

The Way Forward in Analyzing National Educational Systems: A Re-Considered View

Mark H. Moore and Marla Spivack

Abstract

Low- and middle-income countries around the world face a profound educational challenge. At stake in meeting this challenge is their ability to participate effectively in an increasingly interdependent global economy, society, and polity, and to meet many other goals set out in the International Declaration of Human Rights. Turning the current challenge into an important opportunity will, by definition, require significant improvements in the productivity of national education systems. Productivity changes on this scale require innovations at all three levels of the national systems: *micro* (classroom pedagogy), *meso* (school and district management), and *macro* (national politics and policy) levels. This paper sets out principles for designing a process initiated and supported at the national level that can animate, guide, and evaluate the varied innovations that will help national government meet their educational goals along a path that supports their economic, social, and political goals as well.

The Way Forward in Analyzing National Educational Systems: A Re-Considered View

Mark H. Moore
Kennedy School of Government, Harvard University

Marla Spivack
Kennedy School of Government, Harvard University

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Introduction

The international community has committed itself to the goal of quality education for every child in the world. That goal necessarily includes a significant expansion in the *scale* of educational efforts, particularly in low- and middle-income countries. This commitment, by itself, has already accomplished one important goal for these national educational systems: *wider, nearly universal, access to educational opportunities for students in developing countries across the world (World Bank, 2018).*

Unfortunately, this dramatic increase in *scale* and *access* has not produced the expected and desired *impact* on the students who have been newly enrolled in the expanded systems. Levels of educational achievement remained low relative to international standards, and stable with respect to the past performance of the national school systems (Pritchett, 2013; Pritchett, 2018). Nor have the expected benefits of improved educational performance produced the desired improvements in economic, social, or political conditions.

Improving educational performance at individual and aggregate levels in society in ways that can produce valuable changes in the quality of economic, social, and political life in society as a whole requires more than increases in scale and access. It requires significant, sustained, cumulative improvements in the performance of the national educational system as a whole. This, in turn, will require significant innovations in the operations, management, and governance of the system. The innovations have to start at the micro level of the system where teachers engage students, parents and local communities in helping each student develop his or her potential. In order for this to occur, there have to be innovations at the meso levels of the system where those managing and administering the national system find the means to support, identify, and diffuse important educational innovations. And, there have to be changes at the macro levels of the system where those governing the system have to find the means to mobilize a nation's economic, social, political sectors behind a broad campaign focused on educational improvement leading to economic, social, and political development.

This paper lays out a framework for understanding how to promote innovation through the national level governance of education systems. It is organized in two parts.

Section I lays out the features of education systems that create problems for national governments as they seek to animate and guide sustained, cumulative innovation process across the sector as a whole. A nation's educational system is inevitably a system of delegated authority, distributed influence, and shared responsibility in producing results observed and evaluated against different (sometimes competing) goals and objectives held at individual and social levels. These features of the system can and do frustrate both "top down" (bureaucratically managed) and "bottom-up" (market driven) policy and programmatic interventions.

To a degree, the system can be, and has been modelled by using a "principal/agent framework" in which individual citizens acting *en masse* are seen as the "principal arbiter" of the important educational values to be produced at individual and social levels (Pritchett 2015, Spivack, 2021). The citizens (including both taxpayers and parents), in turn, delegate important choices about the governance and management of the educational production system to the government. The government, in turn, uses its assets – both tax dollars, and regulatory authority – to shape *both the demand for and the supply of educational services*. This observation is sufficiently important to the analysis of the system that it is worth taking a close look at exactly how this influence is asserted.

Consider, first, how government influences the “demand side” of education. On one hand, government shapes the demand for education by *creating individual rights (or privileges) to educational services*. It follows up on this commitment by paying for the provision of the educational services required to vindicate this right through the use of tax dollars. This can be seen as the “public service” side of governments influence over the effective demand for education.

On the other hand, government shapes the demand for education by *requiring parents and children to participate in some educational process designed to ensure that the country as a whole can benefit economically, socially, and politically from having a well-educated citizenry* that understands and can take advantage of the existing economic, social, and political opportunities in the society. In short, government uses both carrots and sticks -- rights and obligations -- to stimulate and encourage the individual and aggregate demand for educational services.

Consider next, how government influences the “supply side” of education. On one hand, it shapes the supply side by directly producing educational services. In most countries, most educational suppliers are owned and operated by government, and (presumably) guided by the government’s aims and objectives. As noted above, those aims and objective include not only satisfying individual desires for education, but also to establish and enforce individual duties to become educated in support of economic, social, and political goals.

In many countries, however, room is created for some citizens to “opt out” of the public schools, and to create and attend schools (e.g. educational service suppliers) that are neither owned, nor directed by the government. This carves out a domain in which private educational suppliers can operate either in competition with, or alongside the existing publicly financed and operated schools.

These “private, non-governmental” schools are not entirely independent of government oversight, however. On one hand, they are often regulated by government to be sure that they are reliably contributing to national educational objectives. On the other, and they are often partially supported by government subsidies to the suppliers either in the form of contracts, direct relief from taxation, or public subsidies to individual purchasers of educational services (vouchers). These financial supports may also influence the operation of schools by conditioning the subsidies on certain aspects of performance.

Table 1 illustrates these basic instruments that governments use in different combination to shape the structure, conduct and performance of the educational “industry”.

Table 1:

How Government Influences the Operations of the Educational Sector

By Influencing both the Supply and Demand for Educational Services

	Government Influences the Demand for Educational Services	Government Influences the Supply of Educational Services
Government Supports Educational Sector with Tax Dollars	Government Pays the Costs of Vindicating Rights and Providing Privileges Established for Educational Services	Government Subsidizes or Provides Tax Breaks to Voluntary Sector or Commercial Suppliers as Part of Supply System
Government Guides and Directs Through Regulatory Authority	Government Establishes Rights and Privileges for Educational Services Government Creates Duties and Obligations on Parents and Students to Become Educated	Government Provides, Directs, and Controls Public Schools Government Regulates and Conditions Subsidies to “Private Schools” – both voluntary sector and commercial

The extensive use of government tax dollars regulatory authority to create the “demand” for educational services, and to control the actions of both private and public educational *suppliers* should make the government a powerful “principal” whose only problem is to create a sufficiently complete and coherent performance contract with the educational suppliers that they will be directed and motivated to produce the desired national results (Pratt and Zeckhauser, 1985; Moore, 1993; Gailmard, 2014). The difficulty, however, is that it is exceedingly difficult to construct such a contract and use it to effect high levels of performance by educational suppliers. The reasons are three.

First, the cost of monitoring is very high and imperfectly effective. The government often ends up monitoring educational performance either in terms of tests of academic achievement (educational outcomes), or on compliance with established educational procedures (best practices based on professional standards). The first does not really tell us all that we want to know about the system, since the desired educational outcomes include effects on individual and social advancement in economic, social, and political realms – effects that are further down a chain of causation from academic achievement.

The second could work to produce a kind of equity in the system (in the sense that each student gets a similar treatment), and it might help eliminate corruption in the system if the educational suppliers are held strictly to account for following the rules. But such a system can only produce the best possible educational results if the prescribed methods are both effective and fair, and good and just. If the procedures are not based on empirical knowledge about what works, and broad agreements about what constitutes an efficient, effective, just and fair educational system, then fidelity to the prescribed methods cannot guarantee the best possible educational performance. In fact, if the existing procedures are not known to be the best, or if the ends and means of the educational system as a whole are in flux,

then strict adherence to existing policies and operational methods can freeze existing operations at a level of performance well below the real possibilities of the system.

In short, we cannot easily monitor performance based on compliance with procedures because we do not now have sufficient knowledge about effective educational practices to write down policies and procedures that we know will work to achieve diverse goals across a varied and dynamic economic, social, and political environment.

This leads to the second problem: it is quite possible that important knowledge about what educational processes would work for particular purposes with particular populations is held not among the “principals” who govern the system at the national level, but by the “principals” and “teachers” and “parents” operating in more local, client-facing schools. This “local knowledge” may be at odds with the “nationally prescribed program.” And it may well be that the national government wants to use the educational system to advance and override local ends and means as a way of building what those at the center view as a better society. But, to the degree that the performance of the system ultimately depends on both the acceptance of local agents, and their ability to produce the desired results in their particular context, it is both necessary and potentially desirable to engage local agents in both suggesting what methods might be tried when current methods seem to be failing, and what particular ends of education might not only “satisfy” the “customers” but also engage the producers and consumers in energetic efforts to concrete action that can produce the (locally) desired results.

Of course, because the ability to monitor the performance of local educational agents is weak, there will always be a certain amount of *de facto discretion* that local agents can use to make their particular imprint on the ends and means of local education with the potential benefit of generating more enthusiasm and improved educational results among the locals. But that comes at the price of disrupting the centrally mandated educational ends and means, and enabling the pursuit of idiosyncratic or parochial educational ends, and unconventional or untested educational methods. If, however, we need some variation in the national educational system to explore different ends and means, the system could probably get considerably more of this by enabling a significant amount of *de jure discretion* that encourages local systems to try things that they think will be more acceptable and more effective and more just in local contexts. Allowing “searches” for better educational methods through a system that encouraged, recognized, and evaluated innovations nominated by educational suppliers, might allow more “positive deviance” in the system that would allow the system as a whole to be fitted more exactly to local conditions and aspirations, and accelerate the accumulation of more general knowledge about what works best in many places for many purposes.

This leads to the third key point: the enthusiasm of agents for doing the work well is important not only to ensure compliance, but also to support the sustained dedication and confidence that adds a great deal to the effort, but is hard to require and observe. To the degree that agent support for the effort is necessary, and cannot be secured only through contract enforcement, it may be important to acknowledge and respect the commitment and knowledge held among the different actors who are key to inventing and producing the actions that can deliver the desired results, and grant them some significant degree of *de jure* discretion in defining the important ends, means, and measurement of publicly supported and regulated educational services. Treating these individuals with respect for their professionalism will induce and enable not only their commitment to living up to established

procedures, but also to adapting them to individual circumstances, and even developing some better methods of education for all than are now embodied in existing standard operating procedures.

These points suggest that a certain amount of slack and variability in a national educational system –both that which is produced by the use of the *de facto* discretion and that which is produced by the use of *de jure* discretion of agents -- might not only be *inevitable*, but also desirable to improve the performance of the system as a whole in both the short and long run. Stiff central control may be necessary to get the system moving, but the sooner that central control could adapt to a learning approach where local variation of certain kinds is encouraged and supported to become more responsive to local conditions, and to suggest broader, more robust and effective methods for the system as a whole, the better the system might become over time. In short, the system may perform best over time when it focuses on “learning about learning” over time rather than moving immediately to a standard system that almost certainly will not fit all local circumstances, and is probably not the best system overall for the indefinite future.

Section II lays out nine design principles that can inform national thinking on how to create an environment that is conducive the system of innovation that can support learning about learning for the immediate and indefinite future. They are:

1. The National Education System is the proper unit of analysis for results, performance, and interventions
2. The National Educational System does not consist only (and perhaps not even primarily!) of the national government’s ministry of education; nor only its publicly owned, managed, and financed public schools
3. The goals of the National Educational System should be defined broadly enough to encompass both the social values and aspirations of the society, and the wide effects produced by its efforts on a nation’s economic, social, and political system
4. The performance of the National Education System should be judged -- and measured-- at both the individual and aggregate level, in both utilitarian and justice terms, through the use of both comparative statics and dynamic changes in age cohorts
5. Significant investments should be made in the development of consistent, reliable measures of system level performance in educational achievement and the relationship of educational achievement to collectively desired economic, social, and political goals
6. The variation in educational practices that inevitably arise as a result of both *de facto* and *de jure* discretion should be recognized and used for system-level learning about what works for what purposes in what kinds of places – not simply what works everywhere all the time
7. The central government should seek to ensure that that a diverse, strategically important set of innovations in learning practices for different purposes in different locations is being stimulated by the national government if they are not emerging from existing practices
8. The central government should develop a national system for encouraging, recognizing, cataloguing, and learning from innovations initiated in the field (positive deviance), or stimulated by the national government
9. The central government should help to organize the authorization, financing, and encouragement of educational producers in a way that distinguishes value-creating innovations from fads, and helps to scale the value-creating innovations from those less valuable

10. The national government should engage in a continuing political discussion about both the ends and the means of education, and the role that education plays in individual and collective life.

Section I: Understanding the innovation challenges national education systems face

Analyzing National Educational Systems as a System of Delegated Authority

Researchers focused on the performance of national educational systems have developed an analytic scheme to advance our understanding of why children were not learning despite the increased accessibility of educational services. That scheme relies heavily on “principal/agent theory” (Zeckhauser et al 1985; Moore, 1993; Gailmard, 2014). The core idea is that some social actor is defined as the “principal” and other social actors are viewed as “agents.” The “principal” is important to the organization, direction, and support of a particular social production system for two reasons: 1) the principal decides to grant resources to support the activities of the producing organizations; and 2) the principal defines the purposes, evaluates the performance, and calls the producing organizations to account for their performance. The “agent” is important because it is the agent who has the knowledge and capacity to use the resources supplied by the principal to achieve the principal’s objectives efficiently and effectively.

Researchers associated with the RISE Programme have applied this framework to analyze the systemic origins of poor performance in education systems (World Bank, 2004; Pritchett, 2015). One of the key insights from their work is the role that *incoherence* among different subsystems can play in producing and perpetuating poor outcomes (Spivack, 2021; Kaffenberger and Spivack, 2022). For example inconsistency between national assessment systems and national curriculum, or between curriculum and children’s learning levels can hinder progress (Crouch, 2020; Atuhurra and Kaffenberger, 2020; Hwa, Kaffenberger and Silberstein, 2020).

The problem in the relationship is the challenge of ensuring that the “principal’s” values, purposes, and objectives are reliably reflected in the “agent’s” decisions about how to use the principal’s money for the principal’s purposes. In this conception, the agent will always be tempted to divert some of the principal’s money from the principal’s purposes to their own (i.e. the agent’s) purposes, and preferred methods. These challenges can cause performance with respect to the principal’s purposes to be worse than it could be.¹

¹ Delivering on the principal’s purpose is further complicated when there is conflation between ends and means. For example, one way to define the ends of education could be the learning objectives education authorities set. To achieve those learning objectives education authorities might create a standardized curriculum for teachers to follow, with the assumption that following this curriculum will lead to students meeting those learning objectives. However, in their zeal to ensure learning objectives are achieved, principals (education system managers, government officials, or school leaders) may come to focus on completion of the curriculum as a key objective for agents (teachers) (Hwa and Pritchett 2021). In systems where completion of the curriculum is a central objective for teachers, what was originally meant to be the tactic for achieving an objective (means), has now become the objective itself (ends). Alternatively, the principal and agent could conceive of the ends at different levels of abstraction. The principals may set out learning goals focused on development of “21st century skills” while the

The proffered solution is for the principal to establish a contract along with a measurement system that can reliably monitor the performance of the agent with respect to the principal's purposes, along with a process of accountability that allows the principal to withdraw support from the agent if the agent's performance is not satisfactory. This "complete contract" between the principal and the agent provides both an economic incentive, pecuniary or non-pecuniary, for the agent to perform well with respect to the principal's objective, and a control mechanism that allows the principal to respond to poor performance by the agent by demanding improved performance, or choosing to work with a different agent. On this view, shortfalls in performance occur when incongruities and breakdowns occur in the alignment of the purposes of the principals with the actions of the agents.

Performance becomes less objective, and as a result harder to define and measure, in a system in which there are multiple actors that self-identify as the principal, both because they have a legitimate claim to being the arbiter of value in the education system and because they bring resources to bear to achieve their ends (Moore, 2013).²

When one brings this framework into the context of national educational systems, one can imagine the particular conditions that would make for a high performing educational system. It would be one in which a consistent line of delegated authority and responsibility for achieving particular educational goals was established by a national principal that ran through producing agents. That shared understanding would be embodied in some kind of agreement or contract that defined the purposes of the principals and aligned those purposes with the responsibilities of the agents. That shared understanding, in turn, would be enforced through the development and use of a measurement system that could reliably capture the real performance of agents in producing the desired results. Flows of assets from the principal to the agent would be made contingent on the performance of the agent with respect to the goals. Resource flows from the principles would be distributed to producing agents according to their ability to produce the desired results. The resource flows from the principles would operate as enabling assets and powerful economic incentives to produce the results that the principals desired. If these conditions were obtained, then the system would presumably operate efficiently and effectively against the defined (and reliably measured!) objectives set by the principal.

frontline providers might focus teaching on computer skills. The focus on the frontline might or might not align with what the principal had in mind for a 21st century skill agenda. Finally, the principals and agents might view ends across different time horizons. Principals might set goals for an educated workforce, a goal that only manifests over a ten or fifteen year time horizon, but agents must decide what means to employ to achieve this over much shorter time horizons.

² Various actors have legitimate claims to being the principal in the education system, both in terms of having legitimacy to act as the arbiter of value and the provider of resources. Both parents and government agencies can legitimately claim to be the principal in the education system. Within government, various actors may self-identify as the principal, for example actors at both the national and subnational levels, or different agencies within a particular level of government. Likewise, in a system where the relationship between broad goals and concrete performance measures is abstract or difficult to trace. The broad goals of education, be they related to children's eventual employment outcomes, moral values, or benefits society in general reaps from an educated population, can be difficult to measure in concretely, and realize over time horizons that make acting on their measurement to improve performance challenging.

The chief threat to this system would be inconsistencies or incongruities in the views of principals about what was valuable and important, or breakdowns in the process of delegation and accountability that ensured that the agents would produce the results valued by the principals.

On this view, it seems obvious that conflict among principals about the important dimensions of value and performance to be advanced through the efforts of educational providers can create some confusion that might reduce either the perception or the reality of educational performance. But there are other parts of this system that could break down. For example, the information systems that linked principals to agents could be inaccurate, or limited, or focused on the wrong goals, or corrupted (Honig and Pritchett, 2019). Similarly, the processes that reveals shortfalls in the performance of agents and seeks to prevent further performance difficulties either through replacement, or improvement in the existing suppliers might not work reliably or quickly to restore performance across the system.

The Issue of Limited Knowledge and the Management of Innovation

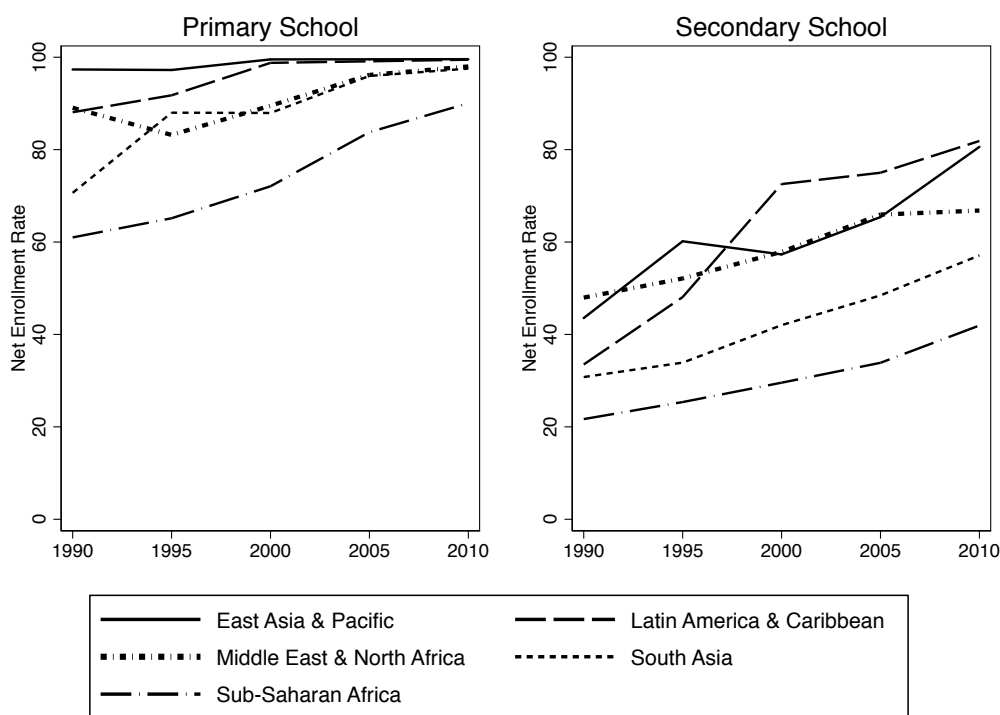
But there is another possible – even likely! -- source of failure. The principal/agent framework is built primarily on the idea that the agents have the available knowledge to produce the results desired by the principals, or an incentive to develop that knowledge. The challenge is to find the means to ensure that they use their existing knowledge to accomplish principal's goals – that they be called to account for doing the work they were being paid to do rather than taking the money but not showing up for class. A strong system, of principal/agent accountability would seem to be the remedy to root out corruption and organizational slack.

Suppose, however, that the agents the principals are relying on do not, in fact, have the knowledge about how to produce the desired educational outcomes. This could be a long-standing problem that could explain the past failures of a smaller educational system. If that were true, simply increasing the accountability and scale of the effort would not create the desired impact of the national educational system.

But it is important to recognize that in the current context, the lack of knowledge among those managing and operating within national education systems might be a consequence of the *the dramatic increase in scale that has occurred* in many national systems. Figure 1 reveals the dramatic increase in scale over the last thirty years (see

Figure 1).

Figure 1. Primary and secondary school enrollment have increased dramatically over the last thirty years



Source: Adaptation from World Bank, 2018 using Lee & Lee 2016 data.

As noted above, this is an exceptional performance. But it also certainly put a great deal of pressure on finding or developing agent capacity for delivering education even if the scaling process was seen primarily as one of replicating existing methods in many more places for many more students. It would take time to mobilize the new financial resources; build new school facilities and buy educational materials; recruit, select, train and deploy new faculty; engage the students, parents, and communities in which new schools were being built, operated, and governed; etc. One would expect that in the rush to increase scale, the system would be forced to rely heavily on existing models of education (however

successful or unsuccessful they had been), and to find that they had to bring in many individuals who had little experience or qualifications for teaching or the management of schools, or school systems.

If the existing models of education worked reasonably well one might still expect some lag between the increased scale, and improvements in educational performance as less qualified and less experienced individuals were called upon to do the work. To the newcomers, there would be a steep learning curve.

But it is also possible that as the great expansion in scale took place, and the public visibility and urgency of justifying the costs of the expensive efforts to build scale increased, both educational suppliers (the agents on whom the principals were relying to know how to achieve the desired results), and the principals (those who were providing the funds and judging the results) began to learn three harsh lessons.

- First, the existing models of education had never worked all that well in producing educational results.
- Second, even if the existing models of education had worked well with the smaller, more homogenous populations of the past, they had to be significantly revised in the face of larger, more diverse population of students who had been swept into the national educational system in its expansion.
- Third, even though some important principals were aligned on the desired goals of education (principally, national government and educational experts), it was not at all clear that those national goals were aligned closely enough with local cultural commitments and values to motivate the significant engagement of parents, students, local communities, and local government structures to animate and support the local educational effort with local commitment outside the government controlled local schools.

These concerns force us to consider more closely how national educational systems could not only rapidly increase their scale, but also successfully innovate in the methods used by the agents to produce the educational results desired by national elites, national government, lower level governments, local communities, and parents and children – all those varied “principals” who believe they have the right to define the purposes of education, who believe they know what will work in their terms, and who have resources to contribute to the educational effort. The focus on innovation and the development of both principal and agent learning about what is both valuable and doable in a national educational system that is spread across very diverse national cultures, forces some alterations in the principal agent framework because it focuses attention on the knowledge and capacity held by the agents, as well as the values of the principals.

The Issue of Multiple Principals and Multiple Dimensions of Value

The key problem is that a national educational system has more than one “principal” – more than one social actor that has a legitimate social and political right to define the values to be pursued by the system at individual and social levels, and who were contributing valuable resources of money, time, and political support to the existing production system, and in some cases actually doing the work of

educating students as agents as well as principals. These actors/principals included national governments, local communities, even parents and students.

Multiple Dimensions of Value and Focus Among Principals

The important implication of the multiple principles (including some agents), is that that these actors attached value to different feature of system performance and made practically important judgments about whether to commit themselves to the enterprise based on the degree to which the system as they encountered and evaluated it was aligned with their values.

To some degree, these values attached to different time frames. Some focused on the level and quality of services delivered by existing educational providers in the here and now; others focused on the cumulative effects of a path through the educational system to maturity.

Similarly, some values focused on the impact of classroom or school level instruction on individual children; others focused on the larger aggregate effects on communities, states or nations as the effects of educational services accumulated across individuals as well as over time.

Benefits and Costs (Positively and Negatively Valued Dimensions of Value)

It was also true that some features of the educational system were valued positively, and some negatively. Some dimensions of value could attract support (in varying degrees) of virtually all actors: the importance of developing basic behavioral and cognitive skills among all children; the practical utility of caring for children so that parents would work; the collective pride that might come from creating a school as a symbol of community commitment, etc.

Other dimensions of value would identify costs that had to be born to enable the proposed value creating changes in system performance, and therefore form the basis of potential resistance to the proposed changes. These could include the cost of schooling, the potential threats to traditional cultural values and social relationships, or doubts about the fairness with which educational opportunities were being provided by the current system.

Dimensions of Value as the Arena for Design, Decision, Action, Evaluation, and Adaptation

The varied dimensions of value create the social, cultural, and political arena within which the educational system as a whole is: 1) authorized and financed; 2) managed and operated; and 3) evaluated and adapted. It is common to imagine that different stakeholders have different values at stake in how the system performs, and that they will use their control over the assets used by the system to push the performance of the system in one direction or another, or to create a piece of the national system that is specifically tailored to their values.

Individual Principals Attach Value to Multiple Dimensions of Value – Often in the Same Direction

This is certainly true. But it is also important to keep in mind that most stakeholders attach value to more than one dimension of value. Also, that most stakeholders tend to value particular dimensions of value *in the same direction*. All things being equal, everyone would like the educational system to produce more proficient students. All things being equal, everyone would like to pay less for the educational results. All things being equal, everyone would like the educational system to be more protective of their cultural values and commitments. In short, most people can agree in what direction

increased value lies. Where they will differ is in how much they value one dimension of value over another, as well as in their confidence that a particular educational method will produce the desired results.

Economists are quick to remind us that individuals disagree with one another about the weights they assign to different dimensions of value in calculating the overall net value of any proposal to expend resources to improve social conditions for all. This means that society has to make “hard choices” that require us to advance the values of some individuals over others. That may well be true.

Is a National Educational System on the Production Possibility Frontier?

But one should also remember that such trade-offs are severe and exacting only as our efforts have already reached what economists call the “production possibility frontier” – that is, the theoretical level of valuable production that can be achieved on all dimensions of value with an existing stock of resources. (Mankiw, 2008). If our current performance is not “on the production possibility frontier” of the production system we are examining, then, by definition, it would be possible to improve performance on all (or most dimensions) of value without penalty.

This makes the question of whether we are anywhere close to the production possibility frontier with respect to our shared goals (dimensions of value) for national education systems very important. If nations are well below the production possibility frontier, then we ought to be able to improve in all dimensions. We don’t have to spend a lot of time arguing with one another about what dimension of value is more important at the margin. All we have to do is imagine actions to be taken that could improve performance on one or more dimensions.

This would be only theoretically interesting if we ignored two additional facts.

First, we do not actually know where we are with respect to the production possibility frontier. There are many reasons to imagine that we are far from it – particularly in a world that is making educational achievements more valuable in economic, social, and political realms increasingly important than in the past, and also suggesting a wider potential for improving educational processes. We simply have not collected enough information about our performance on all dimensions of value, nor experimented with enough different approaches to improving educational efforts, to know where the production possibility frontier currently is. Therefore, there is no particular reason to believe that we are on it, or even close to it.

Second, it might well be that keeping the whole array of values at stake in supporting and improving educational performance, and measuring our actual performance with respect to these values might help with the more material processes of finding the practical means to improve our performance. In fact, this might be necessary to make the principal-agent relationship proposed by the RISE framework (Pritchett, 2015) work since that machinery depends on a contract that accurately identifies the values and purposes that the principles value philosophically, politically and economically. If the contract does not include *all* the dimensions of value, the contract will fail to perform the task of guiding the agents.

In addition, being able to measure improvements in performance on particular dimensions of value is necessary both for managing agents in the short run, and learning what works over the longer run.

Dimensions of Public Value in Education as Both Measurement and Motivator of Performance

Even more important, it is this structure of values that might serve to both rally and focus a constituency that holds many enthusiastic contributors – in effect, a “big tent” with many different interests all being advanced favorably compared to the existing status quo.

The existence of multiple principals and multiple agents makes this challenge more daunting. It is possible that on the principals’ side, national educational systems are embedded in a network of “principals” who are focusing on multiple, more or less agreed upon dimensions of value that they are willing to support with assets they control and that are important to guide and evaluate the operations of the national educational system. At the same time it is possible that the networks of “agents” confront a complex and changing population of learners without the knowledge required to produce valued results on the different dimensions for the different populations of students.

In essence, national educational systems operate in a world of heterogeneous principals seeking to advance different values, through different points of leverage, with dynamically varying influence as economic, social, and political conditions change. They may also be operating in a world in which those who are to be educated are also highly varied in terms of their readiness and commitment to be educated, and where the population to be educated is changing as the scale and scope of educational efforts is changing (Moore, 1995). Assuming those conditions are common, the simple conditions for delegation and performance will not easily be met. It might well be possible to maintain some degree of coherence among the principals and agents in the system, and achieve improvements in educational performance through the mobilization of resources and knowledge that such coherence could provide, but the system as a whole will almost certainly be looser, more flexible, and more dynamic than one might have first imagined.

Managing the Dynamics of Innovation and Learning with Respect to Both Means and Ends!

These considerations lead to a somewhat different general perspective and specific focus in analyzing the national educational system. The different perspective has to do with the emphasis that the principal/agent framework places on both consistency and hierarchy on one hand, and the assumption that all of the work of developing new knowledge about how to improve educational outcomes happens among the agents – not the principals.

In many particular contexts, the environment of a national school system includes principals with overlapping but somewhat distinct purposes that are not explicitly recognized and measured in the management of the system. The students whom the system seeks to educate will differ significantly from one another in important ways that affect the performance of existing educational processes. As a result, we need the agents to innovate not only through the development of robust methods that help *all* students learn *all* things, but also to *accommodate the diversity of different local contexts, with different educational purposes and beliefs, and very diverse students*. If those conditions are present, then the recipe for the solution to the problem in terms of a tighter alignment across the goals of the principals may not work. Moreover, a firmer grip on the actions of agents to ensure that they do what has been prescribed for them as the best possible means seems somewhat inconsistent with the reality that national educational systems face.

So, the general idea of a system marching in lockstep towards improved performance seems wrong. What is needed is some degree of healthy *flex* in the system of delegation. Enough flex is needed to allow for principals to embrace different values, for agents to be allowed to try different approaches, for students to encounter environments that successfully engage them in the task of learning, and for money to flow not only to standard educational processes but to experiments, and to particular variants that seem to work better in particular communities (and might also point to more general and robust improvements for all students and localities).

This does not mean by any stretch of the imagination that we should abandon the idea that there should be some overall structure to the national system. It remains important that the national system should be evaluated against some important social and public values that define the collectively desired ends of that system. It remains important that educational agents/suppliers be accountable for their performance to those in a position to value their performance. Without these tight elements of the system, a society cannot evaluate or manage the system to which they have given a great deal of money and authority. Nor can they expect to motivate the agents/educational suppliers to improve, or to come up with creative new ideas for increasing educational impact at low cost. Nor can they expect to achieve the desired results in student academic achievement, and secure places in the nation's economic, social, and political life.

But at the same time, the system cannot be *too tight* with respect to either ends or means. Variety and openness *with respect to the ends* of education might be necessary to allow the society as a whole to find a reason to be strongly committed to the educational enterprise. That, in turn, may make the problem of measurement more difficult, but it has the great advantage of building the legitimacy and support that could be harnessed for the achievement of the whole set of educational objectives (Moore, 1995; Moore, 2013).

Similarly, variety and openness *with respect to means* is necessary to search for improved methods of advancing particular educational goals with particular kinds of students, embedded in particular social contexts. The development of methods that are generally valuable, or valuable within a particular community, is important. Not only can it produce the desired material results, but it can also successfully build legitimacy and support wherever the new method works to achieve locally as well as nationally desired results.

Thinking About Demand and Supply from a Principal/Agent Perspective

A perspective that embraces both a principal/agent perspective, and one that recognizes the dynamic challenge of learning and adapting over time with respect to both ends and means, changes our ideas about how we might best think about the relationship between the *demand side* for educational services, and the *supply side*. In traditional economic theory, we think of the *demand side* in terms of individual wants and money to spend on satisfying those wants. That is what we mean by "consumer sovereignty." We think of the *supply side* in terms of profit-motivated commercial enterprises that survive and grow by imagining products and services they can produce that will meet consumer desires at a cost that is lower than the price that consumers are willing to pay.

In this model, the consumer plays the role of the *principal* (the actor with money to use to call on a producer to create something of value). The commercial firm plays the role of the *agent* (the producer of the product or service (albeit one who has worked hard at cultivating the consumer's desire

for his product, and has persuaded investors that he has a good enough idea that they can all make money out of selling the product and service to a consumer).

In social or public production systems (i.e. those production systems that are sustained at least partly through third party payments from government and voluntary contributions), the demand side shifts from individuals paying for goods and services for themselves to social actors who either tax and regulate themselves to accomplish a collectively value social purpose, or voluntarily contribute privately held resources to public purposes which benefit others rather than themselves. That demand side becomes the important principal in defining (arbitering) the value to be produced by the system. (The value of that system can and should be judged the value in terms not only individual satisfaction, but also in the achievement of social outcomes including the fair treatment of individuals, and the advancement of an ideal of a just society as well as a prosperous and free one.)

We want and need that principal to be demanding and discriminating in deciding whether to commit resources to particular producing agents. We want national government to commit resources to agents who can not only produce individually valued and socially valuable educational results, but also an overall system that can provide for equal access, improved upward mobility in economic, social and political terms, and a more just and civil as well as prosperous society. We want parents to entrust their children to a system that provides quality services at a low price, that protects individual rights and motivates both parents and students to live up to their duties. We don't want them to waste scarce social dollars on stuff that doesn't work, or disrespect or needlessly attack cultural values.

But we also need that principal to be interested in searching for ways to improve performance of the system – to have some funds that can be spent on trying to find reasons for poor performance on particular dimensions of public value in education, or with particular populations, to develop ideas about how performance can be improved, to test those models, and develop a system for diffusing the models that work and displacing older methods that do not.

On the supply side, are the educational providers – the agents of the system. We want them to be accountable and responsible for their performance. But we are also hoping that they are reflective about their own performance, and resourceful and creative in imagining ways that they can improve either in general, or with respect to a particular valued dimension, or with respect to a particular population and community. We want them to be efficient and effective producers, but also thoughtful and imaginative innovators. They, after all, are in the best position to identify the problems they face, and the strengths and weaknesses of their approach. Their capacity to imagine, invent, and try is critical to the success of the system as a whole.

Nor should the suppliers restrict themselves to innovations with respect to means. Given their substantive knowledge of what they do, and what happens as a result in terms of both student outcomes community engagement and support, they might be in a strong position to name important dimensions of value in educational activities that are seen as important to protect or advance in a given community. They might also be in a good position to suggest measurements that would be useful in recognizing a previously unknown or unintended consequence of their educational efforts.

This quick adaptation of the core ideas of demand and supply to the character of public production systems not only changes our picture of the social location and functional importance of demanders and suppliers, but it also suggests a somewhat different relationship between them. When

customers meet suppliers in markets, they bargain over price. Ideally, when social and public demanders meet supplying agents they discuss not only price/cost, but also how they are going to think together about value. And they are going to think not only about value today through established processes and technologies, but also value in the future through improved production processes and technologies. Ideally, their interests will be focused on current costs and prices, but also on what would be desirable to produce, and how that can be best produced.

Improving Educational Productivity through Local Improvement and Innovation at the Frontier

So, the challenge is to suggest the means not only to increase the scale and widen access to education in low and middle income countries, but also to increase the impact of those educational systems on the prosperity, civility, and justice of those nations – the ultimate goals of a national educational system as imagined in the Universal Declaration of Human Rights. That effort can be framed as improving the productivity of the educational system.

That, in turn, focuses special attention on “innovations” in the educational system that can produce better results on different dimensions of performance for different populations in different locations. But it is important to remember that productivity gains for a national system don’t have to (and probably won’t) come from globally new, generally applicable innovations (i.e. the innovations at the frontiers of educational performance). They are at least as likely to come from the mobilization of new energy and resources that can produce thousands of local innovations that follow reasonably well trodden paths of existing educational processes that work pretty well in most places. They may also come from local innovations that are particularly adapted to local aspirations, local conditions, and local capacities that may or may not be suitable for more widespread replication. Indeed, it is these local adoptions and adaptations of existing methods that may be the most likely path towards improved performance *in national educational systems that have dramatically increased their scale.*

It is important to understand that from the point of view of the local communities within which educational efforts will be mobilized, operated, and produce valued results for the first time, the work they do to create this new capacity will be experienced as novel and challenging. It will feel like an innovation *in that community*. All the practical problems that surround innovation at the frontier will attend the problem of implementing an established method in a new location.

Of course, we all know that it doesn’t make sense to “re-create the wheel.” But we know this only because we assume it is easy to copy existing educational programs in new locations. And that assumption is simply not warranted. (Cels et.al, 2012).

The fact of the matter is that diffusing an innovation to a new location often requires almost as much work as was required to develop the idea in the first place. It is not necessary to invent the idea out of whole cloth. And one can be reasonably confident that the established method might work in the new location if it could be replicated with fidelity. *But the process of fielding that invention that was invented elsewhere in a community that has little prior experience with the new idea, and lots of experience with other more familiar ideas, still constitutes a considerable obstacle to the fast, widespread adoption of methods known to be tolerably effective.*

This implies that for educational productivity to increase, a network of structurally independent principals has to be developed that can bring urgency, importance and resources to the task, along with

a set of agents who are willing and able to shoulder the load. Some part of the productivity gain that ensues will come from mobilizing many communities that have been lagging behind to move forward as quickly as they can by adopting local improvement efforts that follow established methods. Another part will come from the ability of local communities to adapt established methods to their own aims and capacities. Still another part will come from focused efforts to promote innovations that deal with stubborn problems that could not be solved by old methods, new problems that arise as the national system increases its scale, and new ideas that move the production possibility frontier outward for all educational providers.

One way to think about this is that the single most important thing to develop to improve educational systems is to create a stronger, more resourceful, more curious, more knowledgeable, better informed, and more discriminating “national principal” than now exists, and to link that “national principal” more usefully with the local agents who are designing and operating to processes that will stimulate, evaluate, and diffuse important value creating innovations across the national operating capacity. Below, I set out some principles, frameworks, and information systems that might usefully guide this effort to create the most important innovations of all – a flexible structure and process that can organize the national educational system to learn what works in the process of acting to improve performance.

Section II: Principles to Guide the Design of Processes to Promote System Wide Improvement

The following section lays out principles that would characterize an education system that produces a continuous series of productivity enhancing innovations across the scope of the national educational system.

Principle 1: The National Education System is the Proper Unit of Analysis for Results, Performance, and Interventions

The first principle is that we should hold firmly to the idea that we ought to focus attention on the *macro performance of the sector as a whole*. Focus need not necessarily center on the performance of particular policy initiatives launched by national government, nor the performance of particular kinds of educational providers, nor the performance of particular organizations delivering educational services, nor the development of particular programs or methods that seem to improve educational outcomes along particular dimensions in particular locations.

All these particular activities designed to improve the performance of the sector as a whole are potentially important ingredients of achieving the overall goal, and each can be evaluated in terms of their contribution to that goal as a particular ingredient. But the ultimate test is *whether any of these continuing efforts or new initiatives can move the needle with respect to the aggregate social performance of the sector*. The *micro* effects of these parts (some of which may be very large and some much smaller) have to be seen in light of their *macro* consequences or emergent potential. The goal is to achieve something large, at scale rather than decorate the *status quo* with gestures made in particular directions.

Principle 2: The National Educational System Does Not Consist Only, and Perhaps not Even Primarily, of the National Government’s Ministry of Education

A national educational system consists of much more than the National Ministry of Education.

Of course, that the Ministry of Education in a National Government is an actor that has more than average capacity to shape the future performance of a “National Educational System.” In many cases, it provides most of the funds used to support educational providers. It also plays an important role in regulating educational providers, certifying teachers, defining the curriculum, and measuring the educational attainments of a population, and so on. It is also the natural focus of any national economic, social, or political discussion about the value of educational activities and the particular purposes the educational system should be trying to achieve for the nation it governs. And it can be a catalyst for developing new methods of education.

But it is important to keep constantly in mind that the national educational system extends well beyond, and is rooted much more deeply into society, than the processes that are administratively directed by the National Ministry. First, in other areas of government, which important decisions about the education sector are taken. The system is financed not only by public dollars from different levels of government, but also by philanthropists and payments from individual parents. The production system that mobilizes and deploys assets for educational purposes is spread across public, voluntary, and commercial sectors. Its performance is judged and called to account by voters, taxpayers, parents and children as well as the National Ministry.

Cultural, Social, Economic, and Political Factors as Influences on and Targets of National Educational Systems

The simple fact is that the actual day-to-day, individual level performance of the national educational system – what it does, how it is supported, and how it is evaluated-- is determined by many cultural, social, economic, and political beyond the short run influence of ministries of education. What happens in the classroom, and outside the classroom as young people move through life is importantly determined by a cultural tide that runs alongside (and often submerges!) the existing educational institutions. That cultural tide simultaneously pushes educational suppliers in one direction or another, and supplies the basic energy and content of what we hope will be the national educational experience.

The National Government and its Ministry of Education might hope it could sit on top of this system and direct and control its forces. But the actual choice facing national governments and ministries of education is exactly *how they might hope to engage these forces that are already in play*. They often face a tough choice: they can align themselves with the forces currently at play, and benefit from the energy that comes from leading in a direction that the society wants to go, or they can seek to change the direction at the cost of blunting enthusiasm, arousing opposition, and creating risks and uncertainties about their ability to deliver on a new vision.

The existing social, economic, and political culture of a society is at once an important *determinant* of central and de-centralized choices about the ends and means of educational efforts, and the target to be changed by those efforts. It is a *determinant* because both decisions about ends, and the mobilization of commitments, resources and operational support, will be influenced by national and local values. It is a *condition to be changed* – a target - since often an important goal of a national educational system is to influence the culture of the society – either by protecting its existing values and traditions, or finding the means to knit diverse sub-cultures into a more unified whole, or to help part or all of the society develop to engage with the existing international economy and society.

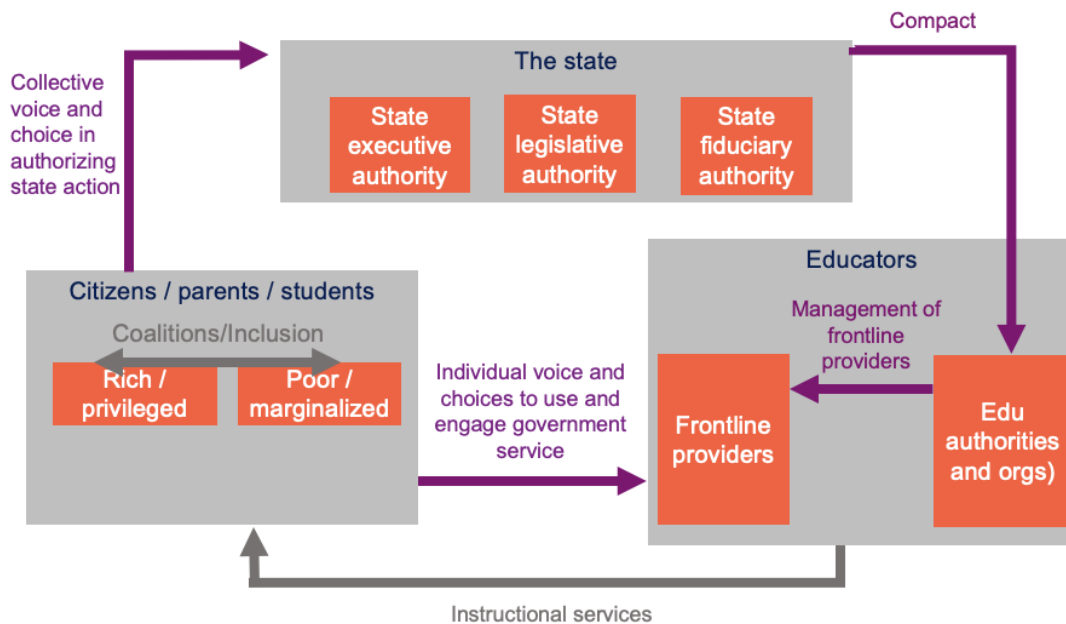
Whether the national educational system should be designed to conserve the old, diverse cultures of a nation, or develop a new national culture that can hold a diverse country together, or promote a culture better adapted to the modern international economy, may never be explicitly debated or resolved. But it will lurk in the background and threaten to disrupt efforts to use education to alter existing economic, social, and political conditions. Those leading the charge for educational improvement, defining its purposes, and making the case for change throughout the society will have to decide how much they want to align their efforts with or challenge the existing *status quo*.

The Institutional Anatomy of the National Educational System

In the midst of the national, sub-national, and local cultures lie established structural units that play potentially important roles in moving the culture towards stasis and division, or collectively defined and advanced “improvement” - including but not limited to National Education Ministries. These structural units believe they have the right not only to express their views but to have the system’s actions reliably reflect those views. Many of the structural units own and control the money, political influence, and social support that would be needed to push the national educational system as it now exists in a new direction. Indeed, many individuals, including parents, volunteers, and the students themselves play important active roles along with teachers and managers in producing the educational experiences that determine the ultimate cumulative impact of the educational system on individual learners and the wider society of which they are a part. (Ostrom, 1996) (John Alford, 2016 *Co-Production, Interdependence and Publicness: Extending public service-dominant logic, Public Management Review*, 18:5, 673-691)

Figure 2, taken from a framework produced as part of the Research on Improving Systems of Education (RISE Programme) for examining alignment among the principals and agents in a national educational system is presented below. It offers a simple, stylized account of the different structures in the society that take some role in witnessing or directly experiencing and evaluating the performance of the educational system (the arbiters of value), the production of educational experiences that produce or fail to produce valuable educational results (the producing agents), and those who provide the resources (more or less voluntarily) that are used to keep the educational production system going at a particular scale.

Figure 2. Accountability Framework for Education Systems Analysis



Source: Adapted from Pritchett, 2015 and Spivack 2021.

While this diagram is complicated enough as it is, one should keep in mind that none of the squares in this diagram that stand in for a complete listing of the particular actors that are significant in a given context actually represent a single actor with the interest and capacity to shape system operations. Each of these squares, in fact, represents a complex bundle of many structurally differentiated actors each with their own values, their own resources, and their own existing capacities.

At any given moment, the educational value that is actually being produced for a given society – the value that is evident in educational attainments, economic independence, and citizenship of the individuals in the society as whole – is the result of very complex interactions among these different structural units. As discussed above in the section “The Issue of Multiple Principals and Multiple Dimensions of Value” the education system has multiple principals each with their own objectives, resources to bring to bear, and tools for shaping outcomes. Considering these multiple principals and multiple dimensions of value together allows for a strategic analysis of the system.

Unfortunately, there is nothing structural or functional in the system that ties these different arbiters of value, producers, and resource providers together into a coherent whole that optimizes some universally shared set of goals. What we get is the “resultant” of the competitive and complementary efforts of this complex system. (Allison, 1999)

Towards a Functional Capacity for “Leading” the National Educational System

To push such a complex system towards improved performance, it is obvious that some kind system level “leadership” is required. By system level “leadership” here, we are referring more to a *functional role* than a *structural position* (Heifetz, 2009). The functional role includes the following:

- A capacity to mobilize, sustain and focus a national focus on improving the national educational system

- A capacity to continuously monitor the performance of the system with respect to valued social results, and the progress of the new investments and innovations designed to improve performance on one dimension or another within some particular time frame
- A capacity to sustain the flow of resources needed to manage the system at its current scale and scope, or to expand and sustain the flow of resources needed to expand the system's current scope and scale to produce a larger impact on economic, social, or political conditions
- A capacity to enable all educational providers to reach minimal standards of performance using established educational practices, and to manage processes that allow the system to learn how to deal with stubborn problems from the past, and emergent problems from the present through both reflective experience and guided experiments.

In short, some kind of “guiding intelligence” for the system has to be created and deployed if the system is to operate with some important shared purposes, taking advantage of all resources and good ideas.

Of course, some, maybe much, of the required functional capacity to provide this kind of leadership could be held and concentrated within Education Ministries at the National Level. But an Education Ministry that fully understood its *functional* leadership role in a complex *national educational system* that was seeking to improve would not necessarily move quickly to assert full operational control over the system as a whole. Generally speaking, the instruments of central control do not reach out far enough, nor exert enough exacting force to dominate all the important systems of educational production. Nor is the system necessarily knowledgeable enough to be responsive to local conditions, concerns, and capacities, and successfully engage them in successful, energetic educational efforts.

What might be better for the national educational system is for the Ministry to become the core, but not exclusive core of a functional capacity that could make a large, steady contribution to each of the functions described above:

- It could routinely convene prominent and influential actors in educational financing, production, and advocacy to sustain national attention to the challenge
- It could publish information on the progress being made by the system as whole
- It could keep track of the flow of assets into the system from all sources, and evaluate their sufficiency for sustaining existing operations, expanding scale and scope, and innovating
- It could help to keep track of the important innovations being developed, point to areas where innovation is particularly needed, and authorize and support the most important and promising innovations with special financing

In short, the Ministry could act as the executive center – the collective brain and national reporter -- of a large economic, social, and political movement in which many were participating, rather the authoritative director of a hierarchical organization.

It is not clear exactly how a particular nation might best create the kind of guiding intelligence required to produce rapid, sustained productivity gains in their national educational system. But it seems likely that some part of that effort would depend on the ability of some group – probably larger and more permanent than any national ministry – to be able to create and hold up to the society a mirror of what the system is now producing. That clear image could then be compared to the same image from previous years. It could also support a broader discussion about whether and how fast the system seemed to be improving, and whether the goals and standards that were being used to define the desired performance remained relevant and motivationally powerful in the existing context. The series of images could also be examined to locate the areas where rapid progress was being made, and where stubborn old problems or newly emergent problems were frustrating performance. Efforts to diffuse the methods that were producing success, and launch new efforts to deal with the old and new problems would become the focus of strategic interventions.

This may look like the standard requirements for a strategic planning system, and so it is. But this strategic planning system would spread across the institutional structures under-writing and guiding the efforts of the national educational system as a whole that was entirely focused on “learning while doing.” (Moore, 1995b). Developing such a learning capacity would be truly an important innovation. But it would be the kind of innovation that could *sustain a continuing flow of resources, new ideas, and learning for the system as a whole*. It would be an innovation in the functional politics and governance of the system, not just policy, programs or operations within national government. The additional principles set out below seek to guide the effort to create such a capacity.

Principle 3: The Goals of the Educational System Should be Defined Broadly Enough to Encompass Both the Social Values and Aspirations of the Society, and the Wide Effects Produced by the Educational System

An important first step in constructing this over-arching leadership capacity is to be conceptually clear about the goals that a nation seeks to achieve through its educational system. Eventually, of course, it will be important to attach empirical measures to these goals so that we can monitor performance and learn from our own experience. (Moore, 2014: Recognizing Public Value) But at the outset, might be important to develop a more or less shared consensus about the broad goals, and more specific dimensions of value that the national educational system should seek to produce for its society.

To many, the answer is obvious. The simple goal of a national primary educational system is to educate school aged children to read and write in their own language, and to use mathematics and science to help them to perform economically useful functions such as exchange, production, and innovation. Additional side benefits of schooling may be that primary school students will learn to think of themselves as responsible individuals and to co-operate with others in daily life according to the norms and rules of their society, and that their parents will have time to focus on their own careers and lives.

Individual and Aggregate Educational Achievement as the Goal

Goals and objectives such as these are useful for focusing attention on the important immediate effects of requiring and enabling school aged children to engage with educational providers. It gives relatively clear guidance to the providers what they ought to teach (curriculum), and (to some degree) how they ought to teach it (pedagogy). Over the years, educational researchers have constructed

relatively objective and reliable measures that can be used to determine the degree to which educational providers have achieved some of these goals (primarily academic achievement). This allows us to determine the degree to which learning has occurred within an individual, and then add those results up to see the extent to which learning has entered the society at large and helped to create an educated citizenry and labor force.

It is worth noting, however, that when we measure the educational attainment of school aged children in their 5th and 8th grade years, we are often observing the educational status of students who are only part way through the educational process. We record the educational attainment of 5th and 8th graders and assess whether they are making adequate progress towards a higher standard of educational attainment to be reached by the time they reach (the legal) school-leaving age.

Measures of educational attainment observed at young ages can be seen as the “outcomes” of particular educational activities and outputs that were delivered by educational producers to those students *in their most recent year of schooling*. However, these results are essentially “way-station,” or “interim” results along a path to the “ultimate outcome” -- helping individuals achieve the status of an adequately educated person by the time they reach “school leaving age” (whether legally authorized or not). The observed results tell us whether things are going well for the individuals, and whether the educational providers making contact with the students are doing their work and producing the desired results. But it remains a bit uncertain about the degree to which our ultimate goals will be achieved – namely, a population of educated citizens. We will not know for sure whether the effects of schooling will reach the ultimate desired level, nor whether they will stay constant at that level as current knowledge fades or grows increasingly irrelevant.

It is also worth noting that the goals of the national educational system are concerned not only with the short and long run impact of enabling and requiring *individuals* to engage with educational providers on individual educational achievement, but also with ensuring that some individually and collectively valued aggregate social conditions in the society are produced. This includes the idea that individuals should have a right (along with a responsibility) to educate themselves; further that this right (and responsibility) will reliably fulfill the social promise of equal opportunity and promote the kind of individual and social upward mobility that can provide hope for the future; and that these conditions, will help to create a more prosperous, civil and just society.

These aggregate conditions in the society represent the ultimate individually and collectively desired outcomes of the national educational system. But achieving these aggregate conditions depends importantly on *what fraction of the population can have access to and progress successfully through the system as a whole*. That is why expanding access was so important.

But access is clearly not enough. It is important to have a system that can sustain and use the engagement of students in the educational system as well as just start in the system. And that means that our measurement systems have to *go beyond the educational attainment of those who remain in school*. We have to be able to observe the educational attainment of entire cohorts of school aged populations who never started, or more or less quickly dropped out of the national educational system.

Beyond Educational Achievement, Narrowly Defined

Educational achievement among cohorts of school aged children moving through the national educational system is the most obvious and perhaps the most important goal of the educational system. We should all rejoice when the performance of the system advances on this particular dimension of performance and feel dissatisfied and motivated to improve if these numbers lag behind our hopes and aspirations.

Yet, it doesn't take much reflection to see that the reasons we have for valuing educational achievement spread out to other dimensions of value that are important to society as the educational system operates on the cohorts moving through it. We noted above that national educational systems work in the short as well as the long run to shape the existing economic, social, and political culture of the existing society. This can be an intentional effort either to preserve or challenge existing traditional cultures, and their ways of knowing and relating to one another. It can be an intentional effort to establish an influential national culture that can integrate diverse sub-cultures into a national culture that can engage more effectively in national economic, social, and political life. It can be an effort to build a culture that can more successfully participate in the international economy and society that is now so powerful in shaping the future of any given nation.

At a much more mundane, daily level it is clear that the national educational system produces important non-educational effects on communities, parents and students in their daily lives. While it may not be the most important effect of schooling on communities, parents, and children, the fact that children are supervised in a safe place for many hours a day has an important effect on parents' quality of life, and their ability to perform their economic and parental duties. Similarly, the existence of a school often helps create a community among parents that not only feeds human desires for comity, but also builds local social capital, and builds a sense of public spirit and responsibility that is available to support other social purposes.

Given the connection of school activities and outcomes to individual and collective social aspirations in both the short and long run it should not be surprising that many national school systems define their broad goals and specific objectives much more broadly than simple educational attainment among those who are students within the national educational system. As the authors of *Achieving World-Class Education in Brazil: The Next Agenda* claim:

“Education systems play a critical role in every country in empowering people to develop their full human capabilities, building national unity, transmitting national culture, and stimulating social development.” (Bruns et al., 2012 p.15)

To many, it seems an unnecessary complication, and a harmful distraction to focus on the broader goals and varied effects of education on individual and social life. To make something important happen, it is better to “stick to the knitting” and concentrate the efforts of the national educational system focused on the narrow objectives of academic achievement. Indeed, even those writing about the future of Brazilian education in broad social terms. In the very next sentence following their bold assertion about the valuable effects of education, they write:

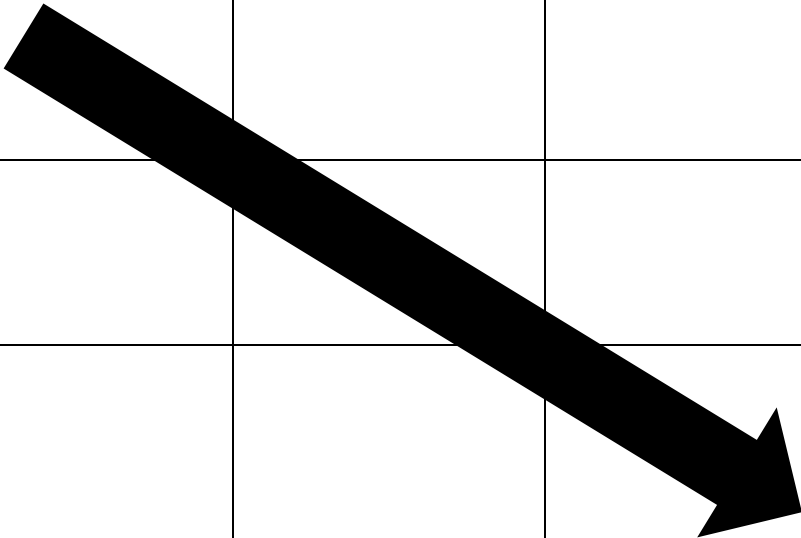
“But from an economic perspective, and education system is judged by how efficiently it performs three paramount functions: 1) developing the labor force skills required for sustained economic growth; 2) contributing to the reduction of poverty and inequality by providing

educational opportunity for all; and 3) transforming education spending into education results – above all, student learning.”(Ibid, p.15)

If our aim is to improve the performance of national education systems, it seems very important that we reach an agreement about what counts as improved performance. And that seems to require those who want to manage continuous improvement to at least name (if not observe and count) the particular dimensions of value that would help us conceptualize both the broad purposes, and more narrow objectives and achievements of the system.

Table 2 presents a framework for thinking about the values that individuals or societies could seek to advance, and have reflected in their national educational systems.

Table 2. Values that individuals and societies seek to be reflected in their education systems

	<i>Economic Resourcefulness</i>	<i>Civic Tolerance and Engagement</i>	<i>Political Standing and Participation</i>
<i>Basic Education</i> <ul style="list-style-type: none"> • Reading • Writing • Mathematics 			
<i>Advanced Basic Education</i> <ul style="list-style-type: none"> • History • Science • Humanities 			
<i>21st Century Skills</i> <ul style="list-style-type: none"> • Problem-solving • Creativity • Team work • Global perspective 			

Source: Author.

The rows of this table describe different clusters of individual competences that have been proposed as the important immediate goals of educational activity. To a certain degree these

educational goals define the content of a given curriculum, written or enacted, and in the set of national exams. But to many, the idea of content extends beyond having particular knowledge, to a wider set of cognitive skills that are associated with exploring, imagining, and testing as well as knowing. The different clusters of educational content also suggest a reliance on particular kinds of pedagogy with the development of the higher level cognitive skills being linked to student initiated exploration rather than rote learning. The rows are arranged from more traditional to more contemporary ideas about the aims of primary education without any claim which is the most important material to teach or the most effective methods.

The *columns* of this Table represent different realms of individual and social life in which the benefits of education will be realized – in the enjoyment of their lives as an expression of their full human potential; in their ability to become economically independent, self-reliant and resourceful; in their capacity to participate in, contribute to and enjoy religious and civic life; and their capacity to protect their rights, live up to their duties, and participate in the political as well as the individual economic, and civic parts of their lives. It is in these realms that both individuals and collectives can experience for themselves, and enjoy with others the ultimate results of education.

The Table also presents an arrow that moves from the upper left quadrant of the table towards the bottom right of the table. To some extent, this arrow indicates the direction of history – at least as it is seen in Western eyes. It is an arrow that sketches not only an extension of educational opportunity that leads from a world in which education was only available to a few in society, to one in which education is much more broadly available. It is also an arrow that suggests how stirrings in our understanding of human capacities and rights, expanded by both economic and political forces moved from traditional societies to more modern societies that challenged traditional forms of knowledge, methods of inquiry, and the economic, social, and political rights and responsibilities embedded in traditional institutions.

Too Complicated and Messy to Serve as a Goal?

No doubt, this foray into the muddy waters of defining the broad goals and narrow objectives of national education systems has persuaded many readers that they were right to view this exercise as a tedious and distracting exercise. Faced with the relatively simple challenge of teaching kids to read and write, why mess it up with more elaborate, longer-range goals? Do we really have to pay attention to the particular ways in which the National Educational System seeks to align with or challenge traditional cultures? Do we really have to burden the educational system with the future economic success of a developing country? Do we really have to develop curriculum and pedagogy that can go beyond the basics of education to teach 21st century cognitive and social skills, or promote the full development of individual human capacities? It is all too much.

Our answer to this question is a resounding “YES”! Here are our reasons.

The main reason we should give close attention to the values that are guiding our efforts to improve national educational system is not only because those values help to identify the intrinsically valuable ends of education, and not only because they will guide empirical evaluations of both current performance and new innovations, but also because they will *help animate, sustain, and fuel the social and political effort to improve educational performance.*

To improve national educational systems, it is necessary to have the *will* to do this as well as a *way* to accomplish it. (Briggs, 2001) The *will* to accomplish the effort -- the willingness of citizens to tax and regulate themselves to support schooling for all, the willingness of teachers to put their heart and soul into the effort, the willingness of parents and students to commit themselves to help achieved the educational goals that teachers set – all depend critically on the alignment between the values to be pursued by the change, and those who are called upon to support the change. If the values to be advanced through the improvement effort can command loyalty, they will turn out to be instrumentally important in creating the pressure and the opportunity to improve.

The power of the full set of values at stake in educational performance to mobilize the widest and most determined constituency for improvement is the main reason to keep that full set of values in front of developing nations. But to have confidence in the substantive as well as the political merit of going broad on educational objectives, one should recognize three additional points.

First, the full set of values at stake in educational improvements all describe real, plausible effects of that system on individual and social life. It is not as though we are making up causal connections between certain kinds of educational activities and results on individual and social life. They are actually there whether we recognize them or not. In this sense, we are trying to develop a frame that can be cognizant of the many real effects of what occurs as the system changes. We are trying to internalize all the potentially costs and benefits, and therefore enable a substantively responsible choice.

Second, there is the risk that by highlighting all the important values at stake we can exacerbate political conflict over which of these dimensions of value should have priority. That is certainly a risk. But it is important to understand that recognizing effects of educational change that are perceived as costs or losses by some particular constituencies has at least the procedural virtue of recognizing the those opposed to the change have a point, and one that might need to be accommodated in the design of the improvement effort moves forward. It might also help those opposed to specific ideas for improvement due to a negative effect on one dimension of value come around to see the *net value* of the proposed change if they can become aware of the more positive effects of the change on other dimensions of value that they hadn't considered. Finally, as noted above, it is quite possible that we don't have to give up performance on the particular dimension of value deemed important by opponents because the system is so far from the "production possibility frontier" that there are technical, operational opportunities to improve performance on all dimensions.

Third, significant improvements in the educational system on various dimensions will take a long time to become visible in the aggregate conditions of the society. Just as investors hoping for a big payoff from a large, uncertain investment have to be patient in waiting for the final result, citizens, taxpayers, parents and students have to patient in waiting for the results of current improvement efforts.

But it is hard to wait. And individuals need to have their patience sustained. That means that the motivation to sustain the effort has to be supported not only by an image of the values to be realized someday, but tangible evidence of progress being made, and benefits being enjoyed in the short as well as the long run. A good sign that things are improving would be consistent local evidence of good facilities, filled with happy, industrious students and committed and skillful teachers, supported by enthusiastic parents and local officials. We know, of course, that these things are merely daily inputs

into a very complex individual and social level production process that produces the ultimate individual and social outcomes. But it is important that we be able to track meaningful indicators of how the investments in the current improvement effort are doing as well as the ultimate outcomes for which we will have to wait.

Principle 4: The Performance of the National Education System Should be Judged -- and Measured-- at Both the Individual and Aggregate Level, and in both Utilitarian and Justice Terms

Fourth, the performance of the sector as a whole has to be judged at both the individual and the more aggregate social level. It also has to be judge in terms of both utilitarian effects on material well-being, and on the degree to which the performance system meets social equity goals.

At the *individual* level, we are concerned about the impact of the particular initiative or system on short run learning outcomes, the satisfaction and engagement of students and parents in the production of those outcomes, and the cumulative effect of the short run learning outcomes on future educational opportunities and outcomes. We are also concerned that individuals are treated and viewed as individuals; that adaptations are made to accommodate individual variation in capacities and learning styles; and that individuals are treated fairly and with respect to their individual rights as well as their individual wants and needs.

At the more *aggregate* level, we are concerned that the educational system accomplishes the social goals of preparing individuals in the society for individual and collective life in the economic, social and political realm efficiently and effectively (that is, with the least use of private and public dollars – though our collective political attention is focused primarily on the use of public dollars). We are also concerned that there be widespread, equal access to quality educational services consistent with the needs and rights of individuals (if not always their individual wants), and that education achieve social justice goals not only with respect to equal access, but also with respect to either establishing a base-line of educational opportunity for all, or one that succeeds in promoting significant absolute and relative upward mobility for individual members of the society (Moore, 2015; Stiglitz and Rosengard, 2015).

Table 3 places these different evaluative dimensions in a simple matrix to emphasize two important aspects of this system level evaluative framework. First, the effects can be measured at the individual and aggregate social level. Second, the individual and aggregate effects we can observe and be a part of can be evaluated against two quite different philosophical standards: the utilitarian idea of the good, and the deontological idea of the fair and just.

Table 3. Evaluative Dimensions in Assessing Educational Performance

	<i>The Good: (Utilitarian Philosophy)</i>	<i>The Fair and Just: (Deontological Philosophy)</i>
<i>Individual Level Evaluation</i>	Clients Satisfied with Service	Clients Fairly Treated

	Clients Future Welfare Improved	Clients Receive Services They Deserve Clients Accept Obligations Imposed on Them
<i>National System Evaluation</i>	Social Prosperity Increased	Society Advances Economic, Social, and Political Equality

Source: Author.

As a crude rule of thumb, you could think of the *individual* good as “client satisfaction” with the educational process and result. The *social* good could be defined in terms of the desired social outcomes of education – the degree to which the educational systems as a whole helped create a prosperous economy, a tolerant civil society, and a knowledgeable polity.

The individual idea of fairness and justice could focus on whether individuals have equal access, whether they are treated fairly, whether they get what they are entitled to have, and that their individual rights and privacy are protected in the schooling process. The aggregate idea of social justice could be conceived in terms of the degree to which the system provided equal access to quality educational services; the degree to which the system not only vindicated individual rights to education, but also fairly imposed the burdens associated with those rights; and the degree to which the educational systems supported significant upward mobility in the society as an embodiment of the ideal of equal opportunity.

Note that the effects produced and observed by the system at the individual and social level, can also be evaluated by individuals, and by the society as a whole. Individuals who use the educational system – the customers or clients of the system – can evaluate their own personal experience in consuming educational services. They can compare what they get from the system in terms of their subjective views of what they want, what they think they need, and what they think they are entitled to.

But other individuals in the society who are engaged as individual citizens and taxpayers as well as educational consumers, can view the system in terms of its effects on individuals other than themselves. That is, they could hold up the experiences they have as consumers or observers and supporters of individual educational experiences and decide to what degree the system provides to individuals what they as individuals think a good and just society would supply to individuals. (Moore, 2014. “[Public Value Accounting: Establishing the Philosophical Basis.](#)” *Public Administration Review*, 74, 4, Pp. 465-477

Finally, the society as a whole – that is, all individuals affected in some way by the current operations of the educational system (which includes citizens and taxpayers as well as the recipients of educational services), as they express their views through their elected representatives and the messy processes of democratic governance) – can also have a *collective, public* view of what constitutes a good and just educational system. This is particularly important and decisive when public money and authority are being spent (Stiglitz and Rosengard, 2015).

Just as individuals can hold views about what is good and just at the individual and collective level, so the body politic assembled into a collective public arbiter of value can hold views about what is

good and just at the individual and social level. When looking at the individual users of educational services (provided at public expense), they can decide to take individual customer views of what the customer wants seriously and provide for that, or they can limit their ideas about what customers should get to what they seem to need and deserve – not just what they want. When looking at the aggregate dimensions value being produced, they might be interested in keeping the costs to taxpayers low as an important practical goal, but also the desire to give special support to those children who have special needs the extra help they need (Moore, 2014).

Principal 5: Significant Investments Should be Made in the Development of Consistent, Reliable Measures of System Level Performance

Having named the important dimensions of value that are at stake in the performance of the national educational system in order both to guide the design of the system and mobilize support for its improvement, it becomes important to go beyond naming the dimensions of performance to developing the instruments that would allow us to empirically observe, and measure the degree to which the system is making progress on our agreed upon dimensions.

In the section above, we noted the important difference between measuring educational *activity and outputs* on one hand, and their *impact on individual students* on the other. In principal, it is the impact on the students that carries much of the value: both the fact that they received the services to which they were entitled, and that these improved their individual condition to greater literacy, numeracy, and with that become stronger citizens as individuals and as a polity etc.

It is important to keep in mind that that this result was not produced without cost. Some of the cost involved the financial costs of providing the services which were divided among different payers. Other costs involved a potential intrusion into the liberty and privacy of families as they were required to send their children to licensed schools or to make some other accommodations for educating their children. Costs could also include some intrusion into traditional culture of a family if the school ignored some important cultural values that should have been advanced, or advanced some cultural values that should not have been encouraged.

These are all effects measured at the individual level. We also noted that while the value of today's educational efforts that produced some immediately valuable benefits as well as cost for children and their parents, the real benefits to the society would be realized not only today, but from today onward through an individual's whole life. They would also be beneficial (and costly!) to the society as the effects on individuals accumulated not only over time, but also as they accumulated across a population. Indeed it seems entirely possible that the social benefits of having and educated population would grow not simply as a linear function of the number of educated individuals who left school and entered the general population, but also as a geometric function as the concentration of educated individuals in the population grew.

And we also argued for the importance of measuring both the individual and social, short and long run impact of education

As noted above, such measures are important because they allow us to have an accurate picture of our performance, to guide our efforts, and to sustain our hope and commitment as we make continuous progress towards our most ambitious and long range goals.

Overall, education systems in developing countries have made some progress with respect to the development of the basic measurement systems that can track the performance of their national education system, with much support and action in this arena coming from international actors and donors. In terms of tracking activities and inputs and basic “thin” outputs such as enrollment and attendance, many developing countries have some form of an “Education Management Information System” (EMIS). Though policy researchers and advisors have noted much room for improvement in the form and function of these systems (Honig and Pritchett, 2019; van Wyk and Crouch, 2020). In terms of measurement of learning outcomes, nearly all systems use some form of exit exams to determine if students are meeting benchmarks. However, scholars point out that reliance on exit exams to measure performance at the teacher or school level can have distortionary effects (Burdett, 2016), and many argue for the need for lower stakes learning assessments either at the regional or national level, both to support individual teacher or student performance and to track system performance overall (Hwa et al 2020; Akmal et al, 2019).

Measuring Access to and Retention Within the National Educational System

We can measure access to education by observing the fraction of school aged children that are enrolled in some sort of educational activity. We can measure the success of the system in retaining children in the system, and presumably advancing their educational attainments, by measuring the rate at which students from one grade advance to another. Increasingly, as a result of significant investments in the develop of tests that can measure educational attainments of children in reading, writing, mathematics, and science, we can observe whether and to what degree children are “learning” as a result of their school attendance. And, we can measure the degree to which some students can advance to and complete higher levels of education.

Measuring the Financial Costs of the National Educational System

We can also measure the costs of expanding, sustaining, and improving the performance of the system. This registers in public expenditures of governments at different levels on education. It also shows up in the form of payments that parents make to support the education of their children in whole or in part, as an obligation imposed on them or a voluntary choice they make. It also shows up to some degree in philanthropic financial support, and voluntary labor in support of educational activities in the nation.

Measuring Long Term Outcomes of the System, and Progress Being Made in that Effort

To some degree, these system level, macro statistics can be seen as a sequence of building blocks that accumulate over time in the lives of students in each cohort as they are exposed to the educational system that exists at the time. And it is important to keep in mind that that educational system is changing pretty dramatically – at least in terms of scale, perhaps also in the facilities, curriculum, and pedagogy.

This emphasizes two key points important for gauging the degree to which the national system is improving. First, that one cannot really evaluate the ultimate, outcome performance of the system until a cohort moves through the “new” system. We can start making the evaluations this year by looking at the cohort that started 12 or so years earlier and compare that with the cohort that reaches

the age of school leaving next year. But when we do this, we are looking at a result that was largely determined by an old system that was being dramatically expanded.

Second, the process of improving the educational system is dynamic. Ideally, it will be improving over time. But when those improvements will show up in the ultimate social outcomes of aggregate student achievement depends a great deal on the focus of the improvement efforts. If we focus on the later stages of the educational process, the impact of those interventions on the position of those who are of school leaving age will show up pretty soon. If, however, as many recommend, we concentrate on improving education in “the early years” (Belafi et al, 2020), it will take many years for those benefits to show themselves in the desired improvements.

The solution to this problem is obvious but not yet part of our routine practice in observing and evaluating the performance of national school systems over time: we should use the whole population of school aged students as the object of study, paying attention to successive cohorts of students passing through the system, and comparing last year’s system with this year’s system performance with respect to each cohort (Kaffenberger, 2019; Silberstein, 2021). This would allow us to observe the performance of the system as a whole at every stage, both the progress of students early in their schooling and the full set of capabilities they emerge with at the end of schooling.

Developing More Complete Measures of Access, Retention and Educational Achievement

This is essentially the current system that has been developed to allow individual nations to measure their improvement over time, and to compare their improvement with that of other developing or developed nations. But there are several important limitations to this system. First, the system is focused on those attending school, not the whole population of school-aged children. It misses, then, the challenge of integrating previously unschooled children into the system as the system expanded. Recent metrics such as the learning poverty indicator from the World Bank, and international surveys such as UNICEF’s MICs have recognized and attempted to address this concern, at least for children in their early years of school (Azevedo et al 2021; Silberstein 2021). Second, the measurement of academic achievement are not made for each year in a given cohort, but typically for only a few years. Third, the measures emphasize academic achievements reading, writing and arithmetic.

Some national school systems have gone beyond this international system of measuring educational achievement (see for example Brazil’s efforts at national system measurement discussed in Bruns, 2012). They wanted to know more about how their system was performing, what it was accomplishing, who was being marginalized along the way, and so on – all as a device for both motivating and targeting improvement efforts, as well as trying to see whether the macro and micro changes that had occurred were registering in the macro data. They have made more comprehensive, more particularized, and more frequent measures of educational achievements of existing students. They have included populations that remained outside the educational system, or had voluntarily dropped out, or been weeded out of the system as it carried out its educational mission using the means it had in hand. And perhaps most importantly, many have sought to develop and use more or less reliable measures of the impact of educational efforts on student capacities beyond narrow academic goals.

Developing Measures of Individual Development Beyond Academic Achievement

The desire to measure educational impact along dimensions beyond the traditional academic goals of reading, writing, and arithmetic, along with some limited civics training to include measures of socio-emotional development and as well as preparation for the workforce in the 21st century has been strongly supported by many academic professionals (York et al 2021; York et al 2021b; Care et al 2018). Many of those pressing not only for wider access to education but also improvement in developing countries have urged that the educational system itself broaden its focus on what are described as 20th century skills. The justification is that an important goal of both individuals and governments in developing countries is to enable its citizens to succeed in different spheres in their own country, and to fully enter the international economy. As Brazil has made clear, its goals are much broader than academic attainment for individual students.

On that view, the aims of education have changed. And it is possible to think that there might be a different path towards achieving those aims. A path that is different because it is being pursued in a particular nation; and different because it is focused on different purposes. If context and aims are different, then there is no particular reason to imagine that the educational process would remain unchanged. And the differences might go much deeper than particular changes in curriculum materials. It might begin to affect pedagogy, and the ways in which the education of children is broader and more tightly integrated into the economic, social, and political culture of a given country.

Setting Standards of Success for Improvement on Different Dimensions of Performance

One last point: an important question for those who would lead a sustained campaign for educational improvement is what standards they should use to determine whether they are succeeding or not in their efforts. By standards here, I mean not only the dimensions of performance that are considered important and valuable, but also the *pace and degree to which improvements on those dimensions of value can be achieved*. It is not just whether a single needle can be moved above some arbitrarily defined threshold that counts as success, but whether many needles can be moved to demonstrate enough progress to sustain and guide the effort.

Many countries seem to use the Organization for Economic Cooperation and Development's (OECD) PISA assessment to locate themselves in a group of comparators. PISA is designed to be used for comparison, with its scale normalized so that a national score of 500 is the "average" among the OECD countries. This is used at least in part as a motivational strategy. "Look how far behind we are! Even X is doing better than we are!"

There is no doubt that this kind of international comparison does command the attention of elites who then use them to mobilize public resources and ideally a wider sense of social urgency. It has also been used to create pressure for action in the education sector when countries perform poorly, a phenomenon termed the "PISA Shock" (Ross Schneider et al, 2018; Davoli, 2018).

But the important question for those who want to make sustained, valuable improvements in the performance of their national educational systems is whether they can steadily improve their performance along dimensions of value that are important to and can motivate the societies in which they live.

That means that the goals to be pursued have to align with goals that are important to those who will be called upon to support education and to take advantage of it when it is available. And it is

not at all obvious that what either the communities and parents living in the diverse rural parts of developing countries, nor the elites who are focused on educating for 21st century skills will support the relatively narrow 19th and 20th century skills of reading, writing, and arithmetic. Some evidence suggests this may be the case. For example, a 2020 survey of education officials in 35 (mostly Sub Saharan African) low- and middle-income countries found that more officials ranked fostering dutiful citizens and completing secondary school higher on their list of the core purpose of education systems than foundational literacy (Crawford et al, 2021).The frame has to be opened more broadly both to attract and to focus social commitment and interest.

It is also true that in order to sustain the long effort to make improvements now that will produce proven results a long time in the future , one has to have not only attractive visions of the “there” but also a good account of “what we need to do to get there.” That path to the future provides hope that can sustain motivation. But it also focuses energy and renews hope by identifying intermediate goals that can be achieved in the short run, and are reliably connected to achieving the long run goals. (Moore, 2013) In our judgment, it would be much better politically, philosophically, and managerially if those leading and managing national improvement efforts concentrated on how much they have improved from year to year than where they stand in the international “league tables.”

In these ways clarity about ultimate goals, and the actions that can accumulate over time to the achievement of these goals, can operate as a powerful motivator to hold a social and political coalition together to act as an effective principal for improvement in the system as a whole. It has a political aim, as well as a philosophical and managerial aim.

Principle 6: Recognizing and Valuing Variation in the System

Sixth, in analyzing the system and how its performance might steadily improve over time as conditions change and improved educational methods develop, it is important to distinguish between the current operations of the system as a whole from the set of emergent innovations in the way the system operates.

As noted above, many social conditions conspire to create a powerful *status quo* that is relatively homogeneous in: 1) what it produces, 2) how it produces the particular results, 3) how it evaluates those results, and 4) how it finances (or more generally, resources) those activities. (Dimaggio and Powell, 1983)

While this is a large and stable system, it need not be *simple*. Indeed, if the environment in which the system is embedded is complex, the stable system may well be very complex as well. The complexity can arise from the fact that the system has found a way to fill in many different niches – each different from others, but stable. Indeed, the complexity of the system might help guarantee its stability by providing a place for everyone, with each faction being able to find the right kind of educational supplier.

Indeed, the stability of the system as a whole may depend on having enough variation to accommodate particular social niches that would otherwise challenge or resist the current operations. For example, it might be true that the existence of private school options relieves some of the strain on

public schools to accommodate some very particular kinds of educational demands and allow the larger public system to concentrate on the more common demands.

However, complex the existing system is, if the performance of the systems is going to improve overall, it must change: 1) what it is currently producing, 2) how it is producing those results, 3) how performance is being evaluated, and 4) how resources flow through the system. That improvement can come from improving performance in one or more niches, by finding new ways to operate across existing niches, or (ideally) by finding methods that improve performance across all niches.

At any given moment, there are hundreds of thousands of variations, adaptations and innovations being proposed or implemented in any national school system. These departures from existing local practices can vary along many different dimensions. They can vary in purpose. They can vary in terms of target population. They can vary in potential scale. They can vary in terms of potential significance. They can vary in terms of where they fit in the operational value chain. They can vary in terms of the amount of collaboration they require. They can vary in terms of whether the ideas are globally new or just locally new. They can vary in terms of their operational and political risk.

The point is, however, that these ideas, and the organizations and individuals behind them are the seeds of change, or to change the metaphor, the stepping-stones into a future of improved national level performance.

Principle 7: Ensuring a Diverse and Strategically Valuable Set of Innovations for Testing

While the existing system can and will produce a great deal of natural variation of its own as educational suppliers adapt to local contexts and niches created by larger systems that authorize, financially support, and evaluate school operations, there is no guarantee that the overall set of innovations stimulated by the current system will include those that can make a significant impact on the system as a whole. In fact, it is likely that that system will generate innovations that are close to current practices, and operating in the mainstream of educational efforts rather than on the boundaries of the system – namely those that are having the most difficult time learning, those who have the fewest private resources to use in pursuing education, those who are most resistant to the “liberating” effect of education, and so on.

It is also likely that the system will focus more on relatively small operational innovations that can be easily mounted, and quickly and straightforwardly evaluated, and less on the institutional innovations that could create more innovators on one hand, and more innovative organizations and systems on the other. These biases may slow the rate of innovation and learning below what might be needed to move the performance of the system forward on all dimensions of performance including but not limited to individual learning and educational achievement.

This suggests that some special efforts might be needed from the “center” or “off on the side” (anywhere but in the middle of the existing system!) to authorize, financially support, and evaluate those innovations that might be important to achieving both individual and system level goals. A useful analogy might be to the tri-sector health system which does an excellent job in developing innovations in medical treatment for the most common diseases, but struggles when it faces serious problems experienced only by some, or only by those who do not constitute a large market for drugs and medical

treatments of acute conditions. That system also struggles when it is forced to pay attention to inequalities in access to preventive and curative medical services.

To ensure an adequately broad and deep array of experiments be undertaken, it is important to begin with a clear-eyed view of the overall performance of the system (see principle 1 above), that one have a good measurement system for both system level performance and the implementation and impact of particular emergent or planned innovations (see Principles 3, 4, and 5 above,) and that one has some system for recognizing and monitoring the emergent and planned variation in the system.

This last requirement – that the national system have the capacity to register and keep track of important existing, emergent, and planned variations in the system – is the focus of this particular principle – Principle 7. That capacity should include not only an accurate and relatively complete picture of what innovations are now being tried, and exactly where they are testing the existing system in terms of improved social performance.

But it should also attend to the important question of what issues have been set aside because they are “too hard,” or those big and small glimmers of ideas which have not yet been developed. In short, it is important to understand what exactly is in the “risk portfolio” for experimentation, as well as what is currently being done, and to ensure that we have been neither too reckless nor too conservative in our search for solutions.

Where Could Important Innovations Be Made?

The core question to be answered is how can we best think and make judgements about the number, size, and kinds of innovation we should try?

- Do the important innovations focus on new methods of instruction – perhaps particularly those that take advantage of digital technology?
- Or, would it be important to develop cheaper, more precise, and quicker measures of individual student development so that instruction could be more tailored to individual student learning trajectories?
- Or, perhaps it would matter a lot if we found better ways to engage the support of parents and peers in the educational process of particular students?
- Or, it could be that what is needed are new ways to recruit, develop, motivate, and compensate the individuals who take on the arduous task of teaching?
- Or, it might be that new managerial processes could be developed that could be used by school leaders to organizational cultures committed to teaching and learning – not only among the students, but among the teachers?
- Or, perhaps it would be important to change the form of accountability now used to finance, manage, control, and evaluate public school systems that would cause the public schools to be more consistent and energetic in doing their routine work; quicker to embrace and adopt

practices that differ from theirs but have been shown to produce better results elsewhere; and more creative on their own in seeking to find better ways to educate.

- Or, maybe the key is to re-shape the entire sector by re-allocating the overall social effort across the different educational suppliers now distributed across the public, nonprofit, and commercial sectors?

The wide range of possibilities suggested above could be seen as a somewhat arbitrary list of possibilities. But each of the broad possibilities suggested above has, in fact, been proposed as the panacea for improving educational performance.

Furthermore, a close reader might have noticed that the possibilities are not listed entirely arbitrarily; they are arrayed in a particular order. The order moves:

- *from* the most concrete and particular (but enormously widespread) activity that involves transactions between students and teachers in the presence of a curriculum presented through a particular pedagogy;
- *through* the (equally particular but equally ubiquitous) intimate influences brought to bear on a particular student's chances to learn by siblings, parents, peers, and relatives;
- *back* to the socially or governmentally organized systems that creates and distributes a pool of teachers that end up standing in front of classrooms;
- *up* to the acknowledged influence of particular school leaders on how all the elements described so far have been combined and operate in a particular school;
- *up* to the systems of public accountability that are used to animate, guide, and evaluate schools and teachers; and
- *up and out* to the wider society of educational suppliers who provide educational services outside the direct management control of government, and sometimes without any government funding, to those who wish the particular kind of education they offer, and are willing to volunteer or pay for that particular education out of their own time and pocket books.

Faced with this daunting array of possible categories of innovations (each embodying hundreds of even more particular possibilities), it is hard to know exactly how to proceed -- to find and make best use of the particular innovations that could define the path towards improved educational performance at the national level. Yet, that is precisely the task that faces us.

Three points seem important at the outset.

Innovations Small and Big: Micro Operational Change v. Macro Institutional Change

First, it is probably important to embrace the wide set of possibilities that exist for improving the performance of national educational systems suggested by the list above. Since there is no particular

reason to exclude or to home in on one particular kind of innovation, and since they all seem to be “on the table” for discussion, we might as well consider them all.

To make our task slightly simpler, we could make one crude but important distinction: that between “*micro operational innovations*” on one hand, and “*macro institutional innovations*,” on the other. The set of micro-operational innovations are those that occur within smaller social institutions such as individual schools or even classrooms that affect the basic processes, they use to promote educational goals. This would include, for example, the adoption of a new pedagogy for teaching reading to young students, or a new way to engage parents in their children’s education, or a new way to test the development of problem-solving skills among adolescents. Referring to them as “micro-innovations” is not meant to imply that they are simple or straightforward to execute, nor should it be taken to mean that they can be easily transported from one context to another once they have been identified. Micro innovations, and the approach to adopting and implementing them are often highly context dependent and rooted features like student composition, teacher capability, and management structure.

The set of macro- operational innovations, in contrast, would include those that happen within large social institutions and involve changes in the large operational processes those large institutions rely on to accomplish their tasks – for example, the processes of certifying individuals to become teachers; or changes in national financial support or evaluation of the performance of public, non-profit, and commercial schools.

Table 4 shows the rough results of this effort below.

Table 4. A Preliminary Catalogue of Innovations

	<i>Micro Innovations</i>	<i>Macro Innovations</i>
<i>Classroom Level</i> <ul style="list-style-type: none"> • Curriculum and Pedagogy • Continuous, Personalized Measurement • Classroom Discipline/Management 	Smaller, Operational Innovations	Diffusion Across System Through Some Process
<i>School Level</i> <ul style="list-style-type: none"> • Parental/Peer Engagement • Teacher Selection/Motivation/Evaluation 	Larger Innovations that Include Managerial Changes at Org. Level	Diffusion Across System Through Some Process

<ul style="list-style-type: none"> • School Leadership, Management, Governance 		
<i>National Level</i> <ul style="list-style-type: none"> • Teacher Development Systems • Financing/Monitoring Systems • Curriculum Requirements and Certifications 	Even Larger Innovations that Include System Re-Structuring and Financing	No Diffusion Since Refers to Whole System

Source: Author

One important result of making this simple distinction is to see that some of the proposed innovations can be tested relatively quickly and easily because they are small, relatively easy to implement, and produce results that show up relatively quickly.

This is not to say that the aggregate value of these innovations could not be large. If the small, operational innovations prove to work for some purposes in some circumstances; if those purposes and circumstances are widespread in the system; and if means are found to diffuse these innovations rapidly across the system; the impact on system level performance can be very important.

Other innovations, however, involve both a great deal of money, time, and risk to implement, and cannot be easily divided into bits that can reduce the wide uncertainty about the likely effects of the larger scale, more institutionally complex innovations.

For example, at the limit, it is hard to know how one could experiment with wholly different national level systems for financing, operating, and evaluating educational systems -- partly because the experiment would be so large, but also because there is only one site where the experiment can take place. One could, of course, take advantage of international or historical comparisons of different national educational systems. Moreover, federalist systems allow for state level variation in national systems. Finally, one could make some marginal changes in particular operational or administrative features of a national systems and observe the net effect.

But the point is that these efforts are of a different kind than smaller scale experiments with the micro operational processes that can produce improved learning of different kinds, in different subjects, for different age groups.

Scale, Infrastructure, and Governance as Innovations

Second, while it is common to focus on relatively small programmatic innovations in the micro and meso production processes of classrooms and schools when talking about innovation to improve educational performance, it is important to recognize the importance of changes/innovations at the macro level of the system in creating conditions that demand, guide, and support innovation across the system as a whole.

As noted above, one of the largest changes (innovations?) that has occurred in national educational systems over the last decade is an increased in scale and access to services. That might well have spawned a great deal of variation in the range of educational practices throughout the national system – not all of them productive!

But even if the increased scale was produced by more public financing, and by increased efforts to produce educational services in areas not yet served through traditional methods, the simple increase

in scale demanded a certain kind of innovation: the kind that could be called the “local development and adoption of existing methods for educating children.”

As noted above, from the point of view of the localities now authorized and financed to produce education, they faced an important change/innovation project. They had to negotiate with the local community, parents, and students what would be offered as educational services, and on what terms. And that may have produced some local variants in both ends and means, including different systems of support and co-production from the local community.

This observation, in turn, focuses attention on the important question of what local education suppliers (the agents in the principal agent scheme) could count on being able to use that already existed in their world. To some degree, this meant whatever enthusiasm and capacity for education existed in their areas. But it also meant the set of larger, national investments that had been made in the infrastructure of educational activity.

Importantly, this includes the amount of cultural, social, and political work that had gone into building the society wide support/demand for particular educational purposes, served by particular educational means. The stronger this demand, and the more aligned it was with the aims of the national educational system, the stronger the drive to produce educational results, and the faster and more effective the response. The weaker or more confused the local demands for education, the slower and less effective the supply response.

It also included the particular systems of financing and control that were used to support and guide the increased scale of educational activities. While local communities, parents, and students could act as “principals” (or “consumer sovereigns”) in the sense that they had interests and values they wanted to see advanced and reflected by the actions of local educational “agents”, they did not necessarily have much control over the evaluations and financial support that would determine which educational agents would flourish. Much of money and much of the power to define the values to be produced by educational agents remained in the hands of different levels of government, or sometimes voluntary associations, religions, and philanthropists. The more money controlled by each principal, and the stricter and more powerful their system of accountability over agents, the more their values would be influential in determining what was produced and how. If the values were mostly aligned, that was fine. But if differences in values existed, or if one principal insisted on a particular means, then infrastructure that supported and guided the scale expansion would not work.

The infrastructure associated with scaling the educational effort could also include the supply of key educational materials including classrooms and school buildings, but more importantly, curriculum materials, and more important still, the supply of skilled, motivated, and well-trained teachers. Scarcity in the supply of any of these education specific assets could operate as a severe constraint as the system sought to increase its scale. This could create room for significant innovation as local communities and local educational suppliers found new ways to meet the demand for classrooms, curriculum materials and teachers. But it was also quite possible that the rush to reach scale put the whole system onto a lower trajectory than was needed, and then locked the system into the commitments that were made in haste and turned out to be problematic in the future.

This dynamic might have been particularly true in the case of the development of teachers. It is possible that the sudden urgency about hiring brought new and talented individuals into the field. But it

is also possible that it attracted and accepted individuals who would have been screened out under older standards. In an effort to motivate both experience teachers and new entrants, labor contracts might have been enriched with more salary and more security, and that, too, might have brought more motivation and encouraged more professional development of teachers. But it could also be so expensive that it would essentially freeze any future possibility of trading increased pay and professional development for demonstrated performance and accomplishment in developing one’s own schools, and contributing to the professional development of less experienced teachers.

Finally, the infrastructure on which the scale was built includes the leadership capacity of those who occupied, were granted, or took positions of authority and responsibility in developing and managing the educational supply system. This included the senior teachers, the school principals, the leaders of local school districts in the publicly operated schools. It included the senior teachers, school leaders, and leaders of the voluntary sector organizations that provided educational services. It included those government officials at higher levels of government who directly managed large public school systems, and/or created policies financing and regulating nonprofit and commercial educational suppliers. And it included national, state, and community political leaders who took up educational improvement as an important national, state, or community goal. Much depended on their ability to demand performance from educational suppliers, and their ability to both tolerate and stimulate supplier efforts to find ways to improve their educational performance.

Innovators, Innovations and Innovativeness

Third, as one goes through this exercise, reaching for larger, more aggregate institutions encompassing larger populations, more learning objectives, and more variety in the particular things they have to keep in motion to produce the desired results, it seems that our approach to innovation seems to change, one becomes less interested in *particular operational innovations* related to the intimate processes of learning, and more interested in *finding, developing and encouraging innovators* on one hand, and *creating institutional frameworks and processes* in which individuals who retain responsibility for that effort, and play central roles in producing it, can feel free to experiment.

Table 5. Innovators, Innovation, and Innovativeness

	<i>Substantive Innovations in Processes that Produce Learning</i>	<i>Developing and Encouraging Innovators</i>	<i>Create Institutional Frameworks That Allow or Promote Innovativeness</i>
<i>Classroom Level</i> <ul style="list-style-type: none"> • Curriculum and Pedagogy • Continuous, Personalized Measurement 	Innovations in Classroom Methods	Find and Support Innovative Teachers	Innovative and Adaptive Teachers

<ul style="list-style-type: none"> • Classroom Discipline/Management 			
<p>School Level</p> <ul style="list-style-type: none"> • Parental/Peer Engagement • Teacher selection/Motivation/Evaluation • School Leadership, Management, Governance 	Innovations in School Level Strategy and Leadership	Find and Support School Leaders Who are Willing to Experiment	Creating Schools that Can Learn
<p><i>National Level</i></p> <ul style="list-style-type: none"> • Teacher Development Systems • Financing/Monitoring Systems • Curriculum Requirements and Certifications • Research, Development and Evaluation 	Innovations in National Systems	Find and Support Political Officials Willing to Change Education Policy	Creating a National System that Can Learn

Source: Author

Of course, the freedom to experiment comes with a cost. Those who seek to innovate at any level of the system (classroom, school, national policy), and in any kind of innovation (substantive processes of teaching and learning, organizational forms and cultures that encourage innovativeness and learn from it) have to recognize that they are, in fact, *experimenting*. They do not know the results for sure until they try it.

And that imposes a burden on them to ensure that the reasoning and evidence that justifies the experiment is sound. Perhaps even more importantly, the experimenters have an obligation to *pay attention to what happens in their experiments, and to report the results to others who are experimenting in similar areas*. In short, we have to have system level processes that has two key properties: 1) they encourage not only *innovations* in all these different domains, but also *innovators, and innovativeness* at all levels of the system; and 2) they have the capacity to capture and accumulate the results of the experiments that are undertaken.

Principle 8: Developing a National System for Encouraging, Recognizing, Cataloguing, and Learning from Innovations

Both natural variation and planned innovation and experimentation represent opportunities for learning and improvement – not only in what we value, but how it can be produced. Natural variation and planned innovation also represent opportunities for meeting heterogeneous educational aspirations and doing so in different jurisdictions and circumstances.

Still, as noted above, it remains important to establish a national perspective over the range of variation that being undertaken to ensure that the national system does not waste too much time on fads that are briefly popular, but do not pan out, or on those that neglect some important dimensions of value, or over-emphasize one dimension of value over all the others. We should also seek to ensure that some of the most difficult challenges facing the national educational system not be neglected because they seem “too hard.” The national consciousness (and conscience!) that encourages, authorizes, and commits to innovation must be wise and discriminating to ensure that the foolish and

bad are weeded out, and the good and just encouraged even when they pose difficult challenges.
(Moore paper on Idiot Winds)

To enable this national perspective that hovers over and influences the overall pattern of change and innovation, there must be some system that not only holds the current overall performance of the system up to the light so that the society as a whole can see what is being produced for it, and in its name (see Principles 1,2,3, 4 and 5 above); but also the portfolio of changes, innovations, and experimentations that are marking the way towards improved performance (See Principles 6 and 7 above). And there must be some way of evaluating the potential overall value of the existing portfolio of innovations for improving the performance of the system as a whole on all dimensions of value for all jurisdictions and population segments. (This is the aim of Principle 8).

This is far from a simple calculation. One has to not only learn what is being tried, and make estimates of their likely success, but also to recognize that the value of any given innovation is determined not only by its particular success, but also by its capacity to reach a scale in the system that could produce an observable change at the systems level.

Whether a particular innovation can produce an effect at scale depends on whether that effect will come from: 1) the widespread diffusion of small but important operational innovations; 2) the development of larger institutional innovations that could increase the number and location of innovators in the system; 3) the innovativeness of the systems themselves; and 4) the evaluation criteria and methods that could stimulate and discipline the learning of the system as well as the current performance. This last point – the importance of innovations in how the system as a whole can distinguish important innovations from less important ones is taken up immediately below.

One might think that this responsibility would lie squarely and uniquely with the National Government and its Education Ministry. They would have the broad perspective on what is happening in the system. They would have the clearest picture of where improvements were required. By bringing together knowledge and expertise from across the country (or even the world), they might have the best chance of imagining and testing the best ideas for solving the most urgent problems of the system. They might also control or have access to those who are particularly skilled in policy and program evaluation methods. And so on.

But a little reflection and empirical observation reveals that the existing systems for encouraging, authorizing, and financing planned innovation is distributed more widely across national educational systems.

Table 6 makes the key distinction between: 1) what might be viewed as the current, steady state operations of the national educational system on one hand, and 2) the challenges to that system embodied in the many different proposals about what educational producers should produce and how they should produce it, how educational producers should be managed, how educational producers should be evaluated, and how the national system as a whole should be governed and financed, on the other.

This Table also makes a key distinction among three different social sectors – the commercial sector, the voluntary/philanthropic sector and government, and indicates how each sector might and

participate in financing, producing, and evaluating both the existing social production system on one hand, and the size and character of the proposed innovations on the other.

Table 6. A Three Sector Model of Innovating and Operating in a National Production System

	<i>Commercial Sector</i>	<i>Philanthropic/Voluntary Sector</i>	<i>Government</i>
<i>Innovation and Experimentation</i>	Financially Motivated Venture Capital	Philanthropic Capital Motivated by Donor and Volunteer Concepts of Good and Just	Social Research, Development, and Evaluation Funds
<i>Current Operations</i>			
<i>Financing</i>	Commercial Capital Fees for Service	Big Philanthropy Many Small Donations Labor Contributions Fees for Service	Tax Dollars
<i>Producing</i>	For Profit Schools	Private Schools Charter Schools Religious Schools	Public Schools Charter Schools
<i>Arbiter of Value</i>	Client Satisfaction	Donors Volunteers Clients	Public as a Whole Clients with Rights

A quick review of this table along with some rough empirical facts points to some key questions to ask about the national level educational system’s ability to learn to improve.

The first key question is about whether the *innovation and experimentation row has enough high quality activity occurring within it*. This could be roughly measured the amount of commercial, philanthropic and government spending was devoted to this activity as an absolute amount, or relative to total spending on sector operations as a whole.

But the real question is whether that spending is focused in areas, and on methods, that could be expected to produce large results if the tested programs could be scaled to their optimal level given system resources and capability. This is hard to know, of course, but it is relatively easy to distinguish among the potential size and significance of the current initiatives being proposed, developed and evaluated. Simply ask the question of how big a change we could expect on what dimensions of national level performance and provide an answer in terms of order of magnitude, risk, timeliness, and complexity. That could sort a great deal out.

The second key question focuses on the potential for *scaling* any of the innovative ideas to a significance within a reasonable time once it has been tested and developed. And it is here that our attention turns not to the supply side of the system – not the world of individual producers and their methods, purposes, and audiences, but to the world of demanders – most importantly third-party payers and regulators who act as the arbiters of educational value.

Government demand is organized around public purposes, and constrained by politics including supplier interests and concepts of the public good and justice expressed in the political system. It is expressed through both public funding and through regulations that decide what sorts of activities count as education for the purposes of the regulatory system that requires all individuals to be educated, and for purposes of financing particular educational activities with public dollars. This is the big buyer/demander in the system, and its choices drive much of what gets produced and who produces it. If the demand side is hostile to innovation, or unable to distinguish improved educational performance (at the individual and social level) then a government dominated system cannot learn to improve its performance.

The government has to remain not only open to, but actively encouraging of innovation. It also has to be reliable in its ability to recognize value at both individual and social levels and to distinguish value creating ideas from fads. It must engage in the difficult work of evaluating value, and resist the temptation to replicate popular trends that produce little substantive change, which are not fit for purpose in a local context, or which produce the form of effectiveness without delivering on the functional goals (i.e. isomorphic mimicry) (Andrews et al, 2017) (Dimaggio and Powell). But it also cannot afford to be hamstrung by methods of empirical investigation and evaluation that are limited in terms of the kinds of innovations that can be scientifically evaluated in a short period of time.

Principle 9: Organizing the Demand Side of the Educational System to Distinguish Valuable Innovations from the Fads, and to Scale the Valuable Efforts at the Expense of the Less Valuable

The value of the innovation portfolio for the educational system depends not only on the number and quality of innovations being developed, but also on the discriminating processes that allow the system to parse the good innovations from the bad, and diffuse and scale the good innovations to replace their less successful forerunners. In order for the system to improve, resources must flow from less productive suppliers and activities to more productive suppliers and activities. Unless this occurs, the innovations that light the path to system wide improvement will simply not be undertaken.

Joseph Schumpeter developed an influential theory about how steady productivity gains could be maintained in commercial market systems. (Schumpeter, 1942) The core idea is that the pursuit of profits by commercial suppliers would cause them to develop new ideas about products and services for which customers would pay a premium, and/or production processes that would reduce the costs of production. Once these innovations were in the marketplace, customers would see the greater value or the lower cost and shift quickly to the innovative supplier. As he explained, “if you build a better mousetrap, consumers will beat a path to your door.” And in the rush to get the new and better mousetrap, the producers of the better mousetrap would flourish, and the producer of the worse mousetrap would starve. This, he called the “gale of creative destruction.”

It is important to see two features of this familiar model. The first is that much of the drive to create innovative products and production processes comes from the supply side – those we call agents in the principal agent model. The consumer remains sovereign – the ultimate arbiter of value, and the ultimate source of funding. But the person with the idea about the new product or service that would “delight customers” and “create value” is the supplier.

The second is that it is the response of the demand side to the innovations that causes the innovations to be quickly evaluated, and resources to flow to the better product or process, and away

from the inferior product, resulting in fast, industry wide productivity gains. This process is particularly effective in producing fast industry wide gains because it not only provides for the growth of the new (with new purchases and the promise of even more in the future), but also because it denies resources to the old (as consumers abandon those they used to support). This twin effect tends to produce very rapid changes in the market share of the new versus the old.

Ideally, some similar process could be created for national educational systems. But it is also important to recall that the effective demand side for national educational systems is *not principally individual consumers* with money to spend on educational services they value in their own terms. National educational systems typically include that kind of demand as a portion of the overall aggregate demand for education. National educational systems also include the kind of demand that comes from voluntary third parties, who pay for educational services through endowments, charitable support to a school, or contributions to scholarships. But in most national systems, the largest amount of funding comes from government tax revenues. And, even those systems that are supported by consumer purchases or charitable contributions are often regulated by the government to ensure that the schools deliver a service consistent with national goals for education.

Since the practical power to arbitrate the value produced through educational performance comes from those who make decisions to financially support (buy) services, the evaluative criteria used to distinguish good educational performance from less good lies with those who have the most money to buy, and the most authority to regulate, the production of educational goods and services. For the most part, that is the government (ideally acting as an agent for society as a whole.) The implication is that the capacity of the educational system not only to recognize increased value in educational activities, but also to scale the more valuable activities up and deny resources to the old has to lie with government (as it is influenced by the wider public).

It is here that the concerns about supplier capture become most important. If suppliers of educational services (government agencies, voluntary sector enterprises, or commercial enterprises) can shape government financing and regulation to their ideas of creating public value in education, they can dominate the supply, level, and distribution, of educational services. In turn they can also dominate the impact that education has on the society. Another concern is the quality of information available to assess education performance.

In order for the demand side to play its important role in encouraging system learning and improved performance, it has to be a reliable arbiter of the public value produced by the system as a whole. It must be able to quickly and reliably assess the micro and macro value of any particular innovation that emerges in the field either as a result of natural innovation, or strategic judgments made about the particular areas in which innovation would be particularly valuable, and the kinds of innovations that seemed most promising. This requires both having reliable information and means and motivation to act to address these. If the demand side is not aligned with the sources of financing and authorization that are the largest forces shaping the operations of the supply side, then there is no guarantee that the innovations being developed will create a gale of creative destruction. It might, as an alternative, simply create “idiot winds” that sweep across the landscape with destructive rather than constructive impact. (Moore, 2019).

Conclusions: Advancing Towards the Production Possibility Frontier of National Educational Systems

National Education Systems are large, messy, complex, stubborn social systems that are critically important in the lives of individuals and societies in the short and long run. They are important not only to the economic life of a society, but also to its cultural, social, civic, and political life. They are simultaneously a reflection of what the society has been in the past, is now, and most importantly, would like to be in the future, if only it could find a way.

Those who take responsibility for leading improvements in the existing educational system from the many different institutional platforms that allow, encourage, enable, or require such leadership face a difficult functional challenge. They have to find a way to leverage or catalyze a localized change process by simultaneously creating an effective demand for educational improvement (a strong national principal); and an imaginative and responsive supply (an array of responsible and innovative educational agents.)

The first is importantly a philosophical and political struggle to articulate the important dimensions of value that the society hopes to advance through (and have reflected in!) the operations of the national educational system. But it is also a technical and managerial challenge that seeks to both accommodate and lock in the social commitment to those values through the development of a measurement system that can capture not only the hopes for the future, but capture the present performance, and the progress that is being made to a better future. (Moore, 2013).

The second is a more managerial and technical struggle to search for and find the means for reliably deploying available assets to the achievement of the desired goals. To describe this as a managerial and technical goal, however, is to miss how creative, dynamic, and risky the search for improved educational performance can be. The existing *status quo* reliably offers the comfort and security of knowing what can be produced. The search for ways to advance along the dimensions of value that define the production possibility frontier of the national educational system is full of risk and disappointment.

What is needed is the development of some kind of functional national leadership capacity that can help to build a discerning and demanding “national principal” – ideally one that can survive through significant changes in economic, social, and political aspirations and conditions, and learn enough through reflective experience, well-designed experiments, and the emergence of practical expertise improve educational performance at scale. Ideally, the articulation of the challenge, and the principles set out here might help to animate and guide that effort.

Appendix 1: The Simple Analytics of Innovation and Learning in Complex Social Production Systems

Reflection on the question of how a complex tri-sector social production system like a national educational system could learn over time to improve its performance suggests an overly simplified model. In this model, the rate of learning by the system can be seen as a function of:

- 1) the number of innovations tried
- 2) the size, character, and (system) location of the tried innovations
- 3) the supply, capacity, and (institutional) position of potential innovators
- 4) the scope of social authorization and financial support for innovation at different levels
- 5) the evaluative terms to be used in assessing the social or public value of a proposed idea
- 6) the *ex-ante* assessed potential of the innovative ideas that were authorized and supported
- 7) the *ex post* evaluation of the empirical results produced
- 8) the capacity of the system that provides financial and social support for new ideas to distinguish good ideas from bad, and to provide sufficient financing and support for the spread of ideas of proven value
- 9) the capacity of the system that provides financial and social support of the status quo to recognize and act on the potential for replacing the old with the new

At the heart of this system are the processes that are the focus of the principles outlines above: the criteria to be used to evaluate innovations, the generation of variation in the system, the ability to distinguish the valuable innovations from those that are less valuable, and to grow the good and shrink the bad in terms of their market share in the ed sector as a whole.

One could think of this as the “innovation system” as it seeks to challenge existing operations, and to enable good ideas rise to the top and worse ideas sink. How best to manage the innovation and system change that must support and guide national level educational systems is essentially the issue that is contested in the comparison between the centralized R and D systems, and the Schumpeterian system.

The Government-Structured, Centralized Research and Development (GSCRD) system imagines that the best source of ideas for change at all levels of the system might come from politicians looking for results, or educational professionals seeking to achieve their aspirations for social impact, or policy analysts, program evaluators and social scientists who want to improve the performance of public sector production systems. This system also imagines the best methods for vetting new ideas is through scientific and professional knowledge and peer assessment of proposals. The best way to know whether a proposal works is through the methods of program evaluation, or (even better) through randomized controlled experiments where those are possible.

The Consumer-Dominated, Highly Decentralized, Market Drive (CDHDMD) system imagines that the best motivator for good ideas is the potential financial returns that could come from patenting a better mousetrap, and that the best test of whether an idea is producing good results, and valuable or not is to ask the person who is using the new good or service. Knowledge and expertise is useful in developing value creating innovations, but it is the person who can see the “market potential” of a practical application of new knowledge who provides the spur to value creating innovations.

References

- Allison, Graham T. 1999. *Essence of Decision: Explaining the Cuban Missile Crisis*. 2nd ed. New York: Longman.
- Anderson, Benedict R. O’G. 2006. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Rev. ed. London ; New York ; Verso. http://nrs.harvard.edu/urn-3:hul.ebookbatch.ACLS_batch:MIU0100000000000005824668.
- Andrews, Matt, Lant Pritchett, and Michael Woolcock. 2017. *Building State Capability: Evidence, Analysis, Action*. Oxford: University Press, Oxford University Press USA - OSO. <https://doi.org/10.1093/acprof:oso/9780198747482.001.0001>.
- Atuhurra, Julius, and Michelle Kaffenberger. 2020. “System (In)Coherence: Quantifying the Alignment of Primary Education Curriculum Standards, Examinations, and Instruction in Two East African Countries.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-WP_2020/057.
- Azevedo, João Pedro, Diana Goldemberg, Silvia Montoya, Reema Nayar, Halsey Rogers, Jaime Saavedra, and Brian William Stacy. 2021. *Will Every Child Be Able to Read by 2030? Defining Learning Poverty and Mapping the Dimensions of the Challenge*. Policy Research Working Papers. The World Bank. <https://doi.org/10.1596/1813-9450-9588>.
- Belafi, Carmen, Yue-Yi Hwa, and Michelle Kaffenberger. 2020. “Building on Solid Foundations: Prioritising Universal, Early, Conceptual and Procedural Mastery of Foundational Skills.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-RI_2020/021.
- Briggs, Xavier de Souza. n.d. “The Will and the Way: Local Partnerships, Political Strategy and the Well-Being of America’s Children and Youth.” *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.295572>.
- Bruns, Barbara, Maryam Akmal, and Nancy Birdsall. 2019. “The Political Economy of Testing in Latin America and Sub-Saharan Africa.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-WP_2019/032.
- Bruns, Barbara, David Evans, and Javier Luque. 2012. *Achieving World-Class Education in Brazil: The next Agenda*. Directions in Development. Human Development. Washington, DC: World Bank, World Bank Publications, The World Bank. <https://doi.org/10.1596/978-0-8213-8854-9>.
- Burdett, Newman. n.d. “The Good, the Bad, and the Ugly – Testing as a Part of the Education Ecosystem,” 12.
- Carnoy, Martin. 1999. *Globalization and Educational Reform: What Planners Need to Know*. Fundamentals of Educational Planning 63. Paris: International Institute for Educational Planning IIEP, UNESCO.
- Cels, Sanderijn, Jorrit de Jong, and Frans Nauta. 2012. *Agents of Change: Strategy and Tactics for Social Innovation*. Brookings / Ash Institute Series, Innovative Governance in the 21st Century. Washington: Brookings Institution Press and Ash Center for Democratic Governance and Innovation. <https://doi.org/10.7864/j.ctt1261pm>.
- Crawford, Lee, Susannah Hares, Ana Luiza Minardi, and Justin Sandefur. n.d. “Understanding Education Policy Preferences: Survey Experiments with Policymakers in 35 Developing Countries.” Center for Global Development | Ideas to Action. Accessed March 31, 2022.

<https://www.cgdev.org/publication/understanding-education-policy-preferences-survey-experiments-policymakers-35-developing>.

Crouch, Luis. 2020. "Systems Implications for Core Instructional Support Lessons from Sobral (Brazil), Puebla (Mexico), and Kenya." *Research on Improving Systems of Education (RISE)*.

https://doi.org/10.35489/BSG-RISE-RI_2020/020.

Davoli, Maddalena, and Horst Entorf. 2018. "The PISA Shock, Socioeconomic Inequality, and School Reforms in Germany," no. 140: 18.

DiMaggio, Paul J., and Walter W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48 (2): 147–60.

<https://doi.org/10.2307/2095101>.

Gailmard, Sean. 2014. "Accountability and Principal-Agent Models." *Oxford Handbook of Public Accountability*, 27. <https://doi.org/DOI:10.1093/oxfordhb/9780199641253.013.0016>.

Heifetz, Ronald A., and Ronald A. HEIFETZ. 2009. *Leadership Without Easy Answers*. Professional Development Collection. Cambridge: Harvard University Press. <https://doi.org/10.2307/j.ctv1pncrt0>.

Honig, Dan, and Lant Pritchett. 2019. "The Limits of Accounting-Based Accountability in Education (and Far Beyond): Why More Accounting Will Rarely Solve Accountability Problems." *Research on Improving Systems of Education (RISE)*. https://doi.org/10.35489/BSG-RISE-WP_2019/030.

Hwa, Yue-Yi, Michelle Kaffenberger, and Jason Silberstein. 2020. "Aligning Levels of Instruction with Goals and the Needs of Students (ALIGNs): Varied Approaches, Common Principles." *Research on Improving Systems of Education (RISE)*. https://doi.org/10.35489/BSG-RISE-RI_2020/022.

Hwa, Yue-Yi, and Lant Pritchett. 2021. "Teacher Careers in Education Systems That Are Coherent for Learning: Choose and Curate Toward Commitment to Capable and Committed Teachers (5Cs)." *Research on Improving Systems of Education (RISE)*. https://doi.org/10.35489/BSG-RISE-Misc_2021/02.

Kaffenberger, Michelle, and Marla Spivack. 2022. "System Coherence for Learning: Applications of the RISE Education Systems Framework." *Research on Improving Systems of Education (RISE)*.

https://doi.org/10.35489/BSG-RISEWP_2022/086.

Lee, Jong-Wha, and Hanol Lee. 2016. "Human Capital in the Long Run." *Journal of Development Economics* 122.

Mankiw, N. Gregory. 2011. *Principles of Economics*. 6th edition. Mason, OH: South-Western College Pub.

Mas-Colell, Andreu. 1995. *Microeconomic Theory*. New York: Oxford University Press.

Michelle, Kaffenberger. 2019. "A Typology of Learning Profiles: Tools for Analysing the Dynamics of Learning." *Research on Improving Systems of Education (RISE)*. https://doi.org/10.35489/BSG-RISE-RI_2019/013.

Moore, Mark. 1995. "Learning While Doing: Linking Knowledge to Policy in the Development of Community Policing and Violence Prevention in the United States." In *Integrating Crime Prevention Strategies: Propensity and Opportunity*, 301–31. Stockholm, Sweden: National Council for Crime Prevention, Sweden. <https://www.ojp.gov/ncjrs/virtual-library/abstracts/learning-while-doing-linking-knowledge-policy-development-0>.

- . 2015. “Creating Efficient, Effective, and Just Educational Systems through Multi-Sector Strategies of Reform.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-WP_2015/004.
- . 2019. “Creative Destruction or Idiot Winds: Schumpeterian Theory Meets the Educational Sector in Developing Countries.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-WP_2019/029.
- Moore, Mark H. 2014. “Public Value Accounting: Establishing the Philosophical Basis.” *Public Administration Review* 74 (4): 465–77. <https://doi.org/10.1111/puar.12198>.
- Moore, Mark Harrison. 1993. *Accounting for Change: Reconciling the Demands for Accountability and Innovation in the Public Sector*. Washington, D.C.: Council for Excellence in Government.
- . 1995. *Creating Public Value: Strategic Management in Government*. Cambridge, Mass.: Harvard University Press.
- . 2013. *Recognizing Public Value*. Cambridge, Mass.: Harvard University Press.
- Mundy, Karen. 2016. *The Handbook of Global Education Policy*. Handbooks of Global Policy. Chichester, England: Wiley Blackwell.
- Ostrom, Elinor. 1996. “Crossing the Great Divide: Coproduction, Synergy, and Development.” *World Development*, World Development, 24 (6): 1073–87. [https://doi.org/10.1016/0305-750X\(96\)00023-X](https://doi.org/10.1016/0305-750X(96)00023-X).
- Pritchett, Lant. 2013. *The Rebirth of Education: Schooling Ain’t Learning*. Brookings Institution Press. <https://www.jstor.org/stable/10.7864/j.ctt1gpccb8>.
- . 2015. “Creating Education Systems Coherent for Learning Outcomes.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-WP_2015/005.
- . 2018. “RISE Programme.” *What We Learned from Our RISE Baseline Diagnostic Exercise* (blog). 2018. https://riseprogramme.org/blog/baseline_diagnostic_exercise_1.
- Schneider, Ben Ross, Pablo Cevallos Estarellas, and Barbara Bruns. n.d. “The Politics of Transforming Education in Ecuador: Confrontation and Continuity, 2006-17,” 37.
- Schumpeter, Joseph A. 1942. *Capitalism, Socialism, and Democracy*. New York and London: Harper & Brothers.
- Silberstein, Jason. 2021. “Measuring, Visualising, and Simulating Solutions to the Learning Crisis: New Evidence From Learning Profiles in 18 Countries.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-RI_2021/029.
- Spivack, Marla. 2021. “Applying Systems Thinking to Education: The RISE Systems Framework.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-RI_2021/028.
- Stiglitz, Joseph E. 2015. “Economics of the Public Sector.” New York: WWNorton & Company, Inc.
- World Bank. 2004. “World Development Report 2004 : Making Services Work for Poor People.” 2004. <https://openknowledge.worldbank.org/handle/10986/5986>.

- . 2018. “World Development Report 2018: Learning to Realize Education’s Promise.” 2018. <https://www.worldbank.org/en/publication/wdr2018>.
- Wyk, Chris van, and Luis Crouch. 2020. “Efficiency and Effectiveness in Choosing and Using an EMIS,” 72.
- Yorke, Louise, Pauline Rose, Stephen Bayley, Darge Wole Meshesha, and Paul Ramchandani. 2021. “The Importance of Students’ Socio-Emotional Learning, Mental Health, and Wellbeing in the Time of COVID-19.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-RI_2021/025.
- Yorke, Louise, Darge Wole, and Pauline Rose. 2021. “An Emerging Strategy for the Development of Culturally Relevant Scales to Capture Aspects of Students’ Socio-Emotional Learning and Social Support for Learning.” Research on Improving Systems of Education (RISE). https://doi.org/10.35489/BSG-RISE-RI_2021/031.
- Zeckhauser, Richard, Kenneth J. Arrow, and John W. Pratt. 1985. *Principals and Agents: The Structure of Business*. Research Colloquium (Harvard University. Graduate School of Business Administration). Boston, Mass.: Harvard Business School Press.