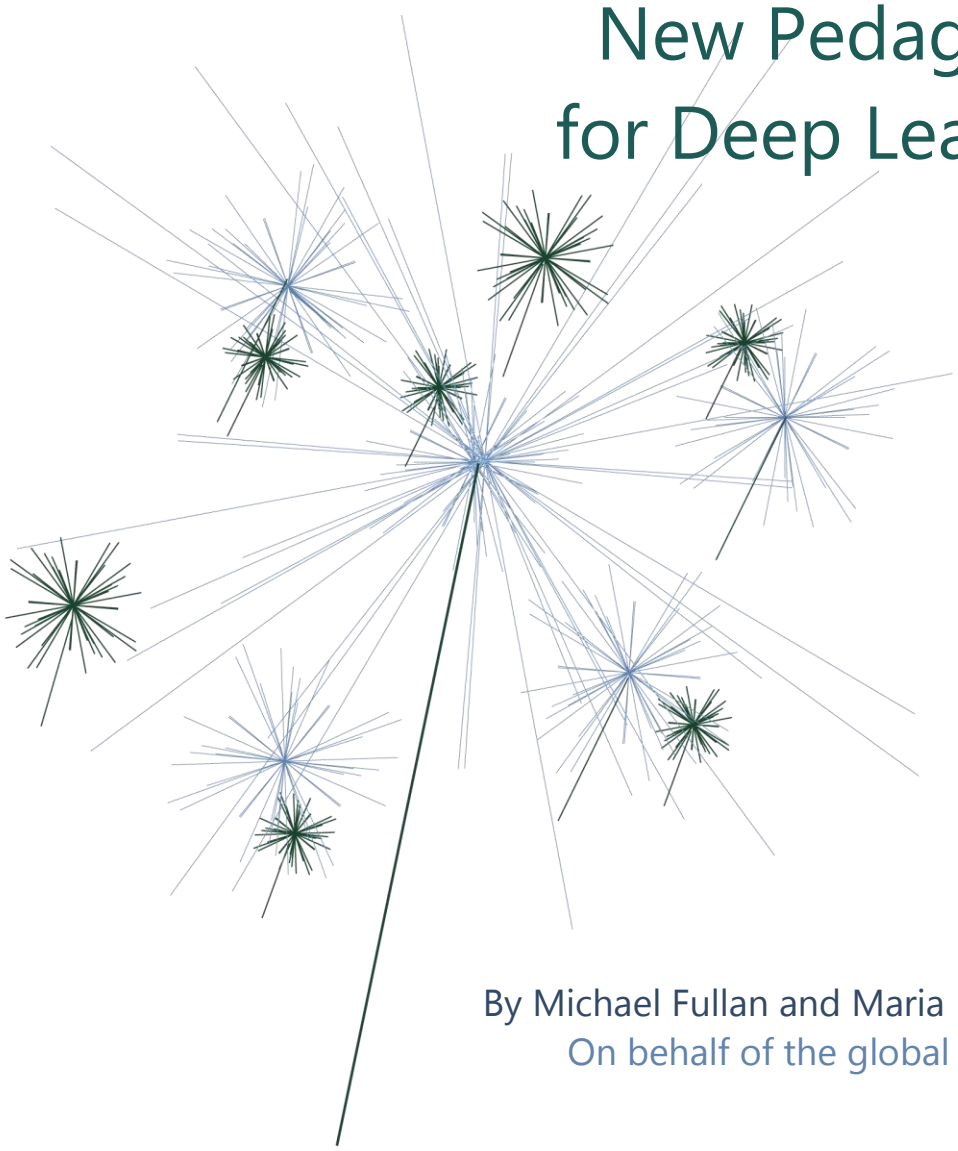
Towards a New End: New Pedagogies for Deep Learning



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On behalf of the global partnership

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Foreword

In early 1950 a talented group of French climbers led by Maurice Herzog set out to be the first team ever to climb an 8000 meter peak. Several harrowing months later Herzog and one of his colleagues reached the summit of Annapurna in the Himalayas and achieved their goal.

It was a remarkable story; much less remarked though is that before they could climb Annapurna, they had to find the mountain which was easier said than done. All they had to go on were poor maps and local inhabitants who naturally enough were more interested in finding passes between the mountains than reaching the summits. Finding the mountain took more than half the time Herzog and his colleagues had before the monsoons set in. All the drama that later followed was a consequence of those lost weeks.

When I survey the literature on the new learning goals, the future of pedagogy and the role technology might play in enabling students to achieve much more in school than is currently the case, the ascent of Annapurna keeps coming back to me. Not only have we not been climbing our mountain; we haven't even found it yet. Until now.

This paper from Michael Fullan and Maria Langworthy needs to be seen in that context. They do not claim to have climbed the mountain; I believe however they have helped us to find it. Drawing on Michael's excellent book, Stratosphere (2012), and the follow-up paper he wrote with Katelyn Donnelly, Alive in the Swamp (2013), Michael and Maria have mapped the landscape ahead. They describe the crisis facing global education systems and set out how systems will need to reconsider their learning goals as well as their approach to change if they are to resolve the crisis and achieve high standards for all. The learning goals set out here go far beyond the essentials of literacy and numeracy and will require, for their fulfillment, new approaches to teaching and learning, a new pedagogy in fact.

The authors argue that unless a new pedagogy emerges the students in school will become increasingly bored and the adults increasingly frustrated. Moreover, the pace of development in technology and its application to learning are creating new possibilities which, unless they are developed in school and for all, will simply be developed outside school and for some. A new divide would emerge — and indeed this has already begun.

Now we have found the mountain — with the notable assistance of this paper — our task as educators around the world is to climb it, and ensure that every student emerges from school ready for the extraordinary century that lies ahead.

By Sir Michael Barber, Chief Education Advisor, Pearson

Introduction

The crisis — and there is no other word for it — in public schooling is a function of the interaction of an enormous push-pull dynamic. The push factor is that students find schooling increasingly boring as they proceed across the grades. Studies from many countries show that among high school students less than 40% of upper secondary students are intellectually engaged (Jenkins, 2013; Willms *et al*., 2009). And, not unrelated, signs of teacher frustration are growing. For example, in the U.S the percentage of teachers who are satisfied with teaching has plummeted from 65% to 38% from 2008 to 2012. Teachers and students are psychologically if not literally being pushed out of school. Meanwhile prodigious technology is alluring all, kids and adults alike, to the digital world, not necessarily productively. Within this allure we are seeing exciting new learning modes emerging from the interaction of pedagogy and technology. Education under these terms needs to be radically rethought — partly to stop the boredom, but mostly to blow the lid off learning, whereby students and teachers as partners become captivated by education day in and day out.

The current situation is intrinsic to our societies' transition to knowledge-based economies and global interdependency, enabled and accelerated by technology. When highly complex systems change, chaos is a natural occurrence. Chaos, in turn, contains its own seeds from which new patterns develop. Amid the challenges, we have begun *defining the what*: new goals for learning relevant to this new era. However, immediate and expansive attempts *to innovate the how*: the processes of education — are urgently required. This focus on mobilizing innovation defines the vision of the New Pedagogies for Deep Learning project:

> Global education stakeholders are working together in partnership to address a key education challenge: how educators can design and practice teaching and learning that leads to more successful futures for all students. The partnership aims to articulate and demonstrate how the true potential for learning can be realized through new pedagogies in a technology-rich society.

Relationships, practices, and measurements define the fundamental processes of education systems. The consensus among stakeholders in this project is that new learning goals require changes in how relationships between students and teachers are structured, in how teaching and learning is practiced, and in how learning is measured.

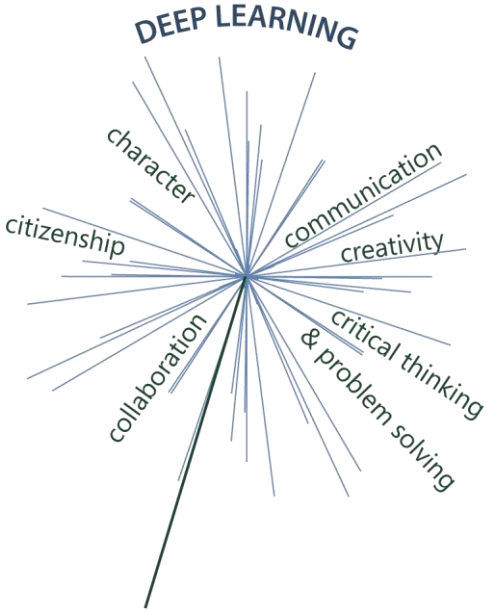
"The context in which digital technology is deployed needs to change if we are going to drive better educational outcomes." Nesta

Using technology more effectively is essential to each of these processes. In much of the language and thinking on technology in education, there has been a quest for a "holy grail" that would transform education through technology. By now, it is clear that no holy grail exists; rather, technologies used to enable and accelerate specific processes can dramatically improve learning, but its impact depends on how it is used. As a recent report articulated, "The context in which digital technology is deployed needs to change if we are going to drive better educational outcomes" (Nesta 2013).

Technology is quickly becoming ubiquitous in learning environments — from personal devices to the education cloud to digital learning resources. This project focuses on the pedagogical innovations that will allow technology to achieve its potential to impact learning.

New Pedagogies for Deep Learning: a global partnership seeks to renew our goals for education and learning, to include skills that prepare all learners to be life-long creative, connected and collaborative problem solvers and to be healthy, happy individuals who contribute to the common good in today's globally interdependent world. We need our learning systems to encourage youth to develop their own visions about what it means to connect and flourish in their constantly emerging world, and equip them with the skills to pursue those visions. This expansive notion, encompassing the broader idea of human flourishing, is what we mean by "**deep learning.**" The skills described below are an initial summary of deep learning skills, which will be further refined and operationalized in the early stages of the project through collaboration with partners.

Deep Learning



- ***Character education*** — honesty, self-regulation and responsibility, perseverance, empathy for contributing to the safety and benefit of others, self-confidence, personal health and well-being, career and life skills.
- ***Citizenship*** — global knowledge, sensitivity to and respect for other cultures, active involvement in addressing issues of human and environmental sustainability.
- ***Communication*** — communicate effectively orally, in writing and with a variety of digital tools; listening skills.
- ***Critical thinking and problem solving*** — think critically to design and manage projects, solve problems, make effective decisions using a variety of digital tools and resources.
- ***Collaboration*** — work in teams, learn from and contribute to the learning of others, social networking skills, empathy in working with diverse others.
- ***Creativity and imagination*** — economic and social entrepreneurialism, considering and pursuing novel ideas, and leadership for action. (Fullan, 2013)

This whitepaper provides a foundation for the global partnership's work. The document first provides an overview of the partnership's goals and the knowledge base that underlies its theory of action. Then it outlines the implementation framework for partners to mobilize for the achievement of deep learning goals.

New Pedagogies for Deep Learning Project

The New Pedagogies for Deep Learning project takes as its focal point the implementation of **deep learning goals enabled by new pedagogies and accelerated by technology**. Responding to the calls from policy-makers, employers, and youth themselves to renew learning systems, a global cross-sector partnership — including research organizations, corporations, education system leaders, and clusters of schools from a variety of countries — are initiating this project. This type of international multi-stakeholder partnership has the capacity and potential to advance the learning agenda in ways a single entity could not otherwise undertake. The challenge we share is complex and multi-dimensional (Snowden *et al.*, 2007), and a successful initiative must bring together the different strengths and capabilities of different actors to accomplish its aims.

The global partnership is grounded in *purposeful learning by doing*. Our intent is to focus on a small number of ambitious goals shared by all partners, building our collective capacity to achieve those goals through a framework of common measurement and action. Partners will collaborate in a global mobilization effort to capture and cultivate the most promising cases of new pedagogies and deep learning. Many isolated cases exist already. We seek to bring them together in a structured mobilization effort with clearly defined success and progress measures, building and expanding capacity rooted in the best of what is dynamically happening in the field. A set of **principles** guide this partnership's work:

- The focal point is the pursuit of "deep learning goals" enabled by new pedagogies and accelerated by technology
- Partnership and transparency are the project's operating model at all levels
    - In mobilization, design, measurement, action, reflection and expansion
    - Including as partners: learners, learning professionals, parents and education leaders
- Fundamentally, a shared learning project
    - With common goals and success criteria
    - Across diverse education systems seeking to build collective capacity

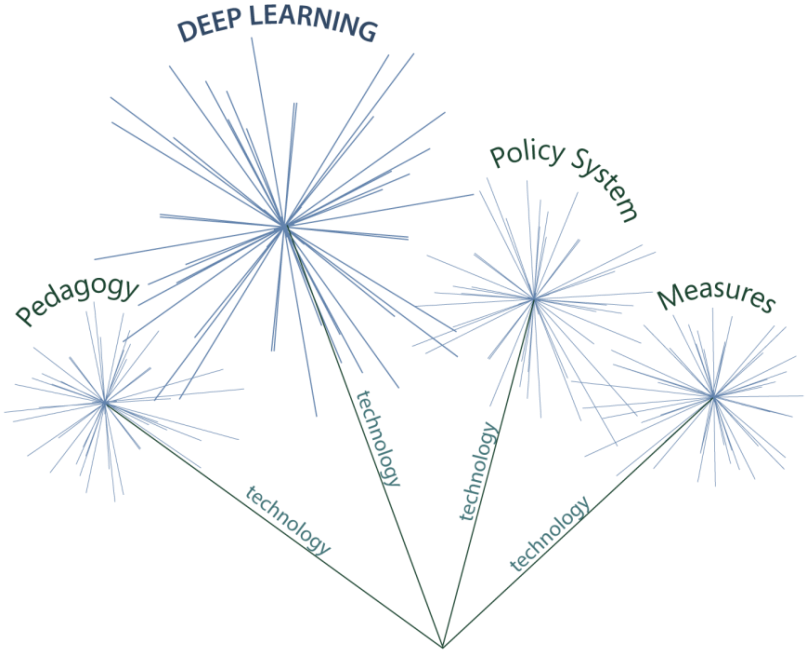
    - With collaborative feedback, reflection and action cycles for innovation
- Mobilization model must be usable and expandable
    - Providing tools and usable knowledge that can advance practices, processes, and policies
    - Growing as school clusters and education systems adopt the framework
- Research continuously feeding into and from the project
    - Keeping abreast of the rapidly expanding knowledge and practice base in this dynamic field
    - Contributing to the international knowledge base through participation in conferences and e-publications

Our Theory of Action

The partnership begins with the proposition that our education systems need new policies, measures and evidence-based pedagogical models to enable learning relevant for the knowledge-based, globalized era. Education stakeholders began to define new learning goals decades ago through initiatives such as the EU Key Competency Framework, Partnership for 21st Century Skills, and the International Society for Technology in Education's NETS framework. With the global partnership, we are moving from the definitional stage to system-level implementation of the new pedagogies and learning goals.

We see four fundamental barriers currently standing between the theory and practice of deep learning, including inadequate development of the following:

1. Policies and system-level strategies that enable diffusion
2. Accepted ways of measuring deep learning
3. Adoption of new pedagogical models that foster deep learning
4. Knowledge of how students adopt deep learning practices



What these barriers amount to is a lack of clarity about the new learning goals, how they can be assessed, how they can be learned, and how leadership can enable diffusion of the new processes across whole systems. All of this can be enabled and accelerated by technology use, if it is implemented effectively. In related work we have developed an index to assess digital innovations according to the three dimensions of: Pedagogy, System Change, and Technology (Fullan and Donnelly, 2013).

The discussion that follows describes the partnership's thinking on each of these barriers and the role technology can play. This thinking informs how we have designed the implementation framework described in the second half of the paper.

Policy System Diffusion

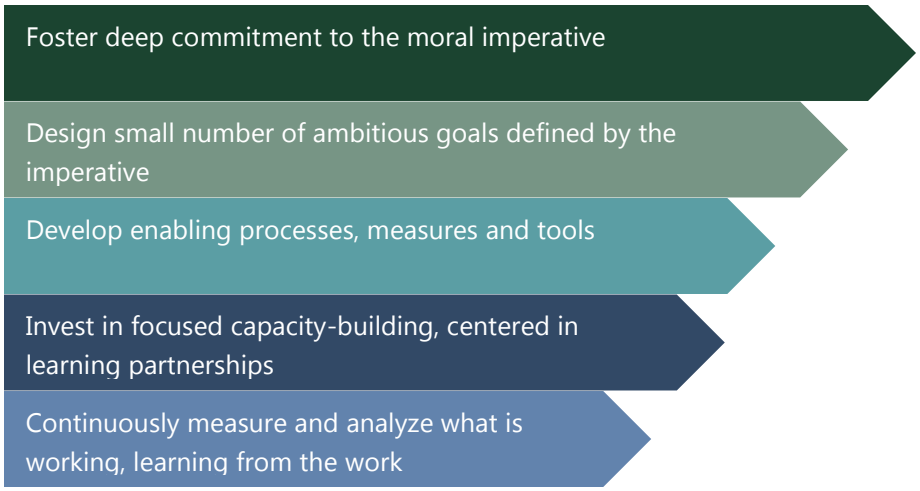
New pedagogies and deep learning are already happening in small leaps and bursts in learning environments all around the world. Yet the need is to transform these small pockets of innovation into whole system reform. Transforming all schools in an education system, effectively mobilizing deep learning at scale requires change knowledge. Leaders often use transactional levers typical of bureaucratic organizations to drive system change: accountability measures, resource investments such as technology and materials, and rules that mandate processes. These levers rarely work to drive authentic, sustainable change in complex learning organizations staffed by experienced professionals (Mehta, 2013). In this project, we will instead seek to drive change starting from a different locus: cultural coherence.

It is our belief, based on working through successful system-level transformations around the world, that leadership can best address the contingencies of change efforts through serving first as the sustained, focused voice of realignment towards new goals. Leadership next serves as a partner with schools and teachers, together bringing in new measures, resources and processes — all clearly aligned to the new goals. It may sound like a subtle distinction, but effective and sustainable change happens when there is a consensus among all stakeholders that the new goals are a moral imperative. When there is this kind of system-wide shared purpose, collective will becomes the core driver, and change becomes much easier than previously thought. Moreover, the new pedagogies and related technologies are intrinsically engaging so that participants are motivated to go deeper, and do more. Thus, key actors become the change activators:

> The key to system-wide success is to situate the energy of educators and students as the central driving force.
> (Fullan, 2011)

This orientation towards system-wide diffusion of new pedagogies and deep learning begins with cultural coherence and initial engagement, and then brings in tools and programs to support realignment. As a process, it looks like this:

Change Process



The Partnership's moral imperative will guide all of our work: **the pursuit of deep learning goals enabled by new pedagogies and accelerated by technology.**

Measures

> The key challenge for education systems in many Member States is the assessment of these competences. Assessment is one of the most powerful influences on teaching and learning but it tends to put too much emphasis on subject knowledge, and less on skills and attitudes, and to neglect altogether the increasingly important cross-curricular competences such as learning to learn or entrepreneurship. (European Commission, 2012)

Assessment has always been one of the essential tools in the learning process. It requires clear and concrete conceptualizations of what it means to learn something as well as the identification of objective indicators that suggest where a student is on the path to mastery. This is what we mean by the ***operationalization*** of deep learning.

> Our starting point should be assessment, which is about making a judgment as to the extent to which the student has learnt what we intended them to learn**.** Learning is one of the most complex of things to measure because it cannot be directly observed but must be inferred. (Hill, 2013)

Very few initiatives have successfully operationalized deep learning skills for measurement purposes, and none of the new methods for doing so have "broken through" to broad use across schools and systems. Yet teachers desperately need these skills translated into a practical set of indicators that can guide practice and define success. A critical first aim for the project is thus the development of more concrete, measurable operationalizations of deep learning skills and indicators for tracking to what extent this kind of connected and flourishing learning is happening. This is the first step in being able to identify appropriate actions that increase learning.

Second, the partnership's work will also seek to **examine learning conditions in relation to deep learning progress**. The aim here will be to work with school clusters to examine the relationship *between* the learning conditions in schools and the deep learning demonstrated by students. Data on this relationship will provide an evidence base to inform system level policies. Online surveys with students, teachers, school and system leaders, and parents will measure learning *condition*s. These surveys will include items such as perceptions of school cultures and environments; learning relationships (e.g. between student peers; between students and teachers; between teacher peers; and between students, teachers and parents); pedagogical practices (as designed and experienced); and students' motivation and engagement. Deep learning *outcomes* will be measured through new assessment methods described below, and potentially through internationally validated assessments such as the new PISA-Based test for schools. Shifting the focus of measurement away from only examining outcomes towards the broader environmental aspects of learning conditions could prove to be a powerful outcome of the project.

We believe that technology has the potential to powerfully advance deep learning, but it depends on how it is used *for specific purposes*.

Third, school cluster partners will have opportunities to **share, test and develop innovative new methods of assessment** that are emerging around the world. A wider array of assessment strategies — including new uses of ICT for assessment — are beginning to be recognized and used by teachers and schools (Light, Price & Pierson, 2011). However, to date, there have been few rigorous investigations of these new strategies across diverse education systems and schools in a way that would allow comparative evaluation. As stated above, we believe that technology has

the potential to powerfully advance deep learning, but it depends on how it is used *for specific purposes*. So, this third focus of the measurement work will test newly emerging ICT assessment tools. Our aim will be to review new assessments created through other projects, not to develop them directly as part of this project. Participating schools will use some of the most innovative new assessment tools to see which ones best enable and measure deep learning outcomes and which tools work best in specific contexts. Initial thinking suggests several types of innovative assessment tools to be included:

- Tools that support rapid feedback cycles on learning progress
- Tools that include a wider variety of participants in the assessment process, e.g. peers, outside experts, etc.
- Tools for providing more complex assessment experiences, e.g. through game-based assessments, online capture of process skills, online collaborative problem solving, etc.
- Tools for assessing more complex learning products, e.g., student work artifacts

Adoption of New Pedagogical Models

The absence of a robust evidence base that shows *how* new pedagogical models achieve deep learning is another critical barrier to the mobilization of new pedagogies for deep learning. We know that the quality of teaching is the single most important in-school factor shaping learning outcomes. At the very core of the partnership's work is the aim to develop our understanding of how new pedagogical models enable new and deeper learning outcomes, how teachers can be most effectively supported in adopting these models, and how these models are enabled and accelerated by technology. We see these new models as based in an equal two-way learning partnership between and among students and teachers.

Teachers and students from the partnership's school clusters who are at the forefront of developing and using new pedagogies will be some of the project's core activators. We seek to capture and cultivate their innovative work, and establish collaboration networks among these teachers and students to build capacity and models for practice:

> Given the various complexities of teaching — potentially unwilling clientele, uncertain chemistry across groups of students, and the need to make decisions in real time — teachers need a deep,

> multidimensional knowledge that allows them both to assess situations quickly and to draw upon a variety of repertoires for intervention. Individual teachers possess such knowledge, but it is largely invisible to the field as a whole. There are few ways for it to be gathered, codified, and shared. (Mehta, Schwartz & Hess, 2012)

This is what we mean by ***new pedagogical models*** — making explicit and specific what teaching for this kind of connected and flourishing learning looks like, and sharing that knowledge in a way that can be directly adopted by teachers and students. The goal of pedagogical specificity will be achieved through identifying and sharing best-case examples of learning designs and teaching strategies, and through capacity-building focused on teachers and students connecting in deep learning relationships and communities.

Teacher activators along with students in the partnership will collaborate to construct — or deconstruct as the case may be — richer understandings of what the new roles for teachers look like in practice. The partnership's initial thinking suggests three new roles to investigate:

1. The teacher as designer of powerful learning experiences
2. The teacher as a source of human, social and decisional capital in the learning experience
3. Teachers as partners in learning with students, accelerated by technology

1. Teacher as designer of learning experiences

> What it takes to teach cannot be determined directly from what it takes to learn, which means that teachers must be willing to treat the process as essentially problematic, iterative, and always improvable; we must stop assuming that teaching can be theorized like a natural science, and treat it as a design science. (Laurillard, 2012)

The role of *teacher as designer* highlights the importance of translating curricular learning goals to meet up with the specific contexts, personalities, and learning modalities of real students. Teachers must know where their students are on their individual learning continuums, and be able to identify success criteria that push forward students' knowledge and skill mastery at progressive stages of that continuum. The role of teacher

as designer also involves educators partnering strongly with students in co-designing learning experiences.

Relative to the teacher, John Hattie's research into the differences between experienced and expert teachers illustrates the importance of the role of teacher as designer:

> Expert teachers and experienced teachers do not differ in the amount of knowledge that they have about curriculum matters or knowledge about teaching strategies — but expert teachers do differ in how they organize and use this content knowledge. Experts possess knowledge that is more integrated, in that they combine the introduction of new subject knowledge with students' prior knowledge; they can relate current lesson content to other subjects in the curriculum; and they make lessons uniquely their own by changing, combining and adding to the lessons according to their students' needs and their own teaching goals. (Hattie, 2011)

Context knowledge — knowing students well enough to design challenging projects that cognitively activate learning — is an essential part of teacher as designer.

Teacher as designer also calls upon teachers to be designers of knowledge-based products: the learning activity is the product. This creative responsibility distinguishes new pedagogies from the primary roles of teachers as *delivering content knowledge*. Digital content and learning resources have the potential to fulfill much of the "content delivery" requirements of teaching, allowing teachers to focus more naturally on creating compelling and personally relevant learning experiences that engage their particular students.

As students become prepared for a globalized, knowledge-based world driven by technology, teachers become models of the learning attitudes and creative, connected, collaborative, skills they seek to instill through their learning activity designs. The partnership will investigate, cultivate and provide a platform for teachers to share this "knowledge creation" work.

2. Teacher as a source of human, social and decisional capital

Teachers are continuous learners. Human capital — the capacities and training a teacher arrives into the profession with — is the starting place. Teachers continue to develop their expertise in an ongoing process of honing their skills and insights, working with other teachers to refine such learning, and getting better at making decisions by themselves and with others. All of these are "professional capital" resources that the partnership's work will leverage and grow (Hargreaves and Fullan, 2013).

The central driving force behind the partnership's capacity-building will be the goal of harnessing teachers' individual capital resources to increase the professional capital of all teachers across whole systems.

Teachers' social capital derives from the quality and extent of their relationships with students, parents, peers, school leadership, outside experts, and the broader community. When supportive, these relationships influence the quality and scope of the learning experiences designed. A teacher with high social capital designs learning experiences that are relevant to their students, bringing in outside experts, and drawing on what other teachers know about and are teaching students. Social capital is based in the social nature of learning and is the foundation of powerful professional development that advances teaching practices, particularly when teachers collaborate to design, implement, share and reflect on the impact of their teaching (Hattie, 2010).

Decisional capital brings human and social capital together over time. It is achieved through the hard-earned years of direct teaching experience:

> Decisional capital is equally important, both to the initial design of the learning experience and to a teacher's ability to consistently engage students in achieving learning goals. Decisional capital here is the capital that professionals acquire and accumulate through structured and unstructured experience, practice, and reflection — capital that enables them to make wise judgments in circumstances where there is no fixed rule or piece of incontrovertible evidence to guide them. (Hargreaves & Fullan, 2012)

Decisional capital guides a teacher's in-the-moment reactions to students as they negotiate challenging learning experiences. Professional capital in its three dimensions — human, social and decisional — grows when teachers collaborate within and outside their schools with other learning professionals. Throughout this project, the central driving force behind the

partnership's capacity-building will be the goal of harnessing teachers' individual capital resources to increase the professional capital of all teachers across whole systems.

3. Teacher as partners in learning with students, accelerated by technology

The push of uninspiring schooling and the pull of the digital world that we identified at the outset of this paper have radically undermined the traditional roles of the teacher-student relationship. Either the situation will continue to erode with students more and more going on their own, or there will be a new learning partnership paradigm between and among students and teachers. Either way, technology will figure prominently.

We are rediscovering the power of strong, supportive, personal relationships between teachers and students (Tough, 2012). Learning is rooted in relationships, and supportive relationships can unleash the potential of every student. Yet few teacher preparation programs provide teachers with explicit guidance on how to build these relationships, especially with students whose life experiences may be quite different from the teacher's own. The future of teaching may ultimately center in deeper relationships built between teachers and students, developed through creative, collaborative, socially connected and relevant learning experiences. Technology can enable and accelerate these deep learning relationships — both between teachers and students and between students and other "learning partners" such as peers, mentors, and others with similar learning interests. Technology as a platform for more connected social learning experiences is a far cry from the notion of technology supplanting teaching.

Technology can also enable and accelerate the learning of *each and every student*. Yet without the frame of schools and teaching, technology alone is likely to cause even more extreme inequity in learning as highly motivated learners with ICT access advance on their learning paths while others fall further behind (Pedró, 2006). Technology alone also risks providing only surface knowledge as current digital learning resources tend to center on content delivery — paradoxically, a 21st Century tool delivering 20th Century instruction. New pedagogical models centered in building supportive, creative learning relationships use technology and digital resources as tools that enable and accelerate the new learning goals.

> No technology has an impact on learning on its own; it all depends on how it is used. (Nesta, 2012)

This partnership will focus on technology's potential to affect all learners through new learning experiences, relationships and teaching strategies. We have discovered — painfully and expensively — during the past few decades that using technology without fundamentally changing pedagogy simply fails to achieve the desired impact on learning outcomes (Laurillard, 2012, Nesta, 2012, ITL Research, 2011). As Laurillard has noted, the investment in technology has been largely a matter of *acquisition* — buy, buy, buy — not a matter of gearing technology to deepen learning. Technology in education has largely sought to deliver the same kind of content knowledge and basic skill mastery that were the predominant roles of 20th Century teachers. It is not surprising that many such investments have not significantly changed learning outcomes.

Deep Learning Work

The scarcity of foundational knowledge about how learners themselves perceive, engage, and adopt deep learning practices is the final barrier this partnership will address. What does it really mean for students to become connected and flourishing learners in a knowledge-based, globalized, technology-driven world? What kind of learning work prepares them to be healthy, happy, productive members of our new societies? And more fundamentally — how do they feel about all this?

In the 20th Century, public education centered in preparing youth with the basic skills and knowledge needed to succeed in industrialized systems where hierarchical bureaucratic organizations predominated. The routines of schooling modeled the routines of these types of organizations (Mehta, 2013). Yet today's world looks different, and the organizations that are the productive locus of the "knowledge economy" operate along different patterns. They have changed because the very nature of the work conducted in them is different. Organizations have become more horizontal, networked "learning organizations" where work is project-based and performance is measured by the impact of ideas and teams' abilities to execute those ideas. Organizational routines center on the development of new ideas, new solutions to problems, and new ways of doing things — in short, innovation.

It stands to reason that to prepare youth for effective participation in this kind of world, our education systems should refocus on engaging students in this kind of work, where ideal outcomes are not achievement scores on tests but students' capacities to collaborate, connect with others, create

innovative products, programs and solutions, and ultimately to implement them in the real world. Youth intrinsically understand the pull to knowledge-production because many of them are already partaking in this kind work outside of school.

> Today's learner is engaged in diverse online networks and communities that shape the way information is received and understood... In essence, learners are engaged in co-creating knowledge in their everyday lives. Yet, classrooms are moving very slowly to embrace this shift. (Dykes, Furdyk, Hassan & Corriero, 2013)

Among the small number of innovative schools where this kind of student work has become a focus, results have been encouraging though they remain at the level of case studies with little or no evidence across cases. Insights from one such school, a part of The Learning Futures program in the UK, are revealing nonetheless:

> Students were most engaged when what they were learning was meaningful in their lives beyond the classroom. They could see its relevance and application or it was something that people in the real world do. Their learning was integrated inside and outside of the classroom and school. In contrast, when learning was apparently meaningless — apart from preparing for tests — it was not engaging... Approaches are effective in stimulating deep engagement when they are implemented in such a way as to enable students' sense of agency and identity, and a learning experience which feels authentic and meaningful whilst progressively handing over responsibility for learning to students. (Learning Futures, 2012)

This sounds a lot like the kind of connected and flourishing learning the partnership aims to expand and grow. It highlights how students' roles in these new models are changing. It describes how students apply learning, connect with others, collaborate in substantive ways, and create knowledge-based products relevant to real problems. They cease to be receivers of content and instead become activators of their own learning, co-creators, and connected change agents. Students doing these things are doing work that is similar to the kind of work they would do in high quality future work. In fact, new research shows that the more individuals are exposed to these types of "real world problem-solving" experiences in their formal learning experiences, the higher their quality of work later in life (Gallup, 2013).

This type of learning also blossoms through the connected and social nature of learning. Learning that is socially embedded harnesses personal relationships — with peers, with teachers, with parents or simply with communities of people with common interests.

> Connected learning [is] learning that is socially embedded, interest-driven, and oriented toward educational, economic, or political opportunity. Connected learning is realized when a young person pursues a personal interest or passion with the support of friends and caring adults, and is in turn able to link this learning and interest to academic achievement, career possibilities, or civic engagement. (Digital Media and Learning Research Hub, 2013)

The challenge for education systems and new pedagogies is how to foster these connected learning opportunities — often enabled by technology — and how to do so equitably across whole systems.

These notions permeate the partnership's approach to identifying and investigating how students engage in and adopt deep learning practices, and how pedagogy can foster these practices. We will start with a focus on student work, looking for examples of high quality student work artifacts that synthesize information, ideas and concepts into new knowledge that solves problems or creates powerful new understandings. From there, we will seek to understand the conditions under which students' create this kind of work — their learning relationships, the design of learning experiences, the teaching strategies involved, how technology was used, and how success was measured — and then extend these conditions through capacity-building and broader system-level change.

A Word on Technology

A fundamental premise of this initiative is that technology can play an indispensable ***deepening and accelerating role*** across all education processes. Students use it to produce work; teachers use it as part of learning activity design, incorporating multiple digital resources and strategies (from video lectures to social media to gaming to expert inquiry); new assessments use technology in myriad ways; and schools and systems use it for collaboration, data sharing, learning analytics and stakeholder communication. Technology in this project is not a locus of investigation per say, but will be examined as it is used for specific processes. The goal is to examine where and how technology is an

effective deepener and accelerator of specific teaching and learning processes, and to work with clusters of schools around the world to identify and share its most powerful uses.

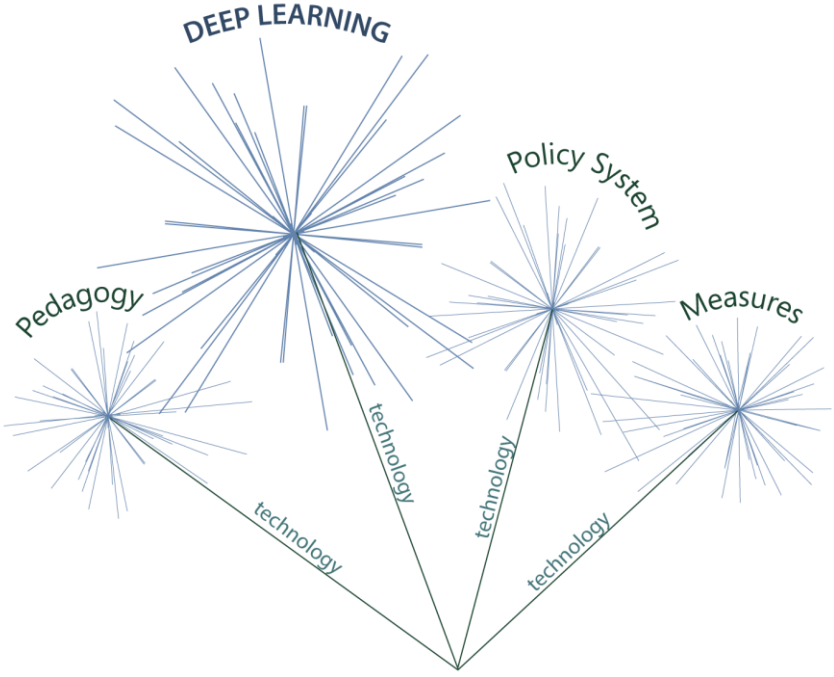
Technology will also be used as a fundamental enabling tool of the project itself. Given that some of the project partners are technology companies, we expect to optimize all project processes through a shared technology platform, leveraging the power of technology for local and international collaboration, data collection, assessment, learning analytics, feedback cycles, and capacity-building. The technology platform will be highly scalable so that new partners joining over time can easily adopt it. All of the core elements of the framework described below will be enabled by this effective use of technology in the name of mobilizing new pedagogies and deep learning.

The second half of this whitepaper outlines the partnership's implementation framework, aimed at providing knowledge and tools to mobilize new pedagogies and deep learning across whole systems. We start with the skills needed for connecting and flourishing in a globalized, knowledge-based, technology-driven world. From there we will delve into the pedagogies and conditions that enable this type of learning, and build collective capacity across the partnership to achieve these deep learning goals.

New Pedagogies for Deep Learning Implementation Framework

> The problem was, in a single word, "implementation."
> (Barber, 2013)

The tremendous thinking and research on pedagogy and learning highlighted in this paper will continue. It is now time to act together to build our collective capacity within and across education systems. This consensus guides our global **partnership goals**:



1. **Engage systems in collective effort to mobilize deep learning**
   - Define the call to action, engaging partners and stakeholders in the common purpose
   - Enable policy and resource realignment to focus on deep learning
   - Partner with students, teachers and leaders to capture and cultivate deep learning

2. **Identify deep learning work**
   - What are the enabling conditions?
   - What are students' roles?
   - How does technology enable and accelerate the learning?

3. **Capture and cultivate new pedagogies that advance deep learning**
    - What are the key elements of pedagogies that enable this learning?
    - What are the enabling conditions for these pedagogies?
    - How do learning relationships change in the new models?
    - How does technology best enable and accelerate these models?

4. **Operationalize, refine and validate measures for "deep learning"**
    - What are the most effective tools and assessments that enable deep learning?
    - How can technology best support measurement of deep learning?

These goals are mutually reinforcing and all align to the common purpose of mobilizing new pedagogies for deep learning. Our implementation plan is simple and specific:

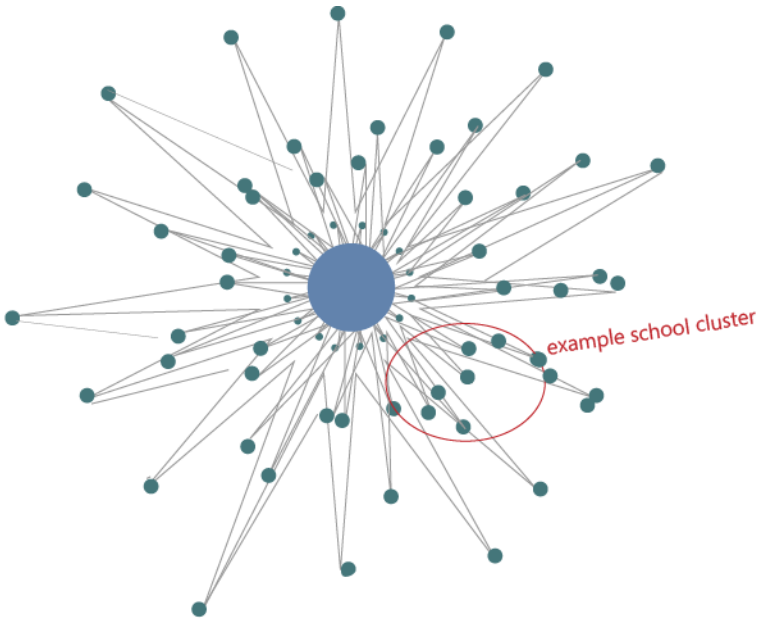
- Forge deep commitment to the common purpose among partners
- Design a small number of ambitious goals defined by the common purpose
- Develop measures, tools and feedback systems aligned to those goals
- Invest in focused capacity-building programs
- Continuously measure and analyze what is working, learning from the work

Working together as a "networked improvement community" the global partnership can implement this plan.

> An improvement community that puts special attention on how it can be dramatically more effective at solving important problems, boosting its collective IQ by employing better and better tools and practices in innovative ways, is a networked improvement community. (Engelbart)

This network model focuses on accelerating innovation through "bootstrapping" state of the art thinking, measures, tools and practices, and then co-evolving those through rapid, strategic capacity-building for faster, smarter improvement cycles. The partnership will bring together individual improvement communities — clusters of schools focused on new pedagogies and deep learning — and foster advancement within and across the clusters.

The Global Partnership



Sharing common goals and collaborative actions to mobilize Deep Learning

We envision global partners collaborating in a shared set of actions, described below, to pursue the goals described above. Collaborative activities and learning cycles will focus on programmatic capacity-building, enabled by aligned measures, tools and feedback systems. The intent is to deeply engage all layers of education systems in the mobilization process, from system and school leadership through to teachers, students, parents and community stakeholders.

As we outlined in the first part of this paper, the intent is to capture and cultivate the energy and ideas of students and teachers who are dynamically innovating through their work already. Harnessing their work and using it as the foundation for deeply supported collective capacity-building — accelerated by technology and enabled by systems — can exponentially expand our impact. The **implementation framework** shows how the pieces of this plan fit together:

Implementation Framework

The framework is premised upon *purposeful learning by doing*, beginning with a small number of ambitious **goals** (as defined in this whitepaper). The next steps are to design a set of common measures and tools to be used across school clusters; to identify and share the best cases of new pedagogies and deep learning work; and for teachers to analyze, share and reflect on the best exemplars for both student work and learning activities as a key part of collective capacity-building efforts. Capacity-building will also be supported by ongoing measures of learning conditions and assessment outcomes, shared back with schools and teachers through frequent feedback reporting. Feedback reports and analysis will allow both schools and the global partnership to focus on developing the learning conditions that produce stronger learning activities and student work.

At the system level, this cycle of examining student work and learning activities in relation to learning conditions in schools will enable leaders to develop or expand specific policies and programs that most effectively mobilize new pedagogies and deep learning, and to share those with other school clusters, enabling diffusion across systems. This ongoing collective capacity-building will accelerate partners' ability to learn from the work and rapidly respond. The cycle will be iterative, with refinements and development as the partnership learns and does.

Common Measures and Tools

Common Measures and Tools will focus on the operationalization of deep learning skills and the development of a technology platform to share common measures and student work artifacts within and across school clusters. A partnership "measures working group" including external experts and country partners will operationalize the deep learning skills and elements of new pedagogies, and then design methods and assessments to measure those skills drawing from existing state-of-the art measures and instruments. The operationalization will pull from projects such as ATC21S, ITL Research and other initiatives that have developed and internationally validated ways of measuring these skills and pedagogies.

These measurement methods will in turn shape the design of a common data platform that will serve as the "foundational tool" of the partnership's work. The **technology platform** will be a scalable online system that includes:

- Collection and sharing of student work
- Collection and sharing of teachers' learning activity designs
- Online surveys of student, teacher, school leaders and parents' perceptions, practices, resources and relationships (learning conditions).
- Data collection on uses of technology for teaching and learning
- Direct online assessments of students' learning progressions
- Reporting engine, providing feedback reports on all of the above inputs

The partnership's measures working group and the partnership's technology provider will co-design and develop the technology platform. These teams will work with country partners to ensure interoperability and local usability of the platform.

The implementation work of school clusters and the whole partnership will be enabled by this data and artifact collection platform that will provide a multi-dimensional database and reporting engine.

Identify and Share Best Work

The next phase of the implementation framework will center in students, teachers and schools becoming researchers of their own teaching and learning. It will begin with identifying exemplars of great student work that demonstrate the skills and elements of deep learning. Our goal will be to analyze how such work developed — from students' perspectives and through the lens of learning activity designs, teaching strategies and schools' learning conditions.

> When teachers work together to examine student work and analyze classroom lessons, they figure out collectively what works and what doesn't work, and they build a culture of learning…they build and share pedagogical capital… (Cuban 2013)

To identify great student work and learning activity examples, we will use rubrics developed by the measures working group for describing, meta-tagging and coding student work artifacts and learning activities submitted to the technology platform. We have existing models of student work collections through programs like the Center for the Study of Student Work and High Tech High, both in the US, which have developed online portals for sharing student work.

Models have also been developed for sharing learning activities such as eTwinnings, Epals, TES, and the Partners in Learning Network. Our work, however, will add rubrics and a process for coding student work and learning activities along deep learning dimensions. ITL Research has tested and validated how this coding process can work.

Through the partnership, a rich international database of student work and learning activities will be developed. This alone could prove a significant and powerful outcome of the project. Providing teachers with a broader range of examples of students' work products — well beyond what their own classes or schools have produced — can truly unleash the potential for *learning by doing*. When students and teachers see high impact student projects from around the world, it can inspire new thinking about what is possible.

Thus, the technology platform will be a tool for identifying and sharing best-case examples of student work and of learning activities. These become the basis for collaborative analysis and reflection on advancing practice. Photos, videos, games, digital learning content, applications, and many other technology and non-tech resources can be included in this system. We will seek to identify best-case examples of student work, of learning designs that prompt such work, and then the school and system learning conditions that nurture and cultivate such learning work.

All of this information will also be leveraged to contribute to the international knowledge base through the global partnership's participation in conferences, publications and other venues for global knowledge-sharing. All stakeholders — from students and teachers to leaders and researchers — will contribute to this dissemination of our work, with the partnership actively supporting this.

Collective Capacity-Building

Effective learning by doing requires shared information about what is working, so rapid and robust feedback cycles will be at the heart of collective capacity-building. As part of the measurement process, partners will collect both structured data (surveys, achievement data) and less structured artifacts (e.g., student work and learning activities). All of these data sources will be incorporated in the technology platform. The measurement group will design and develop usable **feedback reports** using this data, allowing the technology platform to generate evidence that continuously informs practice, programs and policies. These reports will serve as the foundation for collaborative reflection and collective capacity-building.

At the school or cluster level, stakeholders will use the feedback reports to analyze their current work artifacts, practices and learning conditions and then develop focused capacity-building programs, aligned with the goals of mobilizing new pedagogies and deep learning. Capacity-building programs will include many elements:

- Analysis of evidence on learning work (learning activities and student work codes) and learning conditions (practices, perceptions, engagement), using this do identify specific needs
- Student and teacher exposure to exemplars, demonstrations and samples of deep learning, new pedagogies, new assessments and new technologies
- Identification and development of programs and models relevant to the specific needs of individual schools or clusters. This might involve participation in a cross-cluster experimentation "hubs" focused on particular aspects of pedagogy, learning conditions, technology or policy.
- Collaborative capacity-building processes within and across clusters to support the adoption of new models, including supports such as teacher networks, collaboration summits, professional and leadership development, tools, and continuous measurement.

An essential element of the planned capacity-building is to harness the energy of the students and teachers who are the creative and connected partners in exemplary new pedagogies and deep learning work. The partnership will seek to recognize and engage these individuals as "activators" of new pedagogies and deep learning within and across clusters. Once identified, we will seek to build communities of activators who are doing great work now, exposing them to each other and to their work and ideas through structured networks, online and offline. The intent is to build from what they are doing, extending their capacity through connected communities that are led by practicing change agents.

It is expected that all school clusters and participating systems will use the partnership as both a resource and model for deepening the professional development of teachers, school leaders and system leaders. Existing professional development programs and local training professionals should become deeply engaged in the mobilization effort. Integrating the framework described here with local relevance and local stakeholders will be critical to collective success.

Through the implementation of learning by doing, school clusters will go through a systematic process for diagnosing their own needs and priorities, choosing the right set of change levers, and effectively leading the entire change process all the way through to accelerated deep learning for students. Each cluster will be left with the systems, tools, know-how, and guided experience to repeat this process, embed the change, and expand it to more and more schools.

At the global level, additional collaboration "hubs" will develop clear evidence-based models of the new pedagogies. It is envisioned that global research partners will also become committed partners in the initiative, guiding analysis, measurement development and the identification of the most effective uses of technologies for specific processes and purposes. Such global research partners can apply powerful learning analytics across all layers of data, leveraging the full opportunity of this partnership for advancing our global understanding.

The world is changing and teaching and learning are changing with it. This paper has defined a vision and a plan of action. Success will depend on partners truly committing to this work to mobilize and dramatically expand new pedagogies and deep learning on the ground. We invite all who might be interested in participating in this endeavor to contact us at information@newpedagogies.org.

References

Adamson, F., & Darling-Hammond, L. (2012). *Policy Pathways for 21st Century Skills*. Stanford Center for Opportunity Policy in Education. Retrieved from http://atc21s.org/wp-content/uploads/2012/08/ATC21S-launch-LDH-policyii.pdf

Barber, M. (2013). *The Good News from Pakistan*. London: Reform. Retrieved from http://www.reform.co.uk/resources/0000/0688/The_good_news_from_Pakistan_final.pdf

Barber, M., Rizvi, S., & Donnelly, K. (2012). *Oceans of Innovation: The Atlantic, the Pacific, Global Leadership and the Future of Education*. New York: Penguin.

Barber, M., Rizvi, S., & Donnelly, K. (2013). *An Avalanche is Coming: Higher Education and the Revolution Ahead*. London: Institute for Public Policy Research.

Black, P. J. & Wiliam, D. (1998). Inside the Black Box: Raising standards through classroom assessment. *Phi Delta Kappan*, *80* 2.

Cuban, Larry. (2013). *Inside the Black Box of Classroom Practice: Change Without Reform in American Education*. Cambridge: Harvard Education Press.

Darling-Hammond, L. and Rothman, R., eds. (2011). *Teacher and Leader Effectiveness in High-Performing Education Systems*. Washington, D.C.: Alliance for Excellent Education and Stanford: Stanford Center for Opportunity Policy in Education.

Dumont, H, Istace, D, and Benavides, F., eds. (2010). *The Nature of Learning: Using Research to Inspire Practice*. Paris: OECD Publishing.

Dykes, G., Furdyk, M., Hassan, S., & Corriero, J. (2013). *From learner voice to emerging leaders*. Promethean. Retrieved from http://www.prometheanworld.com/rx_content/files/PDF/PrometheanThinkingDeeperResearchPaperNo6-FromLearnerVoicetoEmergingLeader-169728.pdf

(Engelbart) http://www.dougengelbart.org/about/nics.html

European Commission Staff. (2012). *Assessment of Key Competences in Initial Education and Training: Policy Guidance*. Retrieved from http://ec.europa.eu/education/news/rethinking/sw371_en.pdf

Fullan, M. (2011). *Choosing the Wrong Drivers for Whole System Reform. Centre for Strategic* Education, Seminar Series 204.

Fullan, M. (2012). *Stratosphere: Integrating technology, pedagogy, and change knowledge.* Toronto: Pearson.

Fullan, M. (2013). *Great to Excellent: Launching the Next Stage of Ontario's Education Agenda*. Retrieved from: http://www.edu.gov.on.ca/eng/document/reports/FullanReport_EN_07.pdf

Fullan, M. & Donnelly, K. (2013) *Alive in the swamp: Assessing digital innovations*. London: Nesta; Oakland,CA.: New schools venture funds.

Gallup. (2013). "21st Century Skills and the Workplace: a 2013 Microsoft-Pearson Foundation Study on 21st Century Skills and the Workplace."

Hargreaves, A., & Fullan, M. (2012). *Professional Capital: Transforming Teaching in Every School*. New York City: Teachers College Press.

Hattie, J. (2011). *Visible Learning for Teachers: Maximizing Impact on Learning*. New York: Routledge.

Hewlett Foundation. (2012). *Deeper Learning: Strategic Plan Summary*. The William and Flora Hewlett Foundation. Retrieved from http://www.hewlett.org/uploads/documents/EducationProgram_Deeper_Learning_Strategy.pdf

Hill, P. (2013). Personal correspondence with authors.

ITL Research. (2011). *Innovative Teaching and Learning Research: 2011 Findings and Implications*. Retrieved from http://www.itlresearch.com/research-a-reports/2011-itl-research-findings

Jenkins, L. (2013). *Permission to Forget*. Milwaukee: WI: American Society for Quality Press.

Laurillard, D. (2012). *Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology*. New York City: Routledge.

Light, D., Price, J., & Pierson, E. (2011). *Using classroom assessment to promote 21st century learning in emerging market countries*. Center for Children & Technology.

Mehta, J., Schwartz, R. B., & Hess, F. M. (2012). *The Futures of School Reform*. Cambridge: Harvard Education Press.

Mehta, J. (2013). *The Allure of Order: High Hopes, Dashed Expectations, and the Troubled Quest to Remake American Schooling.* New York: Oxford University Press.

(MET) Bill & Melinda Gates Foundation. (2012). *Measures of Effective Teaching*. Retrieved from http://www.metproject.org/

Miller, R., Looney, J., & Siemens, G. (2011). *Assessment Competency: Knowing What You Know and Learning Analytics*. Promethean.

Nourished, M., Farrell, D., & Barton, D. (2012). *Education to Employment: Designing a system that works*. McKinsey & Company: McKinsey Center for Government. Retrieved from http://mckinseyonsociety.com/education-to-employment/report/

Nesta. Lucking, R., Bligh, B., Munches, A., Ainsworth, S., Crook, C., & Noss, R. (2012). *Decoding Learning: The Proof, Promise and Potential of Digital Education*. London: Nesta. Retrieved from http://www.nesta.org.uk/library/documents/DecodingLearningReport_v12.pdf

National Research Council. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.

Partnership for 21st Century Skills. (2007). *21st century skills assessment: A partnership for 21st century skills e-paper*. Retrieved from http://www.p21.org/storage/documents/21st_century_skills_assessment.pdf

Pedró, F. (2006). *The new millennium learners: Challenging our views on ict and learning*. Retrieved from http://www.oecd.org/edu/ceri/38358359.pdf

Paul Hamlyn Foundation & Innovation Unit. (2012). *Learning futures: A vision for engaging schools*. Retrieved from http://www.innovationunit.org/sites/default/files/Learning_Futures_Engaging_Schools.pdf

Quaglia Institute for Student Aspirations. (2012). *My voice national student report grades 6-12 2012*. Retrieved from http://www.qisa.org/publications/docs/ExecutiveSummary_NR12.pdf

Snowden, D., Goldstein, J., Richardson, K., Allen, P. (Editors). (2007). *Emergence: Complexity & Organization 2006 Annual*. ISCE Publishing.

Tough, P. (2012). *How children succeed: Grit, curiosity, and the hidden power of character*. New York: Houghton Mifflin Harcourt.

Trilling, B., & Fidel, C. (2012). *21st century skills: Learning for life in our times*. New York: Josses-Bass.

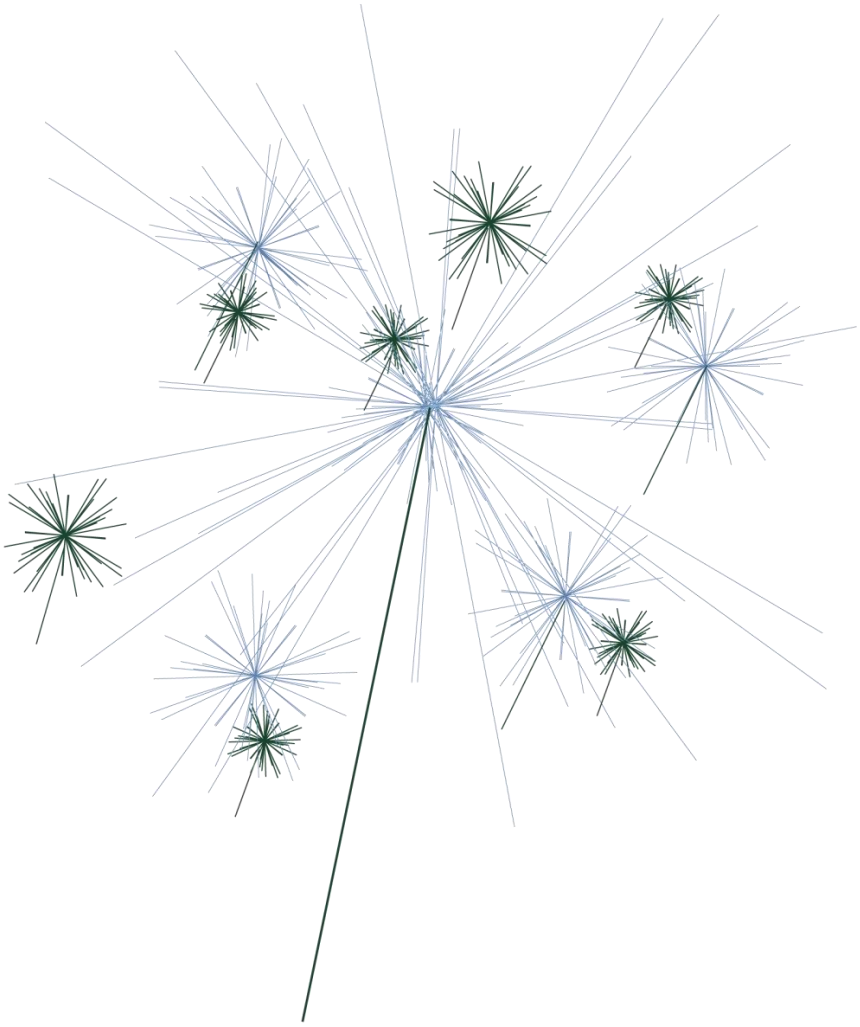
Van Horn, C. (2011, May 25). Their disappointment is justified. *New York Times*. Retrieved from http://www.nytimes.com/roomfordebate/2011/05/24/the-downsized-college-graduate/graduates-disappointment-is-justified

Vander Ark, T. (2011). *Getting smart: How digital learning is changing the world*. New York: Jossey-Bass.

Vieluf, S., Kaplan, D., Klieme, E., & Bayer, S. (2012). *Teaching practices and pedagogical innovations: Evidence from talis*. OECD Publishing. Retrieved from http://www.oecd-ilibrary.org/education/teaching-practices-and-pedagogical-innovations_9789264123540-en

Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. (2012. *Journal of Curriculum Studies*, *44* (3, 299-321).

Willms, D., Friesen, S., and Milton, P. (2009). *What did you do in School Today? Transforming classrooms through social, academic and intellectual engagement*. Toronto: Canadian Education Association.



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