9 Building Blocks from High-Performing Countries in PISA: Inspiration for Educational Reform in Pakistan

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The purpose of this descriptive study is to explain the complicated nature of the education reform initiatives adopted by countries in their early years. This will be done through a rich account of the process. An approach to qualitative research is used to achieve the study's goal. The nine components of the education reform identified by Tucker (2019) are all taken into account in this study, although the sample countries' high academic standards are the main focus. The study provides the information with the level of detail and specificity required to comprehend the phenomenon of educational reform and transformational processes carried out in various ways by various nations with various features in order to accomplish the same objective. The PISA evaluation reports, which also present comparisons of participating nations, are the main source of data. However, information was also acquired through looking at online reports from PISA, official websites run by the ministry of education, and publications describing the curriculum framework. In order to understand how the data might be used to influence educational policies, the patterns and themes that emerge from the data will be evaluated to discover relation with the Pakistani context.

Key words: *PISA, Pakistan, Education, Reforms*

Introduction

The aim of this descriptive report is to generating meaning and understanding education reform process through the rich description to understand the complex nature of the education reform undertaken by nations in their initial years. In recent times, Pakistan is going through a transformation process and the existing government of Pakistan is popular for being ambitious and making bold decisions. It has been applauded for making decisions in good faith and with a will to serve Pakistan with its best interest at heart. However, a recent announcement by the Ministry of Education was made in a press conference held on 27th December 2019. The Education minister declared 16 initiatives taken or decided on by the Government.

The 16 initiatives are 1) E-Transfer System for the teachers to facilitate online application for their transfer orders. 2) Insaf Afternoon Schools to address the issue of out-of-school children. 3) Opening 100 Insaf Primary schools for the out-of-school children in Lahore. 4) Insaf Mobile Schools to address the issue of out-of-school children. 5) HRMIS data collection and HR management system. 6) School education policy launched for the very first time in the province of Punjab. 7) Sports Strategy. 8) Danish Schools and Centre of Excellence. 9) Teachers Licensing Act will be implemented. 10) Assessment policy framework for Punjab will be improved and there will be no national standardized assessments for grade V. 11) Urdu will become the medium of instruction in primary schools, English will be taught as a subject and not used as a medium of instruction. 12) Revision of textbooks. 13) opening 110 model schools in 11 districts 14) Missing facilities will be managed (PSCRP) 15) clean and green Pakistan - tree plantation movement. 16) Rationalization, to address the issue of teacher shortage (Press conference, 2019).

These initiatives can be divided into two categories: 1) interventions that address the issues needing immediate attention. 2) Initiatives for educational reforms. The first category involves all those initiatives that are considered inevitable to address the issue of illiteracy at an immediate basis. It is applaudable decision to reach out to children who are out-of-school for various reasons in multiple ways, if this plan becomes successful, it will see a steep increase in Pakistan's literacy rate. However, the second category, that involves the curriculum development, the change of medium of instruction, the revision of textbooks, the development of assessment policy and the school education policy, need a design to structure all these initiatives in a coherent system' rather than strategizing them in isolation. The 'fragmented educational initiatives' or the silver bullets (Tucker 2019) lead to chaos and confusion, rather than helping our children prepare to compete in the global market (Tucker 2019, Darling 2010).

Knowledge has become a global economy. Developing countries are competing in national comparative assessments to establish education systems and to reinforce practices (Dobbins,

2010) that facilitate the development of their young generation in order to ensure the nation's financial stability and economic growth. These economies are keen to adopt approaches that ensure the readiness of their youth for global competence. Likewise, the Ministry of Education in Pakistan (MEP) needs to develop 'a system' that is responsive to address the challenges faced by our children in terms of lacking skills and knowledge to compete in global competence. It should focus on building a modern education 'system', learning from the approaches taken by the developing countries that are now competing with the developed ones, or even surpassing them. These countries have become emerging economies on the globe, that once faced similar challenges like Pakistan has been facing for decades. It is high time Pakistan came out of it. It should focus on building a modern education 'system' that is globally competitive and locally appropriate. A system that consists of cohesive subsystems, each subsystem collaborating with the other subsystems in order to produce value-added outcomes (Tucker 2019).

The goal of the policymakers and designers of the educational landscape of every nation should be to enable their citizens to benefit from the globalized world economy. Every nation, developing or developed, in today's world is focused on the improvement of educational policies and the quality of service provision. Each one of them has realized that in a global economy, the yardstick for success is no longer an internal evaluation by national standards alone, it is essential to gauge how education systems perform internationally, in terms of evaluating the quality, equity and efficiency of school systems against international standards.

One such international comparative assessment is PISA the Program for International Students Assessments. PISA represents a commitment by governments to monitor the outcomes of education systems regularly within an internationally agreed framework and it provides a basis for international collaboration in defining and implementing educational policies, administered by OECD the Organization of Economic Cooperation and Development. So far seven such surveys reveal that securing strong and equitable learning outcomes and mobilizing rapid educational development is not only possible but are published officially to encourage policymakers around the globe to seek directions for their own education reform process.

The focus of this study is to highlight how the high-performing nations approach academic excellence by employing PISA's evaluation to influence the change in their policies and practices. The study focuses specifically on the importance of establishing 'one coherent system' that is contextually appropriate and responsive to the needs of the students. The study takes into account the academic standards that help the experts develop curriculum frameworks and drive assessment processes to measure achievement of those standards. The theoretical framework indicates the importance of 'systems thinking' in the process of managing the complex nature of education reform as opposed to setting up fragmented change policies; a

model of 'learning lab for sustainability' illustrates it very well, Bosch (2010) elucidates learning through this system thinking model as a unique process and methodology for integrated cross-sectoral decision making to solve complex problems to achieve the vision.
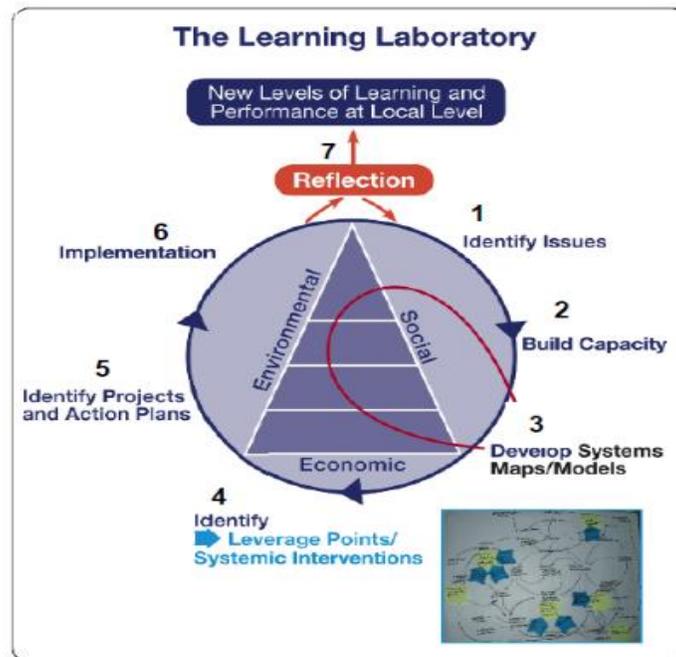

Figure: Systems Thinker think about Systems Education
Source: Under The April 2010 (Volcanic Ash) Clouds of Austria, Proceedings of the IFSR Conversations 2010, Pernegg, Austria

It is very important for all stakeholders to view systems from a broad perspective that includes seeing overall structures, patterns, and cycles in systems, rather than seeing only specific events in the system. Systems thinking allows policymakers to make informed decisions, the choices they make will have an effect on other parts of the systems, and by anticipating the impact of each trade-off, they can minimize its severity or even use it to their own advantage. It is a disciplined approach for examining problems more completely and accurately before decision making and implementing the plan. Therefore, any decision, for example, developing new textbooks is just a silver bullet. Textbooks are not the curriculum but are resources, that should be enriched by the teachers with the use of technology integration, and various ways of introducing inquiry-based learning. Experts have even gone to the length where they do not recommend adopting textbooks. Mooney & Mausbach (2008) argue that adopting textbooks in that manner causes two major problems: 1) it allows publishers to dictate curriculum, and 2) it perpetuates the notion that the textbooks are the curriculum instead of a resource. This process of adopting books is identified as a tradition sin (Wiggins and McTigh, 2010); one of the two sins

of traditional curriculum planning, the first one being "activity focused" It is planning isolated activities and lessons for students' engagement without any alignment to long term goals, another is "coverage focused" covering a large number of content facts marching through textbooks. The devil is in the details. Given the cultural appropriacy as a necessity, the Ministry can recommend textbooks aligned with the high academic standards by setting minimum standards for maximum outcomes.

Thus, this subjective study, with its philosophical roots in interpretivism, is to understand the phenomenon of education reforms through building 'coherent system' and describe how academic standards lead to education reforms if implemented carefully as a subsystem of a carefully planned coherent system. And to discover the principles that are essential to be considered while designing the whole system.

Literature Review

This section focuses on understanding education reforms based on international standards set by PISA and the way different nations are adopting strategies to meet these international standards. We start by reviewing what PISA is? How credible is the evaluation? What impact does it have on the educational policies of the participating countries? How are they setting high academic standards? What are the building blocks of Education reforms as best practices and success components of the high performing countries? The section will discuss the issues faced by Pakistan in the context of Education provision.

OECD, Organization for Economic Co-operation and Development, initiated an international comparative survey known as PISA, Program for International Students Assessments in 2000 with 32 countries, world's leading industrial nation, on board. It is a triennial international comparative study of student learning outcomes in reading, mathematics and science and collaboration problem-solving of 15 years old- the skills judged to be important for adult life in a globalized and knowledge-based society (OECD, 2000; Schleicher, 2007). PISA is designed to monitor outcomes over time and provide insights into the factors that may account for differences in performance within and between countries/economies. A survey that was originally developed for OECD's countries, has now been adopted as a global standard. It is designed to monitor student learning outcomes in every three years and provide insights into the factors that may account for differences in performance within and between the participating countries.

In 2015, the survey was administered in 72 countries including countries that are still developing. Then in 2018, more than 100 economies participated.

Why countries, developed or developing, are attracted towards PISA assessment? Angel Gurría OECD Secretary-General, (2018) claims that "PISA is not only the world's most comprehensive and reliable indicator of students' capabilities, it is also a powerful tool that countries and economies can use to fine-tune their education policies". Around the globe, countries are taking advantage of this educational comparative analysis that shares "evidence of the best educational policies and practices." Countries, in order to achieve the goals of equipping their citizens with the knowledge and skills necessary in this increasingly interconnected world and make them achieve their full potential, are looking beyond their own borders for the evidence of the most successful and efficient education policies and practices.

The best feature of PISA is that it assesses how well the student is able to use what they have learned to solve real-world problems instead of focusing on how well the students have mastered the curriculum (Tucker 2019). PISA is proved to be the most comprehensive comparative longitudinal assessment of students' performance the world has ever had.

East Asian nations and economies like Japan, Singapore, Hong Kong, Macau and Korea have constantly ranked higher on PISA, and through PISA we see the strong showing by East Asian participating countries the overall culture surrounding education in the region. Research shows that countries like Singapore and Hong Kong succeed due to the standards and efforts placed on students and teachers. Researchers have attributed this Asian achievement to factors related to the classroom and teaching practices (H. W. Stevenson & Stigler, 1992), intended and implemented curriculum, and the centralized nature of the examination system (HO. E, 2013).
PISA also assesses economies by how equal education opportunities are for children, it provides an insight to what countries should do in order to effectively distribute their resources equally regardless of class, race or ethnicity of their citizens. PISA indicates that poverty is not a hindering factor for high-performance countries. For instance, in Asian countries like China (one if the four regions that performed well in 2018), most top-performing children come from rural areas, which reflects the overall culture of grit, i.e. their perseverance to work hard and stay patient in difficult times, because these children know that they have to fight hard to get into good schools, they eventually turn up being better achievers than the students in urban areas. And what makes this result even more remarkable is that the level of income in these four regions is well below the OECD average (OECD 2018).

Today's highest performing education systems are examples of the achievements the country has made using PISA analysis despite financial constraints, for example, Estonia has advanced steadily to the top despite the fact that their income and spending on education is 30% lower than the OECD average, Portugal, despite being hit by a financial crisis has managed to achieve high towards the OECD average level.

This analysis has motivated many Asian countries to commit to PISA, to enable their children to excel and fulfil their potential. For instance, India is aiming at benchmarking its educational performance against a wide range of countries. In January this year, India has signed an agreement with PISA to participate in the next round of their survey. The expected outcomes for India in the words of Human Resource Development Minister of India, Shri Prakash Javadekar, is "Participation in PISA will improve learning levels of children and enhance the quality of education in the country." Some of the objectives that Indian Ministry of Human Resource Development, indicated in their print press-release, are aiming at shifting their focus from content-based assessment to competency-based assessment, that will help India to reinforce strategies that will eliminate rote learning, that will be a way towards examination reform process. They also seek global acceptance and recognition of their students and prepare them for full participation in modern societies.

What does PISA assess? In the OECD report 2018, Angel Gurría has beautifully expressed that PISA measures what counts in today's world. The main feature of PISA is to test students' knowledge and skills through a metric that is internationally agreed upon. PISA created crowdsourcing to build the assessments. It has attracted the world's best thinkers and proactively engaged hundreds of experts, educators and scientists to build a global assessment. That is a critical key to success. It tests students' knowledge and skills in Reading, Mathematics and Science. It also measures percentages of resilient students, percentage of students with immigrant status and variation in science and mathematics performances explained by students' socio-economic status. It takes into account the percentage of GDP spent on primary, secondary and non-tertiary education, Annual expenditure by educational institutions per student and ratio of teacher salary to GDP per capita.

The assessment has evolved to capture the global demands of the next century. The children of top-performing nations are able to understand and communicate complex information, they are able to distinguish between fact and opinion using their critical thinking. Their ability is assessed to find, compare, contrast and integrate information across multiple sources, to meet the demands of the digitalized world.

Digital education is no more an option for success. There is a great pressure on the education system to equip their children with the knowledge and skills to meet the rising bar of success in this digital age. They need to build a strong foundation with digitalization and globalization as an essential element in academic standards. Economies are now shifting towards regional hubs that are linked together by global chains of information, digital technologies are providing unprecedented opportunities and the citizens who cannot navigate through the digital landscape

can no longer participate in the social, economic and cultural development of their nations. For this generation, the digital world has become a sizeable part of their real world. Children now growing up having smartphones but poor education will face real risk (OECD, 2018).

A book by Tucker (2019) "Leading High-performance school systems, learning from the bests," with the help of his team from NCEE National Center on Education and Economy, sheds light on the key aspects of an education system that works effectively in this rapidly changing, knowledge-based world. The takeaways from the book in this paper are two: 1) emphasis upon systems thinking and growth mindset and 2) emphasis upon setting high standard instructional system and quality of assessments.

Tucker (2019) distilled nine building blocks of a world-class education system that make any nation perform at higher levels on PISA. Tucker points out that though meeting these nine principles is key, there is no one way to implement these principles. Top performers strategize them and implement them in different ways to different degrees. These nine building blocks are:

1. Provide Strong support for children and their families before students arrive at school
2. Provide more resources for At-Risk Students than for others
3. Develop World-Class, Highly Coherent Instructional Systems: Top-performing systems typically have well-developed, highly coherent, and very demanding instructional systems for all students that incorporate student performance stands, curriculum, and assessment, as well as the use of instructional methods appropriate to the goals and standards of instruction. the standards in top-performing countries are set high not just for mathematics and language literacy but for all the core subjects. These standards are used to construct curriculum frameworks. The framework is used to construct course syllabi. The syllabi are used to build matching examinations. Teachers are taught in teachers' colleges to teach these courses and use these exams. The whole thing fits together seamlessly.
4. Create clear gateways for students through the system, set to global standards, with No Dead Ends
5. Ensure an abundant supply of highly qualified teachers.
6. Redesign schools to be places in which teachers will be treated as professionals, with incentives and support to continuously improve their professional practice and the performance of their students.
7. Create an effective system of career and technical education and training.
8. Create a leadership development system that develops leaders at all levels to manage such systems effectively.
9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale

Tucker (2019) shares the recipe of success that these nine building blocks constitute one system, they are not nine independent systems, but subsystems of one grand education system. The top-performing nations carefully plan how all these principles fit together in their scheme of the plan not leaving any one of them. They build these principles with their vision at the centre. They do not build them at once. They adopt the approach of architects, keeping the whole thing in mind and with precision, they carefully design their plan. One of the reasons, Tucker (2019) stated, why the US performance is mediocre on the league table is the failure of the policy makers in building high performing education system, the one that is carefully designing complex and highly effective subsystems that work in harmony with all other systems in order for one grand system to function to their full potential. It is a matter of getting into the habit of systems thinking, and move away from implementing series of random acts of intervention, because there is no silver bullet that can work. Whereas, high-performing countries implement policies and practices and build comprehensive systems Reforms in Pakistan have been ineffective for a number of reasons, one of them is because of silver bullet strategies and piecemeal approaches, the issues become significant when the leaders and policy-makers do not stay around long, The ones taking over either reject or simply ignore the priorities and strategies embraced by the previous one, so the factor of continuity and prioritizing is always under the threats of discontinuity and introduction of new policies.

Methodology

The study employs the qualitative approach because it is considered to be a powerful method of studying implicit and explicit aspects of this study. It The qualitative approach implies the study's complex nature that relates to the cultural characteristics that cannot be counted or expressed in numbers and entails comparisons of intangibles i.e. the common cultural aspects by studying the material created by the primary sources. Secondary research is a methodological approach adopted for this study. It takes into account all nine building blocks of the education reform identified by Tucker (2019) but focuses mainly on high academic standards set by the sample countries. The exploratory nature of this study results in identifying the series of best practices and emerging patterns of decision-making and prioritizing processes followed by these emerging high-performing countries in order to provide a model for Pakistan education authorities to consider while planning their own education reform process, contextual responsive one.

The study conveys information with the detailed specificity necessary to understand the phenomenon of educational change and transformational processes in different ways by different nations of different characteristics to achieve the same goal: that is to design a system rather than

a few sporadic initiatives to achieve educational excellence and global competence. The study highlights the best practices and the success components identified by the researchers that contributed to achieving outstanding performance in PISA. The primary source of data is PISA evaluation reports that also publishes comparisons of participating countries. The data are also gathered by reviewing online documents such as PISA reports, Official Education Ministry Sites and the Curriculum Framework documents. The patterns and themes emerge the data would be interpreted to find relevance with Pakistani context, in order to reach out for an understanding of how that information be used in influencing educational policies.

The validity (Maxwell, 2010) of data is taken into account by selecting documents that are only from official resources and authentic research database for analysis; using rich thick description ensured that there is sufficient level of detail about the topic is included so others will draw the same or similar conclusions (Creswell, 2007). This research is expected to lay the foundation for a social change. The organization of findings is based on drawing on the work of researchers studying PISA's evaluation reports and its impact on participating countries' policies and practices, along with PISA's own publication.

Data Collection and Discussion

This section explores data sorted under each research question, i.e. countries that reformed their education system in the light of PISA's evaluation. The table below shows a shift in the ranking of countries based on the average of their combined literacy reading score. The table below gives a quick review of the countries ranking, compiled from various primary sources on PISA official site.

Year/Rank	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
2018	China	Singapore	Macao	Hong Kong	Estonia	Canada	Finland	Ireland	Korea	Poland
2015	Singapore	Hong Kong	Canada	Finland	Ireland	Estonia	Korea	Japan	Norway	New Zealand
2012	Shanghai	Hong Kong	Singapore	Japan	Korea	Macau	Canada	Taiwan	Ireland	Poland
2009	Shanghai	Korea	Finland	Hong Kong	ACT	Singapore	Canada	WA	New Zealand	Japan
2006	Korea	Finland	Hong Kong	Alberta	Ontario	Columbia	Canada	Quebec	New Zealand	Ireland
2003	Alberta	Finland	Columbia	Korea	Ontario	Canada	Liechtenstein	Quebec	New Zealand	Newfoundland
2000	Alberta	Finland	Columbia	Quebec	Canada	Ontario	Manitoba	Saskatchewan	New Zealand	Australia

Table 1: Ranking of Economies on PISA

Full assessments of every subject in the first time sets the scale and starting point for future comparisons. Every subsequent analysis provides an opportunity to understand the level of performance in a core subjects and indicates whether students' skills are keeping pace with the changing nature of test in Reading, mathematics and science and how proficiently they are able to use these skills contemporary societies.

In the table below establishes trend in every economy's performance by comparing all available results of each subject with the results of 2018.

		Improving trend in reading	Non-significant trend in reading	Declining trend in reading
Improving trend in mathematics	Improving trend in science	Albania (ms), Colombia (rm), Macao (China) (r), Moldova (rms), Peru (ms), Portugal, Qatar (rm)	Georgia (rms), Malaysia (rms), North Macedonia (ms), Turkey (r)	
	Non-significant trend in science	Estonia (rm), Israel (m), Montenegro (rm), Poland, Romania (rm), Russia, Serbia (rm),	Brazil, Bulgaria (m), Italy, Kazakhstan (rms), Malta (rms), Mexico,	
	Declining trend in science			
Non-significant trend in mathematics	Improving trend in science	Singapore (rms)		
	Non-significant trend in science	Jordan (rm), Chile (m)	Argentina (m), Denmark Indonesia, Japan, Latvia, Luxembourg (r), Norway, Panama (rms), Spain (r), the United Arab Emirates (rms), the United Kingdom (rm), the United States, Uruguay (r)	Sweden, Thailand
	Declining trend in science	Germany	Austria, Croatia (rm), Greece, Hong Kong (China), Ireland, Lithuania (rm), Slovenia (rm)	Costa Rica (rms)
Declining trend in mathematics	Improving trend in science			
	Non-significant trend in science		France, Chinese Taipei (rm)	
	Declining trend in science		Belgium, Canada, the Czech Republic, Hungary, Switzerland	Australia, Finland, Iceland, Korea, the Netherlands (r), New Zealand, the Slovak Republic (r)

Key: Dark blue bar = improving mean performance across all three subjects
Medium blue bar = improving mean performance across two domains out of three (no decline in the remaining one)
Light blue bars = improving mean performance in one (with no decline in the other two domains)
The dark grey bar = declining mean performance across all domains
Medium grey bar = decline mean performance across two out of three domains with no improvement in the remaining
Light grey bar = declining mean performance in one domain with no improvement in the remaining one.

Source: OECD, PISA 2018 Database, Australia

Discussion

In Global Context

In NCSL report State Senator Luther Olsen, R-Wisc concludes "Every championship team, no matter what sport, knows the fundamentals of the game and practices those relentlessly. I believe we have identified the fundamentals of education that are necessary to succeed in preparing our children to be internationally competitive in today's changing economy. It is imperative that we acknowledge and adopt those fundamentals if we are to be champions in education again."

The PISA survey influences educational policies through an international competitive process Breakspear (2012) mentions that the intense influence on countries' educational debates and policy changes triggered by PISA's evaluation came to be known as "PISA shock" in several nations after the release of the first round of PISA results Finland was taken by 'surprise' due to its high performance and the international attention it secured in 2000. Both Switzerland and Germany received a shock as the results were lower than expected Bieber (2010), these countries responded back with a significant amount of reforms in the educational debate and subsequent policy reforms in education. On the contrary, the United Kingdom and New Zealand did not initiate any education reforms in response to PISA 2000. In the UK's context, Knodel and Walkenhorst (2010) concludes that the reason the UK did not initiate any response to its moderate performance was because the years prior to PISA results UK proceeded with significant reforms, whereas Dobbins (2010) states that New Zealand because it performed high on PISA, reinforces their existing policies and therefore, no substantial changes required to implement.

The below Table organizes data drawn from the research-based articles and literature accessible online and in print copies. There are numerous studies consisted of qualitative and quantitative strands that covered PISA 2000, 2015 are taken into account populating the table below, the table will keep populating it is a work in progress:

Countries	Description of the Policy change
Germany	Ertl (2006) Three main areas of policy changes: 1. Political discourse 2. Curriculum development Processes 3. Academic discourse on education
Demark	Egelund (2008) Analyzing the outcome of their very well-funded Danish Schools that performed at an average level on PISA.
Poland	Zawistowska (2014) A significant change in the educational system, the introduction of externally evaluated examinations with multiple-choice format is suggested to be a contributing factor to PISA's score
Japan	Takayama, (2008) In response to the decline in 2003 reserved, low-pressure curriculum policy and revised the national assessment processes
Singapore	Singapore abolishes school exam rankings, says learning is not competition

Most states have yet to move in this direction, and implementation of rigorous standards has been haphazard at best. In retrospect, the NCSL study group concludes that states have tried to find individual "silver bullets" without setting decisive goals and creating a thoughtful, systemic approach to building a coherent system with an appropriate timeline for implementation, as did the other high-performing countries.

In NCSL report State Senator John Ford, R-Okla claims that "Many states have implemented individual education reforms but have not accomplished the results hoped for. One of the most important lessons I have learned during this study is the value of having a well thought out and widely accepted vision that includes the coordination of multiple reforms to produce a world-class education system."

In the context of Pakistan
The challenge now is unprecedented. Pakistani educators must figure out the ways to design a coherent system that not only addresses the challenges faced by the country but also facilitate world-class education for its citizens. There are undeniable challenges ahead to face but the good news is that the lessons we learned from the high performing developing countries motivate us to think differently and encourage us to take the bold decisions in the right direction.

Pakistan's National Education Policy 2017 was introduced with an aim to provide "balanced educational approach, politically united, economically sound and prosperous, morally and spiritually elevated nation's program" (National Education Policy, 2017), it is a detailed document explicitly articulated with all essential components where Government can intervene and improve. The problems faced in Pakistan is explained in extensive detail. Studying developing countries bring us to the realization that all these countries have faced similar challenges and they came out of it designing a coherent Education system, the subsystems of which function in harmony with each other, they are not individual problems that need to be dealt individually, the whole machinery works in sync to produce better outcomes. Pakistan has signed an international commitment to achieve 100% enrolment at the secondary level by 2030, as a part of committing to achieve 17 Sustainable Development Goals (National Education Policy, 2017), there is less evidence to see how it foresee improving the quality of education to meet international standards.

Let's take an example, the issue of undersupply of teachers in rural areas, if this issue is considered to be resolved by hiring teachers of insufficient qualification or inadequate capability of teaching, that will be a quick fix and may be perilous to the system in the long run. Unfortunately, these teachers when staying in the system for a very long time become a stumbling stone in the development process, their inadequate knowledge and skills, sense of insecurity, unwillingness to change impede progress. If the government decides to train them there is no measuring mechanism in place to ensure the quality of teaching has been improved, there is no yardstick to see the difference between student achievement before and after the assessments. The existing assessment processes, on the other hand, are in question for its reliability and credibility, for many educators, it is also the concern of relatability to international standards.

By way of example, teachers' licensure intervention, an excellent policy to revive academic reform process, teachers' licensure can be employed as an incentive to retain a quality pool of teachers in the profession. Ensuring to higher best quality teachers require a subsystem to be in place. Reference to Tucker's (2019) analogy of virtuous circle illustrates it the best, the system designer's approach will be as follows:

Yet another example, the policy about the medium of instruction to be changed to Urdu, the question is how this intervention fits into the grand scheme of things. How would that address a child's use of English language from a very young age when using technology for communication and research, in this age of information technology when artificial intelligence is taking over traditional ways of instruction, a child is expected to be connected to the world

outside their classrooms. That is an essential demand of 21st-century skills. There will be repercussions on a much wider scale that can have damaging effects in developing Inquiry-based learning skills, communication and connectivism in the global world.

As I am writing this, a tweet appears from the ministry of education with regards to technology integration. "Salah Uddin Khawaja (Founder of a digital literacy NGO for children 'Khud') called on to discuss how the non-profit organization can help the provision of digital literacy skills to the students of government schools." Where does this policy fit into the grand system? A system designer sees Integrating ICT as an embedding component of the curriculum development and designing process. Any intervention of ICT training is a silver bullet if it is not an embedded component of the curriculum taught. The approach policy designer and decision-maker adopts is to develop a high standard a curriculum framework, to begin with, and then create a pool of experts and service providers to outsource or crowdsource, this will be multiple times effective strategy in terms ensuring the academic outcomes, allocation of resources and measuring impact size of innovative approaches to develop a mechanism of continuous improvement.

Recommendation

The choice of the prescriptive analysis aimed at finding the optimal recommendation for an education policymaking process. It is high time to realize that our current system is obsolete, it is not designed to address 21st-century challenges. The paper is clearly advising the ministry of Pakistan to develop a coherent educational policy (system) with PISA based 9 building blocks. This requires a much more systematic and serious set of investments into implementing the best practices learned from high performing education systems, upscaling the successful ones in our system and keep evaluating where do we fit into the grand scheme of things. It is a matter of reimagining and re-engineering our education system as a continuous development process.

From the standing point of view as a beginner, how to begin the development process? Tucker (2019) proposed a series of steps to reimagine the education system, the one that builds the foundation of adequate, well-directed resource allocation, strong teaching, thoughtful curriculum and assessment processes that are aligned with the instructions. This is not a one time job, it requires to scale up productive ideas and consequently build on what is learnt from processes of continuous improvement over time. Following is a series of steps to get started right away to turn around our education system:
1. Build an Inclusive Team and Set Priorities.
2. Study and Learn from Top Performers.
3. Create a Shared Statewide Vision.
4. Benchmark Policies.
5. Get Started on One Piece.

6. Work Through "Messiness."
7. Invest the time.

It is important to not fall into the trap of a system based on a vicious circle, and adopt the virtuous circle as illustrated by Tucker (2019). A vicious circle is full of negativity and leakage of resources, efforts and time, it is the opposite of the notion of "systemness" Tucker (2019). It depicts a system where the policies or subsystems (nine building blocks) are not connected if one building block is planned and funded and is implemented and the other is not, the implemented one will also not be effective, for instance, if teachers' licensure is implemented but is not raised compensation, or if compensation is raised but continue to take teachers from lower tiers of graduates, it would be a waste of money. If they provide teachers effective curriculum but no time and resources to use them, the investment in training teachers would be wasted, if the quality of teachers is improved but nothing is done to improve school leaders, great teachers will lose motivation and would not concentrate on best teaching practices. And so on. The examples are endless, where the parts and pieces of the education reform are fractionated and fragmented, results are likely to be a bunch of frustrated and disgusted teachers and an unsuccessful education system.

It is important for the policy makers to broaden stakeholder's premise for sustainable and coherent system make policies in collaborating with stakeholders in the finance and political ministries. Education cannot be separated from the Economy of the nation, the more is invested in education, the more stable the economy gets.

This research methodology has a number of limitations. This brief exploratory study is without a deep analysis of the way PISA plays into the complex reformation of educational policies of participating countries and its impact on the development of these countries. This paper is a foundational work on which the researcher seeks to build the next research in the following areas of study-specific policy changes based on 9 Building Block of education system reform process:

1. Curriculum development
2. Assessment processes
3. Technology integration practices
4. Teachers preparedness and learning
5. Resource allocation (equity)

A comparative study using case study approach can be conducted with a focus on implementing best educational practices in Pakistan, where a strong early education system, a reimagined and professionalized teacher workforce, robust career and technical education programs, and a comprehensive, aligned system of education are the common elements.

Along the lines, gaining insights from the impact of PISA on developing countries in advancing their Education standards, **it is highly recommended for Pakistan to participate in the next round of PISA, PISA 2021.** Grek (2009) in comparative national case study investigations has concluded that PISA can be used nationally as a governing resource, as it enables policy actors to justify and legitimize proposed reforms based on evidence from internationally comparable data. And this the way Pakistan is able to develop its own system, a grand scheme of Education.

Pakistan is full of potential and is an immense reservoir of untapped resources, it has a DNA in its genes to outperform once guided and directed and supported well. It is absolute at the discrete of the government make every effort in developing a system that is designed to get better and better and stay away from implementing fragmented interventions that will show no sizeable productivity. It is a do or die situation, as in the race of global competencies we have no time to lose. For Pakistan, nothing is impossible, once the system based on the vicious circle is gotten rid of and replaced by establishing a system based on the virtuous circle, the education standards, assessments, the quality of teachers, equity and economic stability gets better and better.

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