, UK 2005, p.135.

instruction, dialectal Arabic, which was the spoken Arabic of everyday life of all Algerian Muslims, and the Berber¹⁰⁹ language spoken by the minority of the population mainly in the Kabylia¹¹⁰.

According to the 1966 census, 74.6% (5941100) of Algerian population aged 10 and over were illiterate. While 63.3% were male and 85.9% were female (Table 5), while 5.5% (435000) were literate in Arabic only, 10.6% (841000) were literate in Arabic and French, 8.9% (712300) were literate in French only, and 0.4% (31000) were literate in other languages.

Table 5 Illitracy Breakdown by Gender (up to 1978)		
Reading and Writing	Male	Female
Illiterate	63.3	85.9
Arabic Only	9.5	1.5
Arabic and French	14.3	6.9
French Only	12.5	5.4
Other languages	0.4	0.3

Source: Grandguillaume Gilbert, Country case study on the language of instruction and the quality of basic education: policy of Arabisation in primary and secondary education in Algeria, *Paper commissioned for the EFA Global Monitoring Report 2005* p 16.

The leaders of the country and the population were determined to restore both Arabic and Islam, and underlined that it belonged to the Arab world which supported the Algerian liberation war. The 1964 National Charter stressed the speeding up the process of Arabisation of education and strengthening of links with the Arab world¹¹¹.

¹⁰⁹The term Berber indicates the population of North Africa, this territory which took the name of Tamazigha. The Berbers prefer to be called "Imazighen" (which means noble and free men), and the spoken language is called Tamazigh.

¹¹⁰ Arezki Abdenour, *Le Role et La Place du Francais Dans le System Educatif Algerien*, *Universite Abderahmane*, Bejaia Algeria, 2008, p22.

¹¹¹ Charte d'Alger 1964 (<http://www.el-mouradaia.dz/francais/symbole/textes/charte%20d%27alger.htm>) viewed 2011/5/20

On May 22nd 1964, the High School of Interpreting and Translating was created to accompany the Algerian administration in the gradual Arabisation process¹¹². In 1964, the Islamic institutes were established with the main task of teaching Arabic. They were later dissolved and then integrated in the educational system in 1976. In 1986 the Academy of Arabic Language was created to face the challenges Arabic is expected to take up.

There were two trends, those supportive of the Arabisation decision - hence monolingualism - aiming at sticking an Arab and Muslim stamp on Algeria and installing a non-Western identity, and those who claimed bilingualism and supported the maintaining of French language without rejecting Arabic and advocated for a cautious Arabisation. Those in favor of bilingualism lost political backing up in 1992 when Arabisation had reached all level of the society. In 1999, they regained favor with the newly elected and current President Bouteflika, in addition to the Berber-speaking people whose language is threatened and have become fiercely opposed to Arabisation¹¹³.

6.3 Principal Phases of the Implementation of Arabisation: From Bilingualism to Monolingualism

6.3.1 Arabisation of Education

From October 1962, seven hours per week of Arabic instruction were introduced in all schools. In early 1963, it was increased to 10 hours per week out of 30 hours of

¹¹² Kaplan Robert B., and Baldauf Richard B., op.cit., p 10.

¹¹³ Grandguillaume Gilbert, op.cit., p 4.

classes. In 1964 the authorities opted for the full Arabisation of first grade of primary instruction. Due to the massive illiteracy and the fact that those who were educated were mainly fluent in French rather than in Classical Arabic, the regime had to employ teachers from the Middle East, especially Egypt, Syria and Iraq. In 1966, there were 3500 non Algerian teachers out of 13000 Algerian Arabised school teachers, which represented 27% of school teachers. The only Algerians who were literate in Arabic and hired at independence were those who studied in the medersa or Quranic schools, but often with no pedagogical training.¹¹⁴ While Arabisation campaign continued at all level of the society, a ministerial law was adopted on March 1973 exempting high officials who obtained the exam for civil service from the certificate of Arabic language (level 1)¹¹⁵.

By 1975, primary education was completely Arabised, and French was taught from the fourth grade of primary school, while two-tier system was adopted in secondary and post-secondary schools. In 1976, private schools were abolished and only French schools were providing instruction for those rejecting Arabisation.

On September 14th, 1980, a law is signed providing for the Arabisation of first year of social, political, economic sciences and law at university, to be effective the same year. In January 1981 a High Council of the National Language is created to follow up and control the Arabisation process¹¹⁶. In 1982, Arabisation intensified and in order to offer openings to the holders of Arabised baccalaureate, a decree was adopted providing for the total Arabisation of the first year of social and political

¹¹⁴ Grandguillaume Gibert, op.cit., p 5.

¹¹⁵ Journal officiel de la Republique Algerienne No. 28 April 6, 1973 p 336.

¹¹⁶ Grandguillaume, Gilbert, *Les enjeux de la question des langues en Algerie, les langues de la mediteranee*, Editions l'Harmattan, les cahiers de Confluences, Paris 2002 (http://grandguillaume.free.fr/ar_fr/enjalgerie.html) viewed 2011/07/23

science, law and economics at university. Basic education and arithmetic were also Arabised in 1981 and 1982. French remained only as a language of instruction. In secondary schools, Arabisation of mathematics was done progressively and by 1989 and 1990 baccalaureate was fully Arabized¹¹⁷. Moreover, the teaching of Spanish, German and Russian at Middle school level was cancelled, and became optional at high school on an equal footing with drawing and music. In 1988, the President of the Republic, Chadly Benjedid signed decree 19.09.88 prohibiting Algerian children including those with dual nationality from attending French schools in Algeria where they were seeking bilingual education.

Later on, the Ministry in charge of universities announced the total Arabisation of higher education for the new academic year 1991. To achieve this goal, the ministry was planning to bring 1500 Iraqi professors but late President Boudiaf set up a commission to prepare the freezing of the Arabisation law, which was official in July 1992 through the presidential decree 92/02¹¹⁸.

In 1993, the authorities attempted to substitute English language for French as the first foreign language starting from the fourth grade of primary education. However, the decision seemed unpopular as only ten percent of parents chose English, and the majority opted for French as a foreign language, despite the motives (English as the international language of communication, and the language of science and technology) that were put forward. It was argued that this new policy was a way to reduce the spreading of French rather than facing globalization and adapting to the Information and Communication Technologies (ICT) world where science

¹¹⁷ Arezki Abdenour, op.cit., p25.

¹¹⁸ Grandguillaume Gilbert, L'Arabisation au Maghreb, *Revue d'aménagement linguistique au Maghreb, Office Québécois de la langue française, No 107, hiver 2004, p.20.*
http://grandguillamue.free.fr/ar_fr/quebec2004.html viewed 2010/11/12

terminology is in English.

Under the pressure of “Baathist”¹¹⁹ who were in favor for the creation of a Great Arab Nation, a new law on “the Generalization of the Use of Arabic” was unearthed¹²⁰ and adopted on January 16, 1996 providing for the completion of Arabisation by 1998 for secondary level, and by 2000 for universities¹²¹. While Medicine and Engineering were still taught in French, students were obliged to take Arabic lessons. Furthermore, the government created Committee to supervise Arabisation in the three main universities Algiers, Oran and Constantine.

The law was criticized and one of the reactions was the disapproval of the opposition members as well as non-Arabic speakers denouncing the law as unreasonable and exclusive. Arabisation policy was seen as an anti-Kabyle measure, which triggered Berber’s hostility towards Arabisation and caused riots in Kabylia in 1980 ¹²² known as “Berber’s Spring”, which resulted after a long struggle toward the recognition of Berber language (Tamazight) as a national language in 2001.

Since his election at the presidency of the country in 1999 President Bouteflika stated many times his favor for multilingualism. On many occasions he expressed himself in French in his public declarations both in Algeria and overseas. He declared that it is unthinkable to study sciences in Arabic for ten years “when you can do it in one year”. He further declares that “there is no linguistic problem in Algeria but just a rivalry and fights to take the place of those educated in France”. He also set up the National Commission on reforming the education (CNRSE) in

¹¹⁹ Baathist are panarabist movement in the Middle East under the impulse of Iraq

¹²⁰ Majumdar A. Margaret and Saad Mohamed, *Transition and Development in Algeria: Economic, Social and Cultural Challenges*, Bristol, UK 2005, p 140.

¹²¹ Mahiou Ahmed and Henry Jean Robert, *Ou va l’Algérie*, Etude Broche 2003, p 279.

¹²² The Arabisation Movement (<http://countrystudy.us/algeria/a46.htm>) viewed 2011/09/08

2000, which submitted its final report in 2001.

6.3.2 Arabisation of the Economic Sector

Another important step of the Arabisation policy was towards unifying and spreading the usage of Classical Arabic in the administration and the economic sector. In 1968, there was clearly a contradiction between the theory and the practice of Arabisation.

The Ministry of National Education was aggressive in implementing Arabisation policy while on the other hand administration was fully functional only in French. In reaction to this situation, the government signed ordinance No. 29 on April 24th 1968 to impose the learning and mastering of Arabic language to all civil servants and to the employees of public enterprises. Later, a test of Classical Arabic became mandatory. This measure was intended to train future managers and executives to communicate in Classical Arabic while using technical terminology relevant to their work activity.

During the first national conference on Arabisation held in 1975, President Houari Boumedienne reaffirmed in his opening speech the principles of Arabisation policy and highlighted the new measures to introduce and establish Classical Arabic as the only working tool. These measures are:

1. Evaluate Arabisation among civil servants through questionnaires and surveys to which workers had to reply
2. Provide lessons of Classical Arabic to civil servants
3. Design textbooks, and translate into Arabic administrative forms, laws

and official texts in all administration and Ministries.

Furthermore, to help French speakers and the new Arabised generation to work together, interpretation and translation offices were established in every Ministry. Translators were in charge of translating all official documents, laws and regulations and correspondences. Texts were still drafted in French, and the translation work was felt as a big load, and a waste of energy and time.

On January 16, 1991 a new law – Law No. 91-05 – related to the use and promotion of Arabic language was adopted¹²³. The new law mandated that administration be fully Arabised by July 5, 1992, and tertiary education by 1997. Furthermore, the law applied to public meetings, debates, and both the private and public sectors. Any official document or correspondences had to be written in Arabic, and as of July 5th 1992 any document written in other language was to be considered null and void. Billboards and road signs as well as newspapers, with the exception of French newspapers already approved, had to be in Arabic. Any violation of this law would be subject to a fine between 1000 and 5000 Algerian dinars (approximately USD 40 and USD 200)¹²⁴.

6.3.3 Arabisation Waves in Public Enterprises

In 1962, when the Algerian government embarked on a policy of mass nationalization, the attention fell on domestic gas and oil operations, and all oil assets were nationalized. In February 24th 1971, President Houari Boumedienne

¹²³ Journal officiel de la Republique Algerienne No 03, January 16 1991 p 38.

¹²⁴ Paulin Djite G., “The Arabization of Algeria: linguistic and sociopolitical motivations”, *International Journal of Sociology*, Volume 98 (1)1, pp.15-28, 1992, p.1.

announced the nationalization of all French oil and gas holdings operating in the country, and the Algeria's National oil and gas company, Sonatrach¹²⁵, has been fully integrated as part of the national government structure of Algeria. The company was to play the crucial and leading role in the development of the economy, by serving other economic sectors.

Since its nationalization, Sonatrach has been through three waves of Arabisation. In 1986, the authorities established the committee for the generalization of the use of the national language (GULN)¹²⁶ in order to design a strategy to Arabize the enterprises' activities related to external environment such as customer service, public relations, communication and information. Like all other public enterprises, Sonatrach was expected to comply with the new instructions and use Arabic as the sole working tool in all its activities.

In 1991, Article 8 of law 91/05 mandated that exams and tests for recruitment in administration and public enterprises be given in Classical Arabic. In 1996, article 11 of ordinance 96-30 of December 21st instructed that all exchanges and correspondences of all administrations, enterprises, associations, regardless to their purpose, must be written in Classical Arabic. In addition, lessons of Classical Arabic were provided to the employees for a period of one to two months.

The same waves of Arabisation were implemented in the state-owned company Sonelgaz¹²⁷, in charge of electricity and gas distribution in Algeria. All the efforts to Arabise the personnel, the management as well as the training center of the company

¹²⁵ SONATRACH is an Algerian government-owned company formed to exploit the hydrocarbon resources of the country. It is responsible not only for oil and gas production, distribution, refining and processing but also for oil and gas industry engineering and exploration

¹²⁶ Banbachir Naziha, *Quelle(s) Langue(s) pour l'Economie Algerienne : Cas de la Sonatrach*, Synergie Algerie No 1, 2007, p41-47.

¹²⁷ Cherfaoui Fatma Zohra, *Langues et Marches du Travail en Algerie : cas de Sonelgaz*, University Kasdi Merbah –Department of Foreign Languages, Ouargla-Algeria 2008, p 79.

were unsuccessful though, and French was still utilized as the main language.

6.4 Effects of Arabisation on the Quality of Education

The Algerian government had two objectives: universalizing school enrollment and also Arabising the society and administration. These policies were supposed to bring both quantitative and qualitative changes, however only the first aspect was taken care of. Moreover, French was still dominant in political, economic and even social sector.

From the quantitative part, democratization yielded impressive results: the number of pupils enrolled at the fundamental and secondary levels increased substantially (Table 6). For the school year 1998-1999 enrolment in fundamental schools reached about 6.6 million pupils compared to 4.7 million in 1982-1983 (Table 2), and secondary school students reached 909090 compared to 285000 in 1982-1983 (table2). In the 1998-1999 school year, the percentage of girls enrolled in schools also witnessed an increase both in fundamental and secondary schools with 46.50 per cent and 54.89 per cent. There was also substantial development in the tertiary level both for classroom space and student enrolment. By 1997, there were fifty-five tertiary institutions in Algeria (including thirteen universities) spread over thirty urban centers, where students could enroll, compared to only one university in Algiers and two university centers in Oran and Constantine at independence. In 1998, there 350000 students enrolled at university.

Table 6: Enrolment in Fundamental and Secondary from 1989 to 1998					
Year	Total Fundamental School	Percentage of Girls	Total Secondary School	Percentage of Girls	Enrolment Rate Fundamental and Secondary school
1989 - 1990	5,436,134		753,949		
1991 - 1993	5,994,409		747,152		
1994-1995	6,200,337	45.39	821,059	49.84	
1995-1996	6,309,289	45.66	853,303	50.44	
1996-1997	6,437,708	46.11	855,481	52.54	87.82
1997-1998	6,556,768	46.50	879,090	53.73	87.69
1998-1999	6,677,618	46.80	909,927	54.89	87.45

Source: ONS (National Office of Statistics) [<http://www.ons.dz/>]

However, on the other hand, for the school year 1999 - 2000, success rate was as low as 24.6% at the baccalaureate and 33.09 percent at the BEF¹²⁸. Repetition rate¹²⁹ in 1st and 2nd grades of basic education reached 12.2%, and 26% at the 6th and 7th grades, and 32.2% in 9th grade. Drop-out rate was at 7.7% in 6th and 7th grades of basic education, 28.8% in 9th grade.

Bilingual teaching in primary and secondary schools juxtaposed Arabized teachings and French teaching until 1970s for primary schools and 1980s for secondary schools. Each section had her own teachers and their own methods, but European and Arabic teachers were working side by side. Most parents preferred bilingual teaching to Arabisation, However, the bilingual sector was cut back following the authorities decision for Arabisation, and by 1980s education became monolingual.

The hiring campaign of teachers from Middle East made Algerian schools a dumping ground for unskilled foreign unemployees. Foreign teachers were criticized

¹²⁸ Certificate of Basic education (*Brevet de l'Enseignement Fondamental*)

¹²⁹ Repetition Rate - the proportion of pupils who enroll in the same grade/year more than once to the total number of pupils/students enrolled in that grade/year during the previous year.

for their lack of qualification. While pupils could understand Algerian teachers clearly, it was difficult for them to understand Middle Eastern teachers who had no common language in which to communicate. The difficulty was more serious with the Egyptian primary school teacher sent to the Berber region where pupils mistook Egyptian dialect for Classical Arabic. In addition to a diversity of Arabic dialects in various schools, there was also a diversity in teaching methods, although they shared one common feature which was memorization.

Textbooks were first translated from French textbooks, and then they were developed and produced in Algeria. Teaching math and sciences in Arabic was challenging as francophone teachers of math and sciences were re-trained to be converted into teachers of Arabic language¹³⁰.

Foreign languages known as “minority languages” such as Spanish, German, Italian and Russian were removed in 1986 from secondary schools. Teachers of these foreign languages were either made redundant, or re-deployed as French or English teachers without any prior training or competence. As a result, the faculty of foreign languages at university where these languages are taught stopped getting the substantial enrollment they had before, and the situation remained the same. Between 1984 and 1994, Bachelor degree for beginners in these “minority languages” were offered, which made the awarded degrees unworthy¹³¹.

Few bilingual primary and secondary schools were maintained “unofficially”, such as the famous former secondary school (*Lycée*) Descartes, nationalized and maintained bilingual for the benefit of the “Algerian elite” and the diplomats’

¹³⁰ Mena Development Report, *The Road Not Traveled: Education Reform in the Middle East and Africa*, World Bank, 2008 p144.

¹³¹ Kaplan Robert B. and Baldauf, Richard B., op.cit., p.91.

children. While private schools were still not allowed, the first private school, Bendali School, opened in November 1987 in the outskirts of Algiers, offering instruction in French.

In addition, Arabisation was considered an anti-Kabyle¹³² measure to eradicate the Berber dialect. The Berber Cultural Movement was created as an opposition to the Arabisation of the education system and the government bureaucracy. Berbers and government hostilities exploded into “Tamazight Spring” in 1980¹³³, and Berbers accused the government of repressing Berber culture. Student went on strike and demanded the recognition of Amazigh as the national language¹³⁴.

The progressive Arabisation of the teaching programs on yearly basis required considerable human resources that were lacking at the time. In addition, the labor market was not in favor of Arabisation and not yet ready to absorb an Arabised labor. Therefore, the authorities designed a new strategy based on selecting the subjects to be Arabised, which were basically general subjects such as history, geography, philosophy and Arabic literature, while the scientific and technical subjects remained in French language. The introduction of this linguistic dichotomy was seen to reinforce the already prevailing idea that French language is for science and Arabic for literature. Hence, a new strategy was then designed based on geographical space and their ability to undertake Arabisation policy. The choice focused on regions where traditional schools network survived and prevailed. This late strategy added to the defects and shortcomings of the previous strategies.

¹³² Kabyle or Kabylia is a Berber language or Berber dialect spoken by the Kabyle people an ethnic group in north and northeast of Algeria.

¹³³ U.S English Foundation Research “Algeria: Language issues: Where does one observe language to be a problem in the country” (<http://www.usefoundation.org/view/900>) viewed 2011/11/30

¹³⁴ The riots were the strong reaction to the banning when a prominent and renowned professor Mouloud Mammeri from teaching ancient Kabyle poetry at the University in Kabylia.

In a survey conducted in 1983, pupils from primary schools were asked “What language at school – French or Arabic – gives you more chances to find an interesting a job in the future?” 88.5% replied French and 11.5% Arabic. In 2000, a survey about the important role of French language in society, business and administration, was conducted among parents in Algeria by the National Center of Studies and Analysis of Planning (CENEAP). It revealed that 73% of parents replied “Yes, French is important” and 24% replied no.

Educational reforms, especially Arabisation exacerbated social cleavage. Schools became a reflection of the split occurring at the nation level. Matters related to language, religion and values were controlled and organized by Ministries of Justice, Education and Culture and dominated by religious conservatives, while matters related to economy and development was dominated by technocrats who had a Western education. Besides, trade, businesses and most of economic activities continued to be conducted in French.

The President of the CNRSE, Mr. Ben Zaghrou, straightforwardly declared the foundation schools a failure and a moribund which resulted in a bilingual illiterate youth supposed to take over the management of the economy. He recommended in its report the reestablishment of French language from the second year of primary level¹³⁵. The latest reforms undertaken in 2002 reintroduced French as the first foreign language from the second year of primary education. English is introduced as the second foreign language from the sixth grade of middle schools. Despite the recommendation of the CNRSE to teach science and mathematics in French, they are still taught in Arabic with a new terminology list in French to help students to

¹³⁵ Afrik.com, L'école Algérienne revoit sa copie française, January 26, 2001 (<http://www.afrik.com/article2059.html>) (viewed 08/12/2011).

pursue their studies in universities where subjects are taught in French.

Furthermore, Algerian press commented that heated reactions aroused between those who are in favor and those against Arabisation. A member of the CNRSE, Farid Benramdane, stated that “around one million children and teenagers aged between 6 and 16 are outside the education system, that is to say, these future adults citizens are leaving the school without receiving the full basic education (lasting nine years), as defined in the UNESCO recommendations. The situation is far from promising for those remaining in the “system”, with only twenty-one percent reaching 9th AF without repeating a grade, forty-six percent reaching it after having repeated one or more times and around thirty percent leaving basic education before reaching 9th AF”¹³⁶. Moreover, the whole education system was put into question based on the examination results and educational wastage. Arabisation policy was viewed as the main cause of the failure. One of the main proposals of the report is to put an end to mono-lingualism. It also recommended the teaching of scientific subjects and some social sciences in French as no textbooks were available in Arabic¹³⁷.

6.5 Impacts of Arabisation on the Professional Qualifications and Labor Market

In 1993, the first Arabized students enrolled in universities where French was still the language of instruction. Despite the authorities announcing in 1991 the total Arabisation of universities, and the 1998 and 2000 law predicting Arabisation of

¹³⁶ Grandguillaume Gilbert, Country case study on the language of instruction and the quality of basic education: policy of arabization in primary and secondary education in Algeria, UNESCO 2004

¹³⁷ Arab Fatiha, [<http://www.lecourrier-dalgerie.com/papiers/actualite.html#1>] Issue March, 06th, 2008, n°1213

universities, French is to date the language of instruction for natural sciences, technology and engineering and medicine. Furthermore, those who were educated in French had more chances to find a job than those mastering only Arabic language. In the 1980s this situation created unrest at the universities as students of Arabized disciplines protested against favoring the French speakers and for the career opportunities offered to them.

A number of Algerian intellectuals have denounced the Arabisation policy and the teaching approach. Algiers University professor, Khaoula Taleb Ibrahimi, made the following analysis: “the most astounding and worrying impact is to impoverish the linguistic skills of pupils not only learners during the course of their school career but also as social speakers/actors”. She further describes the result of Arabisation policy as “bilingual illiteracy”¹³⁸. In 2009, in an interview about the linguistic problem in Algeria Mrs. Khaoula Taleb Ibrahimi said that new graduates are confused as Arabic is the language of school and French is the language of university and more importantly the language that dominates the Algerian labor market. She further added that many brilliant and talented students who could not access medical school or engineering school because they have been studying in Arabic and their level of French did not enable them to study at university where all subjects are still taught in French with the exception of religious studies and Arab literature¹³⁹.

Although there are some reservations, Wikileaks¹⁴⁰ released a US State

¹³⁸ Taleb Ibrahimi, Khaoula, A propos de l'école Algérienne de Ibn Badis a Pavlov , *Naqd* , issue 5 April-August 1993, p65-73.

¹³⁹ Belkhadim Irane, Khaoula Taleb Ibrahimi aborde le problem linguistique en Algerie, *Le Jour d'Algerie, Quotidein National d'information* May 30, 2009 p 2. (<http://www.lejourdalgerie.com/editions/300509/rubriques/cultures>) viewed 2011/12/01

¹⁴⁰ Wikileaks is an international online self-described “not-for profit” media organization (www.wikileaks.org) that publishes and comments on submissions of secret information and

Department cable which was drafted by US Embassy in Algeria titled “Trilingual Illitrates : Algeria’s Language Crisis” was released in September 2011, and based on my five-year work experience at the economic section of the US Embassy in Algeria the probability of this report existing are high. The cable states that “the decades of government-imposed Arabisation have produced an under-40 population that, in the words of frustrated Algerian business leaders, “is not fluent in anything” and therefore handicapped in the job market”¹⁴¹. It is also stated that graduates of Algerian schools must spend time and money to re-learn math, science, engineering and commerce in French to be able to follow their studies at university or compete for jobs in Algeria and abroad. Arabisation led those who can afford to seek education in French or English in private schools in Algeria or Europe.

The cable also reports opinions and declarations from Algerian private and foreign business representatives who lamented about Algerian workers who are unable to function in any language. The marketing director of private owned group ETRHB Hadad, Mr. Mohamed Hakem, said that language training in French and English for the new recruits is very expensive and time-consuming. Mr. Mohamed Hakem added that the current Algerian market favor the wealthy elite who could afford private schools in Algeria or abroad. The report concluded that Arabisation had made the literacy process more difficult and resulted in a “lost generation” representing 70% of the population which is under 30, which is left out and no other than the wealthy elite can participate in the international economy, concluded the report.

classified media. The website was launched in 2006 under the Sunshine Press organization. In November 2010, Wikileaks, in collaboration with major global media organization, released US State Department diplomatic cables which became public in September 2011.

¹⁴¹ US Embassy Algiers (Algeria), Trinlingual Illitrates: Algeria’s language Crisis, October 16, 2008. [<http://www.cablegatesearch.net/cable.php?id=08Algiers1121>] viewed 2011/10/23

The various Arabisation strategies proved limited and revealed that the expected impacts on social cohesion, homogeneity of education and the needs of the economic sector were underestimated by the designer of this methodology. The efforts deployed by the authority to spread Arabisation and generalize the use of it at all level of economy, administration, society, education and environment, could not reach the working environment. To date, the working environment remains dominated by the use of French language and if there were attempt to change the working language, it would be more favorable to English than to Arabic.

7. Education between Economic Crisis and Market Reforms

7.1 Market Reforms

Between 1973 and 1987, the Algerian economic growth rate was relatively rapid. The average annual growth of GDP increased from four percent in 1973 to nine per cent in 1979, and after a period of slowdown to three per cent in 1980, it grew again to an average of six percent in 1984. GDP per capita also grew from USD 579 in 1973 to USD 2622 USD in 1985. At the same time, the population was growing at an average of three per cent per year. The Algerian state had become the major economic player by providing seventy percent of industrial production, eighty percent of value added, and 76.9 per cent of total employment. The public sector continued to grow and remained the largest economic sector. Algeria was becoming a more urban and educated society. Oil revenues were flowing, and the government used them to provide subsidies for food, education, and housing. Algeria was enjoying stability and

civil peace.

However, the “socialist” experiment began to show its limits and started its collapse in the late 1980s. The Algerian development strategy failed to achieve its ambitious objectives. The decline of oil revenues due to the sharp drop of oil prices left Algeria both in economic and social crisis. The “socialist” system failed to create jobs and favored the urban middle class and skilled workers while increasing unemployment and underemployment. The Algerian economy was characterized by very poor performance of agriculture and the manufacturing sector, strong dependency on hydrocarbons, and high debts and unemployment. In 1986, oil prices fell by almost fifty percent compared to 1985, bringing down the barrel price to less than USD 10 and the Algerian economy to detrition. GDP was continuing its slump from 0.4 per cent in 1986 to -0.7 per cent in 1987 and -1 per cent in 1988. Algeria underwent a long economic crisis contributing to rising unemployment and poverty, which led the Algerian government to borrow from foreign countries, bringing the external debt up to fifty-eight percent of the GDP in 1999. This crisis hampered the completion of projects, investments, and the financing of imports. In addition, the population, already numbered at approximately twenty-three million, continued growing at a rate unmatched with the state’s infrastructure and agricultural resources, putting more pressure on the economy. By 1983, the private sector, which was growing steadily, employed more than one-third of the national labor force.

A 1982 report by the United States Embassy in Algiers reported that there were 315000 private enterprises, the majority of which were micro enterprises producing luxury goods for a particular social class¹⁴².

¹⁴² Tlemcani, Rachid, and William W. Hansen, *Development and State in Post-Colonial Algeria*. In *Bureaucracy and Development in the Arab World*, International Studies in Sociology and Social

Faced with social and economic strains, the Algerian government began rethinking its economic strategy. The energy minister at that time (1991-1992), Mr. Nordine Ait-Laoussine, openly declared: “we recognize that we lack the financial means and we do not have the sort of technical and human resources required to fulfill our ambitious plan”¹⁴³. It was a clear call for an increase in foreign partnerships. President Chadli Benjedid responded to the economic trouble by attempting to reform the state-engineered economy and by compressing imports.

Nevertheless, available jobs continued to lag behind the rising population, and many Algerians began to look for work outside of the country. Meanwhile, a housing shortage was feeding mounting social discontent, which led to huge organized demonstrations in Algeria’s major cities on October 5, 1988, to protest to the decline in living conditions. This forced the regime to undergo economic and political reforms and to enter a plural democratic transitional phase.

Though political reforms were rapid and led to multipartism, economic change was hampered by not only the heavy external debt and the high dependence on oil and gas, but also the growth of parallel economy¹⁴⁴. Consequently, the effort of the government in 1990-91 to bring structural changes to the economy failed, and it was not until 1994 that the government, unable to deal with the dire economic situation, had to face the unpalatable truth that they would have to resort to foreign aid and all of the conditions that come with it¹⁴⁵.

Anthropology, EJ Brill Leiden, 1989, p122.

¹⁴³ Le Sueur, James D., *Algeria since 1989: Between Terror and Democracy*, Zed Books, 2010, p27.

¹⁴⁴ Economist distinguished two types of parallel economy prevailing in Algeria. The first one is connected to the regime as people exploited their positions for private advantages and derived rent from them, the Algerians define it as the “Mafia”. The second one had no political power or influence, but consisted of trabendo smuggling economy who took advantage of the violence and terrorism period in Algeria to grow their business and exploited every opportunity offered to them.

¹⁴⁵ Joffe, George, The Role of Violence Within the Algerian Economy, *Journal of African Studies*, Vol 7, No.1, 2002, p2.

In 1995, in cooperation with the World Bank and IMF, Algeria embarked on economic reforms and stabilization programs, which marked the transition period. The reforms were in the form of a structural adjustment program, characterized by large devaluation of the Algerian Dinar (Table 7), tighter fiscal and monetary policy, and wage restraint and budget deficit reduction.

Table 7: Currency Equivalent (Exchange Rate: Algerian Dinars per USD)															
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
9.0	18.5	21.8	23.3	35.1	47.7	54.7	57.7	58.7	66.6	75.3	77.2	79.7	77.4	72.1	72.6

Source: World Bank [<http://databank.worldbank.org/data/home.aspx>]

The economic situation was very severe, but as noted by Algerian and international economists and observers, the market-based economic reforms had a number of positive economic effects and led to impressive and unexpected results. As early as 1997, as a result of fiscal adjustment efforts, inflation was contained, and the balance of payment was positive. This success was due to Algerian government actions aimed at providing a better economic and business environment. Some of these actions included price liberalization, a new commercial code, and new regulatory laws. Not only did these actions improve the performance of state-owned enterprises (SOEs), but they also contributed to a renewal of economic growth.

Since 2002, a favorable international situation and good macroeconomic control enabled Algeria to maintain a respectable level of economic growth. This was especially true between 2002 and 2005, when a solid growth rate of 4.5 per cent was maintained. Inflation had decreased from twenty-nine percent in 1994 to 5.6 per cent in 1998 and 1.6 per cent in 2005 (Table 8). The central government budget balance

went from an overall deficit of two percent of GDP in 1999 to a surplus of fourteen percent in 2005. Budget revenues went up from thirty percent of GDP in 1999 to 40.9 percent in 2005, while expenditures declined from thirty-one percent in 1999 to twenty-nine per cent in 2005.

Table 8: Economic and Financial Indicators						
	1999	2005	2006	2007	2008	2009
Production and prices (Annual percentage change)						
Nominal GDP		23.3	12.6	10.0	18.2	-9.5
Real GDP	3.3	5.1	2.0	3.0	2.4	2.1
Real Non Hydrocarbon GDP		4.7	5.6	6.3	6.1	9.3
GDP Deflator		17.0	10.3	7.3	15.4	-9.9
Consumer Price index (Average)		1.6	2.5	3.5	4.5	5.7
External sector (billion US dollars)						
Export fob	12.3	46.3	54.7	60.6	78.6	45.2
Import fob	-9.0	19.9	20.7	26.4	38.0	37.4
Current account balance		21.2	29.0	30.6	34.5	0.4
Current account balance (in percent of GDP)		20.7	24.7	22.5	20.1	0.3
Overall Balance		16.9	17.7	29.6	37.0	3.9
Central Government (In percent of GDP)						
Total budget revenue and grants	30.0	40.9	42.8	39.2	47.2	36.3
Total expenditure and net lending	31.0	29.0	29.2	34.0	39.5	43.1
Overall balance	-0.5	11.9	13.5	4.4	7.7	-6.8
Official Revenues						
Gross Official reserves (in billion of U.S dollars)	4.4	56.2	77.8	110.2	143.1	148.9
Debt						
Total external debt (in billion of U.S dollars)		17.2	5.6	5.6	5.6	5.3
Total external debt (in percent of GDP)	59.4	16.7	4.8	4.2	3.3	3.8
Total government debt (in percent of GDP)		27.3	23.6	12.4	8.2	10.4
Memorandum Items						
Gross domestic product (in billion of U.S dollars)	47.6					
Per Capita GDP (in U.S dollars)	3,168	3,122	3,465	3,934	4,962	3,925.9

Source: World Bank [<http://data.worldbank.org/country/Algeria>]

Economic stability was regained, involving high social costs that fell heavily on the people. However, the results remained beneath the country's potential, particularly in the non-hydrocarbon sector. Growth remained anemic and unemployment worsened. The prolonged surge of the oil price to more than \$20 per barrel in 2000 and then to over \$40 per barrel in 2004 and \$50 per barrel in 2005 enabled the country to embark on a massive public investment program.

In 2001 social and political pressure led the government to launch the first public investment program during 2001-2004, known as "The Support Program for Economic Recovery" (PSRE). This program, for which an amount of USD seven billion was disbursed, had two main objectives: poverty reduction and employment creation. Large labor-intensive and costly public projects in various sectors (Figure 2a) predominated and were implemented through decentralized ministerial entities and community development agencies receiving transfers. World Bank reports noted that, with the exception of a vague reference to an employment creation target of 850000, the government provided neither monitoring indicators nor results. In 2004, World Bank evaluation projects had little reference to strategic sectoral objectives, and their quality was weak. The context of urgency, the overlapping implementation agencies, and the inconsistent technical preparation of staff in charge of execution resulted in poor implementation of the projects¹⁴⁶.

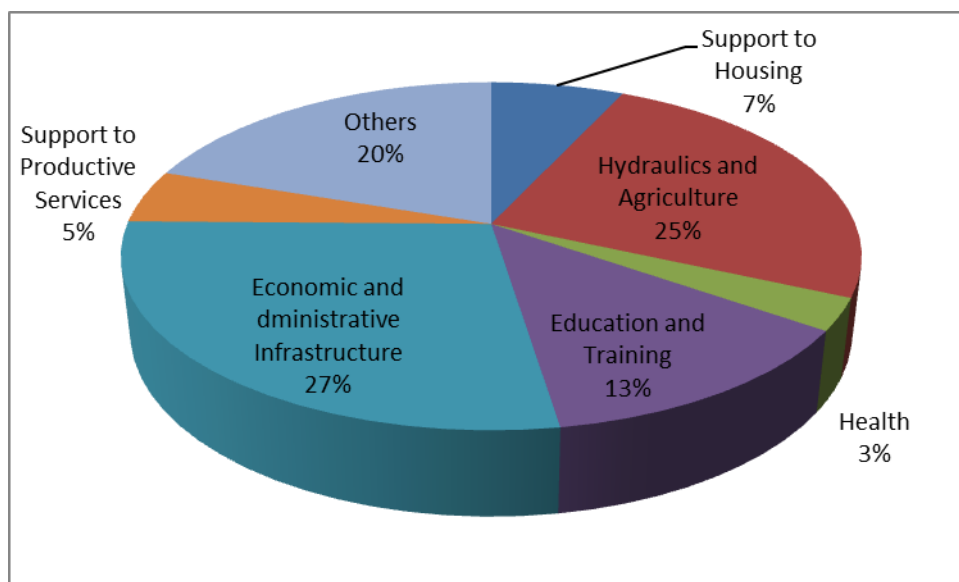
In 2004 the authorities decided to launch the "Complementary Support Program for Growth" (PCSC) during the 2005-2009 period (Figure 2b). The pending and ongoing projects of PSRE were merged into the PCSC pipeline. The PCSC's initial allocation of roughly \$55 billion had more than doubled when the budget

¹⁴⁶ World Bank, *People's Democratic Republic of Algeria, A public Expenditure Review: Assuring High Quality Public Investment*, Vol.1, August 2007, p36.

supplements, new programs for the South, and the “High Plateaux” (Highlands) regions were included, reaching \$114 billion¹⁴⁷. The government launched this program to address the country’s most pressing needs to modernize and expand public services and to deal with a backlog of social and basic infrastructure rehabilitation. In addition, the PCSC would have important consequences by improving the population’s standard of living and developing human resources and achieving economic growth.

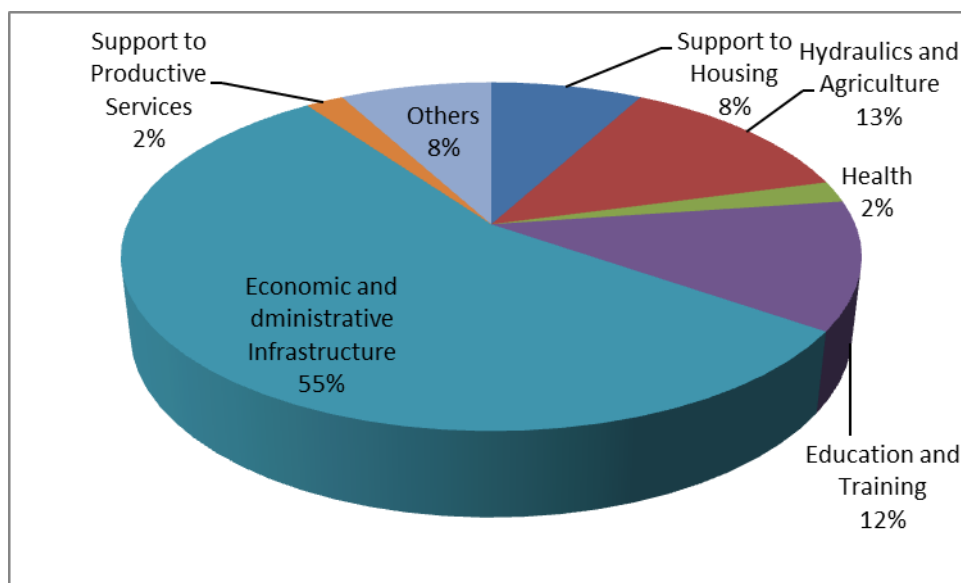
Basic economic infrastructure like public works and roads benefited the most from the PCSC resources, as their shares doubled from the PSRE and PCSC budget and reached more than half of the total share. Health and education sector budgets represented three percent and thirteen per cent respectively under the PSRE and decreased by one per cent in the PCSC budget allocation.

Figure 2a: PCSC 2001-2004



¹⁴⁷ Barak, Zine Med., How Oil Revenue Have Translated into a Sustainable improvement in social welfare in Algeria: 1998-2007, *Topics Middle Eastern and North African Economies, electronic journal*, Vol.11, Middle East Economic Association (MEFA) and Loyola University Chicago, 2009, p 6.

Figure 2b: PCSC 2005-2009



Source : World Bank, *People's Democratic Republic of Algeria, A public Expenditure Review: Assuring High Quality Public Investment*, Vol.1, August 2007, p38

7.2 Educational System Under Difficult Economic Situation

Despite the crisis and turmoil that Algeria witnessed, it continued to achieve significant successes in universalizing primary education and increasing access to other levels of education, financed entirely by public spending. Household expenditures on education were assumed relatively small, mostly for the purchase of textbooks post-2001, when the policy of free, state supplied textbooks ended.

Since 2000, enrollment at the primary level had declined with the sharp drop of fertility rates and reduced size of the zero to five-year-old population. The rate of

primary school enrollment fell at two per cent per year. In contrast, enrollment in lower secondary school and upper secondary school grew at about 3.4 per cent per year. Higher education enrollment grew at 12.4 per cent per year, tripling between 1994 and 2004 and doubling since 1999. In 2001-2002, 6.80 million students were enrolled in the fundamental school, which includes primary and lower. In the following years, enrollment rate continued to decrease to reach 6.61 million enrolled students in 2004-05 school year. At the same time, enrollment at secondary school was increasing from 975862 students in 2001-02 to 1.123 million students in 2004-05. This trend was mainly due to the demographic transition that came as a result of the declining fertility rate, which stood at 2.94 per cent and 2.74 per cent for the years 1996 and 2002.

Tertiary level educational programs also increased, reaching 721833 students enrolled in 2004-05 compared to 466084 students enrolled in 2000-01. And the number of students enrolled in post-graduation programs went up from 22533 in 2000-01 to 33630 in 2004-05¹⁴⁸.

Another significant achievement was that the participation of girls at all levels of education remained high. The proportion of boys at grade one was slightly higher than that of girls, with ninety-seven percent compared to ninety-five percent in 2001, respectively. At the secondary school level, 58.25 per cent of students in 2010 were girls. The male enrollment ratios slowed down, and a dropout phenomenon occurred. In 2000-2001 alone, 84000 children (33500 girls and 50500 boys) officially dropped out of primary school before completing 5 years of schooling. However, female enrollment continued to increase, and neither the economic and social nor political

¹⁴⁸ Office National des Statistiques (National Office of Statistics : ONS)

crisis appeared to have a negative impact on enrollment.

However, the runaway population growth had led the authorities to focus their efforts entirely on the quantitative aspects at the expense of qualitative aspects of education. Thus, every effort made was to increase enrollment and they completely ignored the improvement of educational management and the enhancement of the teaching profession.

Mr. Lacheraf, the former Minister of National Education (1977-1978), drew attention to the poor qualifications of part of the teaching staff, which represented a major problem in the Algerian educational system. He added that the system planners had set up a comprehensive teacher training mechanism without forgetting that graduates would turn to the most lucrative sectors of the labor market (oil industry, government, etc.).

The lack of executives and the strong demand for teaching staff led to the recruitment of teaching staff who often lacked the level of education required for the profession. The unforeseen consequence was that Algerian elite training in the first level of the educational system was partly achieved by individuals who had failed in that system.

Language policies, and their management by politicians who had never asked citizens to express their views on the matter, left the country with serious identity problems forty years after independence, at least for the youth. The psychological instability of these youth was threatened by the complex sociolinguistic context and the various discourses developed by adults who had “biased” views about which native language to use (classical Arabic or the dialect) or which foreign language to teach (French as the existing language of the colonizers or English as the language

of science and technology). Schools had become laboratories where the language problem exposed itself, various reforms were tested, and tentative answers were experimented, but no lasting solution was found because of the divided positions of the decision makers.

As a result of the above factors, Algeria could not improve the quality of its educational system. Although the country achieved near universal participation in the primary and lower secondary levels, enrollment rates at upper and higher education levels remained low compared with other countries. Figures in Table 9 show that the upper secondary Gross Enrollment Rate (GER) is higher than that of Morocco, similar to that of Malaysia, Venezuela, and Indonesia, but significantly lower than those of other countries. Indonesia had an upper secondary GER similar to Algeria's despite its much lower per capita income. Moreover, the GER at the lower secondary levels of education of 105 reflects a large proportion of over-aged students (Table 9). In higher education, Algeria's enrollment rate is much lower than that of Tunisia and Jordan which have similar per capita incomes, and Egypt which has a lower per capita income. Compared to the high income countries of Asia (Malaysia) and Latin America (Argentina), Algeria lags far behind.

Table 9: Participation rate by subsectors in Algeria and Peer Countries 2002-03						
	Per Capita GNI	Primary NER (%)	Lower Secondary GER (%)	Upper Secondary GER (%)	Higher Education	
					GER (%)	Students/100,000 population (2004-05)
Algeria	1,930	95	105	55	21	2,300
Other Middle-income countries						
Tunisia	2,240	97	98	62	27	3,226
Morocco	1,310	90	59	31	11	959
Egypt	1,390	97	95	75	29	2,910
Iran	2,010	87	91	68	21	n.a
Jordan	1,910	100	90	77	39	n.a
Indonesia	940	92	76	46	16	n.a
Malaysia	3,380	95	94	52	29	n.a
Argentina	3,840	100	119	80	60	n.a
Venezuela	3,470	91	83	50	40	n.a

Source: Ibid p147.

Even if the primary enrollment rate is high, however, the transition rate to lower secondary education remained low. Table 10 shows that in 2002-03 the transition rate of seventy-nine percent was similar to those of middle-income countries like Morocco and Indonesia, but much lower than those of many countries of similar incomes. The gross entry ratio to higher education in Algeria was only fourteen per cent, which gives an indication of the transition between the upper secondary and higher education, and ranks Algeria much lower than other countries for which data are available.

Table 10: Progression rate in Algeria and Peer Countries 2002-03				
	Primamry survival rate	Primary Completion rate(a)	Transition rate in lower secondary	Gross entry ratio to higher education (b)
Algeria	94	96	79	14
Other Middle Income Countries				
Tunisa	93	n.a	88	36
Morocco	76	59	79	n.a
Egypt	98	91	84	31
Iran	95	123	96	n.a
Jordan	96	98	97	39
Indonesia	86	107	81	14
Malaysia	84	n.a	100	32
Argentina	90	100	94	56
Venezuela	80	n.a	97	n.a

Source: Ibid p 147.

The problem with student progression and completion of lower and upper secondary education resulted in a low number of students graduating at different levels. Examination failures and high levels of repetition resulted in a high dropout rate in post-primary schooling, especially in lower secondary and upper secondary education, both with a rising rate of about sixteen per cent. This rate increased further as shown in (Table 11). Dropout rates were higher for boys than for girls, with 16.2 per cent and 10.8 per cent, respectively, at lower-secondary school, and 15.5 per cent and 10.3 per cent, respectively, in upper-secondary school.

Table 11: Dropout and Repetition Rates by Grade and Education Level 2003-04							
Primary Dropout rate (%)							
Grade	1	2	3	4	5	6	Overall
Boys	1.3	1.5	0.3	2.1	2.5	5.6	2.3
Girls	3.7	0.4	0.8	1.2	1.9	5	2.2
Primary Repetition rate (%)							
Boys	12.9	8.7	10.8	13.5	14.1	18.2	13.2
Girls	9	5.6	6.2	7.7	7.8	11.8	8.1
Lower Secondary School Dropout rate (%)							
Grade	7	8	9				Overall
Boys	13.2	11.5	23.9				16.2
Girls	6.5	5.1	19.3				10.8
Lower Secondary School Repetition rate (%)							
Boys	24	19	30.7				24.7
Girls	15.6	6.8	30.2				18.4
Upper Secondary Dropout rate (%)							
Grade	10	11	12				Overall
Boys	8.9	11.9	20.7				15.5
Girls	5.1	5.9	17.3				10.3
Upper Secondary Repetition (%) rate							
Boys	29.1	17.4	39.1				29.4
Girls	19.7	12.3	37.9				23.6

Source: Ibid page 146.

8 The New Educational Strategy

Though the necessity of reforming the educational system was emphasized during the 1990s, the security problems and the instability prevailing during that period prevented the country from designing a new strategy. In July 2002 the National Assembly (Algerian Parliament) voted on educational reforms based on the recommendations of the National Commission on Education. The objective of the new strategy was to shift towards qualitative reforms in order to better prepare the Algerian youth for new social and economic changes¹⁴⁹.

¹⁴⁹ Programme d'Appuis de l'UNESCO a la réforme du système éducative, *Reforme de l'Education et innovation pédagogique en Algérie*, UNESCO, ONPS, 2006, p 33.

Some of the challenges facing educational reform included the weak transition rate from primary to secondary school, the high rate of students repeating the primary level, and the high dropout rate. In addition, the imbalance in the number of students that attended general secondary level (the majority of students) versus those that attended the technical secondary level (where students' participation remained very low) posed a problem for reform. Finally, the lack of guidance provided to students when they finished their secondary level, before choosing their university, was another challenge facing education reformers.

The implementation of the new reforms began in 2003-2004, comprising the following three main goals for basic and secondary education¹⁵⁰:

- Upgrading teacher quality by improving the qualifications of teachers.
- Revising and modernizing the form and content of curricula and textbooks, reforming pedagogical methods, and changing students' evaluation method so that it was primarily competency-based.
- Restructuring primary and lower secondary cycles.

Educational reforms were also included in the PSRE (2001-04) with thirteen per cent of the total budget share, and in the PCSC (2005-09) with twelve per cent. Three quantitative targets were set for 2010:

- Ninety per cent of students matriculating to 9th grade, the final year of lower secondary education (versus sixty-three per cent in 2004-05).

¹⁵⁰ World Bank, People's Democratic Republic of Algeria, A public Expenditure Review: Assuring High Quality Public Investment, Vol.1, August 2007, p135.

- Seventy-five per cent of 9th grade graduates to enroll in upper secondary education or vocational training (versus forty-two per cent in 2004-05).
- Seventy per cent passing rate in the secondary school terminal examination (versus forty per cent in 2004-05).

The strategy also focused on expanding access to higher education, improving pass rates on the baccalaureate, and introducing the License-Master-Doctorate (LMD) system, which would introduce a credit system and allow students more flexibility and choices. The quantitative goal of higher education was to double the number of university places and enrollment to 1.2 million by 2010. Important investments in university infrastructure and student accommodations would be necessary, as well as hiring 25000 additional teachers within three years if current student-faculty ratios were to remain the same.

The reform of the educational system hinged on a number of critical elements. The establishment of a revised and stable system that includes the assessment of the quality of instruction was at the head of these elements. The measures set in the new reform strategy were instituted in connection with the following concerns¹⁵¹:

Initial teacher training: In regard to intermediate and secondary academic teaching, the committee proposed hiring Master degree holders based on a competitive process to ensure adequate initial training of aspiring teachers in teachers' training colleges.

On the job training: Many options were considered regarding teachers' performance and continued training, such as advanced graduate studies, remote training, or cooperation training using new technologies.

¹⁵¹ Embassy of Algeria to the United States of America, *Algeria Guidebook*, 2009 [<http://www.algeria-us.org/docs/livre.pdf>] viewed 2011/08/02

The Arabic language: Measures were taken to review Arabic language program and manuals from the standpoint of both content and format and to update teaching methods. Traditional and contemporary Arabic literary and cultural concepts such as novels, short stories, and poetry would be included in the new program content. In addition, with the support of the Arabic Language Academy, Arabic reference works selected from universal scientific, technological, and cultural heritage would be used.

The teaching of the sciences: The integration of universal symbolic values and bilingual terminology in mathematics, physics, chemistry, and the natural sciences was planned.

9. Weak Link between Education and Growth in Algeria

During the 2004-05 school year, there were 4.36 million students in primary, 2.26 million students in lower-secondary, and 1.11 million students in upper-secondary. In 2011 the Algerian Ministry of Higher Education and Scientific Research (MERS) recorded a total of 1077 945 student enrolled in universities, out of which only 20% were enrolled for science and technology studies, and 5% in medical school. In the same year 60,617 students enrolled in post-graduate studies. Moreover, despite the great efforts in past decades to invest in free public education, in 2007 Algeria had some of the lowest rankings in fourth-grade student performances in reading, science, and math, reflecting the challenges caused by relatively new educational systems and poor education quality.

While the Algerian educational system made considerable progress in providing a

great proportion of eligible citizens with educational opportunities, it fell short in contributing to the economic development of the country. The above-described reforms of the educational system reflect the emphasis put on quantity rather than quality. The results also confirm that the disconnection between education and economic development lies in the poor quality of education, which was neglected in order to provide mass education.

High-quality education produces labor that has a great capacity to innovate and adapt to new technologies, which is a prerequisite for advancement amidst the globalization trend. Moreover, the availability of educated manpower is a major factor in inducing multinational firms to invest in a developing country like Algeria.

Various studies exist that do not agree with the hypothesis that more education leads to faster growth. Like Algeria, the Philippines and Thailand have achieved universal enrollment and attainments, but secondary education lagged behind and quality of education remained poor, while South Korea and Taiwan achieved universal education by 1965 and provided some secondary education to most children¹⁵² (Table 12).

Table 12: Percentage of Relevant Age Group Enrolled in Educational Institutions, 1965 and 1987						
	Primary		Secondary		Tertiary	
	1965	1987	1965	1987	1965	1987
South Korea	101	101	35	88	6	36
Malaysia	90	102	20	59	2	7
Philippines	113	106	41	68	19	38
Taiwan	97	97	66	82	11	26
Thailand	78	95	14	28	2	20

Source: Walter Galenson, *Labor and Economic Growth in Five Asian Countries: South Korea,*

¹⁵² Galenson, Walter, *Labor and Economic Growth in Five Asian Countries: South Korea, Malaysia, Taiwan, Thailand and the Philippines*, Praeger publishers, 1992, p.39.

Malaysia, Taiwan, Thailand and the Philippines, Praeger publishers, 1992, p 38

The tremendous leap made by South Korea both on the economic level, as well as with regard to the expansion of its educational programs, require thorough exploration to understand how the country tackled educational reforms following its independence from Japanese colonization and how this contributed to today's modern and advanced Korea.

10. Education and Economic Development in South Korea

Over the past few years, South Korea has exhibited high educational achievements. In the International Assessment of Education Progress (IAEP) administered by the Educational Testing Service to thirteen-year-olds in nineteen countries, South Korean students have recently achieved the highest mean scores in science and math.

These results are the fruit of an educational policy that has emphasized scientific and technical education since the founding of the Republic of Korea in 1948. Since 1960s the government-led economic development programs have been reflected in the educational policies and planning. The government continuously pursued an educational system that provided the human resources needed for economic growth.

Like Algeria, South Korea freed itself from thirty-five years of Japanese colonialism and faced the challenge of building a new nation from scratch. The Korean War left the country with devastated social infrastructure and school facilities. In the 19th century, South Korea's level of development had fallen behind the rest of the world, with an annual per capita income around USD 200. However,

today Korea's GDP stands as the 11th largest in the world, and education has been a key factor in its rapid growth over the past four decades.

10.1 South Korean Economic Development Stages

10.1.1 Post liberation and Post War Economic Disorganization: 1945-1961

From 1910 to 1945, the Korean economy was highly dependent on Japanese capital, technology, and management and the separation from the Japanese economic system at independence left the Korean economy in a state of extreme disorganization and stagnation. Under colonial rule, as of 1945, the Japanese owned about ninety-four percent of the total capital of business establishments in Korea.

In 1944, about eighty percent of the highly-skilled manpower employed in manufacturing, construction, and public utilities were Japanese engineers and technicians¹⁵³. The number of Korean engineers and technicians was very small, as was the number of Korean businesses in high technology industries. Most Korean businesses were Japanese subsidiaries. Therefore, the abrupt retreat of the Japanese in 1945 caused the suspension of many production activities in Korea due to the lack of raw material and managerial staff.

However, despite the heavy-handed rule of the Japanese authorities, many noticeable aspects of Korean society emerged or grew during the 35-year period of colonial rule. This included rapid urban growth, the expansion of commerce, and for the first time some forms of mass culture such as radio and cinema. Industrial

¹⁵³ Frank, Charles R. Jr., Suk Kim Kwang, Westphal, Larry E., *Foreign Trade Regimes and Economic Development: South Korea*, National Bureau of Economic Research, 1975, p.6.

development also took place, partly encouraged by the Japanese colonial state, although primarily for the purposes of enriching Japan and fighting the wars in China and the Pacific rather than to benefit the Koreans themselves. Such uneven and distorted development left a mixed legacy for the peninsula after the colonial period ended.

The Japanese colonial rule in Korea ended on August 15th 1945. From 1945 to 1953, South Korea economic development was disrupted by unprecedented events. After the end of the Japanese Empire, when Korea was split into North and South Korea, South Korea was reduced to half its size with almost no natural resources. In 1948, it was estimated that sixty-six per cent of the population, sixty per cent of the agricultural production, and forty-two per cent of the industrial production remained in South Korea, while seventy per cent of coal and iron production and more than ninety per cent of electric power were left in the northern part of Korea¹⁵⁴.

An independent Republic of Korea was established under Syngman Rhee in 1948, but in 1950, five years following the liberation of Korea from Japan, the Korean civil war known as the Korean War broke out when North Korea invaded South Korea. The war, which lasted three years (1950-1953), left the country in a despondent economic situation and destroyed all the Japanese assets that were left in Korea.

Thus, the division of the country caused extreme disorganization and chaos in every aspect of Korean society. In addition to the decline in domestic manufacturing, the country also faced severe food shortages after the war. Furthermore, the immigration of refugees from the North caused population to increase rapidly¹⁵⁵.

¹⁵⁴ Kim Linsu, *Imitation to Innovation: The Dynamics of Korea's Technological Learning*, Harvard Business School Press, Boston, 1997, p.8.

¹⁵⁵ Booth Anne E., *Colonial Legacy: Economic and Social Development in East and South East Asia*, Hawai University Press, 2007, p.178.

10.1.2 South Korea Rapid Development under Park Chung Hee

In late 1961, Korea suffered and faced many of the same difficulties facing most poor countries today. The Korean GDP per capita was less than Algeria's, and even less than that of poorer countries of Africa, like Sudan (Table 13). Today, South Korea has achieved phenomenal industrial development, and by 1995 it graduated to a high-income economy, as classified by the World Bank.

Despite the Korean government's effort to rebuild the economy following the end of the Korean War, economic recovery was very slow between 1953 and 1961 and remained heavily dependent on foreign aid from the United States.

Table 13 GDP per capita (current US\$)												
		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
GDP per capita (current US\$)	Algeria	252	221	179	237	250	263	249	268	298	319	354
	Korea, Rep.	155	92	104	142	121	106	130	157	195	239	279
	Sudan	97	103	110	109	109	111	111	118	120	129	142

Source: World Databank (World Development Indicators)

[<http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators>]

The economic policies that underpinned economic growth in South Korea were characterized by a vigorous export-oriented manufacturing industry, with an increasing shift towards high technology and a considerable investment in education. This investment in education helped provide the well-educated labor force that contributed to South Korea's rapid economic development. Policies were developed and pursued independently from any lobbying. Scarce resources, subsidies, and any

other instruments were used effectively to support economic growth¹⁵⁶.

Following a coup d'état that overthrew Syngman Rhee¹⁵⁷, a new military regime led by Park Chung Hee was established in 1961. Park inherited a stagnant economy, the populace that demanded better performance, and a failed economic strategy that depended on aid from the United States to cover fiscal and trade deficits. Despite the prior repressive policy and rejection of a free market economy by Syngman Rhee, Park was determined to pursue rapid industrialization to get his country out of the mire of poverty and develop an economically and militarily sovereign country. He claimed that "Koreanized Democracy"¹⁵⁸ was necessary to uproot the colonial past and construct a new generation of leaders comprising of military officers, technical engineers, and other experts with professional qualifications.

President Park and his successor, Chun Doo Hwan, realized that since they took power by coup, they needed to satisfy public demand to claim legitimacy for their governance. Good economic performance would result in political and strategic benefits. They both adopted "growth-first" strategies. President Park adopted the Outward-Industry and Growth oriented strategy (OIG strategy). Park's two famous maxims were "suchul ipguk" (nation building through export) and "export first" strategy.

A new strategy was necessary, and the first five-year plan was announced in 1961, reflecting the basic economic policies of the military government. Annual growth of seven per cent was targeted for the period between 1962 and 1966. The plan's

¹⁵⁶ Hermes Niel, "New Explanation of the Economic Success of East Asia: Lessons for Developing and Eastern European countries", *Center for Development Studies Report No 3, University of Groningen* June 1997, p.19.

¹⁵⁷ Syngman Rhee was the first president for the Republic of Korea from August 1948 to April 1960. He led South Korea through the Korean War. His presidency ended following a large protests against his repressive and undemocratic ruling methods.

¹⁵⁸ Pratt, Keith, *Everlasting Flower: A History of Korea*, Reaktion Books 2006, p.265.

priorities included an increase of energy supply, an increase of agricultural production, an expansion of key industries, an improvement in the balance of payments through the expansion of exports, and the promotion of technology. Furthermore, Park Chung Hee's government launched a stabilization program aimed at ending government deficits (1963-1964). The program comprised won devaluation (1964), interest rate increases (1965), and tax collection improvements (1966)¹⁵⁹.

While rapid economic growth continued, a second five-year plan (1967-71)¹⁶⁰ reflected the necessity to develop and modernize the industrial structure and build the foundation of a self-supporting economy. The main objectives of the new plan were attainment of food self-sufficiency, accelerated and diversified industries, improvement of the balance of payments, and restrictions on population growth by promoting family planning, and raising the level of technology and productivity through the promotion of scientific and management skills and by improvement of manpower resources¹⁶¹.

The government adopted a protectionist trade regime by restricting imports with high tariffs and by implementing an import licensing system, in addition to the overvaluation of the domestic currency. On the other hand, the South Korean government supported light manufacturing export industries and developed firms which were able to increase their export capacity and acquire and utilize technologies. The government actively pursued policies of trade reforms and export

¹⁵⁹ Yun-Shik Chang, and Lee Steven Hugues, *Transformation in Twentieth Century Korea*, Routledge 2006, p.91.

¹⁶⁰ Li Kui-Wai, "*Capitalist Development and Economism in East Asia: The rise of Hong Kong, Singapore, Taiwan, and South Korea*", Routledge, 2002, p.47.

¹⁶¹ Frank Charles R.Jr., and Kim Kwang Suk, and Westphal E.Larry, op.cit., p 20.

promotions, and to achieve those ends, the government provided exporters with subsidies and incentives (such as tax exemptions and export loans with preferential interest rates).

The banks were owned by the government, which facilitated the allocation of credits to the targeted firms. Furthermore, a relationship developed among firms, the government, and banks¹⁶².

Export agreements were signed between government businesses, and firms who did not achieve their export objectives could be subject to administrative sanctions from the government. This period of reform was also characterized by heavy investment in primary education and the adaption of technologies obtained through foreign licensing for domestic production. These additional strategies allowed for a shift towards a value-added chain and provided for the creation of more sophisticated commodities.

In 1973 the government introduced a development plan for heavy and chemical industries (HCI). The government's goals were to transform the industry from labor-intensive to capital-intensive and to decrease the current account deficit, which was incurred by the continually increasing demand for imports of capital goods and intermediate inputs for export production. Six target industries - steel, electronic, shipbuilding, machinery, and non-ferrous metals - were selected to receive generous government support for development and export. Though the HCI was an import-substitution strategy, it supported the export-promotion policy.¹⁶³

¹⁶² Harvie Charles, Pahlavani Mosayeb, "Source of Economic Growth in South Korea; An Application of the ARDL analysis in the presence of structural breaks 1980-2005", Working Paper 06-17, *Department of Economics, University of Wollongong*, 2006, p.3.

[<http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1154&context=commwkpapers>] viewed 2012/12/20

¹⁶³ Jwa Sung-Hee, *A New Paradigm for Korea's Economic Development: From Government Control to Market Economy*, Palgrave Macmillan, 2001, p.6.

This development strategy was successful and yielded impressive results. Per capita income increased from USD 92 in 1961 to USD 279 in 1970 (table 14). In the same period, the share of GDP comprising exports increased significantly from five per cent 1961 to 27 per cent 1975.

In the mid-1970s, the well-targeted industrial policy led to the development of heavy industries such as chemicals and shipbuilding. At the same time, policies were being adopted to improve technological capabilities, as well as the quality of technical and vocational training¹⁶⁴.

Table 14: Korea Economic Indicators 1960-1975																
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
GDP growth (annual %)	..	5	2	10	8	5	13	6	12	14	8	8	4	12	7	6
GDP per capita (current US\$)	155	92	104	142	121	106	130	157	195	239	279	302	323	403	556	608
GDP per capita growth (annual %)	..	2	0	7	5	3	10	4	9	12	6	6	2	10	5	4
Industry, value added (% of GDP)	..	..	..	..	..	21	22	23	24	25	26	25	26	29	28	29
Exports of goods and services (% of GDP)	3	5	5	5	6	8	10	11	12	13	14	15	19	29	27	27

Source: World Databank

[<http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators>]

The economic performance far exceeded the original targets almost in all major sectors particularly between 1967 and 1971. South Korea's GNP reached an average

¹⁶⁴ Pillay Pundy, op.cit, p 72.

annual growth of ten per cent from 1967 to 1971, exceeding the planned GNP by a wide margin. In 1971, exports of commodities expanded rapidly, reaching USD 1132 million in 1971. This number far exceeded the initial target of USD 550 million. Exports of manufactured goods reached eighty-six per cent of total commodity exports and were composed essentially of plywood, woven cotton, fabrics, iron and steel, and clothing. Exports of electrical machinery, footwear, and wigs also increased.

The remarkable growth of exports was paralleled by a change in export structure. Of total exports, the share of industrial products increased significantly from twenty-seven per cent in 1962 to eighty-six per cent in 1973. However, the inflation rate measured by the consumer index recorded a double-digit inflation rate. During the period from 1962 to 73, though the inflation rate remained relatively low with an average of 12.3 per cent¹⁶⁵.

This great expansion of exports played an important role in Korea's industrialization. One such way was that it paid for the imported machinery and materials that were needed to expand capacity and output. Other ways in which it played a role in Korea's industrialization were by increasing output in areas of comparative advantage and by exchanging their product for other product (which could not be produced domestically), thereby increasing efficiency.

Many industries developed under the export-first policy. Companies were not allowed to sell their products on domestic markets and had to market them overseas, as in the case of color TVs as well as other high value items including record players, portable telephones, and mink coats. These products were not allowed to be sold domestically until the 1980s, and manufacturers had no choice but to sell their

¹⁶⁵ Lee Jong-Wha, "Economic Growth and Human development in the Republic of Korea 1945-1997", *UNDP Human Development Report, Occasional paper 24*, 1997, p.4.

products overseas.

The HCI plan also stated the importance of developing human resources, and in particular the technical workforce. The educational system for training technicians was revised in order to improve quality, increase efficiency, and produce greater diversity of skilled manpower. The overly ambitious investments resulted in rapid growth of both the technological and financial capacities of the economy; however, on the other hand, these investments generated adverse effects such as inflation and economic inefficiencies. Supporting and favoring large companies, which were crucial in the process of heavy and chemical industrialization, led to the concentration of economic power in the hands of a few big Korean businesses (chaebols)¹⁶⁶.

Though Korea was achieving annual economic growth of 8.9 per cent during that period, at the same time, it was experiencing an annual inflation rate of about sixteen per cent in 1970 (Table 15). Two oil price shocks in 1973 and 1979 aggravated the inflationary situation and brought the inflation rate up to twenty-five per cent by 1975. The period was also characterized by high growth and large fluctuations.

Table 15: Industry Value added and Inflation (1960-1975)																
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Inflation, GDP Deflator (annual %)	11	11	13	16	13	12	3	24	25
Inflation, consumer prices (annual %)	11	11	13	16	13	12	3	24	25

Source: World Databank
[\[http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators\]](http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators)

¹⁶⁶ *Chaebol* are “business association” and they represent the large, conglomerate family-controlled firms of South Korea characterized by strong ties with government agencies. They were in the beginning family-owned enterprises before 1961 and were then they created a state-corporate alliance under Park Chung Hee rule.

10.1.3 From Government Intervention to Market Oriented Economy:

During the 1980s and 1990s, South Korea undertook important steps to deregulate various sectors and liberalize trade. It also tackled the inflationary issue, slowed down monetary growth, and adopted tight control over fiscal expenditure. Furthermore, measures were taken to reduce government intervention in resource allocation by regulating prices, quantities, imports, and other important economic activities. The government objective was to shift towards more market-oriented resource allocation¹⁶⁷. At the same time, the government was expanding higher education and investing in “indigenous research and development”¹⁶⁸, which it did by establishing the National Research and Development Program.

Faced with the weakening economy in the 1980s, the government adopted a new economic stabilization and liberalization policy (1980-89). This new policy promoted trade liberalization and market opening, promotion of small and medium enterprises and more opening to foreign investment. A financial liberalization plan was also adopted, which led to the privatization of commercial banks. Furthermore, the plan allowed for the creation of new commercial banks and non-bank financial institutions. In addition, measures were taken to deregulate interest rates and shift towards universal banking, as well as to deregulate financial industries¹⁶⁹. By the mid-1980s, the stabilization measures achieved the targeted objectives as inflation decreased, and the economy recovered its competitiveness, productivity, output, and

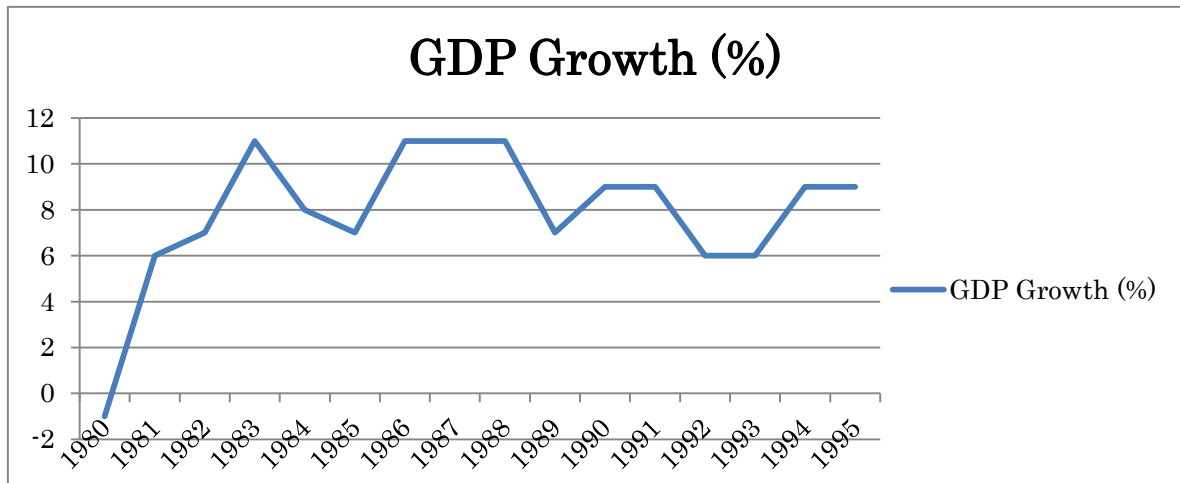
¹⁶⁷ Jiwa Sung-Hee, op.cit., p 7.

¹⁶⁸ Pillay Pundy, op.cit., p 72.

¹⁶⁹ You Jong-II and Lee Ju-Ho, Economic and Social Consequences of Globalization: The Case of South Korea, *KDI School of Public Policy and Global Management*, Korea Development Institute, 1999, p.4.

investment. The economy registered a high annual growth rate, exports exceeded imports, and domestic savings exceeded domestic investments.

Figure 5: GDP Growth (%) in Korea (1980 – 1995)



Source: World Databank

[<http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators>]

Extensive investments in human resources also facilitated rapid modernization. Public and private investment in education had exceeded ten percent of GDP, the highest rate among developing countries. During the 1980s the percentage of students advancing to college or university was the second highest in the world behind the United States. This high investment in education resulted in a high degree of income equality, which remained unchanged except for the period from 1972 to 1980¹⁷⁰. As the research and development capabilities in Korean industries continued to expand, they were able to draw on this skilled labor force.

Although the economy registered high growth of eleven per cent for three consecutive years between 1986 and 1988, the presidential election and the Olympic

¹⁷⁰ Harvie Charles, and Lee Hyun Hoon, *Korea's Economic Miracle: Fading or Reviving*, Plagrave Macmillan 2003, p.30.

Games abnormally increased wages and land prices, which resulted in structural problems and affected economic stability. As a result, economic growth slowed down to seven per cent in 1989 (Figure 2). However, economic growth remained strong until late 1997, with an exception of a slowdown in 1992 and 1993 of six per cent.

On the other hand, despite the privatization of banks, the appointment of top managers of commercial banks, the control of credits, and the economy as a whole remained controlled by the government. This control revealed South Korean bureaucrats' reluctance to seriously grant autonomy to banks. In fact, financial measures only concerned non-financial institutions that had expanded rapidly.

Major factors that accelerated trade liberalization and resulted in the opening up of very important protected industries such as the rice market, financial services, and retailing were as follows: pressure from the United States to liberalize the market, globalization trends manifested during the Uruguay Round negotiations, the application for OECD membership, and the launching of the World Trade Organization in 1995

10.1.4 1997 Economic Crisis and Reforms

During the 1990s another set of financial liberalization measures were launched in order to deregulate interest rates, abolish policy loans, and grant management autonomy to the banks. Despite the government's prior efforts towards liberalization, the results were disastrous, and the economy was facing more challenges than before. The government not only failed to develop the financial system into a competitive and sound system, but it also ignited the seeds of a financial crisis laid by earlier

measures¹⁷¹. The crisis of 1997 revealed that the policy framework and institutions that propelled the South Korean economy to high growth were bottlenecking sustained growth, and the crisis underlined the need for wide economic reforms.

The economic slowdown began in 1996 when both consumption and investment expenditure declined rapidly and export growth weakened. Between the 1980s and 1990s, easy access to credit resulted in imprudent and excessive lending to chaebols, which were using their property holdings as collateral. Such risky lending led to a shaky financial situation. By 1997 South Korea had the highest proportion of short-term debt in Asia¹⁷² and a number of chaebols became insolvent and had difficulty finding loans. Furthermore, the chaebols' excessive debt began to affect domestic banks. By the end of 1997, banks held an estimated USD 4.2 billion in bad loans.

In addition, because South Korea's economy was over reliant on export-led growth, because the Chinese economy rapidly emerged, and because the Japanese yen depreciated during the 1990s, South Korea was stuck between cheap labor from China and high technology from Japan. These three conditions weakened Korea's export competitive advantage. South Korea lost international confidence in the "new" Asian economies, and one quarter of the chaebol collapsed. This collapse made 80000 people redundant, resulting in an unemployment rate of 8.5 per cent in 1999, a huge increase from 3.1 per cent in 1997.

In the wake of the financial crisis in 1997, the government initiated policy reforms to shift the South Korean economy towards a knowledge-based economy in which innovation would expand and raise productivity, thereby sustaining economic growth.

¹⁷¹ Harvie Charles and Pahlavani Mosayeb, op.cit, p.6.

¹⁷² Minns John, 'Of Miracles and Models: The rise and decline of the developmental state in South Korea', *Third World Quarterly*, Vol 22, No 6, pp 1025 – 1043, 2001, p.1025.

The growth strategy was based on the Knowledge Economy (KE) four pillars: a macroeconomic framework, a modern information infrastructure, human resource development, and an effective innovation system. On the other hand, and in response to the financial crisis, the International Monetary Fund helped Korea address internal issues and gain back foreign confidence.

The government-led intervention during the 1997 crisis highlighted the need to reexamine the macroeconomic environment and institutional regime. Facing the competitive environment of world trade, the government adopted a new model to modernize the economy and embrace globalization. Key domestic institutions, private sectors, government officials, and universities initiated important reforms. These reform plans included redefining the government's role, improving the efficiency of the financial system, increasing flexibility of the labor market, opening up the economy and promoting competition, addressing the risk of "knowledge and digital divide," and strengthening the basic institutional infrastructure. In addition, human capital was recognized as crucial in improving competitiveness in the global market.

Both Korean people and private enterprises actively responded to this new development strategy by making enormous efforts to adapt to globalization. The government's new strategy focused on preparing students to participate in the knowledge-based economy and promoting human originality and ICT usage. The Ministry of Education was renamed Ministry of Education and Human Resources Development¹⁷³, and the recruitment processes and career development changed to

¹⁷³ Andrew Cathy, "Dynamic Korea": Education Policies and Reform, The Seventh National Curriculum: Policies for Pre-College Education", *Group Project: EPS530Z*, Spring 2007, p.10. [<http://www.learningace.com/doc/692544/c7c4face03e086d602c1c14dad691977/south-korea2007>] viewed 2011/06/20

follow the principle of “the right man at the right place”¹⁷⁴.

These concerted efforts got the economy back to its normal growth path. Moreover, the KE strategy contributed to the growth of technology-based firms and to building the knowledge-based economy in Korea.

10.2 The Role of Educational Policy in South Korea’s Economic Development

10.2.1 Education at Independence 1945

When South Korea was liberated from Japanese rule in 1945, it began to build both a modern, independent nation and a new educational system.

Despite its discriminating policy in providing education to South Korean students, the Japanese colonial government in Korea established several collegiate institutions including a university. Furthermore, the Japanese government allowed many Koreans, regardless of social status and gender, access to public education. It also introduced Western technical and professional training and adopted a modern administrative system and practices that were used as models for modern Korean higher education¹⁷⁵. In 1912 the enrollment in primary schools was 45000 and it increased to 236000 in 1922 and to 1695000 by 1942. Korean elite who studied during the colonial period under the Japanese educational system played an important role in the foundation of modern Korean education.

Though the increase in primary school enrollment was impressive, these results

¹⁷⁴ Kim Sangjoon, “Globalization and Individuals: the Political economy of South Korea’s Educational Expansion”, *Journal of Contemporary Asia* Vol. 40, No 2, May 2010, p.310.

¹⁷⁵ Lee Jeong-Kyu, “Japanese Higher Educational Policy in Korea (1910-1945), *Educational Policy Analysis Archives*”, Vol.10, No.14, March 2002, p.3. [<http://epaa.asu.edu/epaa/v10n14.html>] viewed 05/23/2012

were only possible because the students enrolled in traditional basic schools were forced to enroll in the schools established by the Japanese. Moreover, statistics reveal that the Japanese colonial government did not meet potential demand for education, especially for secondary and higher education. By 1943, there were less than 10000 students in Korea who reached the level of higher education both in government and private institutions. Around seventy percent of students in government schools were Japanese. The policy of the Japanese colonial government regarding higher education was based on the fear of breeding nationalism and dreams of independence.

At independence, South Koreans were short of knowledge and experience in running modern schools. The three years of destruction and refugee movements that prevailed during the Korean War interrupted the efforts undertaken since 1945 and destroyed eighty percent of the existing schools, which resulted in inefficient and inadequate education facilities even in 1970s.

Though modern education had already existed, South Korea had fallen behind the rest of the world in its level of development. Advanced knowledge had to be imported from developed countries, primarily from the United States and Japan. In 1948, when South Korea began to build modern education, the vocabulary of science and technology was almost nonexistent in the Korean language and had to be invented

¹⁷⁶.

The educational success of present-day South Korea is the result of the interaction of complex values, institutions, economic resources, and accumulation of knowledge. Two distinctive features characterize Korean education: the egalitarian ideal and the zeal for education. The government emphasized equality in educational

¹⁷⁶ Sorensen, Clark W., *op.cit.*, p 4.

opportunities regardless of gender, religion, or geographic location. In addition, the Korean society places high value on education, and parents sacrifice for their children's education and contribute extensively in schools. This zeal of education increased following Japanese rule and the Korean War, which convinced the Koreans to invest more in people than in physical capital¹⁷⁷.

10.2.2 The Establishment of School System

When the Republic of Korea was proclaimed on August 15th, 1948, following the UN-supervised elections, one of the urgent tasks facing the fledgling government was to establish a new school system and expand elementary education to meet the demand for school education. The Korean Education Committee drew up the new school system with the values and precepts of “Hong Ik In Gan,” which literally means devotion to the welfare of humankind¹⁷⁸. To develop the new schools, three guidelines were recommended:

- Provide easy access to education for all.
- Provide relevant educational opportunities to meet education needs.
- Accommodate the new educational system with the worldwide trends of educational practices.

In 1950, a new education law was enacted, providing for the following six principles that were set to guide the functioning and the development of the new

¹⁷⁷ Kane, John, “*Dynamic Korea: Education Policies and Reform, A brief History of Education in Korea*”, Group Project EP530Z, spring 2007, p.3.

[<http://www.learningace.com/doc/692544/c7c4facc03e086d602c1c14dad691977/south-korea2007>] viewed 2011/06/20

¹⁷⁸ Korean Educational Development Institute, “*Understanding Korean Education: Vol 5 Education and Korea's Development*”, 2007, p.13.

educational system:

1. Require six years of free compulsory elementary-level education.
2. Divide secondary school into middle school and high school in order to reduce the dropout rate. Secondary school would follow a single track.
3. Require high schools to follow a single track that would branch out into various streams of study. Vocational education would be provided by diversified occupational training schools.
4. Provide higher education through various institutions with diverse academic programs in order to meet the wide array of social demands.
5. Establish elementary and secondary teacher training schools.
6. Establish civic schools to provide adult education.

Under the Education Law of 1951, the new Korean school system was developed into a 6-3-3-4 ladder structure comprising six years of elementary education, three years of middle school education, three years of high school education, and four years of higher education¹⁷⁹.

10.2.3 Alignment between Education Strategy and Economic Development

10.2.3.1 First Period: 1945 -1960

During the last four decades, through a government led industrialization policy, Korea successfully transformed itself from an underdeveloped agrarian economy into

¹⁷⁹ Kim Ee-gyeong and Han You-Kyung, "Attracting, Developing and Retaining Effective Teachers: Background Report for Korea", *Korea Educational Development Institute*, Seoul, 2002, p.9. [<http://www.oecd.org/edu/school/2713221.pdf>], viewed on 11/24/2012

an advanced economy. At the same time, the government focused on the expansion of the public education system. Despite the poor educational resources, the Korean government wanted to achieve a universal school education (grade 1-6) as soon as possible.

Under President Rhee's government (1948-1960), the strong commitment to expansion of primary education provided remarkable results. Many teachers' colleges were created in order to produce primary school teachers, and an aggressive construction plan was launched to build 5000 classrooms per year starting in 1954. As a result of this policy, universal primary school education had been more or less achieved by 1965. Primary school enrollment increased from 1.36 million in 1945 to 2.27 million in 1947 to 4.94 million in 1965 (Table 17). The number of teachers also increased from 20000 in 1945 to 79000 in 1965¹⁸⁰. Moreover, the Six-Year Compulsory Education Law (1954-1959) was enacted to expand educational opportunities for elementary schools. Under this plan, ten percent of the government budget was invested in education.

Table 16: School Attendance Rate Among School-Age children			
Year	Number of School Age Children	Number of Schooled Children	Ratio %
1953	3,096,293	2,259,313	72.9
1954	3,246,364	2,678,978	82.5
1955	3,289,865	2,947,436	89.5
1956	3,333,949	2,997,813	89.9
1957	3,480,225	3,170,981	91.1
1958	3,583,427	3,315,989	92.5
1959	3,689,690	3,558,142	96.4
1960	3,799,105	3,622,685	95.3

Source: Lee Sang-Jin, National Understanding Korea Education Policy Vol. 1: National Development Strategy and Education Policy, *Korean Educational Development Institute* 2008, p.29.

¹⁸⁰ Kim Sunwoong and Lee Ju-Ho, "Private Tutoring and Demand for Education in South Korea", *Journal of Economic Development and Cultural Change*, Vol. 58, No. 2 (January 2010), pp. 259-296, .3.

Table 17: Enrollment in Korea 1945-85								
Type of school	1945	1952	1960	1965	1970	1975	1980	1985
Primary	1,366.00	2,369.90	3,622.90	4,941.30	5,749.30	5,599.10	5,658.00	4,856.80
Middle	83.5	291.6	528.6	751.3	1,318.80	2,026.80	2,471.00	2,782.20
High								
College and University	7.8	34.1	101	141.6	193.6	296.6	597.9	1,260.30

Source: Chung H. Lee and Ippei Yamazawa, “*The Economic Development of Japan and Korea: A Parallel with Lessons*”, Praeger 1990, p.174.

10.2.3.2 Second Period 1961- 1980

During the third and fourth development plans, the Korean government shifted towards an industrialization policy centered on manufacturing industries, especially heavy and chemical industries. At the same time, the government maintained its export-oriented development strategy. As the demand for a skilled workforce increased, the Korean government strongly supported the expansion of vocational and technical education at the secondary education level. To this end, in the 1970s the government founded the first National R&D Institute, KDI¹⁸¹.

Access to middle school and high school, both public and private, was based on a competitive entrance examination. Intense competition for better schools led to what is called ipsi-jiok (literally: entrance examination hell). Education policymakers acknowledged that this examination was extremely stressful and had caused psychological problems within Korean teenagers. In response to these problems of competition, Park’s government adopted the High School Equalization policy, which abolished the high school entrance examination and replaced it with a random

¹⁸¹ Fredriksen, Birger, and Pang, Tan Jee, “An African exploration of the East Asian Education Experience”, *World Bank Publication*, 2008, p.161.

allocation of students within separate school district. The new policy resulted in a significant expansion of high school's enrollment from 254095 students in 1965 to 932605 students in 1980 (Table 18). However, it was met with criticism, as it limited the right of students and parents to choose schools.

Table 18: Expansion of High School Education in 1970's						
Year	General High Schools			Technical High School		
	Number of Schools	Number of Students	Number of Teachers	Number of Schools	Number of Students	Number of Teachers
1965	389	254,095	7,894	312	172,436	6,214
1970	408	315,367	9,845	481	275,015	10,009
1975	673	648,149	20,415	479	474,868	15,340
1980	748	932,605	27,480	605	764,187	23,468

Source: Pei-tseng Jenny Hsieh, *Education in East Asia*, A&C Black, 2013, p 239.

Universal enrollment in primary school has led to an increasing demand for higher level of schooling. The number of student enrolling for middles school in the late 1960s and early 1970s increased dramatically and reached a peak of 2.7 million by 1980's which is more than half of the size of the primary school population. Furthermore, the number of college students enrollment went up from more than 1.2 million in 1983 from 193.6 in 1970 (Table 17). Despite the level of per capita income, education expanded and human capital stock was comparable to that of much more economically-advanced countries.

In addition, regulations on private schools were updated with the enactment of the Private School Law 1963. Programs regarding teachers' training and education were set up, and the Education Graduate School was created in 1963.

Aside from the growth and the development of formal education, the Korean government sought to develop and expand informal education as well. Informal

education contributed in varying degrees not only to the development of education in Korea but also to the economic growth. For the second five-year plan (1967-71), which involved projecting labor demand while anticipating a shortage of technicians, the government judged that only formal education could not meet the demand for technical manpower and decided to expand supply by promulgating, for the first time in the history of South Korea, the vocational training law in 1967. Furthermore, in order to reflect labor requirements, the Korean government changed the conditions of college admissions. As a result about one-third of college students in 1989 were enrolled with natural sciences and engineering¹⁸² majors.

Two types of informal education that were the most important and effective to help promote economic development were the short term vocational programs organized by the government and the private sector and various training programs within the military. During the Korean government's drive for industrialization, short-term vocational programs helped to supply skilled and semi-skilled worker. The training programs organized during compulsory military service enabled young Koreans with secondary education to develop skills and acquire knowledge such as driving, construction, navigation, and even flying, which later benefitted the private sector¹⁸³. In 1974, distance-learning high schools were opened, and in 1976 some secondary schools were annexed to industrial institutions. Evening schooling programs were also initiated. Furthermore, it subsidized or obligated industrial companies to conduct on-site training and imposed levies on those who failed to do so; on the other hand, it operated public technical and vocational training centers.

¹⁸² Kuznets Paul W., *Korean Economic Development: An Interpretive Model*, Praeger Publishers 1994, p.63.

¹⁸³ Lee Chung H., Yamazawa Ippei., *The Economic Development of Japan and Korea: A Parallel with Lessons*, Praeger, New York, 1990, p.177.

Though survey data on workers' education has only been available from 1980, a dramatic increase in the proportion of workers who attained a high level of schooling was noticeable. Data show that between 1980 and 1990, workers who completed high school increased from twenty-two to thirty-eight per cent, and the share of workers who reached university level and training rose from seven per cent to fourteen per cent. Increase of enrollment in science and engineering endowed Korea with a high capacity to assimilate technology. Human capital indicators for Argentina, Brazil, India, Korea, and Mexico in 1965–1978 show that Korea had proportionally more post-secondary students enrolled in universities overseas, more scientists and engineers per million, than other countries in the sample¹⁸⁴.

An employment structure survey undertaken in 1986 revealed that out of 3.5 million manufacturing workers, 94000 were professional and technical-related workers, and 69000 were engineers, architects, and technicians. These skilled workers played a major role in developing the Korean manufacturing sector in the late 1970s by introducing new technologies necessary to produce steel, machinery, and electronic goods, as well as capital and technology-intensive products. Firms like the Korean chaebols also played a role in improving workers' skills and capabilities by providing them with opportunities and incentives to apply their education and training, by giving them good jobs and high wages, and by offering them on-the-job training. The employment experience at chaebols shows that investment in education and training paid off at the industrial level in Korea.

¹⁸⁴ Kuznets, Paul W., *ibid.*, p.64.

10.2.3.3 Third Period 1981 -Present

From the beginning of the 1980s, despite the great economic and social changes during the 1960s and 1970s, Korea was facing new challenges. The major challenge came from the structural adjustment, changing industries from a transition process to a knowledge-based economy. Korea started to move away from the heavy and chemical industries of the past twenty years towards information and technology-oriented industries such as automotive, semiconductor, digital electronics, shipbuilding, and telecommunication. Such drastic changes led education scholars and policymakers to reevaluate the past education system that greatly contributed to improving the quality of Korean labor. While the system had worked well then, it was no longer able to produce the human talent required for a knowledge-based economy.

During the 1980s, educational reforms were particularly focused on college education, and higher education was growing rapidly. A severely competitive examination system for college or university, as well as the burden of extracurricular tutoring, led the newly military-based government in 1980 to formulate the “July 30th Educational Reforms.” These new reforms eradicated private tutoring, relieved students from the university entrance examinations, established a graduation quotas system, determined high school achievements as the basis for college entrance eligibility, and readjusted curricula in terms of work load¹⁸⁵. They also put an end to the government control of university enrollment.

In addition to the aforementioned reforms, the government initiated an education

¹⁸⁵ Lee, Jeong-Kyu., Main Reform on Higher education System in Korea, *Revista Electronica Educative*, Vol.2, No.2, 2000, p.3.

tax, launched educational broadcasting programs, and increased college education from two years to four years. In 1984 the Korea National University of Education was established, and magnet high schools such as science high schools or foreign language high schools were inaugurated¹⁸⁶. The role of higher education became more and more important as the technology-intensive industries grew, and the number of high school graduates was creating an increasing social pressure. In the 1970s, the rapid expansion of college quotas started and was reached by the July 30th Educational Reforms. By 1980, Korea had exceeded the average schooling rate of the whole world, and by 1985, it exceeded the average of all other regions except North America¹⁸⁷.

The implementation of graduation quotas led the number of enrolled students to increase dramatically, with the enrollment rate at a level thirty per cent more than the college capacity. Numbers of college students increased from 402879 in 1980 to 931894 in 1985 and 1187398 in 1995 (Table 19). On the other hand, education and research facilities deteriorated. However, private universities and colleges were able to provide the necessary resources for college improvement.

¹⁸⁶ Ja Oek Gu, “*Understanding Korean Education*”, Vol. 5 Education and Korea’s Development, *Korean Educational Development Institute*, 2007

¹⁸⁷ Lee, Sang-Jin, *Understanding Korean Education Policy Vol.1: National Development Strategy and Education Policy*, *Korean Educational Development Institute*, 2008, p 47.

Table 19: Growth of 4-year General Universities			
By Year	Number of Schools	Number of Students	Number of Teachers
1970	71	146,414	6,591
1975	72	208,986	8,575
1980	85	402,979	14,458
1985	100	931,884	20,128
1990	107	1,040,166	25,337
1995	131	1,187,398	33,938
2000	161	1,665,398	41,943
2005	173	1,886,639	49,200

Source: Lee Sang-Jin, “Understanding Korean Education Policy Vol.1: National Development Strategy and Education Policy”, *Korean Educational Development Institute*, 2008, p.48.

This sudden increase in the number of students led to the deterioration of higher education. The severe imbalance between quantity and quality was significant and could not satisfy the new information-based, technology-driven society. In addition, globalization was accelerating and lifestyles were changing. Therefore, the government saw the urgent need to bring new educational reforms. At this juncture, in February 1994 the Presidential Commission on Education (PCER), an advisory organ of the president, was established. Its objective was to design the basic direction of education and form the national consensus on long-term educational development¹⁸⁸.

The PCER thoroughly analyzed the problems faced by Korea’s educational system and presented its proposal of very comprehensive, all-encompassing educational reform. On May 31st, 1995, the PCER announced what is known as the “5.31 Education Reform Proposals” (ERP)¹⁸⁹, which provided the overall framework of the educational reform plan. The fundamental direction dictated by the new reform plan was diversification and specialization. The ERP goals were to establish a college

¹⁸⁸ Kim, Ee-gyeong, and Han, You-kyung., “Attracting, Developing and Retaining Effective Teachers: Background Report for Korea”, *Korean Educational Development Institute*, 2002, p.18.

¹⁸⁹ Kim, Gwang-jo, “Policies and Reform in South Korea: In Secondary Education in Africa: Strategies for renewal”, *World Bank* 2001, p.8.

entrance system that was less burdensome for students and parents and reduce the unreasonable tutoring expenditures. Furthermore, the ERP would design curricula that would develop creativity and innovation and better prepare children and adults for a society in which knowledge and human capital are key to achieving prosperity. The ERP proposed the following policies: deregulating and increasing accountability measures, diversifying teaching and learning through curricula reform, and expanding educational opportunities for all by integrating ICT into the lifelong education system. For the implementation of such reforms, the government allocated five percent of GNP to the education budget. The PCER highlighted the development of creativity especially at primary and secondary school by reducing the number of required subjects and increasing the elective ones. The commission also suggested putting more emphasis on computer education, foreign languages, Chinese characters, and world culture and history¹⁹⁰.

The PCER members perceived that the entrance examination issue originated from the previous military dictatorship, the government's control of education, and its failure to manage supply and demand. Therefore, they sought to liberalize and decentralize learning and teaching and improve the quality of education. However, the approach did not work the way it was expected, and the issues of the burdensome nature of the entrance examinations and the high expenditure on private education still existed¹⁹¹. Following his election as the new President of South Korea, Kim Dae Jung decided to take over the reforms of education and began to establish policy

¹⁹⁰ The EFA 2000 Assessment, "Country Report: Education for All, the Year 2000 Assessment" Korean National Commission, for UNESCO, Korea, December 1999
[\[http://www.unesco.org/education/wef/countryreports/korea/rapport_3.html\]](http://www.unesco.org/education/wef/countryreports/korea/rapport_3.html) viewed 2012/06/20

¹⁹¹ Kim, Ki Su, "Public and Private in South Korea's Education Reform Vocabulary: An Evolving Statist Culture of Education Policy", *International Education Journal* Vol 5, No 4, 2004, p.5.

measures stimulating the research activities of university academics¹⁹².

One of the most important issues in terms of higher education quality was the specialization and diversification of universities. Korean universities did not pay attention to qualitative improvements. In 1999, the most competitive Korean university, Seoul National University, was ranked third in Asia, behind only Tokyo and Kyoto universities. The number of international journals published by Korean universities represented only 3.9 per cent of the number of journals published by American universities. Moreover, Korean universities were heavily reliant on universities overseas, creating a USD seven billion deficit in national revenue and public expenditure¹⁹³. In response to the concern over the low standard of the nation's universities and researchers, the Korean Ministry of Education and Human Resource Development (MoE) launched the ambitious project known as BK21 or Brain Korea 21st Century.

Initiated in 1999, the BK21 project sought to cultivate creative and high-quality human resources necessary for building the knowledge-based society. In addition, the project sought to develop world-class research-oriented universities that specialized in specific fields. The program has had two phases of funding. Phase I ran from 1999 to 2005 and had USD 1.4 billion allocated to it. Phase II, which started in 2005 and continued through 2012, was allocated an additional USD 2.1 billion. Phase I emphasized university-led excellence and institutional reforms, while Phase II emphasized department-led excellence and university-industry partnerships. The

¹⁹² Chung, Bong Gun, "The University Reform in Korea: A deregulation to be deregulated?", Paper presented at the Institute of Asia-Pacific Educational Development 2nd International Conference on Education Research, October 25-26, 2001, Seoul National University, p4.

¹⁹³ Mugyeong, Moon, and Kim, Ki-Seok, "A Case of Korean Higher Education Reforms: The Brain Korea project 21", *Asia Pacific Education Review* 2001, Vol. 2, No 2, 96-105, p.3.

natural and applied sciences and technology was one subject group supported through BK21¹⁹⁴ and humanities and social science were the other. USD 6 million was allocated to the natural sciences and applied technology, which included information technologies, physics, chemistry, mechanics and materials, biotechnology, material engineering, in addition to others. USD 750000 was allocated to the humanities and social sciences, which included history, language, philosophy, education, law, administration, politics, economic, psychology, and others.

The BK21 program allocated resources by using a concentration strategy, which is based on the merit of research groups and universities¹⁹⁵. This strategy resulted in awards larger and more attractive than other project-based funding programs, which made universities put priority on BK21 in order to obtain funding. Thus, universities put emphasis on achieving the goals of the programs to further their own financial needs. Funding was allocated to graduate students, post-doctoral fellows, and research professors belonging to select graduate schools and universities. The recipient universities were encouraged to develop specializations so that they would concentrate their resources and efforts on the selected areas of particular fields.

The seven years of implementing BK21 contributed significantly to increasing the research capacity of the universities and to developing high-quality human resources that were equipped with global competitiveness¹⁹⁶. The program has contributed in

¹⁹⁴ Samanjit, Kaweta, "Higher Education Promotion for the Knowledge-Based economy: A Comparative Study of Brain Korea 21 and Thailand's National Research Universities", *Verdian-E-Journal, Silpakorn University*, Issue 4 September-December 2004, p.3.

¹⁹⁵ Seong, Somi, and Popper Stevn W., and Goldman, Charles A., Evans, and David, K., and Grammich, A., "*Brain Korea 21 Phase II: A new Evaluation Model*", Rand Education, 2008, p.5.

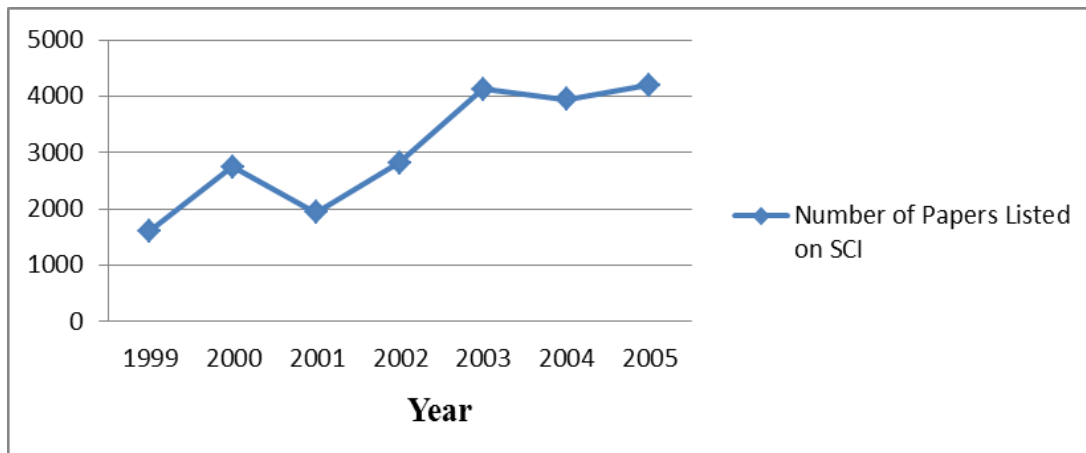
¹⁹⁶ Korea Research Foundation: "BK21- Nuri Committee",
[<http://bnc.krf.or.kr/home/eng/bk21/achievement.jsp>] viewed 2012/06/10

developing competent manpower in key areas of importance to Korea. This has been achieved by enhancing research capability of students by providing a better environment for research activities. Moreover, BK21 has helped increase the number of master and PhD degrees as well as researchers with a doctoral degree. During Phase I of the program 50874 masters, 23000 doctors and 8100 post-graduates were funded. However in Phase 2 an annual average of 36588 masters and 15319 new researchers (post-doctoral and research professor) were funded¹⁹⁷.

The universities that took part in the BK21 program reformed their administrations, as well as their academic and selection systems, in order to become research-oriented institutions. As a result, the number of papers published in academic journals increased dramatically. Figure 7 shows the number of papers listed on Science Citation Index (SCI) in the field of science and technology, which increased from 1615 in 1999 to 4200 in 2005. Figure 8 shows the number of papers published in national journals in the humanities and social sciences, which increased from seventy-eight published journals in 1999 to 239 journals published in 2005.

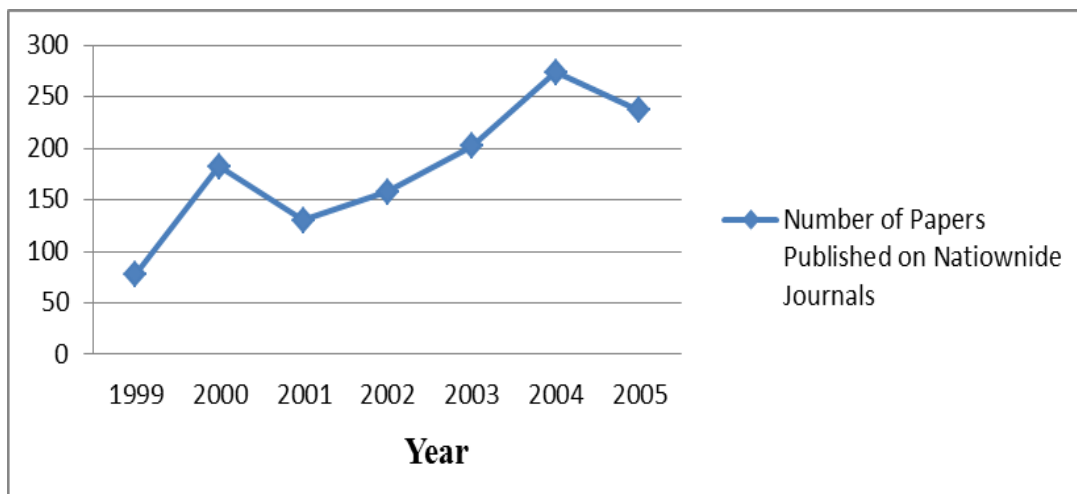
¹⁹⁷ Um Mi-jung “Center of excellence as tool for capacity-building, case study: Korea”, *Science and Technology Policy Institute (STEP)*, A report as part of the Programme on Innovation, Higher Education and Research for Development (IHERD) hosted at the OECD and funded by the Swedish 3 International Development Cooperation Agency (Sida), Volume 38, p 16.

Figure 7: Number of papers listed on SCI



Source: Ibid

Figure 8: Number of Papers Published on National Journals in Humanities and Social Sciences



Source: Ibid

BK21 introduced a pay-on-performance system for professors' research achievements, which helped to create a research environment and enhance research capacities. The second phase of Brain Korea, which began in 2006 and ran until the

end of 2012, remained focused on science and technology and creating high-quality R&D human resources that would have direct impacts on human development.

In addition to increased research and publications cited on SCI, some outcomes of the program such as increasing QS¹⁹⁸ World University Rankings classification of Korean universities are expected to take time to emerge.

To further strengthen and support the cooperative policy between industry and academia, the government, in addition to BK21, announced in 2003 the New Industry-Academia Cooperation Vision and Advancement Strategy. This strategy was executed in collaboration with other government departments such as the Ministry of Commerce, Industry, and Energy¹⁹⁹.

10.2.4 The Role of Information Communication Technologies in the Korean Education System:

Computer education in South Korea was the first step towards ICT use in schools. In 1987, computer education became part of the debate on educational reforms at the national level, and the Committee for Education and Reform introduced in its report the idea of computers at schools as a measure to improve teaching methods at elementary and secondary schools, promote science and technology education, and lay the groundwork for an information society. In December 1987, the Ministry of Education announced its Enhancement Plan for Computer Education in Schools²⁰⁰.

¹⁹⁸ QS stands for Quacquarelli Symonds

¹⁹⁹ Lee, Jin Sung, and Hee Kyung, “*Understanding Korean Educational Policy Vol 1: National Development Strategy and Education Policy*” Korean Educational Development Institute, 2008, p.58.

²⁰⁰ Korean Educational Development Institute, “Brief Understanding of Korean Education Policy”, *Gyeong Seoung Printing* 2011, p.109.

A variety of ambitious plans were designed to integrate ICT into the education system, and policies were adopted to implement these plans. These policies included the following: introducing a recognition system of ICT competence at school; investing in the ICT infrastructure of primary and secondary schools at the national level; establishing a school information management system; providing ICT training opportunities for teachers; and amending education rules and regulations to include the use of new technologies, such as ICT in the classroom²⁰¹. Through ICT integration plans, South Korea aimed to improve schools' information infrastructure to reach OECD levels (five students per PC, +2Mbps communication speed). Furthermore, South Korea aimed to build an educational information system that could be used to share and disseminate administrative information and reduce teachers' tasks.

Since 1996, three national master plans have been implemented to increase the development of ICTs within the education system in South Korea. The first master plan (1996-2000) focused on the establishment of a world class ICT infrastructure in elementary and secondary schools. The second master plan (2001-2005) aimed at improving the quality of education by allowing open access to educational content and providing training to teachers which would facilitate the integration of ICT in the classroom. The third and most recent master plan (2006-2010) emphasized ensuring a sustainable learning environment by creating u-learning.

Astonishing progress was made in introducing ICT in schools. Since April 2001, all of the 10,064 elementary, middle, and high schools in South Korea were connected to Internet and the school management information system. In addition, each of the

²⁰¹ Kim, Gwang-Jo., "Education Policies and Reform in South Korea", *Africa Region Human Development Working Paper Series*, World Bank May 2002, p.38.

340000 South Korean teachers were provided personal computers, and nine new cyber universities were established and accredited in 2001. In addition, the establishment of The National Educational Information System (NEIS), the creation of the Korean Education Research Information System (KERIS), and the development of world class sharing systems for educational information centered on EDUNET, have all greatly contributed to improving school education.

NEIS was developed as a computer network maintained by South Korea's Ministry of Education and has been operational since 2003. The system facilitates the electronic management of all education-related administration tasks. Since 2006 this system has been operating in schools nationwide, providing elementary and secondary schools with administrative and finance services to improve the educational environment.

In 1999, KERIS was established. KERIS is a government R&D Institute for educational information services which provides information network services that link major sources of academic information for research. KERIS also developed EDUNET, a website that provided educational material for the use in the classroom²⁰². The main objective of KERIS was to build a lifelong learning society and promote and disseminate e-learning. It has taken the lead in all e-learning projects and policies for elementary, secondary, higher, and lifelong and business education.

Through collaborative efforts from the Ministry of Education, Science, and Technology, KERIS, and the sixteen regional education offices established nationwide, Korea has been very successful in e-learning. As e-learning technology

²⁰² Korean Educational Development Institute, "*Understanding Korean Education Vol 5 Education and Korea's Development*", Seoul, 2007, p.65.

was increasingly utilized for educational courses, national standards for e-learning were developed, and the Korea Educational Metadata (KEM)²⁰³ was enacted. Furthermore, to enable quality control of e-learning, the E-learning Quality Assurance System (EQAS) was established. To ensure a safe and sound cyberspace in the educational area, the Korean government set up the Education Cyber Security Center (ECSC) and implemented many e-safety and e-ethics campaigns, as well as training programs.

To monitor and evaluate ICT policy in education, the government measured ICT education in schools, conducted ICT literacy tests for students, and evaluated external ICT projects on the national level. Moreover, the Korean government expanded its cooperation with the global community in order to reduce the digital divide. As a result of these concerted efforts, today representatives of fifty countries visit South Korea every year to benchmark best practices in this field. ICT policies in education in South Korea have been recognized as best practices as a result of their solid legal framework, implementation mechanisms, secured budget and support, successful cooperation between public sectors, and their effective monitoring and evaluation system.

The new figures released by the International Telecommunication Union (ITU) on October 11, 2012, South Korea was ranked as the world's most advanced ICT economy²⁰⁴, attributed to its well-established and world class ICT. It is the third time in a row South Korea has come in first in the ICT Development Index (IDI). The Asian country has the highest percentage of households connected to the Internet at

²⁰³ Dae, Joopon Hwang, and Hye-Kyung, Yang, and Hyeonjin, Kin, "E-learning in the Republic of Korea", *UNESCO, Institute of Information Technologies in Education*, 2010, p.8.

²⁰⁴ International Telecommunication Union (ITU), "*Measuring the Information Society 2012*", Geneva, 2012, p.6.

sixty-seven percent, while both broadband and fixed broadband penetration rates were at eighty-four percent, propelling the country to the top. The great achievements of South Korea in ICT over the past two decades are owed to the strong collaboration among ministries, public, and private sectors in implementing various government policies and initiatives. The aggressiveness of the authorities and society in shifting towards an information society, as well as the high value placed on education, played an important role in propelling the country amongst the most advanced countries.

11. Where Do Algeria and Korea Stand

In this chapter we highlighted the main policies and reforms undertaken by Algeria and South Korea following their independence. Both countries were at same economic level with a high rate of illiteracy. However 50 years later, South Korea could achieve remarkable and rapid economic growth and social prosperity through human capital development consistent with economic development plan and demand, while Algeria is still lagging far behind with an economy highly dependent on oil and gas, and a deteriorating education system. Despite all the efforts and investments, Algeria still faces several challenges. The greatest challenges are to develop a knowledge based economy which will help to create jobs, and achieve more sustainable economic growth, and to deal with an increasing demand for education that stems from a large proportion of young population in the total population. People aged 25 and under represent 49% of the total population in 2012.

Algeria has achieved continuous improvement in economic development over the

past decades. GDP per capita grew from USD 5854.09 in 2000 to USD 8515.35 in 2012. However, the country is still far behind compared to South Korea's GDP per capita that grew from USD 18730.40 in 2000 to reach USD 30800.55 in 2011, as well Saudi Arabia where GDP per capita reached USD 31729.06 in 2011 compared to USD 19956.54 in 2000 (Table 20).

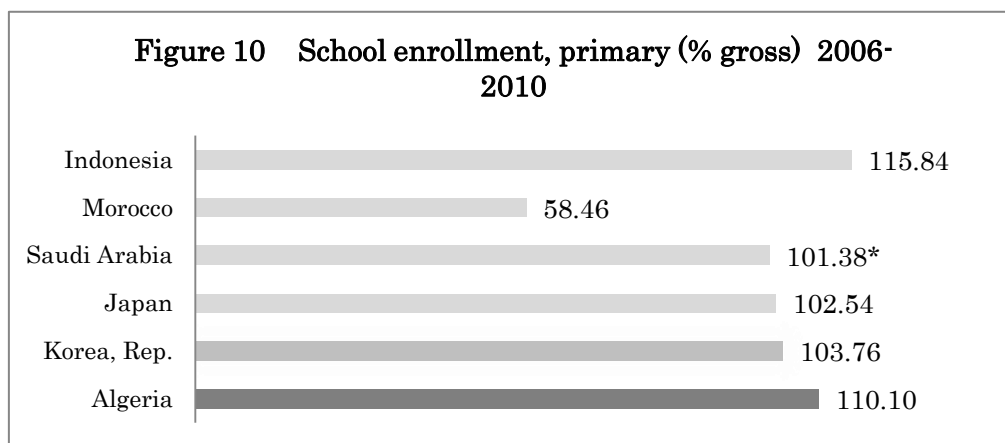
Table 20: GDP per capita, PPP (current international \$)								
Country	2000	2006	2007	2008	2009	2010	2011	2012
Algeria	5854.09	7193.74	7496.23	7707.90	7818.27	8057.59	8270.29	8515.35
Korea, Rep.	18730.43	24246.50	26101.37	26688.74	26679.79	28612.83	29786.17	30800.55
Japan	28889.20	31763.07	33396.56	33589.33	31745.50	33667.94	33838.09	35177.55
Indonesia	2678.99	3372.49	3638.32	3887.36	4047.01	4298.15	4614.81	4955.95
Saudi Arabia	19956.54	21932.32	23418.67	25510.04	25784.44	27596.14	30043.78	31729.06
Egypt, Arab Rep.	4235.99	5035.00	5455.60	5875.37	6101.06	6391.85	6533.58	6723.56
Morocco	2923.98	3779.25	3845.37	4020.92	4167.55	4268.03	4421.11	4474.45

Source: World Data Bank

[<http://databank.worldbank.org/data/views/reports/tableview.aspx#>]

In a very short time, Algeria could provide education to all and reach an enrollment rate of more than 94.3 per cent in 2011 compared to 82 per cent in 2000.

In primary level, the gross enrollment rate between 2006 and 2010 is 110.10 per cent compared to Korea who reached 103.76 per cent (Figure 10). A high gross enrollment rate indicates a proportion of students in primary level who are at a higher schooling age.

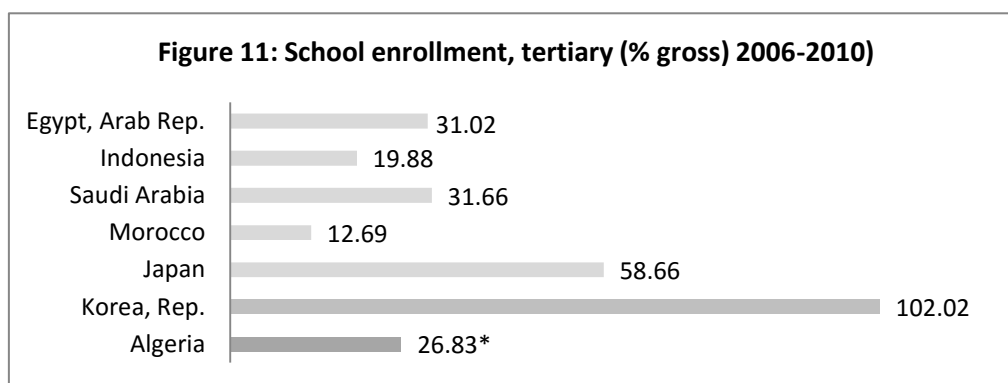


*Data not available for 2006

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

The gross tertiary school enrollment in Algeria is far behind Korea with 26.83 per cent and 102.02 per cent respectively (Figure 11). The rate is also lower than in Egypt (30.48 per cent) that has a GDP per capita lower than Algeria.



*Data not available for 2008

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

With an adult literacy rate of 72.64 per cent in 2006, Algeria is higher than Morocco (55 per cent) and Egypt (66 per cent), but much lower than Indonesia (92 per cent) that has a GDP per capita lower than Algeria.

The completion rate of primary school in Algeria continued to increase to reach an average of 94% between 2005 and 2009. However the percentage of repeaters in primary school and especially in secondary school remain significantly high with 9.7 per cent and 17.2 per cent respectively compared to zero per cent in Korea as well as in Japan for both primary and secondary (Tables 21 and 22). This reinforces the idea of mass education on the detriment of quality.

Table 21: Repeaters, primary, total (% of total enrollment) 2006-2010	
Country	%
Algeria	9.76
Indonesia	3.27
Morocco	11.13
Saudi Arabia	2.83
Korea, Rep.	0

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

Table 22: Repeaters, Secondary, total (% of total enrollment) 2006-2011	
Country	%
Algeria	17.2
Indonesia	0.48
Morocco	15.6
Saudi Arabia	3.06
Korea, Rep.	0
Japan	0

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

The Algerian government spending and the budgets allocated to education are significant. In 2008, 4.3 per cent of total GDP was spent on education, which is almost same as South Korea who spent 4.8 per cent of its GDP, but lower than Morocco and Saudi Arabia who spent 5.56 per cent and 5.61 per cent respectively of their GDP on education (Table 23).

Table 23: Public spending on education, total (% of GDP) 2008	
Country	%
Algeria	4.34
Korea, Rep.	4.80
Japan	3.44
Saudi Arabia	5.61
Morocco	5.56
Indonesia	2.90

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

Table 24: Public spending on education, total (% of government expenditure) 2006-2008	
Country	%
Algeria	20.27
Indonesia	16.84
Korea, Rep.of	15.24
Japan	9.44
Saudi Arabia	20.06

Source: World Data Bank

[\[http://databank.worldbank.org/data/views/reports/tableview.aspx#\]](http://databank.worldbank.org/data/views/reports/tableview.aspx#)

In Algeria there are very few data about student performance and no regular evaluation system. The country has seldom participated in international evaluation tests such as the Program for International Student Assessment (PISA) to which Tunisia, Qatar and Jordan have participated in 2009. In 2007, Algerian students participated for the first time in the Trends in International Mathematics and Science Study (TIMSS) that measured over time the mathematics and science knowledge and skills of fourth and eighth-graders. Students of eighth grade were ranked 41st in science and 29th in mathematics compared to South Korea who was ranked 4th and 2nd, thus corroborating the poor performance of Algerian students and the poor quality of the Algerian education system.

Today, Korea, along with Singapore and Hong Kong, leads the rankings of international students' achievements on the 2011 Trends in International

Mathematics and Science Study (TIMSS)²⁰⁵. This study was conducted by the International Association for the Evaluation of Educational Achievement (IEA) with 300000 fourth grade students from fifty countries and 300000 eighth grade students from forty-two countries. South Korean fourth grade students earned an average score of 605²⁰⁶ in mathematics, ranking second behind Singapore. In science, they were first with 587 points. The percentage of students who fell short of the baseline achievement level stood at zero in mathematics and one percent in science.

Table 25: Average Science Scores of Fourth and Eighth-grade Students (2007)						
Position rank	Education System	Grade 8 Science		Position rank	Education System	Grade 8 Mathematics
TIMSS Scale Average		500		TIMSS Scale Average		500
1	Singapore	567		1	Chinese Taipei	598
2	Chinese Taipei	561		2	Korea, Rep. of	597
3	Japan	554		3	Singapore 593	593
4	Korea, Rep.of	553		4	Hong Kong SAR1	572
5	England	541		5	Japan	570
41	Algeria	408		29	Algeria	378

Source: TIMSS 2007

[<http://staff.tarleton.edu/brawner/coursefiles/579/TIMSS%202007%20Report.pdf>]

The enrollment rate in tertiary level continued to increase for the last decade to go up from 16 per cent in 2001 to 32.39 in 2011, but remain much lower than Korea rate at 103 per cent in 2010. In the academic ranking of world universities in 2013, conducted by the Shanghai Jiaotong University, no Algerian university is listed among the top 500, while Korea has made progress with 3 universities listed, and among them the Seoul National University is ranked 100th ²⁰⁷. The only two

²⁰⁵ The TIMSS is an international assessment of student achievement in mathematics and science based on the average scores of the two subjects. It is conducted once every four years.

²⁰⁶ Ina, V.S. Mullis, and Michael, Martin O., and Pierre Foy, and Alka, Arora, "TIMSS 2011 International Results in Mathematics", TIMSS & PIRLS International study center, Lynch school and Education, Boston College

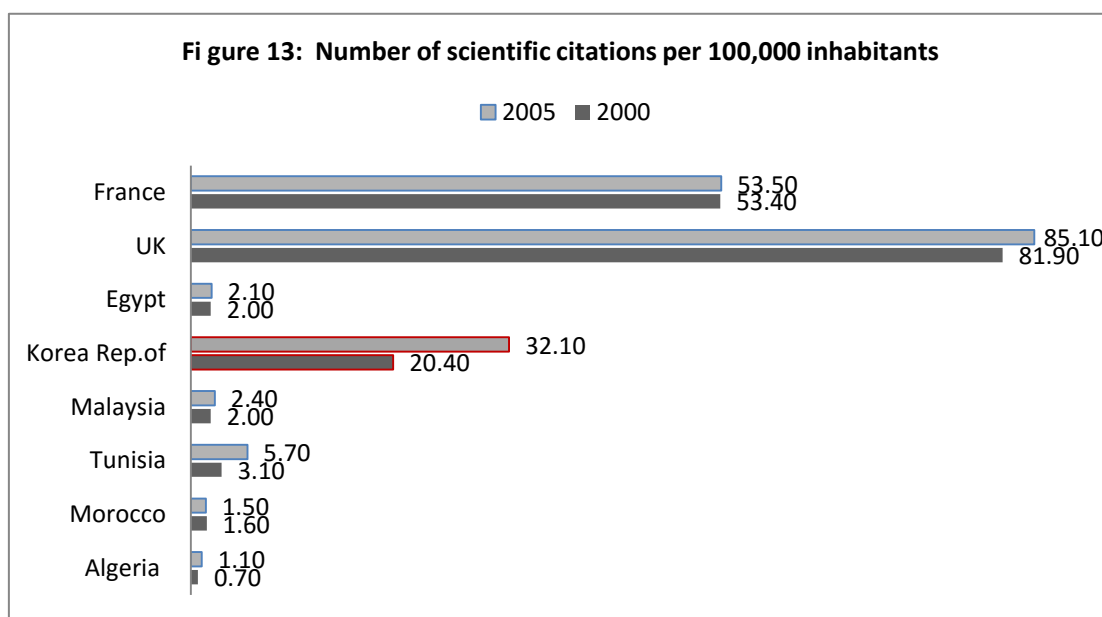
²⁰⁷ Academic Ranking of World Universities (ARWU), [<http://www.shanghairanking.com/ARWU2013.html>]

countries in the MENA region listed in the top 500 were Saudi Arabia with 3 universities and Egypt with one university.

Moreover, the number of published articles in scientific and technical journals is very modest - only 606 published articles for Algeria compared to 4200 in Korea, and 2247 in Egypt and 1022 in Tunisia²⁰⁸ or China with 74019 published articles.

In terms of Knowledge Economy Index, Algeria scores 3.2 in 2009 well below the average MENA (5.47) and ranks 15th in the MENA group out of 18 countries and 105th in the world. It has improved its ranking since 1995, by making a real jump of +5, but remains still in a weak position in view of its immense potential in terms of natural resources and human capital.

²⁰⁸ Notre Algerie Batie sur de Nouvelle Idees (NABNI), [<http://www.nabni.org/rapports-et-publications/>]



Kosarajo, S., and Zaafrane, H, “Benchmarking Governance as a Tool for promoting Change: 100 Universities in MENA Paving the Way”, 2013 p.13.
[\[http://www.higher-edu.gov.lb/Studies/1313877_University_MENA_Book.pdf\]](http://www.higher-edu.gov.lb/Studies/1313877_University_MENA_Book.pdf)

Algeria suffers from a weak research capacity, insufficient linkage between education and economic policies and weak research capacity. There is no national study to measure the adequacy and appropriateness of education and training to the enterprise’s needs. As shown in survey, the Algerian business environment is very much affected by the poor education system as 37.0% of enterprises deplored a deficit of competences in Algeria which lower than Morocco with 31.0 per cent.

Korea’s educational advancements and economic growth have placed it among the most advanced countries in the world. Its economy is the third largest in Asia and the 13th in the world. The development of education in Korea resulted in high quality educational programs and well-educated human capital. According to OECD, in the 1960s South Korea’s national wealth was on par with Afghanistan. But the country’s educational policies and strategies resulted in a young generation leapfrogging the academic achievements of other industrialized countries.

Korea could take advantage of the modern school inherited from Japanese

colonial rule and developed to make it an efficient education and training system that made rapid economic growth and industrialization possible. The workforce was endowed with the technical and special skills required to achieve industrial transformation in a short timeframe. Expansion of higher education enabled the supply of highly-qualified workers and R&D personnel needed at each stage of economic development.

Chapter V: Conclusions and Recommendations

1. Conclusions

Many researchers have investigated the link between human capital development and economic growth. Human capital development through education is still seen today as a fundamental factor in the innovation and assimilation of new technologies. Those are the key drive for economic growth. The development of human capital has played an important role in the economic development of advanced countries, such as Singapore, Japan, and South Korea in East Asia and Southeast Asia. Developing countries, due to the lack of highly skilled and trained manpower, are lagging behind in productivity and technological innovation. They are today facing the challenges of the new century with the aim of catching up with the rapid development the world undergoes.

Algeria, as a developing country faces the same challenges. Since independence, Algeria, a country blessed with natural resources and a young population, has had the ambition to build a nation with a strong economy and achieve social changes and modernization. Education has been an important component and a great source of hope in the economic development strategy. The implementation of education policy and all the reforms that followed required an increasing need of funds, material and human resources. The efforts of the last five decades have led to a notable increase in education growth, however quantitative mainly. On the other hand the quality of education decreased due to policies and ongoing reforms that failed to achieve the objectives. It is today commonly admitted that the quality of education system in

Algeria is far below the standard required. Hence the country's human capital does not seem to be well positioned to address the new economic and social challenges. Moreover, in the Global Innovation Index 2014 (GII)²⁰⁹, Algeria has been ranked amongst the 10 least innovative countries in the world. The result is a clear indication that Algeria has failed to align its educational policy with its economic development plan.

While Algeria has had trouble adapting to the economic and social challenges of the 21st century, South Korea has thrived. Contrasted to Algeria, among many countries that achieved economic growth in the 20th century, scholars pay particular attention to South Korea as a model of economic growth. Rather poor in natural resources, South Koreans transformed their nation from a less developed country to a developed one in a relatively short timeframe. Many economists argue that the development of human capital through education and training has contributed to the economic development of South Korea.

Hence, this study has three principal objectives. The first one is to examine human capital development through education attainment and its relationship to the growth of the economy in Algeria. The second one is to compare the Algerian and South Korean cases. The third and last objective is to draw lessons from South Korean strategies and policies. Algerian is a very good case that remains unexplored in the field of human capital development. The comparative study of Algeria and

²⁰⁹ The Global Innovation Index 2014 (GII), in its 7th edition this year, is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO, an agency of the United Nations, a leading reference on innovation). Understanding in more detail the human aspects behind innovation is essential for the design of policies that help promote economic development and richer innovation-prone environments locally. Recognizing the key role of innovation as a driver of economic growth and prosperity.

South Korea cases is based on the similarities of the two countries' historical backgrounds. Both countries were a colony and experienced wars. At independence, both countries were left with a devastated economy. Illiteracy rate in Algeria was higher than in South Korea who inherited a modern education system introduced by the Japanese colonial government. However, Algeria and South Korea adopted different development plans and strategies. Both of countries have made education a priority, but with different policies and objectives. Therefore, examining the two cases is a valuable exercise that provides significant insights.

This thesis examines the colonial and post-colonial educational systems in Algeria and South Korea and their contributions to their respective economies in order to highlight and better understand the path to nation-building through education and economic development in both countries. Through the comparative study, this thesis demonstrates how Korea, with a GDP lower than Sudan at independence from Japanese rule, succeeded in increasing the level of its society and economy to the level of the most advanced countries in the world, primarily accomplishing this through the development of its human capital. In Algeria, the contribution of human capital to economic growth was not commensurate with the significant investments in education and training systems over the last fifty years. The study is reinforced by exploring the differences in economic growth rates among developed and developing countries and by analyzing the effects of education on GDP growth through a growth analysis. The analysis confirms the strong relationship between human capital and economic growth.

This study reveals that Algeria is endowed with abundant natural and human resources that gave it the potential to achieve economic and social prosperity by the

20th century. However, it failed to realize the human capital development needed to transform all the resources for the nation's use and benefit. After fifty years of independence, Algerian economy has not been diversified and remains highly dependent on oil and gas export.

South Korea's successful economic growth has benefited in part from the human resources that Korea has developed. In addition to the precolonial modern education South Korea inherited from the Japanese, the educational policies developed in the 1960s greatly aided the development of human resources and it subsequently nourished in the last three decades.

Based on the findings of this thesis, this final chapter provides a brief overview, lessons from the findings, and implication for future policies and research. This study begins with a literature review of growth theories (Chapter 1), which emphasized the link between human capital and economic growth. Human capital has gained increased recognition as a key production factor along with physical and capital labor. The studies of Mincer (1958, 1962, 1974), Schultz (1961), and Becker (1962) underpin the theoretical and empirical foundations of human capital. According to new theories by Romer (1988) and Lucas (1986, 1990), human capital affects growth in at least two ways: increases in education and training have the potential to spillover to other individuals, and better-educated and trained workers are more productive, have more knowledge, and make better use of firm investments. The theory argues that having more educated workers who generate new ideas increases the rate of innovations.

Even though there is no consensus among economists about which theory accurately describes the process of economic growth, there is consensus that human

capital development plays a key role in increasing productivity, fostering the change in technology, and diffusion. The above-reviewed literature provided evidence that education is a powerful tool to speed up economic growth, increase productivity, and achieve national prosperity. However, while investment in education is a necessary condition to achieve the above outcomes, it is by no means sufficient. Thus, the answers to the questions regarding how much Algeria and South Korea have invested in their respective educational systems and why their investments have resulted in specific economic returns are totally different.

As global economy shifts towards more knowledge-based sectors such as IT, telecommunication, and pharmaceuticals, skills and human capital development become a central issue for policy makers. Education and training activities and policies are now very much influenced by the changing economies. Investing in human capital through education provides potential to generate benefits that go beyond those acquired by the individual involved. Higher investment in education is not associated with faster economic growth, especially when the system fails to produce the level, mix, and quality of skilled labor required to meet demand or when demand itself is inadequate or distorted. Similarly, poor-quality education effectively erodes its returns, leading to high dropout rates, especially among the poor.

In light of the above findings and conclusions, Chapter 2 delves even further into the research in order to provide more evidence by demonstrating how education has been important to some countries' development and how it failed in other countries, including Algeria. Chapter 2 explores the differences in economic growth rates among developed and developing countries and analyzed the effect of education on GDP growth. The chapter first reviews select key studies in the empirical literature

on the contribution of education to economic growth, emphasizing human capital through education attainment. The section reviews the most recent and influential works including Aghion and Durlauf (2005), Benhabib and Spiegel (2002), and Durlauf, Johnson and Temple (2004). It also reviewed the estimation conducted by Haouss and Yagoubi to measure human capital as a source of productivity in the Middle East and North Africa region. Haouss and Yagoubi concluded that despite investments and achievements in the education in MENA countries, the payoffs will only be visible if education is adapted to the changing demands of the economy. Haous and Yagoubi also concluded that quality of education in MENA countries is the key to allowing gains in productivity.

Moving on, chapter 2 describes and examines the data collected from the Barro and Lee education attainment dataset, as well as the macro data from Penn World Table. The research compared education attainment data in Algeria with data for a group of developed countries, including South Korea and the United States.

Finally, using the same data from the same sources above, the thesis conducts two models of growth regression analysis. The first model is a cross-sectional country analysis based on data of a group of developed and developing countries over a period of five years. This research measures the effect and direct return of schooling variables as well as other variables on growth rate of GDP per labor unit. The findings of the regression analysis proved significant; however, the schooling ratio variable appeared insignificant for developing countries. What is consistent across each regression is that education is most likely to have a beneficial effect on the levels of GDP growth.

In the second model, the percentage of the population aged fifteen and over who

had completed secondary school in Algeria and South Korea was used. From the results, the research concluded that benefits of human capital are more significant in developed countries than in developing countries. Findings show that schooling ratio is significant on the levels of GDP growth. Furthermore, comparing economic growth between Algeria and Japan, the research showed that human capital investment was positive and significant in Japan; whereas, it was insignificant in Algeria.

Less developed countries in general and Algeria in particular have made great achievements in universalizing education and in increasing literacy. However, their lack of a skilled workforce and enough well-trained specialists required for sustainable development leads to the conclusion that education systems are not adequate when quality is not emphasized. Quality of education is the key for economic effectiveness and should be a priority for policymakers in developing countries.

In order to clarify the extent to which the Algerian and the South Korean choices of policies and strategies, particularly the economic and educational policy-making, have impacted their success or failure in achieving economic growth, Chapter 3 turns to their respective colonial periods and Algeria's and South Korea's historical trajectories. This chapter mainly focuses on education before and during colonization and its impact on Algerian and South Korean societies and economies.

This chapter highlights the similarities between Algeria's and South Korea's histories. Both countries have experienced colonization, civil wars, which highly affected the education of its population and resulted in a high rate of illiteracy among the local population. Furthermore, few youth had access to higher education. The

economic system and projects of the colonizers were exclusively developed to serve their own interests. Particularly Algerians lacked skills and training, and they were excluded from managing the economy. Because of the colonial organization of activities, there were no economic elite. There were no Algerian entrepreneurs, as Muslim Algerian economic activities were limited to those of shopkeepers. When the Algerian themselves took over the state affairs after a devastating war, the problem of widespread shortage of all type of specialties was apparent. Illiteracy was high and there were almost no elite to take over and build the new nations. Similarly, the Korean War had left the South Korean economy devastated but at the same time Koreans had inherited a better and a more modern educational system from the Japanese colonial system.

Following independence, education and literacy became a focus of concentration for the new government who viewed it as a master determinant for economic growth. Likewise, when South Korea was liberated in 1945 after thirty-five years of Japanese rule, the country embarked on a major recovery at all levels which produced drastic changes in both the quantity and the quality of education. What made the difference between Algeria and South Korea at independence was the legacies of South Korea from Japanese colonial administration which became an important part of South Korea post liberation education system.

The fourth chapter continues the investigation by examining and highlighting the major post-independence economic development plans and education reforms adopted by the Algerian government in the last fifty years. The chapter then assesses the impact of the country's education policies on economic growth. Finally, Chapter 4 studies the South Korean case and the trajectory it took after independence from

Japanese colonial rule, with a special focus on education policy and to what extent it was shaped to meet the economic demands.

Chapter four starts by examining the structure of the French colonial economy in Algeria and describing the underdeveloped economy Algeria had inherited. The colonial economy was characterized by poor human capital in terms of both quantity and quality. At independence, Algeria was a rural Third World economy highly dependent on imports from foreign countries, and most of the population worked in the agricultural sector. Discrimination and denial of identity and culture heavily influenced the independent Algerian policy makers. The new government's focus, besides economic growth and social prosperity, was universalization of school enrollment and Arabisation of the society and administration. Similarly, independence from Japan and the Korea War has fueled language purist movement in South Korea, to rid the Korean language of the Chinese characters. Purist in South Korea, under the aegis of Korean Language Society pushed for adopting and implementing the exclusive use of Hangul. However, the government attitude and involvement was not as significant as in Algeria. On the contrary, the South Korean government attitude was described as unconcerned despite the strong clashes between the opponents to the use Chinese characters and the proponents. There has not been a single governmental agency to deal with the language problem. More importantly, the government was more preoccupied by the nation's economic development than anything else.

The chapter then goes through the various stages of economic and educational reforms and, based on data, recent reports and surveys, assesses the impact of education on the economy and the return of significant public investments.

Particular attention is given to the language reinstatement strategy adopted in Algeria, known as the Arabisation Policy, and its long-lasting implementation process. Compared to the effect of similar programs in neighboring countries, Arabisation in Algeria had major implications for the quality of the education system and professional qualifications, and hence for the economy. The reinstatement of Classical Arabic as the official national language has gradually replaced the use of French language in schools. However, the spread of Arabic language has been inefficient in all aspects of the Algerian society. It had led to discrepancies, confusion within the Algerian society and contradictions with today's reality. The Arabisation policy was incomplete and inconsistent. Prior to its implementation, the Algerian authorities did not consider terminology coining in Arabic for the teaching of science and technology, and therefore the use French language has been and is still maintained in teaching those subjects in universities. In addition, the continued preference for French as the working language of government and of urban society was another obstacle to the Arabisation policy. Students who completed education in Arabic were faced with two major issues; continuing their higher education in French and finding a job in a French-dominating economic environment. This situation has created a general public skepticism about the Arabisation program, divided the society between modernists and conservatives, and produced students with low proficiency in both standard Arabic and French. More importantly, Arabisation policy affected education quality and produced inefficient human capital, hence affecting labor market and economic growth.

Chapter 4 also highlights the quality of education and the mismatch between graduates with high levels of education and the labor market. This mismatch is

mainly due to the imbalance between the two different types of secondary education that students attend: the general secondary level of education, which the majority of the students attend, and the technological and technical secondary level, where students' participation remains very low, primarily because of the lack of orientation provided to students in regard to their choice of specialties and faculties. As a result the majority of students were choosing to pursue their studies in social science and arts with 65% of total students enrolled in 2011 whereas the number of students opting for technology, and mathematics is very low with 20%.

The chapter continues by exploring the Korean model of development and its successful progress on the path to sustainable growth, which education has contributed to significantly. The different development stages Korea has been through are highlighted: South Korea was able to overcome its colonial legacy and march toward progress rather rapidly. Following independence, the first challenge Korea had to face was how to meet social objectives, which it accomplished by giving priority to government expenditure on basic social services in education, health and infrastructure. Even though the Korean government launched education reforms, unlike Algeria, there was the strong foundation of modern school education introduced by the Japanese colonial government. Moreover, the heritage of emphasizing education was pursued with great zeal by the new Korean government. Reforms aimed at expanding education to all levels of society in order to serve national needs. Progressive policies were adopted, emphasizing economic growth and investments in human capital. The human resources strategy propelled South Korea to the rank of most developed countries in the world. The human resources strategy provided a balanced structure of economic growth based on the

accumulation of human capital for all sectors and ensured that all efforts become the engine of economic growth.

The chapter ends by comparing the latest data in terms of economic and educational achievements in Algeria and South Korea. This comparative study reveals that indeed Algeria did achieve significant success in universalizing primary education and increasing access to other levels of education, financed entirely by public spending; however, it has failed to generate the maximum economic returns to individuals and society. The four important indicators that show the quality of education in Algeria and its poor performance are scores on international tests, field of studies in higher education, drop out of school rate and literacy rates. Algeria's participation in the Trends in International Math and Science Study (TIMSS) was very mediocre. In the fourth grade only 2% of students reached level II while OECD countries reached 68% for Singapore and 44% for Italy, and 33% reached level IV in Algeria, compared to 90% in OECD countries. In the eighth grade, Algeria scored 465 on the Mathematics test, far behind South Korea which is ranked 2nd with a score of 711. The science scores for fourth and eighth grade were also mediocre and lower than countries with comparable revenues.

Furthermore, with the increasing importance of technological innovations and adaptation to development changes, the number of students enrolled in applied science and engineering fields in Algeria is very low. The increasing dropout and repetition rates revealed by the latest Algerian education statistics are alarming indicators of the poor educational system. The shortage of industry-specific qualified workers across the economy confirms that the current disconnect between education and economic development lies in the poor quality of education, which was neglected

for mass education.

2. Recommendations

This study estimated the human capital development in the development strategy through a comparative analysis of a developing and a developed country. It also showed the role of education quality in promoting economic well-being. In the case of Algeria, a developing country, the study demonstrates that tremendous gains in education have been realized in Algeria: most children benefit from compulsory schooling, quite a few have opportunities to continue their formal education, and the illiteracy rate has been significantly reduced. In short, past achievements are impressive, particularly if one considers the starting point during the 1960s.

However, the study also shows an important gap between the type of labor force the educational system currently produces and the type of workforce Algeria needs if it is to achieve its development objectives. The educational achievements to date are in part compromised by high dropout rates, and relatively low scores on international tests; and the education system produces more graduates in humanities than in science. Policy makers must consider alternative paths of educational development in the future.

The Algerian educational system still needs to be reshaped to face up to a number of new challenges. The most glaring challenges relate to globalization and the increasing importance of a knowledge-based economy in the development process, the youth bulge and number of out-of-school children and adults, and the financing requirements. This research showed that education reform alone cannot meet these

challenges, and that high education expenditure does not automatically translate into improved outputs and outcomes. Setting a good education financing system, and creating the right conditions for education reforms are necessary to have the full effects. It is clear that education is the main source of knowledge creation, and that a more educated society may translate into higher rates of innovation, higher overall productivity through firms' ability to introduce new and better production methods. Therefore, the Algerian education system must be changed to deliver the new skills and expertise necessary to excel in a more competitive environment.

Past and recent reforms continue to be focused on engineering, while incentives and public accountability are geared to the task of creating and maintaining a national mass education. This approach has served Algeria in the early periods of educational development, but as time passes by, it has shown its limits. Because of the limits of the previously taken approach, policymakers might think of experimenting with new pedagogical innovations, private provisions and decentralization.

In part because of Korea's early pursuit of welfare improvements for the majority of the population, the country achieved indicators of success in both social and human development. As an example, universal enrollment in primary education was achieved in the mid-1960s, and by 1970 the median number of years of education for young adults was 6.6 years, a number that compares very favorably with OECD countries.

Even though Korea and Algeria devoted almost the same share of their respective public expenditures to education, Korea's expenditure was and is still being applied to help raise the quality of education since it already achieved universal enrollment

long ago.

The lesson to be learned from Korea's policy making and human capital development experience is that the policy measures have had to be varied continuously in line with changing domestic and international conditions and opportunities. In every area of the economy, what the Korean experience shows is that education policies were continuously revised. Even though Algeria had same goals as Korea which is to build a prosperous and flourishing nation, and despite all the efforts Algeria has not been able to adopt strategies or policies as comprehensive and consistent as those implemented by Korea. With respect to globalization and the knowledge economy, the education system in Algeria must produce competent and flexible human capital to be able to compete.

Lifelong learning, coping with out-of-school children and adults, and a cohesive language policy are no longer a luxury but a necessity. Each of these challenges requires a shift in what is taught in schools and how it is taught. Making such a shift will enable students to first acquire the necessary fundamental and transversal skills and then allow them to better upgrade these skills over time.

To overcome these problems, the Algeria needs to aspire to be ranked as the No. 1 country in terms of the quality of human resources in the Middle East and North Africa region. To realize this vision, it needs to align the education reform with the economic development plan by benchmarking the Korean case. It also needs to take an incremental approach in reforming education. Additionally, it needs to diversify the financial sources for expanding education. Lastly, the government needs to create competition among educational institutions in order to improve the quality of education.

In 2012, the Knowledge Sharing Program (KSP)²¹⁰ was launched between Algeria and South Korea. This program confirms the Algerian government's awareness of the issues and challenges, and willingness to achieve Knowledge Based Economy. The KSP also shows that Korean case can be used as a reference for Algeria to reform education and vocational education and training. The program's purpose is to help the Algerian government to establish a mid and long term development plan including, improvement of Human Capital through education reform, transformation into a Knowledge Based Economy and the improvement in economy management methods. According to the KSP report and the result of analysis conducted by a Korean team, if Algeria accomplishes the recommended reform tasks –industrial diversification, reform in governance, education and public health and national land development for growth and equality– the possibility of Algeria transforming into a fast-growing nation in the 21st century rises dramatically.

Finally, while investment in education and improving the quality are necessary conditions for faster development and prosperity, investment alone is by no means sufficient. The benefits of education depend on whether society is able to deploy its educated labor force into productive and dynamic activities. Therefore, an in-depth study of the Algerian labor market is recommended for future research and study.

²¹⁰ Knowledge Sharing Program (KSP) was launched in 2004 by the Ministry of Strategy and Finance (MOSF) together with Korea Development Institute (KDI). It is a knowledge-intensive economic cooperation program in which Korea shares its experiences of economic growth to support the institutional and capacity building of partner countries.

References

Abe, Hiroshi, “Higher Learning in Korea Under Japanese Rule: Keijo Imperial University and the “People’s University” Campaign” *The Developing Economies* Vol 9, issue 2 page 175, June 1971.

Abdenour, Arezki, “Le Role et La Place du Francais Dans le System Educatif Algerien”, *Universite Abderahmane Bejaia*, Algerie, 2007.

Afrik.com, “L’ecole Algerienne revoit sa copie francaise”, January 26, 2001 [<http://www.afrik.com/article2059.html>] viewed 08/12/2011.

Aghion, Phillipe and Durlauf, Steven, *Handbook of Economic Growth*, Elsevier, 2005.

Alfred Greiner, Human Capital formation, public debt and economic growth, *Journal of Macroeconomics*, Vol.30, Issue 1, pp.415–427, March 2008.

Algeria’s Summary Report on Implementation of the National Program of Actions on Governance, “*Algeria 1999-2008: A decade of achievements*”, APRM/National Focal Point, November 2008.

Alice H.Amsden, *Asia’s Next Giant: South Korea and Late Industrialization*, Oxford University Press, New York, 1989.

Angrist, Joshua D., “The Economic Returns to Schooling in the West Bank and Gaza Strip”, *Working papers 95-5, Massachusetts Institute of Technology (MIT), Department of Economics, 1995*.

Antoine, Leon, “*Colonisation, enseignement et éducation: Etude Historique et Comparative*”, l’Harmattan, 1991.

Arab, Fatiha, [<http://www.lecourrier-dalgerie.com/papiers/actualite.html#1>] Issue March, 06th 2008 n°.1213.

Attieh, Aman, “Algeria Higher education Profile” (http://www.bc.edu/bc_org/avp/soe/cihe/inhea/profiles/Algeria.htm)

Azariadis, Costas & Drazen, Allan, "Threshold Externalities in Economic Development," *The Quarterly Journal of Economics*, MIT Press, vol. 105(2), pp.501-26, May 1990.

Barak, Zine Med., How Oil Revenue Have Translated into a Sustainable improvement in social welfare in Algeria: 1998-2007, Topics Middle Eastern and North African Economies, *Electronic Journal*, Vol.11, Middle East Economic Association (MEFA) and Loyola University Chicago, 2009.

Barro, Robert J., "Economic Growth in a Cross Section of Countries" *The Quarterly Journal of Economics*, Vol. 106, No. 2. May, 1991, pp. 407-443.

Barro, Robert J., "Determinants of Economic Growth: A Cross-Country Empirical Study" Cambridge, MA: MIT Press 1997.

Barro, Robert J. and Lee Jong-Wha, "A New Data Set of Educational Attainment in the World, 1950-2010", *National Bureau of Economic Research working paper No. 15902*, April 2010.

Becker, Gary S., "Nobel lecture: The economic way of looking at life", *Journal of Political Economy*, Vol.101, No.3, p. 385 -409, 1992.

Becker, Gary S., "*Human Capital: a Theoretical and Empirical Analysis with Special Reference to Education*", University of Chicago Press, 1993.

Belkhadem, Irane, "Khaoula Taleb Ibrahimi aborde le problem linguistique en Algerie", *Le Jour d'Algerie, Quotidein National d'information* May 30, 2009. (<http://www.lejourdalgerie.com/editions/300509/rubriques/cultures>) viewed 2011/12/01.

Benbachir, Naziha, "Quelle(s) Langue(s) pour l'Economie Algerienne : Cas de la Sonatrach ", *Synergie Algerie* No.1, pp.41-47, 2007.

Benhabib, J., Spiegel, M. M." The role of human capital in economic development: evidence from aggregate cross-country data",. *Journal of Monetary Economics* . Amsterdam: Elsevier Science B.V., 1994, Vol. 34, issue 2, p. 143-173.

Benhabib,J., Spiegel, Mark M., "Human capital and technology diffusion," Working Papers in Applied Economic Theory 2003-02, Federal Reserve Bank of San Francisco.

Benhabib J., Spiegel, Mark M.,“Human Capital and Technology Diffusion”, *Handbook of Economic Growth*, Vol.1, Part A, pp. 935–966, 2005.

Benghida, Sonia, “Language Planning and Policy Attitudes in Algeria”, *Journal of Science*, Vol.1, No. 2, July 2006 (<http://www.ibscientific.net>) viewed 2010/02/10.

Benoune, Mahfoud, “*The Making of Contemporary Algeria, 1830-1987*”, Cambridge Middle East Library, 1988.
(<http://education.stateuniversity.com/pages/24/Algeria-HIGHER-EDUCATION.html#ixzz1eWTIyK8k>) viewed 2010/12/20

Benziane, Abdelbaki, “Economic Reforms in Algeria and their Impact on Higher Education and Students Benefits”, *The Journal of North African Studies*, Vol.9, No. 1, 2004.

Bessaoud-Alonso, Patricia, “les Enjeux Educatifs des Memoires Algeriennes Coloniales et Post-coloniales: Fabrications et Construction des Objectifs”, *Paris VIII University*, 2008.

Black S., Devereux, Paul and Salvanes, Kjell, "The More the Merrier? The Effect of Family Size and Birth Order on Children’s Education" *CEE Discussion Papers 0050*, Centre for the Economics of Education, LSE., 2005.

Blundell, Richard, et al, "The Returns to Higher Education in Britain: Evidence from a British Cohort," *Economic Journal, Royal Economic Society*, Vol. 110(461), pp.F82-99, 2000.

Boudia, Mohamed, “*Reflexion sur l’Education en Algérie*”, Collection Plumes au Bout des Doigts, France 2008.

Booth, Anne E, “Colonial Legacies: Economic and Social Development in East and Southeast Asia” *University of Hawaii Press*, Honolulu 2007.

Brendan Hughes, "A Mission of Education and Creation: The Work of Christian Missionaries in Korea from 1882 Through 1910", *Eastern Illinois University History*, Vol.18, 2009.

Buckley Ebrey, Patricia, and Walthall, Anne, "*East Asia: A Cultural, Social, and Political History*", Cengage Learning, 2013.

Buzo, Adrian, "*The Making of Modern Korea*", Routledge, 2007.

Cathy, Andrew, Howe Cindy, Kane John, Mattison Reese, "Dynamic Korea": Education Policies and Reform Ed. *Group Project EPS530Z*, 2007.

Chang, Yun-Shik, "Growth of Education in Korea 1910-1945", *Bulletin of the Population and Development Studies Center* 4, pp.40-53, 1975.

Charles, R. Frank Jr, Kim, Kwang Suk, Westphal, Larry E., "Foreign Trade and Economic Development: South Korea", *National Bureau of Economic Research*, 1975.

Charte d'Alger 1964

(<http://www.el-mouradaia.dz/francais/symbole/textes/charte%20d%27alger.htm>)

viewed 2011/5/20

Charte d'Alger

(<http://www.el-mouradia.dz/francais/symbole/textes/charte%20d%27alger.htm#mouvementnationa>

l viewed 2010/06/30

Cherfaoui, Fatma Zohra, "Langues et Marches du Travail en Algerie : Cas de Sonelgaz ", *University Kasdi Merbah –Department of Foreign Languages*, Ouargla-Algeria, 2008.

Chevalier, Arnaud, "Parental Education and Child's Education: A Natural Experiment," *IZA Discussion Papers 1153*, *Institute for the Study of Labor (IZA)* 2004.

Chung, Bong Gun, "The University Reform in Korea: A deregulation to be

deregulated?”.Paper presented at the Institute of Asia-Pacific Educational Development 2nd International Conference on Education Research, October 25-26, 2001, *Seoul National University*.

Conseil Constitutionnel , chapter IV

(<http://www.conseil-constitutionnel.dz/constitution-fr-2008-2.htm>)

viewed 2011/03/2

Crumley, Jaimie D., “The Origins of the Twentieth Century Explosion of Christianity in Korea: Changing Heaven’s Landscape”. *Honors Thesis Collection*, Paper 44, 2012.

Currie J., Moretti E., ‘Mother’s education and the Intergenerational Transmission of Human Capital: Evidence from College Openings’, *Quarterly Journal of Economics*, Vol.118 (4), pp. 1495-532, 2003.

Depont, Octave and Coppolani, Xavier, "Les Conférences Religieuses Musulmanes", *Typographie et Lithographie Adolphe Jourdan*, Algiers 1897.

Djebbar, Ahmed, “Le système éducatif algérien: miroir d’une société en crise et en mutation In L’Algérie face à la mondialisation”, *CODESRIA*, 2008, (164-207)

Djite, Paulin G., “The Arabization of Algeria: linguistic and sociopolitical motivations”, *International Journal of Sociology*, Vol.98 (1)1, pp-15-28, 1992

Dr. Lamiri, Abdelhak, “Crise de l’économie algérienne: causes, mécanismes et perspectives de redressement”, *Les Presses d’Alger*, 1999.

Dr. Abdelhamid, Hosna, “Identité et système éducatif: d’un fait laïc à une orientation religieuse”, *Sciences Humaines*, No.25, June 2006.

D.A. Olaniyan and T. Okemakinde., “Human Capital Theory: Implications for Educational Development”, *Pakistan Journal of Social Sciences*, Vol.5, Issue 5, pp.479-483, 2008.

Embassy of Algeria to The United States of America “*Algeria Guidebook*”, 2009 [<http://www.algeria-us.org/docs/livre.pdf>] viewed 2011/08/02.

Esim, S., "Contribution of secondary education to economic development in S. Korea, Malaysia and Thailand" Second Draft, *Education and Social Policy Department, The World Bank*, 1994.

Fagerlind, I., & Saha, L., "Education and National Development: Comparative perspective", (2nd ed.). *Oxford: Butterworth-Heinemann*, 1997.

Fredriksen, Birger, and Pang, Tan Jee, *An African exploration of the East Asian Education Experience*, World Bank Publication, 2008.

Galenson, Walter, "Labor and Economic Growth in Five Asian Countries: South Korea, Malaysia, Taiwan, Thailand and the Philippines", *Praeger Publishers*, 1992.
George, Psaharapoulos, and Harry Anthony Patrinos, "Returns to Investment in Education: A Further Update", *Education Economics*, Vol.12, No.2, August 2004.

Gerard A. Postiglione and Jason Tan, *Going to School in East Asia*, The Global School Room, Greenwood, , 2007.

Glewwe, Paul, Maiga Eugenie, and Zheng, Haochi, *The Contribution of Education to Economic Growth: A Review of the Evidence, with Special Attention and an Application to Sub-Saharan Africa*, World Development, Vol.59, pp.379-393, 2014.

Goodman, R., and Hatakenaka, S., and Kim, T., "The Changing Status of Vocational Higher Education in Contemporary Japan and the Republic of Korea", *UNESCO-UNEVOC Discussion Paper, International Centre for Technical and Vocational Education and Training, Bonn, Germany 2009*.

Grandguillaume, Gilbert, "Changement culturel et arabisation au Maghreb" *Analyses, theories, Vol0 2-3*, pp.56-67, 1979.

Grandguillaume, Gilbert, "Arabisation et politique linguistique au Maghreb", *Serie Islam d'hier et d'aujourd'hui*, G.-P. Maisonneuve et Larose (ed), 1983.

Grandguillaume, Gilbert, "Arabisation et démagogie en Algérie", *Le Monde Diplomatique* 1997.

Grandguillaume, Gilbert, “*Les enjeux de la question des langues en Algérie*”, les langues de la mediteranee, *Editions l’Harmattan, les cahiers de Confluences*, Paris 2002 (http://grandguillaume.free.fr/ar_fr/enjalgerie.html)

Grandguillaume, Gilbert, L’Arabisation au Maghreb, *Revue d’Amenagement linguistique au Maghreb*, Office Quebecois de la langue francaise, No 107, 2004 (http://grandguillamue.free.fr/ar_fr/quebec2004.html) viewed 2010/11/12.

Grandguillaume Gilbert, Country Case Study on the language of instruction and the policy of basic education: Policy of Arabization in primary and secondary education in Algeria, Background paper for the Education for all global monitoring report 2005: the quality imperative.

Grandguillaume, Gibert, “L’Arabisation en Algerie des « ulema » a nos jours », *Ecole Noramle Superieure-Lettres et Sciences Humaines*, Lyon, 20-22 mai 2006.

Greiner, Alfred, “Human Capital Formation, Public Debt and Economic Growth”, *Journal of Macroeconomics*, Vol 30, Issue 1, March 2008, Pages 415–427

Grossman, Michael, "The Correlation Between Health and Schooling," *NBER Working Papers 0022*, National Bureau of Economic Research, Inc., 1973.

Hansen, William W., “Development and the State in Post-Colonial Algeria”, *Journal of Asian and African Studies* January 1989 24: 114-133.

Haouas, Ilham and Yagoubi, Mahmoud, Openness and Human Capital as Sources of Productivity Growth: An Empirical Investigation from the MENA Countries, IZA Discussion paper, from the Institute for the Study of Labor (IZA), No 1461, Germany, 2005.

Harmon, Colm & Walker, Ian, "Estimates of the economic return to schooling for the United Kingdom," *Open Access publications from University College Dublin* urn:hdl:10197/647, 1995.

Harvie, Charles and Pahlavani, Mosayeb, Source of Economic Growth in South Korea: An Application of the ARDL analysis in the presence of structural breaks 1980-2005, working paper 6-17, Department of Economics, University of Wollogong,

2006.

Harvie, Charles and Lee, Hyun Hoon, "*Korea's Economic Miracle: Fading or Reviving*", *Plagrave Macmillan*, 2003.

Hermasi, El Baki, "Leadership and National Development in North Africa: A Comparative Study", *University of California Press* 1972.

Hermes, Niel, "New Explanation of the Economic Success of east asia: Lessons for developing and Eastern European countries", *Center for Development Studies Report* No 3, June 1997.

Hugues, Brendan, "A Mission of Education and Creation: The Work of Christian Missionaries in Korea from 1882 Through 1910", *Historia*, Volume 18, 2009.

Hwang, Dae Jopon and Yang, Hye-Kyung and Kin Hyeonjin, "E-learning in the Republic of Korea", *UNESCO Institute of Information Technologies in Education*, 2010.

International Telecommunication Union (ITU), "*Measuring the Information Society 2012*", International Telecommunication Union (ITU) Geneva, 2012.

International Monetary Fund (IMF), "*Algeria Statistical Appendix*, December 20, 2004", International Monetary Fund (IMF)

Iwa, Sung-Hee, "A New Paradigm for Korea's Economic Development: From Government Control to Market Economy", *Korea Economic Research Institute*, Palgrave 2001.

Jacob, Klaus and Elenore, "*Education and Training in the People's Democratic Republic of Algeria*", Asia, Africa Latin America special issue 16, Berlin 1985.

Joffe, George, "The Role of Violence Within the Algerian Economy", *Journal of African Studies*, Vol 1, 2002.

Johnson, Paul, and Durlauf, Steven N., and Temple, Johnathan R. W., "Growth Econometrics," Vassar College Department of Economics Working Paper Series 61,

Vassar College Department of Economics 2004.

Journal officiel de la Republique Algerienne No 28 April 6, 1973.

Journal Officiel April 23 1976 (<http://www.joradp.dz/jo6283/1976/033/FP432.pdf>)
viewed 2011/08/24

Journal Officiel de la Republique Algerienne No 03, January 16 1991.

Kadri, Aissa « Histoire du système d'enseignement colonial en Algérie », *colloque Pour une histoire critique et citoyenne. Le cas de l'histoire franco-algérienne*, 20-22 June 2006, Lyon.

[http://ens-web3.ens-lsh.fr/colloques/francealgerie/communication.php3?id_article=206]

Kane, John, "Dynamic Korea: "Education Policies and Reform, A Brief History of Education in Korea", *Group Project EP530Z*, 2007.

Kang Jae-Eun, *The Land of Scholars: Two Thousand Years of Korean Confucianism*, Hangilsa Publishing, Korea 2003

Kaplan, Robert B. and Baldauf Richard B.JR., « Language Planning and Policy », *Africa Vol 2 Algeria, Cote d'Ivoire, Nigeria and Tunisia*, US 2007.

Kateb, Kamel, "The expansion of access to education and the demography of Algeria ", *Paper commissioned for the EFA Global Monitoring Report 2003/4*

Keller, K., "Investment in primary, secondary, and higher education and the effects on economic growth". *Contemporary Economic Policy* 24(1): 18-34, 2006.

Kenkel, D.S., "Health behavior, health knowledge, and schooling", *Journal of Political Economy* 1999, pp. 287-305, 1991

Khelfaoui, Hocine, "Les ingénieurs dans le système éducatif : l'aventure des instituts technologiques algériens", Publisud 2000

Khelfaoui, Hocine, "Le champ universitaire algérien entre pouvoirs politiques et

champ économique”, *Actes de la recherche en sciences sociales*, Vol. 148, juin 2003. Entreprises académiques. pp. 34-46.

Ki-Baik Lee, Edward W. Wagner, Edward J. Schultz, “A New History of Korea”, Harvard University Asia Center 1988

Kim, Ee-gyeong and Han, You-kyung, “Attracting, Developing and Retaining Effective Teachers: Background Report for Korea”, *Korean Educational Development Institute*, 2002.

Kim, Gwang-Jo, “Policies and Reform in South Korea: In Secondary Education in Africa: Strategies for renewal”, *World Bank* 2001.

Kim, Gwang-Jo, “Education Policies and Reform in South Korea”, *Africa Region Human Development Working Paper Series*, World Bank May 2002.

Kim, Jimwung, “*A History of Korea: From “land of the Morning Calm” to States in Conflict*”, Indiana University Press, 2012.

Kim, Linsu, “Imitation to Innovation: Dynamic of Korea’s Technological Learning”, *Harvard Business School Press*, Boston 1997.

Kim, Ki Su, “Public and Private in South Korea’s Education Reform Vocabulary: An Evolving Statist Culture of Education Policy”, *International Education Journal* Vol 5, No 4, 2004.

Kim-Renaud, Youn-Key and Grinker, Richard R., and Larsen, Kirk W (eds). Korean Education, The Sigur Center Asia Papers No 24, , The George Washington University, 2005

Kim Sunwoong and Lee Ju-Ho, Private Tutoring and Demand for Education in South Korea, *Journal of Economic Development and Cultural Change*, Vol. 58, No. 2 (January 2010), pp. 259-296, the University of Chicago Press, March 2004.

Kim, Sangjoon, “Globalization and individuals: the Political economy of South Korea’s Educational Expansion”, *Journal of Contemporary Asia* Vol. 40, No 2, May

2010.

Kiso, I., “Secondary education and economic development in Japan: A case study of key policy decisions affecting the development of secondary education in Japan”, *Japan Ministry of Education*, 1993.

Kouaouci, Ali, “Population Transition, Youth Unemployment, Postponement of Marriage and violence in Algeria”, *The Journal of North African Studies*, Vol.9, No.2 2004.

Koulytchizki, Serge, « l’Autogestion, l’Homme et l’Etat : l’Experience Algerienne », *Paris.Mouton* 1974.

Korean Educational Development Institute, “*Understanding Korean Education Vol 5 Education and Korea’s Development*”, Korean Educational Development Institute, Seoul, Korea 2007.

Korean Educational Development Institute, “*Brief Understanding of Korean Education Policy*”, Korean Educational Development Institute, Gyeong Seung Printing 2011.

Korea Research Foundation:BK21- Nuri Committee,
[<http://bnc.krf.or.kr/home/eng/bk21/achievement.jsp>] viewed 2012/06/10

Kosarajo, S., and Zaafrane, H, “Benchmarking Governance as a Tool for promoting Change: 100 Universities in MENA Paving the Way”, 2013 p 13.
[http://www.higher-edu.gov.lb/Studies/1313877_University_MENA_Book.pdf]

Kuznets, Paul W., “*Korean Economic Development: An Interpretive Model*”, Praeger Publishers 1994.

Kyung Ryu. “The role of Confucian Cultural Values and Politics in Planning Educational Programs for Adults in Korea”, *the University of Georgia*, Athens, 2008

Le Sueur, James D., “Algeria since 1989: Between Terror and Democracy”, *Fernwood Publishing* 1988.

Le Sueur, James D., "Between Terror and Democracy: Algeria since 1989", *Global History of the Present*, pp21-21

Lee Chung, H and Yamazawa, Ippei, "*The Economic Development of Japan and Korea: A Parallel with Lessons*", Praeger Publishers, New York

Lee, Eun Kyung, "Higher Education Expansion and Economic Growth in Japan and South Korea", *University of Pittsburgh* 2001.

Lee, Jeong-Kyu, "Main Reform on Higher education System in Korea", *Revista Electronica educative*, Vol.2, No.2, 2000.

Lee, Jeong-Kyu, "The Establishment of Modern Universities in Korea and Their Implications for Korean Education Policies", *Education Policy Analysis Archives*, Volume 9 No. 27, 2001

Lee, Jeong-Kyu, "Japanese Higher Educational Policy in Korea During the Colonial Period (1910-194)", *Educational Policy Analysis Archives*, Vol 10 No 14, March 2002

Lee, Jisoon, "Education Policy in the Republic of Korea: Building Block or Stumbling Block", *School of Economics*, Seoul National University, 2001

Lee, Jong-Wha, "Economic Growth and human development in the Republic of Korea 1945-1992" [http://www.hdr.undp.org/en/reports/global/hdr1997/papers/jong-wha_lee.pdf] viewed 2011/12/30

Lee, Ki-baik, "*A New History of Korea*", Ilchokak, Seoul 1984.

Lee and Sang-Jin, Kyung, Hee University, "Understanding Korean Educational Policy Vol 1: National Development Strategy and Education Policy" *Korean Educational Development Institute*, 2008.

Levine, Ross and Renelt, David, "A Sensitivity Analysis of Cross-Country Growth Regressions", *The American Economic Review*, Vol. 82, No. 4. (Sep., 1992), pp. 942-963

Li, Kui-Wai, *Capitalist Development and Economies in East Asia: The rise of Hong Kong, Singapore, Taiwan, and South Korea*, Routledge, 2002.

Lowi, Miriam R., “Oil Wealth and the Poverty of Politics: Algeria compared”, *Cambridge Middle East Studies* 32, 2009.

Mahiou, Ahmed and Henry, Jean Robert, ‘*Ou va l’Algérie*’, *Etude Broche* 2003.

Majumdar, Margaret A. and Sadd Mohamed, “ Transition and Development in Algeria: Economic, Social and Cultural Challenges”, *Bristol, UK* 2005.

Mankiw, Gregory N., Romer David, Weil David N., “A Contribution to the Empirics of Economic Growth”, *The Quarterly Journal of Economics*, Vol. 107, No. 2. (May, 1992), pp. 407-437.

McMahon, W.W., “Conceptual Framework for the Analysis of the Social Benefits of Lifelong Learning”. *Education Economics*, 6(3), 309–346, 1998.

Merrouche, Ourda., “ Long term impact of French colonialism on Education in Algeria”, *The Institute for Fiscal Studies, Department of Economics, UCL, Cemmap working paper CWP14/06*, 2006.

Michael J.Seth. “ Education Fever: Society, Politics, and the Pursuit of Schooling in South Korea”, *Hawai'i Studies on Korea, University of Hawai'i Press*, 2002

Miliani, M., “La dualité franco-arabe dans le système éducatif algérien: Entre slogan et réalité”, *Education et Sociétés Plurilingues* 2003, 17-32

Mincer, Jacob, “*Schooling, Experience, and Earnings*”, *New York: Columbia University Press for the National Bureau of Economic Research*, 1974.

Minns John, ‘Of Miracles and Models: The rise and decline of the developmental state in South Korea’, *Third World Quarterly*, Vol 22, No 6, pp 1025 – 1043, 2001

Moon, Mugyeong and Kim Ki-Seok, “A Case of Korean Higher Education Reforms: The Brain Korea project 21”, *Asia Pacific Education Review* 2001, Vol 2, No 2, 96-105

Nakamura, J. I. (1981) "Human Capital Accumulation in Premodern Rural Japan", *The Journal of Economic History*, 41/2, 263-281.

Nakamura, H., "An empirical reexamination of the solow growth model", *Journal of Japanese and International Economics* 2001, Vol 15, 323-340

Oh, Seung-Cheol & Kim, Ki-Seok, The Increase Of Educational Opportunity in Korea Under the Japanese Occupation: For Whom the Bell Told?, SNU Journal of Education Research, Vol .8, pp 83-95, 1998.

Organization for Economic Cooperation and Development (OECD), "*OECD Economic Surveys: Korea*" Organization for Economic Cooperation and Development (OECD) April 2012.

Organization for Economic Cooperation and Development (OECD), "*African Economic Outlook: Algeria*", Organization for Economic Cooperation and Development (OECD), 2008

Page, Marianne and Stevens, Ann and Oreopoulos, Philip, "The Intergenerational Effects of Compulsory Schooling," Working Papers 05-19, *University of California at Davis, Department of Economics*, 2005.

Park, Namgi, John, Weidman, "*Higher Education in Korea: Tradition and Adaptation*", Falmer Press 2000.

Pei-tseng Jenny Hsieh, Education in East Asia, A&C Black, 2013

Perri, Timothy J., "Health status and schooling decisions of young men," *Economics of Education Review*, Elsevier, vol. 3(3), pages 207-213, 1984.

Perville, Guy, "Les Etudianst Algeriens de l'universite Francaise 1880-1962" *Casbah edition* 1997.

Philip, Oreopoulos and Marianne E. Page & Ann Huff Stevens, "Does Human Capital Transfer from Parent to Child? The Intergenerational Effects of Compulsory

Schooling," NBER Working Papers 10164, *National Bureau of Economic Research, Inc*, 2003

Pierre, Vermeren, "The North African Educational Challenge: From Colonization to the Current Alleged Islamist Threat", *Mediterranean Journal of Educational Studies*, Vol. 14(2), pp. 49-64, 2009

Pratt, Keith, "Everlasting Flower: A History of Korea", *Reaktion Books* 2006.

Programme d'Appuis de l'UNESCO a la reforme du système éducative, " *Reforme de l'Education et Innovation Pédagogique en Algérie*", UNESCO, ONPS, 2006.

Projet de Programme pour la realization de la revolution democratique et populaire(adoptee a l'unanimité par le C.N.R.A> a Tripoli en juin 19629 (<http://www.el-mouradia.dz/arabe/symbole/textes/tripoli.htm>)

Pundy, Pillay, "Linking higher education and economic development: implication for Africa from three successful systems", *Center for Higher Education Transformation (CHET)* 2010.

George, Psacharopoulos, and M. Woodhall, Education for Development: An Analysis of Investment Choice, *Oxford University Press*, New York 1997.

George, Psacharopoulos and Harry Anthony, Patrinos, Returns to Investment in Education: A Further Update, *Education Economics*, Vol 12, No 2, August 2004,

Ruedy, John Douglas, "Modern Algeria: The Origins and Development of a Nation", *Indiana University Press*, US 2005.

Saad, Mohamed and Zawdi, Girma and Derbal, Abdelkader and Lee, Ralph,"Issues and Challenges Arising from a Greater Role of the University in Promoting Innovation in Developing Countries: A Comparative Study of Experience in Malaysia, Algeria and Ethiopia" in *Triple helix 5: the capitalization of knowledge, cognitive, economic, social and cultural aspects*. Turin, Italy 2005.

Saad, Mohamed and Meliani, Hakim and Benosman, Mahfoud, "The Tourtuous and

Uncomplete Process in Algeria” *Transition and Development in Algeria* , UK 2005.
Sacharopoulos, George, "Returns to investment in education: A global update," *World Development*, Elsevier, vol. 22(9), pages 1325-1343, September 1994.

Samnjit, Kaweta, “Higher Education Promotion for the Knowledge-Based Economy: A Comparative Study of Brain Korea 21 and Thailand’s National Research Universities”, *Verdian-E-Journal, Silpakorn University*, Issue 4 September-December 2004.

Schultz, Theodore W., “*Investment in Human Capital :The Role of Education and of Research*”, Free Pr., 1971.

Seong, Somi, Popper Stevn W., Goldman Charles A., Evans David K. and Clifford A. Grammich, “Brain Korea 21 Phase II: A new Evaluation Model”, *Rand Education*, 2008.

Shik, Chang Yun and Lee, Steven Hugues, “*Transformation in Twentieth Century Korea*”, *New York: Routledge* 2006.

Sillies, M., “The casual effect of education on health: Evidence from United Kingdom”, *Economic of Education Review*, 28, 122-128, 2009.

Sorensen, Clark W., “Success and education and South Korea”, *Comparative Education Review*, Volume 38, No1, February 1994.

Steven, Philip, and Weal, Martin, Education and Economic Growth, *National Institute of Economic and Social Research*, London SW1P 3HE August 2003.

Taleb Ibrahimi, Khaoula, « A propos de l’Ecole Algerienne de Ibn Badis a Pavlov » *Naqd* , Issue 5, April-August 1993.

Taleb Ibrahim, Khaoula, “*Les algeriens et leur(s) langue(s): Elements pour une approche sociolinguistique de la societe algerienne*”, Collection Connaissance de l’Algerie contemporaine, 1995.

Taleb Ibrahim, Khaoula, “*Elites Et Questions Identitaires En Algerie: Ouvrage*

Collectif, Casbah editions 1997.

Taleb Ibrahimi, Khaoula, “L’Algérie de la question des langues à la question de l’identité », in *L’Algérie contemporaine. Bilans et perspectives pour sortir de la crise*, G. Meynier (dir.), Paris, L’Harmattan, 2000.

Tlemcani, Rachid and Ishwaram, K., “Bureaucracy and Development in the Arab World: Development and State in Post -Colonial Algeria”, *International Studies in Sociology and Social Anthropology*, EJ Brill 1989.

Descy, Pascaline, Manfred, Tessaring, , The Value of learning: evaluation and impact of education and training, Third Report on vocational training research in Europe, synthesis report., Luxembourg Office for Official Publications of the European Communities, 2005 (Cedefop Reference series, 54)

The Arabisation Movement

[<http://countrystudy.us/algeria/a46.htm>] viewed 2011/09/08.

The EFA 2000 Assessment, “ Country Report: Education for All, the Year 2000 Assessment” *Korean National Commission for UNESCO*, Korea, December 1999
[http://www.unesco.org/education/wef/countryreports/korea/rapport_3.html]
viewed 2012/06/20.

TIMSS 2007

[<http://staff.tarleton.edu/browner/coursefiles/579/TIMSS%202007%20Report.pdf>]

Um Mi-jung “Center of excellence as tool for capacity-building, case study: Korea”, Science and Technology Policy Institute (STEPI), A report as part of the Programme on Innovation, Higher Education and Research for Development (IHERD) hosted at the OECD and funded by the Swedish 3 International Development Cooperation Agency (Sida), Volume 38.

United Nation Education, Scientific and Cultural Organization (UNESCO), “*Priority Projects for Educational Development*”, United Nation Education, Scientific and Cultural Organization (UNESCO), Paris 1968.

U.S English Foundation Research “*Algeria: Language issues: Where does one observe language to be a problem in the country*”

[<http://www.usefoundation.org/view/900>] viewed 2011/11/30.

US Embassy Algiers (Algeria), “*Trilingual Illitrates: Algeria’s language Crisis*”, October 16, 2008. [<http://www.cablegatesearch.net/cable.php?id=08Algiers1121>] viewed 2011/10/23.

van Leeuwen, Bas, “Human Capital and Economic Growth in India, Indonesia and Japan: A Quantitative Analysis 1890-2000”, *Utrecht University*, Netherlands 2007.

Wolff, EN and Gittleman, M., “The role of education in productivity convergence: does higher education matter?” In *A Szirmai, B van Ark, and D Pilat (eds), Explaining Economic Growth*. Amsterdam: North-Holland, 1993.

World Bank, “*People’s Democratic Republic of Algeria, A public Expenditure Review: Assuring High Quality Public Investment*” World Bank Report No. 36270– DZ, Volume 1 and Volume 2, August 2007.

World Bank, “*The Road Not Traveled: Education Reform in the Middle East and Africa*”, World Bank ,MENA Development Report, 2008.

World Bank Group, “*Human Development Indicators, GDP Growth (annual %)*” (<http://data.worldbank.org/indicators/NY.GDP.MKTP.KD.ZG?page=4>) viewed 2011/12/16.

World Bank Group, “*Country Brief*”, April 2011
(<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/ALGERIAEXTN/0,,print:Y~isCURL:Y~contentMDK:20188043~pagePK:141137~piPK:141127~theSitePK:312509,00.html>)

World Bank, “*The Road Travelled So Far in Mena, Education Reform in the Middle East and North Africa*”, Mena Development Report World Bank 2008.

You, Jong-II and Lee, Ju-Ho, “Economic and Social Consequences of Globalization: The Case of South Korea”, *School of Public Policy and Global Management, Korea*

Development Institute 1999.

Yuh, Kimberley Leighanne, “Education, the Struggle for Power, and Identity Formation in Korea, 1876 – 1917”, *University of California*, Los Angeles 2008.