



EDUCATION IN POST- INDEPENDENCE SUDAN: A CRITICAL ASSESSMENT

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ABSTRACT

Purpose: The paper aims at provoking national debate in light of its findings for all concerned to participate in outlining an 'Action Plan' to get the education system, and hence, the country, back on track.

Design/Methodology/Approach: This paper focusses on the narrower meaning of education as a process for certain periods from schooling to colleges through fixed time, fixed curriculum, fixed classes, fixed subjects for a degree or certificate and hence will consider only a subset of these aims. It models the education as an engineering system of processes that identifies the individual as an input and the qualified trained graduate as a product of this system that is supposed to satisfy certain measurable Key Performance Indicators (KPIs). In this sense, the education system is designed to serve the objectives of the national development in a specific state or country. Indeed, the link between the aims of the education system and the National Development Plan (NDP) is organically established and is essential for any successful and meaningful education system. The paper goes on to review and critically evaluate and assess the Sudanese education system against its objectives and its ability to meet the NDP of the country throughout its post-independence history. For this purpose, post-independence history was divided into three major phases through which the education system has undergone major overhauls, namely the years 1956–1969, 1969–1989 and 1989–to date. A qualitative research methodology based on analysing the experience of the authors both as customers of and providers to the system throughout the target period was adopted.

Findings: The review of the education system performance in post-independence Sudan has identified three major phases through which it has undergone major overhauls, namely the years 1956–1969, 1969–1989 and 1989–to date. The link was clear between the major political changes marking these phases and the impact they had on the structure, architecture and performance of the education system in the Sudan. This has led to a clear de-linking between the current system and the NDP. Irrespective of whether this was done by design or unintended consequence of the change, it was evident that the outcome is devastating on the country's economy and the wellbeing of its citizens. Accordingly, the paper is calling upon all concerned to engage in national debate in order to outline an Action Plan to remedy the situation and put the education back on track.

Originality/Value: The modelling and presentation of the education system as a simple system of engineering processes, where the outcome is a measurable product through identifiable KPI's that can be used to evaluate the performance of education is novel. The evaluation of the education system against the objectives of the NDP using the prescribed model is also highly useful as it gives the education clear purpose identifiable by the 'customer' of the system with a clear link to how the system serves the country economically and reflects in the standard of living of its citizens. This is a hot topic that affects all the Sudanese citizens irrespective of their schools of thought. Hence, provoking them all in a national debate aiming at outlining an 'Action Plan' is essential.

Keywords: Sudan; education system; system of processes; National Development Plan; NDP; action plan; review; evaluation; assessment; model; engineering methodology.

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INTRODUCTION

Education may be defined in the wider sense as a purposive, conscious or unconscious, psychological, sociological, scientific and philosophical process, which brings about the development of the individual to the fullest extent and also the maximum development of society in such a way that both enjoy maximum happiness and prosperity (Kunar and Ahmed, 2007). In Short, education is the development of the individual according to his/her needs and demands of society of which he/she is an integral part. The aims of education may therefore include knowledge or information, vocational, functional, cultural, character formation,

spiritual, leisure, social, harmonious development, citizenship training and complete living aims. The main objective of education should emphasise the total development of an individual. This total development includes intellectual, social, moral, aesthetic, cultural and physical development. As such, education is considered as a human right. Different countries interpret and implement this right differently and consequently, the age and level of mandatory education varies from learning the famous 3R's (Read, Write and Arithmetic) in the developing world to staying in compulsory education throughout childhood in developed countries. However, pragmatism deals with life as it is and not as it should be. Consequently, realistically, the existing or prevailing social, political and economic conditions of life are taken into consideration and largely determine the aims of pragmatic education. The socio-political ideologies also determine the aims of education. Accordingly, each country designs its own education system to focus on its needs and align with its development phase. This is particularly true for developing countries, which need to optimise their resources in order to serve their National Development Plan (NDP) and goals as best as they could. For example, following independence, the Indian leaders realised the inherent defects in the system of education introduced by the colonial British Empire. They decided that education must be linked with national development in all directions. With national goals in view, the government in independent India set up different committees and commissions for educational reforms along the desired lines (Kunar and Ahmed, 2007). These committees and commissions formulated new education aims and objectives for the country. In other words, the aims and objectives of education are not universal, fixed and static but subject to constant change and dynamic. Hence, they should be reviewed and adjusted as required dependent on the development phase of the country.

Like India, the Sudan had also inherited a colonial British education system that was designed to prepare the Sudanese only for taking certain subordinate positions in government offices. It was not intended to develop among the people capacities to take leadership and initiative in different walks of life. Hence, a fresh look at the education system's aims and objectives were adjusted after independence to put more emphasis on promoting the aims of education as serving the development needs of the country economically, technologically, culturally as well as socially. In fact, this process started just before independence in preparation of the country for a smooth move towards independence (c.f. Taha, 2014) and adjusted later on. Consequently, new objectives of education were drawn emphasising its functional aim in order to achieve vocational efficiency, development of personality or character, education for leadership, increasing national productivity, achieving social and national integration, accelerating the process of modernisation and cultivating cultural, social, moral and spiritual values. The urgent problems of the country of improving productive efficiency and increasing the national wealth and thereby raising the standard of living were the order of the day and the education system was viewed as the tool to help addressing these problems. In other words, education was viewed as a purposeful activity that intended to bring certain desirable changes in the individual as dictated by the direction given by the set education aims. In light of these aims, the curriculum was determined and the academic achievement of the candidate was measured in the pro-education environment provided in purpose-built schools. The objective was to enable the individual to make their life purposeful and better both as an individual and as a member of the society.

This paper has utilised a qualitative research approach to evaluate and assess the Sudanese education system based on the critical analysis of the system by the authors both as customers (students and parents) of and suppliers/providers (teachers) to the system living with, observing and experiencing the system throughout the target period of interest of post-independence Sudan between the years 1956 and 2015.

LITERATURE REVIEW

It is not the intention of this section to cover the literature on education in general. Rather, it will review three important themes central to the objectives of the paper, namely the evolution of the concept of education as a human right, importance of the link between education aims and objectives and the NDP and finally modelling education as a 'system' using engineering methodology approach, as found in the literature.

The UNESCO made an effort to harmonise national education systems with international education strategies and vision. These strategies evolved from work force and socio-economic development drivers to more humanistic one. In 1972, the UNESCO formulated the vision of 'Learning to be' with lifelong education concept that meets the challenges of a rapidly changing world (Faure et al., 1972). This vision was seen as necessary because of its advantages of flexibility, diversity and availability at different times and places. It also went beyond the traditional distinction between initial schooling and continuing education. UNESCO's report (Faure et al., 1972) suggested lifelong education as the master concept for educational policies. Additionally, it aimed towards developing a scientific humanism, creativity, social commitment, complete development and learning society. This was followed by a global commitment during the 'world conference for education for all' at Jomtien, Thailand to make primary education accessible to all children in order to massively reduce illiteracy before the end of the decade (UNESCO, 1990). In this conference, a clear tie between the human development and contemporary global challenges was established and this became the driver of the recommended 'Global Education Action Plan' for the 1990s. The focus on universal access to the learning and equality in education fostered by the 'Dakar Action Framework' to establish tight monitoring, evaluation and global commitment towards 'Education for All', which were summarised in the six goals of the 'Dakar Declaration' to be achieved by 2015 (UNESCO, 2000). This declaration amounted to announcing education as a human right. Delors et al. (1996) revisited the global education vision in their report 'Learning: the Treasure within' in which they advocated a shift of focus from local community to a world society, from social cohesion to democratic participation, from economic growth to human development, and from basic education to universities. This, together with fostering the four pillars of learning to know, learning to do, learning to live together and with others and learning to be, was a main vision shift, which suggested a strategy backdrop by lifelong learning.

Although there is clear evidence that education has a positive impact on the nation development, yet it remains less clear how this impact manifests itself. The Human Development Report (UNDP, 1990) identified education as one pillar to enlarge people choices. The social and economic development of nations is fundamentally an education process in which people not only improve their individual capacity but also learn to create new institutions, utilise new technologies, cope with the environment, and alter their patterns of behaviour. As such, education becomes a catalyst for the closely interrelated economic, social, cultural and demographic changes that become defined as national development aims (Adams, 2002).

Hence, education strategies must be at the core of any NDP that, beside social and economic development, must pay attention to the diversity, nation building, and equality in the access of education services. Uneven education distribution will deepen and legitimise social and wealth divisions in society. While building and strengthening national culture and diversity, the NDP must also balance the other sides of living in global, borderless and connected environment. Therefore, the challenges of globalisation will, in turn, reflect in the complexity of education strategy, policy and plan.

Beside the necessity of integrating the strategic plan of education into NDP, the quality of education must be maintained and improve continuously. One paradigm that enhances the design, evaluation and evolution is to treat education as a system using engineering methodology approach. Miokovic et al. (2011) analysed the higher education system in Bosnia-Herzegovina using the adaptive control theory with a reference model and adopted social cognitive theory to represent the carrier development in order to improve their understanding of the education system. Likewise, system engineering approach, which utilises both natural science and social sciences, was used in retrospect to study the higher education system in China focusing on the education system structure as optimisation problem (Shaorong and Liyong, 2009). Education System as a state space model describing behaviour characteristics, where linear graph theory was used for the socioeconomic problem at higher education, was discussed in Sinha and Satsangi (1972) and revealed full advantage of the system approach. Education can also be looked at as a complex adaptive system from the cybernetics point of view. Ligus et al. (2011), for example, used this system approach to apply a bridge between the theory and practice in education. They represented the theory as a system and practice as its surrounding. Similarly, Peng and Jiang (2011) modelled the education system requirements the same as software system engineering. They applied the concept of engineering system to education with all its elements and activities. The requirements were obtained by standard software engineering requirement tools and verified against education system activities to ensure a high efficient system. Also, since one of the drivers of education strategy plan is to fulfil workforce demands, it is useful to look at the education system as a service production system. Xu et al. (2007) applied this concept to the Chinese higher education system quite successfully. The system was analysed using service production theory while elasticity-based input/output model was utilised to evaluate the efficiency and effectiveness of the higher education system. It is, therefore, clear that studying education as an engineering system can give invaluable insight to analyse and evaluate education performance and standard.

MODELLING OF THE EDUCATION SYSTEM

This paper focusses on the pragmatic meaning of education as a process for certain periods from schooling to colleges through fixed time, fixed curriculum, fixed classes, fixed subjects for a degree or certificate. It also only considers the functional aim of education as a servant to the NDP and hence models education as a simple engineering system of processes that identifies the individual as an input and qualified trained graduate as a product of this system that is supposed to satisfy certain measurable Key Performance Indicators (KPIs). In this sense, the education system is designed to serve the objectives of the national development in any specific state or country. Indeed, the link between the aims of education and the NDP is organically established and is essential for any successful and meaningful education system as argued above. Such a system is designed by the society, funded by the society for the benefit of the society. Consequently, the education could be generically modelled as a closed

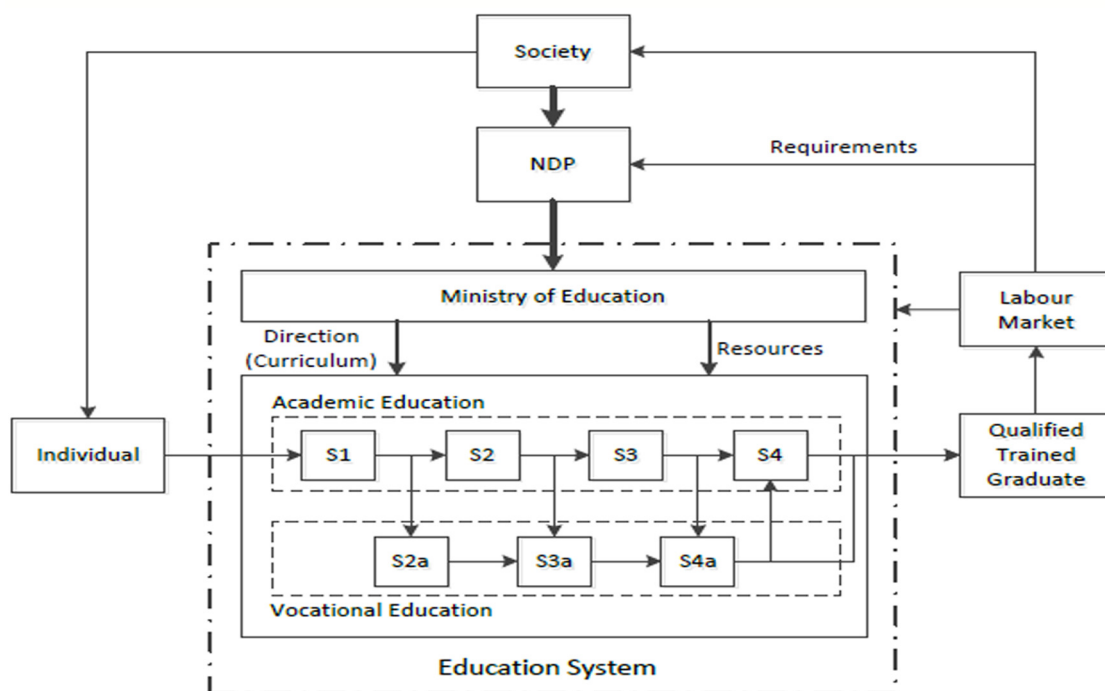


Figure 1 Generic Education System Model as a closed loop to the society

loop system that is fed and driven by the society and pays back its return to the society, as shown in Figure 1. The flow chart shown in the figure summarises the various elements of a generic educational model together with its dependencies and interfaces, as explained below.

The society, represented by its central government, parliament and civil community organisations and concerned individuals, agrees on the country's priorities and hence draws a NDP that reflects its values, direction and ambitions for the future. The NDP guides the total development of the country and hence provides direction and aims for the required education system. Consequently, the central government acts as the custodian of the NDP, while the ministry of education naturally acts as the custodian of the education system and its processes on behalf of the government. Therefore, like the learning processes, the ministry of education is also a component of the education system. The ministry of education translates the objectives of the NDP into education direction and aims in the shape of a curriculum to be taught at the different learning processes or stages of the education system. Additionally, it is the role of the ministry of education to oversee the educational process and make available the different educational means and resources, such as budget, books, well-equipped schools and qualified cadre to run them. The curriculum and resources act as the catalyst for the processes within the system and hence feed directly into the various stages to ensure that the education system is running smoothly and efficiently. These stages, that is S1, S2, etc., in Figure 1, were designed to suit the age and ability of the individual entering the education system as input. The output, or product, of these processes, the qualified trained graduate, should satisfy the demand of the labour market, which should, in turn, reflect in the overall wellbeing of the society and the standard of living of its members. In order to ensure that

the process is achieving its national goals, the labour market feeds its requirements and need for qualified cadre to the NDP and through it back to the education system. The ministry of education is also in a uniquely interesting position. As the custodian of the education system, it provides direction and resources to the system while relying on its graduates through the labour market to run it. It is, therefore, provider, part of as well as customer to the system. Likewise, teachers and other support staff are also graduates of the system only to feed back into it through the labour market. Hence, there is a small inner closed loop here between the labour market and the education system, as shown in the figure, indicating that the system is operationally self-sustaining.

The model provides a natural means to measure its performance. The ability of the system to meet the demand of the labour market is the primary KPI through which the success of the education system against its general objective of serving the goals of the NDP can be measured. Additionally, the wellbeing of the society and hence the standard of living of its members is a reflection of the success of the system. However, the education system, though instrumental, is not the only factor in determining such a complex goal. Other factors, such as type of governance, good planning, secure funding, efficient management, etc., also play significant roles. Accordingly, this can only be considered as a secondary KPI. The model assumes that funding the education system comes largely from the state. However, there is always a room for private investors to help as long as they adhere to the aims and objectives set by the ministry of education in accordance with the NDP. Hence, while recruiting directly from the labour market, the private sector role must be subject to the control and monitoring of the ministry of education.

CRITICAL REVIEW AND EVALUATION OF THE EDUCATION SYSTEM IN THE SUDAN

A thorough discussion of the education in the Sudan and its evolution in the context of economic and administration evolution for the pre-independence period of 1898-1956 was given by Professor Mohamed Omer Bashir in Bashir (1983). This paper is intended to highlight and evaluate the education system and its contribution to the wellbeing of the Sudanese society in the post-independence period only. Like any other colony, The Sudan has inherited a deficient education system that was designed to satisfy the need of the British colonial power rather than meet its own national and global objectives. Vocational efficiency was one of the urgent problems of post-independence Sudan. There was a need to improve productive efficiency and to increase the national wealth and thereby raise the standard of living. Together with the general national aims of the country, these objectives were translated into a NDP that was stressing the Sudanese values, defining its identity, building the infrastructure and accelerating development. Therefore, there was an urgent need immediately after independence to review and amend the education system, its aims, goals and objectives against the new direction set to the country at the time. The new system should bring forth vocational efficiency, development of personality or character, education for leadership, increasing national productivity, achieving social and national integration, accelerating the process of modernisation and cultivating social, moral and spiritual values. In other words, stressing the functional role of education as a driver for social change and progress. However, these new objectives were not set on stone and were subjected to changes throughout the country's post-independence history. In this paper, we are dividing this history into three significant phases through which the education system realised major changes. The first phase covers the period following the

independence in the year 1956 until the year 1969, the second extends between 1969 and 1989, while the third and last phase covers the period from 1989 up to now. A review, evaluation and assessment of the education system using the model described above during each of these three phases separately are given below.

Phase 1 (1956–1969)

This phase is usually described by the enlightened elite of the country as the ‘golden era’ of education in the Sudan. It was characterised by a controlled expansion of the education in many parts of the country. Education was provided for free and state-funded boarding schools were built in strategic places to attract as many pupils as possible at all education stages from large rural catchment areas, particularly in Darfur and Kordofan where the nomad nature of the population makes it difficult for children to reach schools. These boarding schools used to offer pupils free education, shelter, food as well the right environment for learning. Additionally, pupils were given return travel expenses to visit their families during the school holidays. The education system was designed, well-funded and monitored by the state. However, the foundation seeds of the education reform during this phase were laid shortly before independence. In his speech in November 1949 to seek approval for the education budget, Abdel Rahman Ali Taha, the minister of Knowledge (Education) at the time, outlined the main features of his Education Plan for the years 1949–1956. The main theme of the plan was to enable up to 40% of age-eligible pupils to have their education in primary schools. The plan focused on introducing vocational, trading, and industrial, and engineering education due to severe shortage in capacity in these fields. The ministry also put an effort to have a balance between the south and north, with special care of the south which had a dedicated separate plan (Taha, 2014). Generally, the education system architecture inherited from the colonial power was largely kept after independence, while the curriculum was significantly redesigned to feed the newly set NDP objectives. The overall system during this phase, which is modelled in Figure 2, faithfully mimicked the generic system shown in Figure 1. There were three four-year-long main general education stages, namely Primary, Intermediate and Secondary, before students were admitted to the Higher Education stage. All stages were run by well qualified and trained teachers supplied by specialised training institutes that offered tailored training courses for the different stages. These courses were designed to equip the trainee teacher with the knowledge and skill as well as the required competences to teach, manage and lead the school in an efficient manner. The national curriculum was well-designed, evaluated and tested at Bakht El-Ridha Institute of Education before being published by the Publishing House of the ministry of education and then distributed to all schools in a timely manner for the beginning of the academic year. As Figure 2 reveals, the academic and vocational/industrial/technical branches of education were well aligned, integrated and complementing each other in order to ensure that the need of the market, hence the NDP, is well captured. As shown in the figure, in addition to feeding the academic Intermediate stage, S2, the graduates of the academic Primary stage, S1, also provide the initial entry point to the first stage of the vocational branch, S2a, which graduates skilled labour. Jabeet Industrial Training school and the Industrial Training Centres at Khartoum and Wad Madani established by the German government and the International Labour Organisation, ILO, respectively were some examples of this stage. Note that as this stage is only two years long, it does not provide natural entry point to the next stage, S3a. Hence, its graduates go directly to the labour market as skilled labour. This is the main departure from the generic model shown in Figure 1. Likewise, the

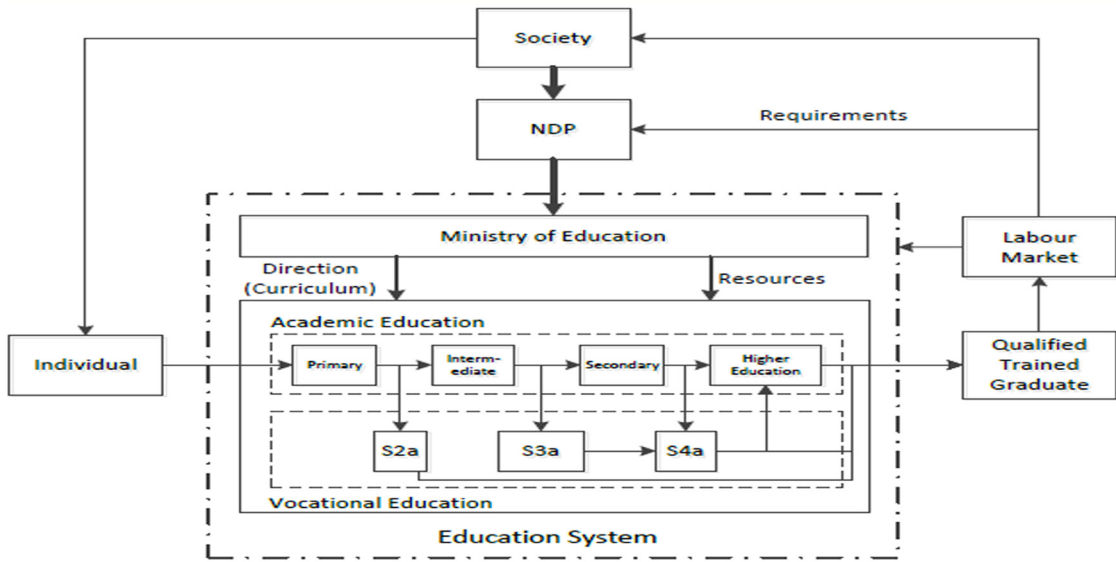


Figure 2 Education System in Phase 1

academic Intermediate schools of S2 feed into the four-year-long academic Secondary, S3, and industrial secondary or vocational training schools of stage S3a. Atbara Industrial Secondary school and Kasala Teachers' training Institute are some examples of the establishments within this stage. S4a is represented by Higher Vocational Education establishments, such as Khartoum Vocational College, Khartoum Technical institute and The Higher Teacher's Training Institute in Omdurman and, like the academic Higher Education stage, S4, it is fed by intake coming directly from the graduates of the secondary schools of both the academic and vocational branches of education. Teachers' training is provided by the vocational branch of the education system. Establishments like the Teachers' Training Institutes at kasala, Shendi, Dalanj and Zalangae, which are part of Stage S3a, were well distributed geographically and provided the trained teachers for the Primary education stage; Bakht El-Ridha institute of Education did the same for the Intermediate stage, while The Teachers' High Institute in Omdurman was part of stage S4a and supplied qualified teachers for the Secondary Stage of Education. The university and other higher education lecturers were usually sent abroad for post-graduate qualifications. Adults' education was also established to care for those who missed the opportunity of learning during the colonial times. As the system was strongly linked to the NDP, it was very competitive by design. The students were tested at national level at the end of each stage. The different stages were both age and ability bound. Students also had the option to move from academic to vocational education branches according to their ability and interest. The competitive nature of the education system has inevitably resulted in a drop out at the end of each stage. However, these drop outs were easily recruited by the hungry labour market at the time to do low-skilled jobs either in the state run, private sector or family-based businesses. The alignment of the academic and vocational educational branches was exemplary. The system was designed to provide different exit gates for graduates to fill middle ranking professional jobs while the highest ranking and leadership roles were filled by those who stay in the system until its natural end. State-funded scholarships were also available for post-graduate studies or training abroad after joining the labour market as seen fit by the

employer. This was designed to ensure that the labour market demand was met. Indeed, there was a job for almost every graduate of both the academic and technical/vocational branches, which is very motivating for individuals to stay in education for as long as they can. However, the fact that all graduates were fully employed may indicate the low capacity of education rather than fully meeting the demand of the growing labour market at the time. Nevertheless, for a young education system, which did not reach full capacity during this phase, the result should still be counted in its favour. Generally speaking, that was a period when the country was well run, the economy very stable and the living standard of the population continually rising. The education system had played its role fully and comprehensively. Therefore, the education system during this phase had met its goal and satisfied the success requirements set by its both primary and secondary KPI's.

Phase 2 (1969–1989)

Following the change of the political regime through the military coup of May 1969, there was an ideological drive towards unifying the education systems all over the Arab world. An education revolution was declared with the slogan of 'Education for All'! As a step towards this, a major change to the Sudanese education system was imposed within a period of six months. In fact, most of the changes were copying main parts of the Egyptian education system. This served the two purposes of shortening the period required to implement the changes as well as being an initial step towards achieving the ideological objective of unifying the education systems in the Arab world. Consequently, although the general structure remained the same, the three main general education stages before the Higher Education stage were redesigned into a six-year-long Primary stage followed by two three-year-long stages of General and High Secondary education consecutively, as shown in Figure 3, which summarises the application

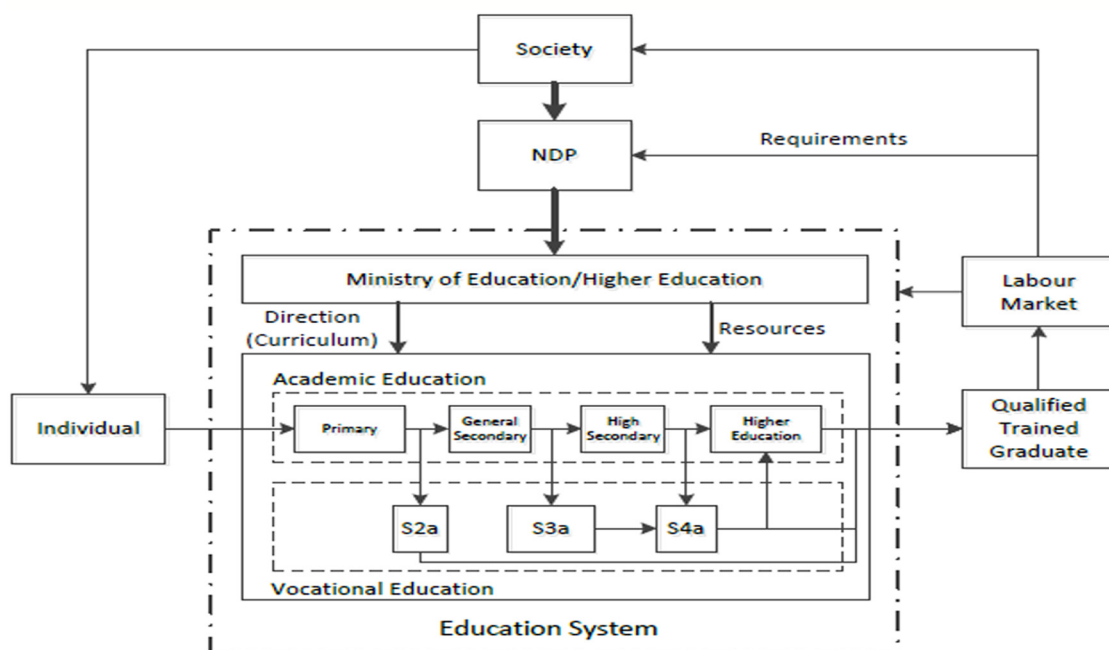


Figure 3 Education System in Phase 2

of the generic education system model to this second phase. Science was introduced as a subject at the General Secondary stage, S2, together with additional subjects to enhance the citizenship aim of education. Teachers were hastily retrained at Bakht El-Ridha to cope with the new changes. Additionally, Primary Schools Teachers Training Institutes started to take intakes from the graduates of the Higher Secondary education stage, S3, instead of S2 in order to adapt to the newly introduced longer Primary stage. Also, women training teacher centres were established to cope with the increasing demand. The impact of this shake-up on the national curriculum was not well-thought through at the time. Educationalists can easily confirm that changing the educational architecture automatically invalidates the curriculum. Copying part of the Egyptian curriculum does not fully address the problem created by the changes. Also, it is only fair to say that, as the NDP's objectives of the Sudan and Egypt were not aligned at the time, copying major parts of the Egyptian education system into the Sudanese one should not be expected to yield the best results for the Sudan anyway. As a result, the Sudan had spent most of the following 20 years trying to rectify the damage happened to its education system. This phase was also characterised by accelerated opening of many schools in many parts of the country, particularly Primary and General Secondary schools, in response to the political slogans of the new regime. However, this expansion was not matched by adequate funding and resources. As a result, schools were starved of the right books, adequate resources and qualified staff, which reflected badly on the standard of education in general. It also worth mentioning here that a huge number of vocational and technical education institutes were founded during the first few years of this phase with the objective of training skilled labour, support staff and middle ranking professionals to serve the over-ambitious development plan that the new regime promised. However, very few, if any, of these institutes survived beyond the first few years of their inception due to lack of both resources and good planning. Additionally, a few years later, the ministry of education was split into two ministries, one for main education and the other for higher education and scientific research. This move had the drawback of weakening the link between the main and higher education which had adversely affected the integrated and aligned nature of the education system in the Sudan. The impact of these structural changes was felt both in the overall quality and standard of the education system in the country and its repercussions were felt in the weakening of the economic situation of the whole country as well. The skill gap in the labour market was clear and unemployment was on the rise. Although education alone cannot be blamed for this, it was nevertheless evident that it was no longer working as intended by the objectives of the NDP. Its performance against the KPI's was poor.

Phase 3 (1989–2015)

The military coup of 1989 brought with it a new political regime that declared its intention to remould the identity of the Sudanese people. It was then obvious that achieving this end necessitates a radical change to the education system. Consequently, the three pre-higher education stages were replaced by two stages of eight-year-long Foundation stage followed by a three-year-long Secondary one. Figure 4 shows the model that represents this new phase of education. Additionally, new subjects were added to complement the national curriculum and stress the new identity. The deletion of one year off the main education while adding new subjects to the curriculum had a devastating impact on the system. Equally significantly, the alignment between the academic and vocational education branches was lost and the exit gates have become less defined as the vocational branch still have three stages; not two

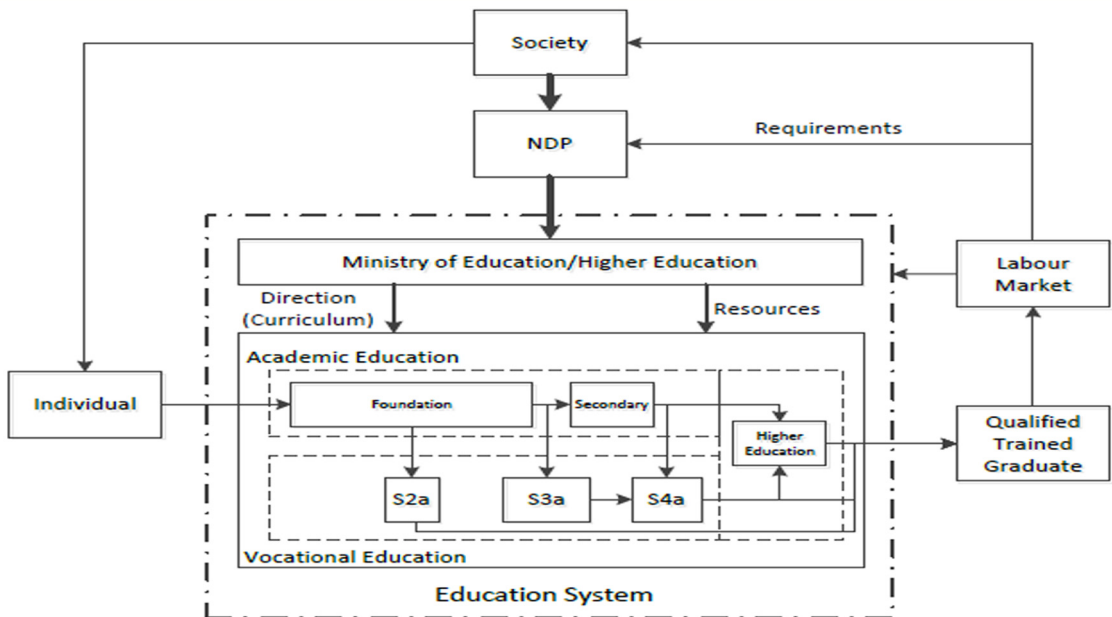


Figure 4 Education System in Phase 3

like the new academic branch. Indeed, the vocational stage S2a is no longer aligned with the academic Foundation stage and hence relies on un-natural exit gates from the Foundation stage, such as drop outs, to feed it! Characteristically, existing institutes, such as Atbara Mechanical Engineering College and Khartoum Polytechnic were converted into fully-fledged Wadi Elneel and Sudan universities, respectively, hence absorbed into the academic Higher Education Stage, and a number of new universities were also established enlarging this stage by an order of magnitude. In a country where there was, and still is, hardly a place in Primary Education for every child, the regime slogan was a ‘University Degree for All’! However a number of new colleges offering three-year Diploma courses in the technological field, such as the technical colleges at Nyala, Wad Madani and Marawe were also hastily established. As a result, Stage S4a has become smaller and includes mainly these new colleges. The universities are now also offering a choice of Bachelor and Diploma courses in an attempt to fill the skill gap left in the middle ranking jobs that was used to be filled by the graduates of vocational education stage S4a. Consequently, the Higher Education Stage has become larger and serving both academic and vocational sectors at the expense of the shrinking vocational stage S4a. However, the question remains if these steps are enough to fill the resulting skill gap in the labour market and whether there is enough demand for all these new Higher Education graduates with university degrees. Clearly from general observation of the market, the balance is not right. However, it is less clear whether the underlying reason for the imbalance is the lack of real need for all this number of graduates from the Higher Education Stages or the general weakness of the economy that cannot recruit anymore. Either way, this demonstrates the de-linking of the education system, the NDP requirements and the economy as a whole. The biggest casualty, however, is the teacher training, particularly for the Foundation stage. As the intermediate stage was deleted, existing teachers of the old Primary and General Secondary stages were automatically recruited to fill the demand for teachers at the Foundation stage.

Neither group had the right training for this new eight-year-long stage. To add to the problem, Bakht El-Ridha Institute of Education had also been converted into a fully-fledged traditional university, hence taken away from its pivotal role in the Education system without proper replacement. Additionally, the door was also widely opened for the private sector to invest in the main as well as higher education. There is nothing wrong with the contribution of the private sector in education per se. South Korea, for example, where almost 75% of its higher education institutes are privately owned and run, has successfully managed to use the private sector to the benefit of its education system. This allowed the government to free invaluable resources to expand the main, particularly primary, education in order to achieve their goal of 'Basic Education for All' and steer the education system to serve their 'Knowledge-Based Economy'. In other words, the education system in South Korea was developed in tandem with stage of economic development. As a result their economy has grown by more than 12 folds since the year 1970, when the knowledge-based economy was introduced (Chen, 2007). The effective link between the education aims, economy and NDP strongly steered by the South Korean government is also worth noting. This is in contrast with phase 3 in the case of the Sudan, where the new universities, both state and private ones, lacked facilities, resources and, above all, clear direction. There are no clear and rigorous conditions, criteria, regulations, monitoring or guidance to follow for the establishment and running of the private educational institutions. These changes resulted in fragmented education system that lacked resources and, more importantly, lost its link to any sense of a NDP, or what is left of it. The focus was shifted towards building the character of the individual in a manner consistent with and provided by the ideological inclination of the new regime. This phase represented the most significant change in the aims and direction of the Sudanese education system since independence. It attacked both the structure and architecture of the education system. It was imposed upon the country with little, if any, adequate consultation. The schools were lacking resources and under-funded while teachers under-paid and lacked training and, consequently, moral was down. The internal as well as external links of the system shown in Figure 4 that were essential for the system to function properly were either defective or no longer in place. The trade of quality for quantity in education was evident. This manifested itself in continuously weakening economy, record low standard of living and mass immigration. The skill gap has become wider than ever and unemployment reached unprecedented scale as the education system has lost its way. The education system is no longer satisfying any of its KPI's.

ASSESSMENT OF THE EDUCATION SYSTEM IN THE SUDAN

The aim of modern education is individual development as well as social advancement. Consequently, modern education enables the individual to make his/her life better both as an individual and as a member of society. It emphasises total development of an individual. This total development includes intellectual, social, moral, aesthetic, cultural, physical development, as argued above. The spirit of modern education was clearly captured in the education system in post-independence Sudan. However, according to Mohamed Khair Othman, approximately all post-independence governments did not care about nationalism of education and restricted it to the domains of general and educational bureaucracy and let education to move with inertia alone without strategic objectives or scientific planning (Othman, 2015). Accordingly, he stressed that it is important for education to take a national role in emphasising citizenship, engagement in democracy and breaking boundaries between people where they live, work and

interact. Nevertheless, immediately following independence, a very well designed, funded and run education system was adopted to meet the social and economic development as dictated by the newly laid down NDP. The system produced the trained teachers to run it as well as the qualified cadre to meet the demand of the labour market and aid the execution of the NDP for the benefit of the whole society. To this end, the education system during the initial post-independence phase had met its overall objectives quite satisfactorily. However, it was not free of criticism. For example, Mohamed Khair Othman argued in Othman (2015) that the colonial British power created a defective education system in pre-independence Sudan that led to educational injustice phenomenon in the southern part of the country. He blamed the Sudanese elites at the time of independence for not paying enough attention to this phenomenon that created an uneven distribution of the education opportunities between the north and south and questioned how it began and who was responsible for it. This created the longest and most dangerous dichotomy of education between the two parts of the country (Othman, 2015) and arguably used politically to justify the separation of the south later on. Likewise, the competitive nature of the system and the teaching philosophy, which was based on filling the individual with knowledge and information that would be tested regularly and rigorously to ensure that the pre-set standard was achieved was at odds with modern education philosophy that is based on self-learning while the role of the teacher is to secure and manage the environment where the individual is encouraged to develop their faculties in their own way according to their own ability, talent and interest. There is an implied assumption here that there is enough variety among the population to ensure that all the skills required by the labour market would be naturally met without further steer from the authorities. Such modern practices were used in different parts of the developed world with varying degrees of success. For example, the education system in Finland was completely liberal with absolutely no testing during the mandatory education stages, which covers the whole childhood period of the candidate. Following the self-learning philosophy, the children in Finland were encouraged to pursue their own interests under the supervision of highly trained teachers while progressing through the various education stages based on their age only without any consideration of ability. The system was reported to be extremely successful and known to produce some of the best graduates in the world. The British system, on the other hand, is not far removed from the Finish one, however, some testing at Key Stage 2 level for the age group of 10 to 11 years old, the SATS test, takes place between the Primary and Secondary stages at national level. As only the age factor is considered for pupil's progression from one stage to the other, results of the SATS test are not decisive for the progression of the pupils from the Primary to Secondary stages of the mandatory education. The purpose of the test is only to serve as a dipstick to measure the performance of individual schools, rather than pupils, against a pre-set national standard. However, despite the larger population of the UK relative to Finland, the country is now suffering from a skill gap of about 1.5 million jobs (Winterbotham et al., 2014), the majority of them in the fields of health and technology, which is filled to some extent by immigrant workers (Lewis, 2014). This could indicate the presence of other forces in the society acting in a different direction in a manner strong enough to invalidate the assumption implied in the self-learning theory cited above. However, the skill gap in the UK and the role of immigrants in filling it had been highlighted by the Green Party in their 2015 general election campaign in order to emphasise the importance of the positive net contribution of immigration to the economy as a whole. The Conservative Party, on the other hand, pledged in its campaign to make the pupils who fail their SATS test at the end of the Primary stage (year 6) to resit the test the following year (year 7) in their Secondary schools in an attempt

to address the falling standard of education. Additionally, they are promising to introduce an 'Apprenticeship Scheme' and, hence, impliedly acknowledging a deficiency in the vocational efficacy role of the education system needed to keep the wheel of material development rolling as highlighted by industry leaders. A survey conducted by the Confederation of British Industry, CBI, for example, found that a quarter of employers who need technicians qualified in science, technology, engineering or mathematics already reported difficulty recruiting and a third anticipated problems in the next three years (Groom, 2014). This shows that the level of success of the Finish system cannot be readily replicated elsewhere. Indeed, when it comes to developing countries a tighter control and balance between complete freedom of choice and meeting the need of the development plans is highly desirable. The balance can only be dictated by the development stage of the country. Clearly, this approach helped the education system in the Sudan to perform well in its initial phase following independence and is still recommended for the country now as the challenges facing the country still persist. Once the development plan is running smoothly and efficiently, the system can then be relaxed gradually and proportionately.

However, thanks largely to major changes introduced to the education system on the hoof with no proper thinking nor acceptable level of public consultation following the change of the political regimes in May 1969 and June 1989, respectively, the education system performance and hence its ability to meet the demands of the labour market and the NDP were gradually eroded as highlighted above. The first major change introduced following the military coup of May 1969 attacked the architecture of the education system and hence the national curriculum without enough planning or even proper thinking of the consequences. The motive behind the change was mainly ideological and driven mainly by political considerations. The funding was inadequate, the implementation was poor and the result was quality deterioration in the education standard. In fact, education was not the only facet of life that was adversely affected during that period. Corruption was ripe, economy weakening and the standard of living continuously lowering as governance lacked stable direction. Admittedly, these factors are interdependent. Therefore, it is too complex to isolate one of them to take all the blame. However the role of education is too significant to ignore. The performance of the education system during this period was weak and its ability to meet the NDP objectives through satisfying the demand of the labour market was clearly inadequate.

The impact of the second major change, which followed the military coup of 1989, was even more devastating on education than its predecessor. The change this time has attacked the structure, architecture as well as the aims of education in the country. It was ideologically driven and aiming at remoulding the identity of the Sudanese people. Education was seen as the tool to bring this identity change. Hence, the vocational efficiency character of the education was replaced by one that emphasised the character building and individual development role of education. This was enforced by changing the architecture of the education system and introducing new subjects to the national curriculum. Consequently, the alignment between the academic and vocational branches of education was muddled and, hence the target market niches for each branch were blurred. To clarify this, take the example of the technology field. The education system was originally designed to graduate Technicians with a three-year Institute or College Diploma, Technician Engineers with Four-year Polytechnic Diploma, both come from stage S4a, and Engineers with a Five-year University Degree from the Higher Education stage, S4. In the new system Colleges and Polytechnics were converted into universities offering both Diploma certificates and university degrees. In other words, the distinction between the old S4a and new S4 stages has become unclear.

What role would these new degree graduates play, is there any demand for them, who is going to fill the roles that Stage S4a used to do and how can the labour market deal with them? This was both confusing to the labour market and also created a skill gap which is difficult to fill. This was a radical change to the system that has resulted in de-linking the education system and the declared objectives of the NDP and brought chaos to the labour market.

It should also be noted here that both the two major changes discussed above were introduced and implemented in record short periods of time of less than six months each. This rush introduced implementation problems and mistakes that required many years, typically over twenty, to repair. Indeed, there is current talk in the Sudan about changing the current eight-year-long Foundation education stage into a nine-year-long one. On the one hand, this proposal is an admission of the problems introduced by the latest change and, on the other, will introduce its own new challenges of different nature, such as dealing with children of extreme age range of 7 to 16 years in the same school building and environment, let alone the usual problem of any architectural change, such as invalidating the existing curriculum due to the change of the educational period length from eight to nine years! Equally significantly, it will not address the problems of teacher training or linking the system back to the NDP. Note that, like the rest of the working force in the Sudan, the teaching profession has recently suffered from uncontrolled mass immigration of qualified and well-trained teachers at all educational stages. Low morale, low payment, deteriorating economic situation leading to the lowest ever standard of living were among the main factors for the immigration of teachers. Interestingly, the last batch of teachers who served in Phase 2 will retire naturally by the year 2016. Hence, any attempt to repair the system by reverting back to its predecessor will be hampered by the loss of their invaluable experience.

Both changes also introduced accelerated expansion to the education establishments. The first change in Phase 2 accelerated the expansion of the state-funded main education schools while the second one in Phase 3 expanded the university education and the uncontrolled role of the private sector in the field of education. Neither of the two was adequately funded nor rigorously monitored. In fact, instead of increasing the expenditure on education in order to meet and fund the expansion, (UNICEF, 2008) revealed that the education expenditure in the Sudan has dropped from 4% of the GDP and 15% of the total government expenditure in the early 1980s to around 1% and 3%, respectively in the 1990s. As a result, schools were suffering from teacher shortages and starved of resources and educational aids. Schools buildings were run-down, if not collapsing, as funding for schools maintenance and running are becoming dear. Consequently, schools needed to generate their own income through private admissions, levying parents and raising public donations in order to survive. No wonder teachers' morale was low!

Likewise, the enlargement of the role of the private sector was another opportunity missed. Instead of following the South Korean example highlighted above, the private educational institutions in the Sudan were managed as commercial enterprises rather than education establishments with particular emphasis on teaching medicine. Interestingly, foreign secondary certificates, such as the international Oxford, American and the gulf certificates, were downgraded relative to their Sudanese counterparts and hence forced the children of the Sudanese diaspora, despite proving themselves academically, to apply for private, rather than general, admission in the Sudanese state and private universities. This was interpreted by them as an attempt to boost the private sector rather than a fair reflection of the academic standard of their certificates. However, in summary, this uncontrolled, ill-thought and underfunded

expansion of the main and higher education during phases 2 and 3 has resulted in a bad trade of quality for quantity. The impact was lowering the education standard and mass graduation without proper link to the demand of the labour market.

The discussion above clearly shows that the damage happened to the education system is both visible and deep. Simply, the education system has lost its way. Hence, an 'Action Plan' to repair the situation is urgently needed. The design, implementation and funding of the education system is a complex problem. Likewise, introducing major changes to it is a complex process that requires deep thinking and wide consultation as it is linked to the NDP and has repercussions on all facets of life. Recall that the education system is owned by the society and the central government should only act as its custodians. Hence, radical changes to the system should not be taken lightly and should not be a unilateral decision of any group or party. Wide societal debate and consultation should take place before changes are introduced. In other words, changes to the education system should be taken out of the political arena and only introduced by national consensus. It is therefore our aim in this paper to provoke national discussion towards an 'Action Plan' to remedy the situation and take the education system out of the competition of politicians. We call upon all concerned and all interested parties to engaged constructively and participate in outlining the required 'Action Plan' to get the education system, and hence, the country, back on track.

CONCLUSIONS

- A critical review and assessment of the education system in post-independence Sudan were undertaken. The review considered three significant phases in the history of education in post-independence Sudan when the education system has experienced major changes. These are: Phase 1 between the years 1956 and 1969; Phase 2 between 1969 and 1989 and finally Phase 3 from 1989 to 2015.
- The education was generically modelled as an engineering system of processes. The model was then applied to the Sudanese education system through its various phases.
- The model represented the system as a closed loop that is fed by the society and graduates qualified trained individuals to meet the demand of the labour market, hence, contributes to achieving the objectives of the NDP and, in turn, improving the standard of living and wellbeing of the whole society.
- Consequently, meeting the labour market demand and reflection on the standard of living of the population were used as Primary and Secondary KPI's respectively to measure the success of the education system.
- The link between significant political events in the country and major changes to the education system was evident.
- While the initial post-independence phase was characterized by a stable education system that was run smoothly, efficiently and successfully with clear objectives linked to the NDP, the following two phases had gone through major changes driven by ideological philosophy and political aims without adequate consultation and rushed through in extremely short times.
- These changes contributed to the deterioration of the quality of education in the Sudan and gradually de-linked the education system from the objectives of the NDP. The current system appears to be like a ship sailing in rough seas without a captain.
- The damage occurred to the system throughout the years was so wide, deep and fundamental. It is now in a state of crisis. This manifested itself in skill gap in the labour market and, together with

other factors, reflected in weakening economy and ever lowering standard of living in the country leading to mass immigration. The system has failed to satisfy both its primary and secondary KPI's.

- Wider national debate should therefore start now, including all parties, organisations and individuals concerned, in order to outline an 'Action Plan' that is capable of repairing the damage and putting the education system and , hence the country, back on track.

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BIOGRAPHICAL NOTES

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