



Students' Lower Educational Performance in the USA: A Systemic Macrolevel Explanation

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ABSTRACT

In this paper a model is developed to explore some of the most important macro level factors that are responsible for lower student educational performance in the USA compared to most other developed nations. The underlying theme of the conceptual framework which guides the basic premise comes from Karl Marx's notion of political economy and Talcott Parson's theory of voluntaristic positivism. To test the conceptual model, data have been procured from various international sources in aggregate secondary form. The conclusions drawn in the final form relied on utilizing simple cross-comparability of aggregate data rather than complex statistical techniques due to earlier establishment of many of the assumptions of the model in various other literature as well as missing data and limited number of cases. The analysis based on comparative aggregate level data demonstrates that the lower educational performance in the USA is not an outcome by accident, but rather an output of a well-designed system inherent in the structure of the US political economy. The findings suggest a large scale macrolevel intervention involving structural changes in the US political economy to achieve any noticeable changes in the educational gain. The results further suggest that impact of microlevel intervention will be slow paced, sporadic, and tenuous.

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1. INTRODUCTION

The major purpose of writing this paper is to develop a model to explore the most significant macrolevel factors that are responsible for specific patterns of students' educational outcomes in the USA. The assessment will be made by comparing the USA with most other developed countries focusing on performance levels in various academic areas.

The USA has been scoring fairly high in the educational ladder internationally; however, not among the developed nations. Especially at the pre-undergraduate level the reverse is the reality (See Tables 1, 2, and 3). Table1 demonstrates overall educational status of the USA in cross-sectional and comparative terms with regard to its performance in the general literacy and subject specific standing. The Tables 2 and 3 show more specific details of the performance with regard to student capability in information analysis, math and science literacy. The information analysis in Table 2 covers areas of information retrieval, interpretation of the text materials and reflection of the text materials. The data show the US ranking, respectively, as 15th, 15th, and 11th among twenty-four developed countries. The performance in math and science as shown in Table 3 depicts a similar pattern. Between 2003 and 2006 math performance increased by only 6 points, whereas, science performance declined by 17 points. The data show the USA to rank as 22nd and 18th, respectively, in 2003 and 2006 in math, and 18th and 21st, in 2003 and 2006 in science. Finland, Canada, Hong Kong, Japan, South Korea, and the Netherlands remain in the top positions with significantly higher performance scores than the USA across the subject areas and over time. The pattern of US educational performance with regard to positional ranking and decline as depicted has been visible last several decades. Consequently, such a noncompetitive position and decline relative to other developed countries is also affecting all other higher levels including market structures.

It is assumed that this specific scenario is not an outcome by accident, but rather an output of a well-designed system inherent in the structure of the US political economy. Further, it is also assumed that significant changes in the situation can only be brought about by creating policies that focus on intervention at the intra-national

and cross-institutional levels as opposed to the micro or individual level. Such intervention involves changing overall socioeconomic structures, not just the milieu of educational settings. Moreover, the impact of microlevel intervention will be slow paced, sporadic, and tenuous. Following No Child Left Behind (NCLB), introduced by the Bush administration, focusing only within the school level a small improvement has been made, however, etiologically unsubstantiated, an issue that will be explored later in the paper.

2. CONCEPTUAL CONTEXT

The underlying theme of the conceptual context which guides the basic premise of this paper comes from Karl Marx's notion of political economy and Talcott Parsons' theory of "voluntaristic positivism". According to the Marxist standpoint [1,2,3] most individual actions, emotions, and cognitions are products of the material existence of life embedded in the historically aligned specific modes of production. The mode of production constitutes the basic structure of the society which in turn determines the superstructure encompassing every aspect of human social existence. Education is simply a part of that superstructural process. Therefore, logically, educational institutions, their attendant philosophy, and actual outcomes are all emanating products of power structures encompassing overall economic organization and policies. Parsons, following a somewhat similar theme, argues that,

Social acts are always voluntaristic from the perspective of the actor choosing a course of action, but from the broader perspective of the scientific observer these choices are always guided- though not fully determined- by culturally prescribed norms that are either internalized by the actor or enforced by others [4].

He further argues that,

Common cultural values shape and control all social organization, as they are expressed in shared norms which are institutionalized into patterns of social ordering and internalized within individual personalities [4].

Social scientists in general identified Marx with the left wing intellectual arena and Parsons with

the conservative intellectual tradition. One conservative sociologist is that in many ways he reason for Parsons being labeled as a directly or indirectly justified the system.

Table 1. U.S. and international educational standing

1	In 1982, the US Bureau of Census [5] estimated 26 million (adult) = 13% to be illiterate.
2	In 2005, it was found that the US ranked 11 among the developed nations in prose interpretation as determined by the International Adult Literacy Survey, which requires readers to locate specific pieces of information from a passage [6].
3	Kozol reports that "Twenty-five million American adults cannot read the poison warnings on a can of pesticides, a letter from their child's teacher, or the front page of a daily paper. An additional 35 million read only at a level which is less than equal to the full survival needs of our society" [7].
4	The National Alliance of Business estimated that 30% of high school students cannot write a letter seeking employment or information, and that one 17 year old in eight (12.5%) cannot read beyond fifth-grade level [8].
5	Only 13% of a select group of American 17 year old students achieved algebra scores equal to 50% of 17 year old Hungarians [9].
6	25% of Canadian 18 year old students know as much chemistry as a very select 1% of American high school seniors who had an advanced, second year chemistry course [9].
7	In similar advanced algebra and geometry tests involving same grade level, Hong Kong ranked first in both tests, while the USA ranked, respectively, twelfth and eleventh [10].
8	30% of South Korean 13 year old students were able to apply "advanced scientific knowledge" compared to 10% of American students of the same age [9].

Table 2. Combined reading literacy average scores and average subscales of 15-year-olds (2000)

Combined scores		Retrieving information		Interpreting texts		Reflecting on texts	
Finland	546	Finland	556	Finland	555	Canada	542
Canada	534	Austria	536	Canada	532	UK	539
New Zealand	529	New Zealand	535	Australia	527	Ireland	533
Australia	528	Canada	530	Ireland	526	Finland	533
Ireland	527	S. Korea	530	New Zealand	526	Japan	530
South Korea	525	Japan	526	South Korea	525	New Zealand	529
UK	523	Ireland	524	Sweden	522	Australia	526
Japan	522	UK	523	Japan	518	South Korea	526
Sweden	516	Sweden	516	Iceland	514	Austria	512
Austria	507	France	515	UK	514	Sweden	510
Belgium	507	Belgium	515	Belgium	512	USA	507
Iceland	507	Norway	505	Austria	508	Norway	506
Norway	505	Austria	502	France	506	Spain	506
France	505	Iceland	500	Norway	505	Iceland	501
USA	504	USA	499	USA	505	Denmark	500
Denmark	497	Switzerland	498	Switzerland	496	Belgium	497
Switzerland	494	Denmark	498	Denmark	494	France	496
Spain	493	Italy	488	Spain	491	Greece	495
Italy	487	Spain	483	Italy	489	Switzerland	488
Germany	484	Germany	483	Germany	488	Italy	483
Liechtenstein	483	Liechtenstein	482	Liechtenstein	484	Portugal	480
Greece	474	Portugal	455	Greece	475	Germany	478
Portugal	470	Greece	450	Portugal	473	Luxembourg	468
Luxembourg	441	Luxembourg	433	Luxembourg	446	Luxembourg	442

Source: U.S. department of education [11]

Table 3. Average combined mathematics and science literacy scores (2003 and 2006)

Math literacy^a 2003 average scores, out of 1000		Science literacy^b 2003 average scores, out of 1000		Math literacy^c 2006 average scores, out of 1000		Science literacy^d 2006 average scores, out of 1000	
Hong Kong	550	Finland	548	Finland	548	Finland	563
Finland	544	Japan	548	South Korea	547	Canada	534
S. Korea	542	Hong Kong	539	Netherlands	531	Japan	531
Netherlands	538	S. Korea	534	Switzerland	530	N. Zealand	530
Lichtenstein	536	Lichtenstein	525	Canada	527	Australia	527
Japan	534	Australia	525	Japan	523	Netherlands	525
Canada	532	Netherlands	524	N. Zealand	522	S. Korea	522
Belgium	529	N. Zealand	521	Australia	520	Germany	516
Switzerland	527	Canada	519	Belgium	520	UK	515
N. Zealand	523	Switzerland	513	Denmark	513	Switzerland	512
Australia	524	France	511	Iceland	506	Austria	511
Iceland	515	Belgium	509	Austria	505	Belgium	510
Denmark	514	Sweden	506	Germany	504	Ireland	508
France	511	Ireland	505	Sweden	502	Sweden	503
Sweden	500	Germany	502	Ireland	501	Denmark	498
Austria	506	Iceland	495	France	496	France	495
Germany	503	Austria	491	UK	495	Iceland	491
Ireland	503	USA	491	Luxembourg	490	USA	489
Norway	495	Spain	487	Norway	490	Spain	488
Luxembourg	493	Italy	486	Spain	480	Norway	487
Spain	485	Norway	484	USA	474	Luxembourg	486
USA	483	Luxembourg	483	Portugal	466	Italy	475
Portugal	466	Greece	481	Italy	462	Portugal	474
Italy	466	Denmark	475	Greece	459	Greece	473
Greece	445	Portugal	468				

a. Lemke M, Sen A, Pahlke E, Partelow L, Liller D, Williams T, et al. [12], b. PISA technical report [13], c. note: the scores above represent first two columns of the OECD indicator table on access to knowledge, source: lewis, kristen and burd-sharps, sarah [14], d. note: the scores above represent first two columns of the OECD indicator table on Access to Knowledge, source: lewis, kristen and burd-sharps, sarah [14]

Despite noting such difference, social scientists have recognized one common dimension between Marx and Parsons' analytical scheme in that they both belong to a macrolevel or system perspective, meaning, individual outcomes are socially processed within the boundaries of various cultural parameters in the context of a specific social structure. It is this common dimension which is taken as the guiding theoretical orientation for the analytical purpose to investigate the assumptions laid out earlier. Elaborating Parsons' analytical model further, one will be able to much more clearly see the needed communality with Marx as needed for this research.

Parsons, although a renowned sociologist standing alone as a paradigmatic intellectual giant, had an earlier background in Biology and Economics. Both backgrounds can be easily located in his conceptual scheme regarding the

way he sees the societal functions. For this paper, the context of Economics aligned with the Marxian model is more relevant. Parsons, prior to entering in Sociology, was not only an economist, but rather he was also teaching Economics at Harvard from which he later moved to Sociology during the 1930s [15]. His theory is filled with the influences of many classical economic components. Dissecting his analysis of societal framework will allow anyone to depict that evidence.

In analyzing society, Parsons uses a systemic model ultimately to understand the human social action which in the present case is students' academic performance. In Parsonian view [16,17], a society is composed of four systems. In order, they are cultural system, social system, personality system, and behavioral organismic system. The goal of the cultural system is to maintain general order or pattern through the

process of value generalization with the help of several institutions where education is one of the most important. At the bottom, the organismic behavioral system, composed of human biological force and ecological structure, helps humans to adapt into the environment through the process of differentiation or change with the help of the economic institution. The four systems maintain their interrelationships following a cybernetic process, the cultural system generating information and the organismic system generating resources for the total social system to ultimately maintain a homeostasis.

economic institution dictating and transforming the latter outcomes, such as educational institution and its output. In both cases, the organization of social structure remains the prime mover, and the action frame of reference in any form remains the secondary embodiment. It is equally notable that over time, the educational outcome either in performance or ideas will maintain the societal framework through internalization of values in the case of Parsons and false consciousness in the case of Marx, required for the systemic needs.

3. ANALYTICAL MODEL AND DATA

While there may be a dispute over the idea of homeostasis relating to Marx's conceptualization of society among the scholars, one cannot ignore, nonetheless, the pertinence of the influence of organizational framework of the

The following schematic diagram outlined in Fig. 1 presents the analytical model which is being used as the investigative tool for this research paper.

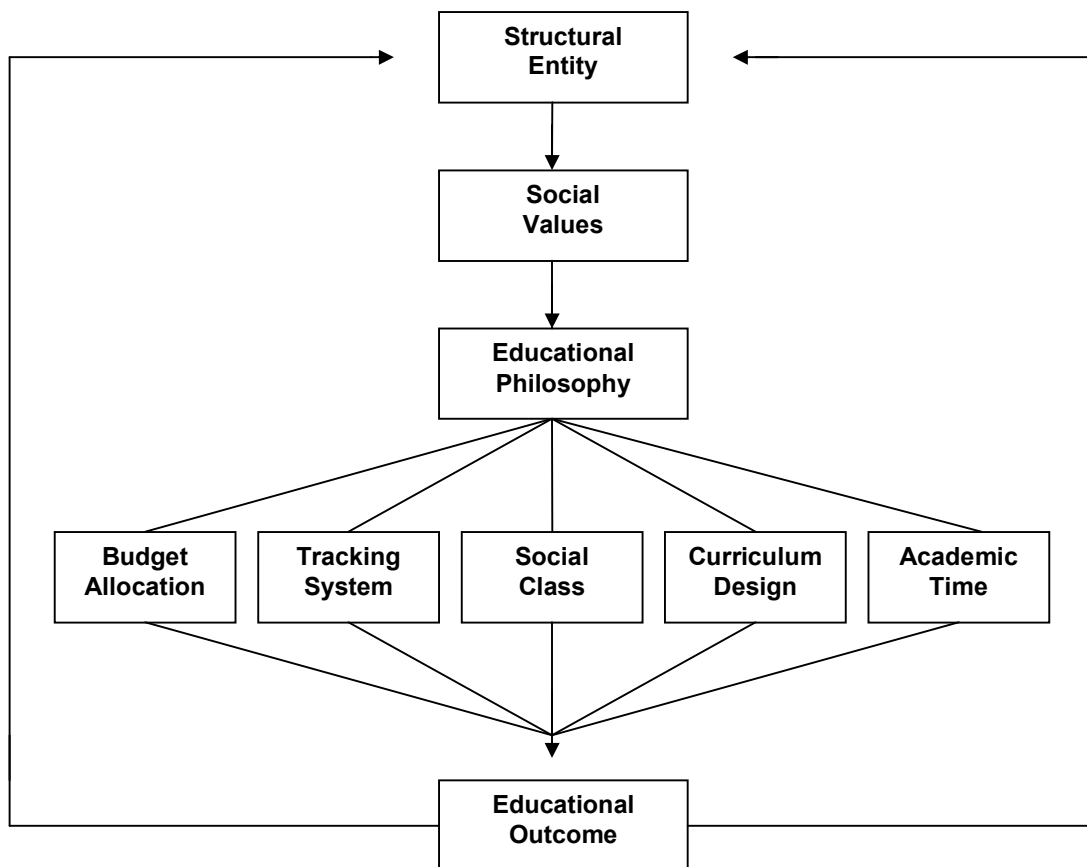


Fig. 1. Schematic diagram representing the students' educational outcomes in the United States

In the model presented, STRUCTURAL ENTITY refers to the national social system. Currently three basic structures dominate the world social system, and they are capitalist, socialist, and democratic socialist (a structure based on mixed economies) systems. The focus of this paper lies in the observation of the most industrialized, developed countries having capitalistic and democratic socialist structures. It must be mentioned that not all industrialized nations with mixed economies are labeled as democratic socialist. However, for the sake of convenience, the term democratic socialist is applied to all other countries that have mixed economic structures which are a combination of capitalistic and socialistic frameworks. There is no pure capitalist country as measured by level of private investment. Nevertheless, the USA can be considered to be at the highest level of capitalism because of having a maximum amount of private ownership of the means of production (See Table A1), and lower levels of government employees (See Column a in Table A2) and government revenue (See Column b in Table A2). Other countries are basically capitalist; however, they have significantly implemented many socialist policies as far as basic human necessities are concerned. That is, they allocate more resources for the well being of common people compared to the USA because of intense mass union influence [18] and larger voter participation [19].

The US system is more geared towards profit maximization for the economic elite, lacking deeper mass participation due to having smaller roles of the unions. Accordingly, one can assume that, in the context of the USA, the goal of the system is to create SOCIAL VALUES that enhance greater class differentiation or social inequality by overemphasizing individualism as opposed to a collective orientation. The purpose of educational institutions, therefore, will be to develop EDUCATIONAL PHILOSOPHY, structure, curriculum, and techniques that promote the social values of the capitalist social structure. A similar assumption can be applied about the democratic socialist structure. That is, its educational goal will be to promote greater equality, and the philosophy, structure, curriculum, and techniques within the educational institutions that will be organized according to the systemic needs. After all, the basic purpose of education in all social systems is not simply to promote knowledge and make students marketable, but also to socialize individuals towards conformity to authority, normative standards, social values, and organizational

structure within any particular system, [20-22] which Kanter [23] calls 'the production of organization child'.

There are a wide variety of macrolevel factors that may directly or indirectly affect actual educational outcomes or performance. For the sake of clarity and simplicity, only those factors have been selected for the purpose of examination which are most important and which need immediate attention. These factors are BUDGET ALLOCATION, TRACKING SYSTEM, SOCIAL CLASS, CURRICULUM DESIGN, and ACADEMIC TIME. It is also important to mention that while each of these factors has independent effects, they collectively also have interactive effects. The assessment of the case in point will be made by cross-comparing various macrolevel aggregate data originating from different national and international sources. The analysis will also remain with the use of cross-comparative methods rather than the use of complex statistical techniques due to the limited number of cases as well as missing values. The data on educational outcome covers a wide time period. The data on explanatory factors go much further back in time to create a lag period for causal ordering as well as availability. With regard to information on every single country, the data presented have changed over time with largest change being government ownership due, in part, to the global move towards greater privatization enforced by the powerful international conglomerates, and in part, to natural social influence of global national and organizational networks or, one would say, the unintended consequences of globalization. However, the pattern still remains the same, thereby lending implicative pertinence to the present theoretical model.

Additionally, from a macrolevel methodological perspective, transformation of any outcome emerging from its attendant aggregate structure does not easily change with microlevel intervention. According to the general macrolevel explanations, even when changes are made in the aggregate structure, the outcomes change very slowly due to having a deep-rooted socio-psychological referent, an emergent component of broader institutional settings. It is important to note that the independent effects of all the explanatory factors have already been identified in the scientific literature as can be seen later. The present research suggests a recursive path model combining all the factors using more

current data on international educational performance.

quality of life which in turn may also disrupt educational performance.

4. MODEL ASSESSMENT

4.1 Tracking System

BUDGET ALLOCATION: Budget or funding for school systems affects educational outcome in a variety of ways. Less educational funding means schools have to cope with outdated and old materials, lack of access to appropriate technology, large class size, and often poor quality teachers. Schools which have more money can afford to hire better teachers who in turn can provide better instruction. Having better teachers in a poor school can also result in poor outcomes because of large class size. This also leads to less interaction time between the teacher and the students, and often such an interaction pattern results in less motivation and greater alienation on the part of the students. In schools with large size classes, teachers have to depend more on multiple-choice type questions rather than critical essay type questions. Multiple-choice type questions have been found in general to be less thought-provoking and more memory-based compared to essay type questions. In many of the schools lacking money to build more classrooms, they must rely on trailers or mobile classrooms and even in some inner city schools they must use bathrooms, gymnasiums, hallways, and closet space for class purposes [24].

Tracking is an important factor responsible for influencing educational performance [27-32]. Tracking is by no means unique to the US system. It takes place in almost every single industrialized country. However, its uniqueness lies in the way it takes place in the USA. In most other countries, tracking starts much later in the school system after providing all the basics, whereas in the USA it starts almost from the very beginning. In most other countries tracking starts during seventh through ninth grade mostly for the purpose of identifying a specialty, that is, whether a student will be suited to, for instance, chemistry or biology. It is not used as a means to identify poor or gifted performers.

The Organization for Economic Cooperation and Development in its Paris conference in 1993 reported that the USA has the highest educational inequality between the rich and the poor [25]. The Column a In Table A3 shows that the USA compared to many other industrialized nations has one of the lowest governmental expenditures for education. Within the USA, of the total expenditure for elementary, secondary and higher secondary schools, about 6% of the funding comes from the federal government, 45% from the state, 8% from the private sources, and the remainder from property taxes [26]. This means that a student from a poor neighborhood will most likely end up in a poor school. The USA spends a large portion of its resources for national defense (See Column b in Table A3), which is highly profit oriented, and this takes money away from various other sectors like public health, social security, housing, and welfare, in addition to education (See Columns c, d, and e in Table A3). These additional factors can affect educational outcomes by breaking the internal infrastructural aspect of individuals'

In the USA the major purpose of tracking is to sort students into low and gifted performers [32]. Poor performers are usually assigned with a low quality teacher and the gifted ones are usually with better quality teachers. Such a process further depresses low quality students and increases the performance of better students. Lower track students also receive inferior materials and less access to many important intellectual activities. After tracking is done it is found that lower track students usually socialize with their own subgroup members where intellectual activities are at a minimal, and high track students tend to socialize with high performers who are more achievement oriented. The resulting effect is the creation of inequality [29] and social class from the very beginning that in the end suits the purposes of a capitalist social structure. Lower track students surrounded by their similar intellectual peers with inferior materials and low quality teachers often succumb to a situation of higher alienation, lower motivation, careless work, failure to complete assignments resulting in poor performance and at times high dropout rates [27].

This type of tracking technique has also been found to be responsible for developing labeling and self-fulfilling prophecy on the part of both the groups, which means lack of initiative for one group and over achievement for the other [28]. One way of solving the problem of intellectual disparity, if it exists, could be done by the use of collaborative learning techniques where students are collectively engaged in small groups helping each other to complete various assignments [31].

This is a very common technique used in most other countries. This does exist in the USA, but very rarely in the pre-undergraduate level. Collaborative learning techniques have been found to be responsible for developing higher level team work and interpersonal skills, and higher levels of learning for the vast majority of students [29,30]. These skills are extremely important for work organizations which are constantly in demand even by the US corporate sector. Cooperative learning techniques have been found also to be responsible for promoting critical thinking and conflict reduction, and maintaining a democratic environment. This technique is slowly entering at the college level. However, lacking familiarity with the method, many students resist, and sometimes teachers themselves fail to organize properly due to their own unfamiliarity with this approach.

4.2 Social Class

Social class has both independent and interactive effects with budget allocation and tracking systems, and it is also one of the leading predictors of educational outcome [33,34]. Social class not only affects education, it also affects almost every other aspect of life, [35-38], often to the minute detail. The capitalist social structure thrives on producing inequality and social class, because systematic inequality, in the form of social class, helps the system generate surplus and profit for the small elite class at the expense of hard work on the part of large numbers of individuals composed of the working poor and lower middle classes [38]. From the macrolevel standpoint, while it is fairly logical to say that inequality and social class differentiation is the product of capitalist social structure with its attendant value system and normative design, it is also fairly logical to say that the educational system is one of the major means through which such inequality is maintained, because it simply serves the system. Evidence of the effects of social class on educational outcome is not sporadic, but rather widely noted [38-42].

How exactly does social class affect education? If families belong to the upper echelon of society then they can override many of the negative effects of the system. Having large sums of money, they do not have to live in a poor neighborhood and send their children to schools which are equipped with poor resources and suffer the meager consequences. Even if their children go to poor schools they still can avoid such consequences, because children of upper

class families have themselves in general higher levels of education which in turn results in greater educational supervision and overall involvement and concern in their children's lives [43]. If they fail to do so, they at least can provide more assistance to their children in terms of hiring tutors or other materials needed to have better outcomes. Moreover, their children also tend to socialize with peers of their own class, thereby adding more inputs. So, having an upper class background, one can in many ways avoid various consequences of lower budget allocation and the negative effects of the tracking system.

Social class background has various long term consequences affecting national and international situations. The children of elite families usually select the best possible schools in terms of location, resources by materials and personnel, reputation, and external connection with the larger system [41]. Through such means students also develop their own powerful network leading them in the end to some of the best colleges and universities, like those in the Ivy League [42]. Ivy League schools not only make their own decisions, but also their policy affects most schools within the USA, and even outside the USA, through corporate connections and links with organizations like the United Nations (UN), the International Monetary Fund (IMF), the World Bank, the United States Agency for International Development (USAID), the North Atlantic Treaty Organization (NATO), and various other institutions. Among many top schools, Harvard is one of the leading actors in these aspects [44]. It must also be mentioned that students coming from the upper social class also have minimal discipline problems, health hazards, dropout rates, and absences due to the greater amount of wealth and family stability. After examining Column e in Table A3 on income distribution for the poorest 20% in the developed countries, in conjunction with various other information presented earlier, one will have a much clearer picture of the assumption made about the effects of social class and inequality on educational outcomes in the USA.

4.3 Curriculum Design

Variation in educational performance across the developed world is significantly affected by how curriculum is designed, that is, what is taught as content in the school system and its uniformity [45-49]. A large scale exploration of the effect of curriculum design on educational outcome in the USA compared to other countries is simply

beyond the scope of this paper. It was stated earlier that most other countries do have tracking systems; however, the purpose of their tracking systems is mostly to identify specialty, whereas the purpose in the US system is to differentiate between low and high performers, which ultimately results in intellectual and social inequality. Second, in most other countries tracking starts much later than the USA, and prior to that all students go through the same basic and very rigorous curriculum [47-49]. Most other countries have uniform national standards while we have national expectations without any supporting instrumental curriculum standards. In the USA, a lack of uniformity in the curriculum design can be observed across various levels and areas. They vary from state to state, from one school district to another and from school to school within the same school district. Such widespread disparity significantly retards the psychological, social, and intellectual growth of students, and in the end, individuals have less access to the market sector. It even further creates social segregation not simply by class, but also by race and ethnicity, in terms of both belief [45,46] and actual physical existence. So, it is clear that a unique curriculum design simply serves the purpose inherent in the system based on trickle-down economics. If the masses remain critically uneducated, then very few are going to question and intimidate the objective of the structure. However, within the uncritical masses, many support the scheme and even resist when the question of reform arises with the belief that such a scheme offers individual freedom, a competitive mode and incentive. One probably could label this situation as a simple state of false consciousness.

4.4 Academic Time

Academic time refers to how much time students, on an average, in different countries, are exposed to various academic activities, measured by number of school days in a year, hours per week spent on various learning activities, and parental time devoted to children's academic well-being. A comparative study of Taiwanese, Japanese, and American students in terms of parent-teacher-student involvement by time spent and various other categories found the US to have significantly lower time related to various academic or educational issues [49]. The study showed that Taiwan and Japan, compared to the USA, scored very high on every single indicator included in the survey related to positive

outcome: a. per day homework, b. Saturday homework, c. parental help with homework, d. possessing a desk at home, e. purchasing workbooks for extra practice, f. classroom time devoted to academic activities, g. classroom time devoted to academic interest, h. total time spent in school, and i. time teachers spend imparting information. The last category involved all grades, while all the other categories involved the 1st and the 5th grades. It is interesting to note that on the category of time students are not in the classroom, the USA scored significantly higher than the other two countries. This category involved only the 5th graders. The study further noted that American parents believing in general in the idea of talent or ability were more satisfied with their less performing children, while in the other two partner countries, the parents, believing in the effort more than the ability were less satisfied with their children's performance. The consequential result of these two belief systems made the American parents push their children less on average, and on the contrary, the scenario was otherwise in the cases of the Taiwanese and Japanese. This aspect of the study can also be attributed to the philosophy behind the specific way of tracking in the USA compared to other developed countries discussed earlier.

The USA spends significantly fewer days in a school year at 180 compared to Japan at 243, and eleven countries remaining in between [10]. If time alone is taken for the purpose of analysis with regard to its impact on educational outcome, one can easily conclude that US students are learning much less compared to students in many other countries. One can equally argue that given the same amount of information introduced, the rate of absorption of the information and attendant understanding is likely to be less in the USA compared to the others due to extra space in the time framework. Time spent in school by itself cannot change students' lives as far as performance is concerned. Time has to be related to various quality activities in connection with educational performance. With the information from the two sources in combination with other factors discussed earlier, one can easily come to a conclusion that other countries are not only introducing quantity of time, but quality of time as well. Therefore, it is not surprising to a scientific observer as to why most other countries are far ahead in the educational ladder in terms of performance [49,10,50].

5. DISCUSSION

So far, by cross-comparing the USA with various other industrial developed countries using aggregate macrolevel data, effort has been made to understand the reason for lower educational performance in the USA. At this point, further effort will be made to probe and understand the case in point by examining the US longitudinal and state level aggregate data. Throughout the discussion, the crux of the theoretical underpinnings are centered on linking student performance with political economy of the US social system in the context of resource distribution, arguing financial strength emanating from the institutional structure makes greater impact than the individual efforts.

To understand this point it is important to see the role of income and its distribution. Over time the USA has made some progress in high school completion rates, giving somewhat of a sanguine picture, however, significantly less, relative to the nation's socioeconomic needs and compared to other developed nations. In 1996, the high school graduation rate for Japan was 99% while for the USA it was 72%, ranking Japan as 1st and the USA as 17th among top 17 industrialized nations [51]. Over time, the USA's increasing graduation rate also did not coincide with increasing educational performance. In 1970, the average Verbal and Mathematics scores were, respectively, 537 and 512 in the Scholastic Assessment Test (SAT-1), and by 1996 they, respectively, came down to 505 and 508 [51]. Further investigation as of 2010 shows additional decline in the area of verbal score, and only a few marginal points increment in the area of Mathematics [52]. The results showed a steady downward trend in the area of writing since its inception. The ACT composite score remained virtually unchanged between 1886 and 2008, with a .30 decline [53].

The declining pattern was also notable by racial and gender differences for both SAT and ACT. In 1970, controlling for inflation by 1996 dollars, the per capita family income for the bottom fifth was \$11,640, while for the top fifth and the top 5% it was, respectively \$86,325 and \$131,450. And by 1996, it became \$11,388 for the bottom fifth, \$125,627 for the top fifth, and \$217,355 for the top 5%, meaning, a harsh picture of income inequality became much harsher [51]. Among the 18 OECD countries, between 1982 to 1992, inequality as measured by the Gini Coefficient, the USA occupied the highest rank at .343, and

Finland, the lowest rank at .233 [51], and within the USA the coefficient rose from .353 in 1970 to .425 in 1996 [51]. In terms of absolute hourly income - including wages plus benefits - for workers, the position of the USA was first in 1985, which by 1996 became the thirteenth [51]. It must be noteworthy to mention that personal gain for the richest echelon of the American society and corporate profit are continuously on the rise, making society more unequal. Common people are working more hours - whose very labor supports the backbone of the economy and the lifestyles of the rich and famous - leaving little time and opportunity for family time, health, education, and leisure.

If one examines the rate of inequality across the 50 states, a similar picture can be found as measured by the Gini Coefficient. Educational performances also bear a similar pattern, meaning, with greater inequality educational performance declines. The US Census Bureau and various other organizations interested in understanding the social health of the nation collect different types of data including income and income distribution tabulated across cities, counties, and states. The available data since 1979 show that the Southern states in general had consistently lower median incomes compared to the Northeastern, Northcentral, and Western states, accompanied by the South, which had the highest Gini Coefficient at .4221 in 1980 and further increased in 1990 to .4453 [54]. Among the 50 states, 16 of them, in addition to the District of Columbia, are located in the Southern zone, meaning, a significant part of the US sociopolitical boundary.

From time to time, the U.S. Department of Education takes the initiative of collecting data from across the USA to prepare the nation's report card, especially focusing on the public school system [55]. It is important to focus on the public school system because most of the students attend public school, and it is where level of income, income distribution and inequality affect most. The 1996 Department of Education report based on the data collected by the Educational Testing Service [55] shows that in the area of Mathematics for fourth and eighth graders and in the area of Science for eighth graders, most of the Southern states including the District of Columbia scored much lower compared to the other states. Two states, Texas and North Carolina, often perform better, usually remaining at the lowest part of the upper 50% of the states. The relationship between state level

inequality and educational performance shows a very negative linear relationship, that is, the greater the inequality, the less the educational performance.

The power and effects of socioeconomic structure, income level and economic disparity are very significant and visible across all societies, and can hardly be avoided from discussion involving philosophical, theoretical, and policy implications [56-58]. They are the arenas where practitioners from all five fields - Science, Politics, Business, Helping Professions, and Philanthropy - face each other either in collision mode or in alignment. When experts from these fields encounter each other in a debate either to collide or align, their meeting point is often decided by larger philosophical orientation and sociopolitical climate. The experts who believe in the system of trickle-down economics will in general support the existence of economic disparity with the notion that such economic policy supports a climate for incentive to achieve. Those who oppose such systems will argue that disparity may in the short run provide incentive to achieve, however, it comes at the cost of social cohesion and civic trust [56-58,51], and provide such positive outcomes for only a short period of time by helping those who support and maintain the system within the top authority level. The position of this paper has been the second one. To probe and establish this stand, initially, data on income, income inequality, and various policy related issues in connection with the proposed analytical model for educational performance have been explored across various developed nations, the USA being the focal point of reference. Then to further strengthen the argument, the relationship between inequality and educational performance has been examined using US longitudinal and cross-sectional data. The argument consistently remains viable as proposed.

6. CONCLUSION

This section will address three important issues, theoretical and policy implications, and limitations of the present research underlying the methodology used. The conceptual framework embedded in the analytical model incorporating various factors presented in this paper is believed to be a powerful and pragmatic one as documented in the literature. The ideas, in terms of the causal factors that have been included in the model are not totally new. However, putting those factors and translating them into a single

model is assumed to be an advancement. The policy makers within public and private sectors, involving both educational and non-educational, must pay attention to the findings of this research if they think that it carries any weight.

The socioeconomic structure, level of income, and economic disparity do not simply affect education alone. They affect almost every aspect of life, as mentioned earlier, including crime [59-63] arrest [59], physical health [64-66], mental health [67], and family stability [68]. These outcomes also have interrelationships among themselves making the problems more confounding, intricate, and difficult to solve [61,62,68,65,63]. This implies that individuals responsible for maintaining the authority structure at various levels of the hierarchy, and across various segments of a particular level should not just intervene in the arena of education, rather across all types of organizational milieu since organizational units have interrelationships, and overarching and over-spilling effects.

To understand this case in point, if data are examined from the top industrialized nations, one will find that nations which experience higher educational performance also in general have lower infant mortality, higher life expectancy, lower suicide rates, lower crime and arrest rates, and cleaner environments. Between 1992 to 1995, the US youth homicide rate was the highest among 22 top developed nations, and for the same time period the US ranked 8th in the youth suicide rate among the same group of nations [51]. The number of prisoners per 100,000 populations in various state and federal institutions was 83 in 1926, which by 1996 became 427, making it highest in the developed world [51]. Drug use is also on the rise. In 1975, the percentage of twelfth graders using drugs was 45. By 1980, it rose to about 54 percent, and then around 1992 it took a sharp decline to 27 percent, however, by 1996, the rate of use increased to a dramatic high at 40 percent [51]. In fact, the power, intensity, and prevalence with respect to the influence of inequality is so immense that observing and studying it in the process gave rise to a whole dynamic environment for the emergence of Sociology as a modern discipline [69].

Arriving at the conclusion will be very futile without discussing one of the stunning developments in the area of education. The famous No Child Left Behind (NCLB) act

introduced in 2001 gradually emerged from the assessment on school accountability which grew out of a report of the National Commission on Excellence in Education during the 1980s [70]). The accountability and assessment of the school system is not new. However, NCLB's approach is very unique with many promises and a vast bureaucratic network without taking into consideration the general organizational features of the society related to medical care, residential stability, community integration, community resources, all linked with educational performance and balance [71], housing vouchers [72], community based economic development, and racial and economic integration of schools [73]. The act is significantly focused on accountability involving various incentives and punitive measures to teachers avoiding the structural components of the school districts and migratory aspects of the students accompanied by inappropriate assignment of teachers and inattention to retention, low pay and low occupational status of the teachers, the scenarios very uncommon among other developed US counterparts [70].

Despite all the promises the act failed to incorporate a holistic measure of education, with significant reliance on standardized testing, unrealistic timelines for clearly unreachable goals, attendant with not providing enough resources to the systemic needs, thereby, making the process very burdensome for all the schools, and, especially for the poor ones [74]. Moreover, having a specific articulation on parental involvement in the initial process – a significant indicator of a child's emotional and academic development - the NCLB clearly failed in the equality of parental participation in the academic mechanism as promised across various educational, racial, ethnic, and linguistic backgrounds except for more formally educated and richer groups [74]. Despite all the assurances and spirit embedded in the NCLB, its success has been critically questioned by those who truly understand the system as a whole.

The Act has been associated with a wide of range of many unwelcoming consequences and unorganized inputs shattering the nation's future. Consequently, some educational scholars arrived at a predicated conclusion that "NCLB law is a near perfect case of political spectacle" [75] having a picture, "much more theater than substance" [76]. Since the initiation of the NCLB act some gains have been noticed in the student scores with an etiological claim solely connected

to the act. However, most scholars with a critical inquisitiveness, including the author of this paper, doubt those gains and the associated claim, given the evidence of massive cheating nationwide incorporating school administrative staff and the students in the face various systemic punitive measures [77,78]). Among all the developed countries, the United States union membership combining all sectors holds at 13.4% ranking 22nd according to 1999 OECD data [18]. Current position stands at about 11 percent. Among all the countries of the world the United States voter turnout rate stands at about 50% having no place among the developed nations [19]. It is possible that in the face of high inequality resulting in a greater disenfranchisement reflected in lower union participation and voter turnout, the mass has been marginalized significantly leading to various negative outcomes. The education may be considered one of them.

Within the past few years attempts have made with much success to cut more funding in the areas of education, health, environment, various state and federal social programs including different crime prevention measures which in combination may make the scenario worse. There is often much clamor by the top leaders to overhaul the present education system in the face of mass critique, especially during the election period. Nonetheless, they carry very little pertinence when it comes to preparedness for actual overhaul and application. The few of those which come into play for actual purpose, much of their emphasis, application, and investment lie in a tenuous approach by cost cutting, reducing teaching and administrative staff, increasing punitive measures as stated earlier, and shifting management and policy focus to private sectors, many of whose goals are economic profit in the name of efficiency rather than social growth. This is not unique to the educational sector, rather most areas including health, criminal justice, social work, and most other areas within both private and public sectors. This is also slowly becoming evident in many other developed nations in the face of sociopolitical and socioeconomic globalization in terms of international competition and efficiency. This implies that those countries may also experience outcomes similar to the USA as they gradually move towards assimilation and emulation along the lines of US socioeconomic and educational paths. The global structural changes are already evident. As far as educational outcomes are

concerned, one needs to hold on to the social time line to see the expected emergent.

The scholars in any field, as they pursue intellectual endeavors, must address the motive behind their quest and emergent properties of such a motive whether intended or not. The motive in this paper was, mainly, twofold: the development of a conceptual framework embedded in the scientific paradigm and addressing policy implications. All the research activities that have taken place in the area of the etiological dimension of educational outcomes were geared along two major lines. One focused on symptomatic intervention within which some research was politically aligned, similar to the NCLB act, and some was relevant to classroom and institution specific settings devoid of political orientations. The others looked at the structural setting as the prime mover embedded in the institutional arrangement, irrespective of any political alignments. However, their works fell into two specific traditions, whether intended or not; one within a general system framework and the other within the paradigm of Marxist political economy. This research attempted to combine both system perspectives into a single conceptual model, somewhat leaning more towards a Marxist framework based on the available data that are historically attendant and cross-comparatively verified, both within and outside the USA. The model presented in this paper was developed based on the availability of conceptually pertinent data and associated literature spanning over decades. The conclusions drawn, however, should be taken with some caution as any scientific activity demands due to the fluxing nature of society and the possibility of reconceptualization in the face of emerging data.

The policy implications that this research entails have been highlighted throughout this paper. In sum, for concrete, sustainable educational outcomes, the entire US social system must be overhauled, initiating first in the economic and political structures with a much more active citizenry. Simultaneously, efforts must be made to develop a national holistic curriculum minimizing gifted programs, increasing the number of school days, increasing the educational budget, and reducing income inequality without waiting for the total political economy to change, similar to what most other developed countries have done. It should also be mentioned that in parallel, progress must also be made in the areas of health, crime, national

security, environmental sustainability, and the infrastructural setting since they all have direct and indirect linkages to education and vice versa.

Finally, which direction should future research lean toward? To reach a firmer conclusion and avoid negative criticism, multilevel research should be proposed which combines macro and microlevel factors within a single analytical model. This will serve two purposes. First, a more precise amount of variance in the explanation can be detected, and second, a common problem associated with a macrolevel approach, the possibility of ecological fallacy, can be investigated and addressed. Additionally, a multilevel approach will provide a much finer identifier in mapping the mechanics and dynamism of macrolevel factors in the way they affect the individual and the respective outcomes under investigation. This will provide scientists and practitioners a much more powerful and socially pragmatic set of tools for empirical observation and educational reforms.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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APPENDICES

Table A1. Cross-national comparison of government ownership of basic industry

NATIONS	Postal %	Tele- phone%	Electri- city%	Gas %	Oil %	Coal %	Rail %	Air %	Auto %	Steel %	Ship %
Australia	100	100	100	100	000	000	100	075	000	000	NA
Austria	100	100	100	100	100	100	100	100	100	100	NA
Belgium	100	100	025	025	NA	000	100	100	000	050	000
Britain	100	100	100	100	025	100	100	075	050	075	100
Canada	100	025	100	000	000	000	075	075	000	000	000
France	100	100	100	100	NA	100	100	075	050	075	000
W Germany	100	100	075	050	025	050	100	100	025	000	025
Italy	100	100	075	100	NA	NA	100	100	025	000	025
Japan	100	100	000	000	NA	000	075	025	NA	NA	NA
Netherlands	100	100	075	075	NA	NA	100	075	050	025	000
S. Korea	100	100	075	000	NA	025	100	000	000	075	000
Spain	100	050	000	075	NA	050	100	100	000	050	075
Sweden	100	100	050	100	NA	NA	100	050	000	075	075
Switzerland	100	100	100	100	NA	NA	100	025	000	000	NA
United States	100	000	025	000	000	000	025	000	000	000	000

Source: the economist [79]

Table A2. Employment in general government and general government revenue

Government employment ^a			Government revenue ^b		
Percentage 2000		Percentage 2008	Percent of GDP 2012		
Denmark	29.7	Norway	29.6	Norway	57.23
Norway	29.5	Denmark	28.7	Denmark	55.48
Finland	22.2	Finland	22.9	Finland	54.39
France	21.8	France	21.9	France	51.81
UK	16.8	Luxembourg	17.6	Sweden	51.41
Luxembourg	16.1	UK	17.4	Belgium	50.97
Canada	15.9	Canada	16.5	Austria	49.16
Ireland	15.4	Australia	15.6	UK	47.74
Italy	15.3	Ireland	14.8	Italy	47.70
Australia	15.1	United States	14.6	Netherlands	46.41
United States	14.8	Italy	14.3	Germany	44.77
Netherlands	12.7	Netherlands	12.6	Greece	44.58
Spain	12.2	Spain	12.3	Luxembourg	43.74
Germany	11.1	New Zealand	09.8	Iceland	43.51
New Zealand	10.1	Switzerland	09.7	Portugal	40.93
Switzerland	09.9	Germany	09.6	Portugal	40.93
Japan	07.7	Greece	07.9	Spain	37.12
Greece	06.8	Japan	06.7	Ireland	34.48
				Switzerland	33.83
				United States	30.83
				Australia	30.01

Sources: a. employment in general government, [80], b. general government revenue [81]

Table A3. Expenditures for education, defense, public health, social security, housing, welfare, and earnings of the poorest 20%

	Education^a	Defense^b	Public health^c	Social security, housing, & welfare^d	Earning poorest 20%^e				
	% of total 1992	% of total 1992	% of total 1988	% of total 1991	% of national income 1990				
Finland	14	USA	25	USA	42.1	Sweden	56	Japan	8.7
Singapore	14	Singapore	15	Portugal	60.8	Switzerland	51	Sweden	8.0
Iceland	13	UK	12	Austria	67.4	W Germany	49	Belgium	7.9
N. Zealand	13	Greece	11	Switzerland	68.2	Luxembourg	49	Spain	6.9
Ireland	12	Switzerland	10	Australia	70.5	Austria	48	Netherlands	6.9
Belgium	12	W Germany	09	Japan	73.5	Belgium	43	Italy	6.8
Netherlands	11	Australia	09	Netherlands	73.6	Netherlands	41	W Germany	6.8
Greece	10	Canada	08	W Germany	73.6	France	41	France	6.3
Norway	09	Norway	08	France	74.2	Norway	40	Finland	6.3
Sweden	09	France	06	Canada	74.6	Italy	39	Norway	6.2
Denmark	09	Sweden	06	Finland	78.6	Denmark	38	UK	5.8
Luxembourg	09	Spain	06	Italy	78.8	Canada	37	Canada	5.7
Austria	09	Denmark	05	Spain	79.2	Spain	37	Hong Kong	5.4
Italy	08	Finland	05	Greece	79.6	Finland	36	Denmark	5.4
Australia	07	Netherlands	05	Ireland	81.8	UK	35	Switzerland	5.2
France	07	Belgium	05	N. Zealand	84.7	N. Zealand	34	N. Zealand	5.1
Spain	05	N. Zealand	05	Denmark	84.9	Greece	33	Singapore	5.1
UK	03	Italy	04	UK	86.1	Ireland	30	USA	4.7
Canada	03	Austria	03	Belgium	89.1	USA	29	Australia	4.4
Switzerland	03	Luxembourg	03	Iceland	89.6	Australia	29		
USA	02	Ireland	03	Sweden	90.4	Iceland	21		
W Germany	01	Iceland	00	Luxembourg	91.5	Singapore	11		
				Norway	93.5				

Sources: a. world resource institute: a guide to global environment 1992-1993 [82], b. world resource Institute: a guide to global environment 1992-1993 [82], c. statistical abstract of the United State [83], d. statistical abstract of the United States [83], e. world development report: investigating in health. world bank [84]

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