Redefining high performance in Northern Ireland:

How do secondary schools serving high poverty communities under pressure for test performance also teach 21st century skills?

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April 2015

A shorter version of this paper is forthcoming from the *Journal of Educational Change.*

Abstract

This study examined four secondary schools in Northern Ireland to identify when and how students practiced higher level cognitive skills, interpersonal skills and intrapersonal skills, known collectively in the literature as 21st century learning. Three of the selected schools served at least 25% low income families, consistently outperformed demographic peers on required exams for the General Certificate of Secondary Education, and revealed through inspection reports and professional reputation a school-wide commitment to instruction of 21st century skills. A fourth school was chosen to represent the unique challenges faced by the Protestant working class community.

Analysis of classroom observations and focus group interviews with students, teachers, and administrators revealed that:

1. 21st century task demand is *relatively higher* when student learning is assessed with portfolios, performances, and local assessment practices, *and* 21st century task demand is *relatively lower* when learning is assessed with external exams;

2. pastoral care, thoughtfully deployed, is a powerful lever for 21st century learning;

3. cross-community contact, developed in meaningful ways, is a powerful lever not only for peace-building in Northern Ireland, but also for high level learning for the province's youth; and

4. schools that foster 21st century skills possess a vision for learning that extends well beyond the low level demand of state accountability metrics, while paying strategic attention to test performance.

Introduction

National and provincial policies governing primary and secondary education within countries belonging to the Organisation for Economic Co-operation and Development (OECD) increasingly demand that schools prepare students for externally imposed standardized exams. Such exams tend to measure low level cognitive skills such as recall, procedural thinking and analysis. At the same time, national and provincial policies are also insisting that schools teach higher level skills known in the literature as 21st century knowledge. There are however few, if any, state administered metrics of 21st century knowledge. Consequently, there is little real policy-based incentive or pressure for schools to teach 21st century knowledge. A large body of evidence now exists demonstrating that the demand for standardized test performance biases practitioners toward shallow ("test prep") instruction focused on memorization and procedural skills. Research shows further that this bias is particularly strong for schools serving marginalized children and youth. At the same time, the twin policy demand for 21st century knowledge requires schools to focus on deeper-level instruction in the cognitive, interpersonal, and intrapersonal domains. Thus, for school-level practitioners, especially those serving marginalized youth, these demands stand in conflict with one another (Schoen & Fusarelli, 2008). Because external accountability metrics are likely to continue as a policy lever and because 21st century knowledge instruction will become increasingly important for the future of democratic and economic flourishing, schools across OECD nations must learn how to navigate both demands simultaneously (Silva, 2008). Likewise, policy-makers must refine laws, regulations, exams, and other policy tools to incentivize high-quality instruction and ensure that all students enter the world of work and citizenship equipped with essential 21st century knowledge. This challenge is particularly urgent for schools serving marginalized children and youth.

This paper reports on data collected as part of a larger international study of secondary schools. Focusing on how schools respond to the twin policy demands for test performance and 21st century learning of many economically developed democracies, we designed a multi-year project to identify and study outlier schools that serve marginalized children and youth and that show promise *in meeting both policy demands simultaneously*. We focused our exploration particularly on the lives of marginalized children and youth because each of the nations represented in the study - US, UK, Israel - has a history of deep educational inequality rooted in differences related to race, class, sectarianism, language, nationality, and/or immigration**.** For the purposes of this paper, we share findings from four case studies of secondary schools in Northern Ireland, a UK province with a particularly pronounced history of educational inequality.

The Northern Ireland Context[1]

Since the 1980s, there has been a general recognition both within the European Union and internationally, that educational structures and processes will need to reconfigure and adapt to the demands of developing knowledge-based economies. (Organisation for Economic Co-operation and Development, [OECD] 1984, 2009, 2010; Carr and Hartnett, 1996; Barber, 2001). The main government agency for educational standards in Northern Ireland (NI) is the Department of Education for Northern Ireland (DENI). In the primary school sector the main measure of educational achievement is pupil outcomes in literacy and numeracy at Key Stage 2 (age 11). Pupil outcomes are based on teacher assessment and the figures show that, in general, there are fairly high levels of achievement. In 2006/07, 78 per cent of pupils were performing at or above the expected level in literacy and 79.5 per cent were achieving at or above the expected levels in mathematics (DENI 2009). By the same token, these figures also show that around one fifth of pupils do not

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[1] The four paragraphs leading this section were prepared by Martin Hagan, Principal Lecturer and Chair of the Education Studies Team at St. Mary's University College, Belfast.

manage to reach the expected standards by the end of the primary school phase. As such, this does not provide a good platform for development as these pupils move into their post-primary education.

Post-primary education in NI is characterised by a two track approach with academic selection at the age of 11. Though the state no longer oversees or officially endorses an academic selection process, schools and families continue to engage in this process quite vigorously on their own. The top 27 per cent of pupils progress to what is perceived as the elite Grammar school sector and the rest of the cohort move into what is termed the Secondary sector. The main measures of achievement in the post-primary sector are the General Certificate in Secondary Education (GCSE) and Advanced Level (A level) examinations. These are public examinations which are taken in the United Kingdom (UK) at the post-primary stage at ages 16 and 18 respectively. Schools in NI outperform their counterparts in England and Wales, showing that 98 per cent of year 14 pupils (age 18) achieved 2 or more A levels (or equivalent) at grade A-E and 60 per cent of year 12 (age 16) pupils achieved 5 or more GCSEs at grade A*-C including English and Mathematics, in a recent representative year: 2011-2012 (DENI 2013). These achievements should not be underestimated and it is generally recognised that success in these examinations paves the way to further and higher education and employment.

This positive picture, however, is not reflected in all school contexts as there are still a significant number of pupils who do not manage to achieve these recognised standards. In 2011-12, for example, nearly a fourth (22 per cent) of pupils did not achieve the desired success measure of 5+ GCSEs at grade A*-C. When this criterion is broadened to focus on 5 or more GCSEs at grade A*-C including English and Mathematics, the figure not achieving this standard was actually 40 per cent (DENI, 2013). This high level of underachievement becomes even more significant when it is layered onto the socio-economic status of the underachieving pupils in question. The relationship between educational attainment and social disadvantage is clear (Cox, 2000) and in the case of NI, the selective system has been highlighted as a significant factor in the enhancement of class inequality and educational disadvantage (Sutherland, 1993; Gallagher and Smith, 2000). Gallagher and Smith (2000) have shown that the selective structure tends to reflect the socio-economic divisions in society, in that children from more advantaged backgrounds have a greater chance of obtaining a place in grammar schools while those from less advantaged circumstances are more likely to be found in secondary schools. The phenomenon applies across both sides of the traditional, religious 'two communities' divide i.e. for the Controlled (*de facto* Protestant) and Maintained (*de facto* Catholic) sectors respectively.

For example, in the academic year 2011-2012, non-grammar schools serving 0 -19.99 per cent of students eligible for free school meals, showed an average of 38.4 per cent of all students leaving school with at least 5 GCSEs at grade A*-C including English and Maths. By comparison, non-grammar schools with 50 per cent or more students eligible for free schools meals showed an average of 18 per cent (DENI 2013). However there is significant variation across schools and localities which points to the fact that different schools can produce significantly different outcomes, regardless of similar levels of disadvantage.

In assessing the overall quality of education in NI, outcome comparisons are usually made with pupils in England and Wales. In general, these comparisons show the NI education system to be working well in comparison to that of its closest neighbours. In addition, NI participates in the Programme for International Student Achievement (PISA) which allows a comparison of outcomes at the age of 15 with 56 other nations including EU and OECD members. A recent survey (OECD, 2009) shows that the NI ranking has declined in recent years to the point where NI outcomes currently reflect average OECD attainment both in English and Mathematics as opposed to significantly higher levels as measured in 2003. In science, NI has maintained an above-average position since 2003, but other countries have managed to improve their rankings above the NI position.

Protestant Youth from Low-Income Families in Northern Ireland

There are strong indications from existing research that Protestant youth from low-income families are, as a class, underachieving when compared to the norm for Northern Ireland and, in particular, to youth in Northern Ireland from similar family income levels. In the preliminary data analysis for the present study, controlled sector schools sharply underperformed similar maintained and integrated schools. For schools with a population of pupils eligible for free school meals of at least 25%, there was no controlled sector school that met the threshold for inclusion in this study. That threshold was GCSE scores at least one standard deviation above the mean for like-schools (Details in section below). Ranking all 76 schools in this study's preliminary pool from top to bottom, the highest-ranking controlled school stood in 27th place. Further evidence of a pattern of underachievement comes from a study conducted by the University of Ulster, published in 2001, showing that participation rates in further and higher education among Protestant boys, in particular, was well below average (Collins, K. et al, 2001).

What might explain this phenomenon? A report issued by a working group led by MLA Dawn Purvis in 2011, found the following patterns within the Protestant community of Northern Ireland which help explain educational underachievement:

> One strong theme within the discourse of the Working Group, and in responses to the consultation, was the familiar narrative of deindustrialization and the loss of traditional labour markets and skills. Generations of working class Protestants were heavily involved in manufacturing industry and viewed getting a trade as the main form of educational requirement. The collapse in this labour market and the movement towards a consumerist, service-driven economy has, to a degree, left elements of the Protestant working class stranded with redundant skills-sets and abilities. Given the historic predominance of trades and apprenticeships, educational attainment via schools, colleges and universities had not been prioritised among this section of Northern Ireland's working class in the manner required to respond to new 'flexible', less regulated, labour markets driven by educational qualifications and skills tied to computerization and portable learning. The collapse of established, long-term inter-generational labour markets led to some aiming for new skills but many merely feeling 'out of sync' with contemporary requirements. For the latter group, the traditional labour market was replaced by social fatalism, low wage employment, insecure casualised work, feminised labour and benefit dependency. Within that group, education remains both under-valued and under-appreciated. A new and deep-rooted approach is needed to bring about the scale of change that is required (Purvis, 2011).

While the controlled sector experiences educational underachievement generally, boys, in particular, underachieve by a wider margin than girls. One report shows the passing rate for girls (42%) 11 points higher than the passing rate for boys (30.7%) with 5 GCSEs A*-C, including Maths and English (South Eastern Education and Library Board, 2013).

It is clear then that although the NI education system produces some very good academic outcomes for some pupils, this pattern is not uniform for all. The significant gap between the highest and lowest achieving pupils is also reflective of the social division apparent in society which, in turn, perpetuates existing inequality.

Research Context

The current study locates itself at the intersection of three streams of research activity from education scholars around the world, stretching back several decades. It draws heavily on the existing knowledge issuing from each stream and seeks to advance our understanding of all three. Together, these three streams of research are the basis of the conceptual framework for the current study. They are:

1. research in the area of *deeper learning* and the emerging construct of 21st century knowledge;
2. research into the impact of test-based accountability on instructional practice and student learning; and
3. research in the area of school-level traits associated with academic high performance.

Following is a brief summary of research in each of the three areas.

1. <u>Deeper Learning and the Emergence of the 21st Century Skills Construct</u>

Since the early 1990s labor economists have theorized the emergence of a skill set associated with a growing number of jobs in the US and international labor markets, resulting from economic globalization and advancing digital technology. "What Work Requires of Schools", a report of the United States Department of Labor's Commission on Achieving Necessary Skills (1991), may be the first major report identifying a skill set which has been reiterated with strikingly little variation by policy reports in the decades since. Three major initiatives active in recent years have yielded similar analyses. The Partnership for 21st Century Skills, the International Society for Technology in Education and the North Central Regional Educational Laboratory have each published schema outlining 21st century skills. The rationales driving the major "21st century skill" initiatives are quite similar and are summarized well in the early (1991) US Department of Labor report: "the globalization of commerce and industry and the explosive growth of technology on the job." (p. viii)

Though labor economics has been the chief driver of policy activity surrounding 21st century skills, some education stakeholders have invoked 21st century skills as the essential abilities that foster *civic engagement* in a world that is increasingly complex politically and increasingly connected socially and politically. The William and Flora Hewlett Foundation's "Deeper Learning" Program (www.hewlett.org) is a prominent example, along with scholars Pellegrino and Hilton (2012).

The 21st century skills construct is emerging as a fairly stable and relatively well accepted policy framework internationally for what students need to know and be able to do to thrive as workers and citizens in a globalized environment (Anandiadou and Claro, 2009; Voogt and Roblin, 2012). Various terms appear in popular literature, which tend to refer more or less to the same skill set. Pellegrino and Hilton (2012) list them: "deeper learning," "twenty first century skills," "college and career readiness," "student-centered learning," "next generation learning," "new basic skills," and "higher-order thinking." In their 2012 report *Education for Life and Work,* the Committee on Defining Deeper Learning and 21st Century Skills based their definition on the idea of deeper learning as "transfer" or the process through which an individual becomes capable of taking what was learned in one situation and applying it to new situations (Pelligrino & Hinton, 2012). Indeed, many scholars argue that the essence of 21st century learning is not what unit of knowledge students have; rather, it is what students can do with knowledge once they have it (Silva, 2009), thereby requiring schools to develop new, more sophisticated approaches to teaching (Rotherham & Willingham, 2009).

Arguing that transfer is inextricably intertwined with specific competencies, the Committee organized what they referred to as 21st century competencies into three domains. The Cognitive Domain included critical thinking, information literacy, reasoning and argumentation, and innovation. The Intrapersonal Domain included intellectual openness, work ethic and conscientiousness, and positive core self-evaluation. The Interpersonal Domain included teamwork and collaboration and leadership (Pelligrino & Hinton, 2012, p. 4). According to the report, 21st century competencies are the blend of knowledge and skill that create the capacity in the individual to understand how, why, and when to apply domain-specific knowledge to answer questions and solve problems.

Similarly, in their efforts to promote deeper learning and the development of 21st century skills in US classrooms, UCLA's National Center for Research on Evaluation, Standards, and Student Testing (CRESST) relied on Webb et al's (2005) Depth of Knowledge Methodology (DOK) to analyze new assessments (i.e. PARCC and Smarter Balanced) of deeper learning. The system categorizes DOK into four levels:

DOK1:   recall of a fact, term, concept, or procedure; basic comprehension
DOK2:   application of concepts and/or procedures involving some mental processing
DOK3:   applications requiring abstract thinking, reasoning, and/or more complex inferences
DOK4:   extended analysis or investigation that requires synthesis and analysis across multiple contexts and non-routine applications

It should be noted that while none of the skills embedded in these varied constructs is new to the 21st century, three things *are* new:

- the technological platform on which so much intellectual activity now occurs, (not, in itself a skill);
- the increasing percentage of workers required by a globalized, knowledge economy, who must be facile with such skills; and
- the swelling chorus of actors in the policy world who are calling for their inclusion in primary and secondary education.

There are voices in the academy - and some in the policy world - who deride 21st century skills and similar terms. See, for example, blogposts by historian Diane Ravitsch (www.dianeravitsch.net) and literary critic E.D. Hirsch (www.commoncore.org). Ravitsch, Hirsch and others do not criticize the skills *per se*. They criticize the separation of skills from domain specific knowledge (subject matter), citing anecdotal evidence from schools that purport to teach "critical thinking" without teaching anything about which to critically think or zealots who argue against teaching "content" because in the digital age one can simply google it on a smartphone.

2.   Impact of Test-based Accountability on Instructional Practice and Student Learning

We turn now to the second of our three streams of research informing this study. "21st century skills" has become a construct with global currency. However, the penetration of 21st century skills into public schools internationally remains weak (Anandiadou and Claro, 2009; Voogt and Roblin, 2012). A barrier to success, particularly for schools serving marginalized students, is the omnipresence of high-stakes, mandated tests across many industrialized nations, which dis-incentivize deeper learning. As the policy world increasingly relies on tests as a public accountability metric, there is growing evidence that schools under pressure for test performance narrow the curriculum and instruction in order to boost scores (McMurrer, 2007; Moon et al., 2003; Hinde, 2003). In doing so, schools diminish their capacity to foster deeper learning and intensify a learning

gap between their students and students of privilege with an increasingly important skill set *that goes largely unmeasured*. Because external accountability currently focuses on test performance, 21st century learning in many schools fails to make its way into instructional practice (Schoen & Fusarelli, 2008). Schools tend to respond to the call for 21st century skills through a vision statement or other types of administrative planning documents, but they rarely respond at the level of practice because there are no assessments that hold them accountable for doing so. The problem is particularly acute in schools serving low socio-economic status (SES) populations in many OECD nations which are experiencing increasingly intense pressure for improved test performance. The consequence of this tendency in many schools is that a generation of children, particularly children from low SES groups, may grow up with a dangerously lopsided, inadequate, and unfulfilling education (Kozol, 2005; Biddle, 2001). While there is documentation of schools that perform beyond expectation on tests (Carter, 2000; Herman et al, 2008; Maden, 2001), there is no systematic accounting of schools that *also* place a demonstrable emphasis on 21st century learning.

In the US, policymakers hope to promote and systematically account for 21st century learning in schools by developing standards and assessments that are in line with this goal. According to Herman and Linn (2013), new assessments coming out of PARCC and Smarter Balanced are intended to "address much deeper levels of knowledge, application, communication, and problem solving than do current state assessments" (p. 19). However, the scholars foresee that initial results on these assessments "are likely to provide a shock to the public and to teachers' usual practice" (p. 19). Since the late 1990s, policymakers, practitioners, and scholars in the UK have engaged in "voiciferous debates … around the extent to which education [is] primarily a means of knowledge transfer for achieving success in examinations or whether, in the new 'Information Age', it should focus more on the acquisition of transferable skills for life-long learning" (Colwill & Gallagher, 2007, p.415). These debates were driven by a tension between a demand to modernize and prepare students for the future and a need to determine how education serves a role in promoting values of the past. Curriculum developers in Northern Ireland, who were challenged by a rapidly changing economic and technological landscape, resolved to meet the learning needs of students in the 21st century through new curriculum frameworks that emphasized transferable skills and learning for life and work. Colwill and Gallagher (2007) describe these efforts:

> A framework for cross-curricular skills (Communication, Using Mathematics and Using Information and Communication Technology) and a framework for Thinking Skills and Personal Capabilities have replaced the subject-based levels of achievement as a means of describing progression.

According to the researchers, efforts to change curriculum to address the demands of the 21st century have done little to impact teaching in secondary schools. While Northern Ireland's curriculum is robust, meaningful implementation will require more systematic efforts to build capacity through professional development and leadership that can influence teachers' willingness to engage in new ways of doing their work. It will also require a re-conceptualization of student assessment as the current study demonstrates.

While implementation in both the US and UK is underway for curriculum and large-scale assessments that invoke 21st century learning, it remains unclear the extent to which such changes in language are fostering changes in practice.

3.   Underline: School-level Traits Associated with High Performance

We turn now to the third of the three streams of research informing this study. External curriculum mandates and assessment pressures focusing on the school as the unit of accountability and

improvement have prompted research since the 1990s to identify school-level traits associated with high performance. Robust findings now exist which identify the following requisite traits for a high performing school: high cognitive demand across classrooms; high expectations for all students within a classroom; collective responsibility for student learning; collective efficacy; shared instructional norms; collaborative examination of practice; shared vision and purpose; sense of community; an inquiry stance toward professional practice; and capacity-building through shared leadership. See figure 1 below for a summary. (For a discussion of the origin of this set of traits and relevant research, see Nehring and Fitzsimons, 2011; and Nehring and O'Brien, 2012.) While we know that these traits are strongly linked with high performance based on conventional examination metrics, we do not know what role they may play in the fostering of 21st century learning. This study sought to better understand that role.

Figure 1: Research Summary of Traits Associated with High Performing and Low to Moderate Performing Schools

Traits of Low to Moderate Performing Schools		Traits of High Performing Schools	
Finding	Source	Finding	Source
Low cognitive demand	Nystrand & Gamoran, 1991; Cuban, 1986.	High cognitive demand	Newmann & Associates, 1996.
Low collective efficacy	Evans, 2009.	High collective efficacy	Hoy, Tarter & Woolfolk, 2006
Low student expectations, particularly for marginalized student groups	Brophy 1983; Cochran-Smith et al., 2004; Cooper & Tom 1984; Cooper et al., 1982; Howard, 2003; Ketter & Lewis, 2001; Miron, 1996; Raudenbush 1984; Rousseau & Tate, 2003.	High expectations for all students	Ancess, 2003; Hoy, Tarter & Woolfolk, 2006; Leithwood, 2010
Teacher isolation	Lortie, 2002; Sizer, 1984.	Collective responsibility for student learning	Lee & Smith, 1996.
		Shared instructional norms, collaborative examination of practice	Yasumoto, Eukawa & Bidwell, 2001.
		Shared vision and purpose; sense of community	Waters, Marzano & McNulty, 2003; Leithwood, Louis, Anderson & Wahlstrom, 2004; Leithwood, 2010.
		Inquiry stance toward professional practice	Calhoun & Joyce, 2005
		Capacity building through shared leadership	Hallinger & Heck 1998, 2010a, 2010b, 2011a, 2011b; Mascall & Leithwood, 2010.

Conceptual Framework

Based on the literature review, a conceptual framework was designed for investigating how four schools in Northern Ireland mediate both the pressure to perform on basic skills assessments and the need to prepare students for the 21st century. Three concepts are central to the framework. First is our definition of 21st century learning. For the purpose of this study, various definitions of 21st century skills were reviewed along with scholarly theory focused on deeper learning (Brookhart, 2010; Pellegrino & Hilton, 2012). Findings were synthesized into a taxonomy. The taxonomy, which follows as figure 2, was used as an organizational and analytical tool for the current case studies. We use this taxonomy because it sharpens our focus on the tasks that students are asked to execute in classrooms as well as in school-wide activities. Tasks are defined by the answers students are required to produce and the routes that can be used to obtain the answers (Doyle, 1983). Students will, therefore, learn what the task leads them to do. The "task" is constituted by three aspects of

students' work: (1) the products students are expected to generate (e.g., an essay); (2) the operations students are expected to use to generate the product (e.g., memorizing a list of words); (3) the givens or the resources available to students while they are generating the product (e.g., success models of an essay) (Doyle, 1983). One would expect that the acquisition of 21st century competencies would necessarily increase with task demand.

Figure 2: Student Skills Expressed as Tasks in Three Domains
Note: An asterisk (*) indicates a task that is higher level, often described in the literature as "21st century".

Cognitive Domain

Cognitive Standard 1: Recall
The task asks students to recall or reproduce information gained by reading, listening, or observing.

Cognitive Standard 2: Application
The task asks students to execute or implement a procedure to solve a problem. These problems usually have one best answer and they can be similar to problems students have solved before.

Cognitive Standard 3: Analysis
The task asks students to break information into its parts and determine how the parts are related to each other and to the overall whole. Processes include differentiating, organizing, and attributing. "Getting to the point" of something (main idea), analyzing arguments (or theses), or comparing and contrasting are all examples of an analysis task.

Cognitive Standard 4: Evaluation*
The task asks students to judge the value of material and methods for given purposes, based on standard criteria or criteria students invent themselves. The task requires reasoned evaluation that can be stated as a thesis or a conclusion and supported with logic and evidence. Processes include checking and critiquing. The task asks students to judge whether a single fact or claim is true and whether it is relevant to the argument or problem at hand, and/or to judge whether two or more things are consistent. Tasks may emphasize deductive reasoning - starting with one or more premises (the basis for an argument) and then reasoning with it to draw a conclusion. Tasks may emphasize inductive reasoning - starting from an instance or instances and moving to a principle. (Students have to reason from various aspects of a text, for example, and determine its meaning as a whole.) This standard also includes tasks that ask students to evaluate the credibility of a source of information, identifying assumptions implicit in that information, and identifying rhetorical and persuasive methods.

Cognitive Standard 5: Creative Thinking*
The task asks students to put disparate elements together to form a new whole, or reorganize existing elements to form a new structure. Processes include generating, planning, and producing. Examples: Coming up with alternative hypotheses based on criteria; devising a procedure for accomplishing a given task, such as planning a research paper on a given topic; inventing a product, such as a habitat for a specific purpose.

Cognitive Standard 6: Information Literacy*
The task asks students to use information literacy skills (e.g., computer literacy skills, library literacy skills, media literacy skills, network literacy skills, visual literacy skills). The task requires students to use these skills to answer the questions: What information do I need and where do I get it? How do I effectively convey this information?
Note: Expanded conceptualization of information literacy to include the translation of information from one form to another (e.g., represent in narrative form the information in a graph).

Interpersonal Domain

Interpersonal Standard 1: Teamwork/Collaboration*
The task asks students to work with others by communicating effectively, cooperating, being empathetic/taking different perspectives, building trust, taking on a service orientation, resolving conflict, and/or negotiating.

Interpersonal Standard 2: Leadership*
The task asks students to be responsible, assertive, and influential members of a group.

Intrapersonal Domain

Intrapersonal Standard 1: Intellectual Openness*
The task asks students to be flexible, adaptable; to appreciate diversity and value continuous learning; to demonstrate artistic and/or cultural appreciation; to show intellectual interest and curiosity.

Intrapersonal Standard 2: Metacognition*
The task asks students to use self-regulation strategies and skills such as forethought, self-reflection, self-monitoring, self-evaluation, and self-reinforcement.

The authors share with many scholars included in this literature review, the view that domain-specific knowledge is inseparable from skills and the conviction that civic engagement and personal development are at least as important a rationale for public education as workforce preparation. The authors also hold the view that students' opportunities to develop 21st century knowledge and skill are inextricably tied to school-level factors, which are an important aspect of our conceptual framework. Based on past research we bring to our study the assumption that specific traits — those associated with high-performing schools — are associated with the prevalence of 21st century teaching and learning in a given school. Moreover, these traits have a direct bearing on how schools mediate the pressure associated with external policy demands, the third aspect of our framework.

Research Question and Methodology

This study sought answers to the following question:

How, if at all, do schools that serve a large percentage of low income students and that significantly outperform their demographic peers on state-mandated, standardized achievement tests, promote 21st century learning?

1. How, if at all, is 21st century learning fostered in the classroom?
2. How is it fostered school-wide?
   a. What role do school-wide traits such as high cognitive demand, high expectations for learning, and collective responsibility for learning play in promoting 21st century learning in and across classrooms?

Site Selection

Research sites for this study were identified by analyzing publicly available test data and demographic data for all publicly funded post-primary schools in Northern Ireland (DENI, author request for information). Top performing schools serving a large (>25%) percentage of low income families were identified. All schools meeting this criterion were then banded into demographic peer groups consisting of schools with a similar percentage of students eligible for free school meals (FSME). The groupings were ≥50%, 40-49%, 30-39%, and 25-29%. A calculation was performed for each school that took an average of 2010/11 and 2011/12 (preliminary) test scores achieving 5+ GCSEs grades A*-C (including equivalents) including GCSE English and GCSE Maths. The standard deviation for schools within each FSME grouping was then calculated. All schools above the standard deviation for their group were then compared with schools in other groups and ranked according to their deviation from the mean. Thus schools from different peer groups were compared with each other in a way that adjusted for the differing percentages of students eligible for free school meals.

Inspection reports for top performing schools were then reviewed for evidence of instruction in 21st century skills and inquiries were made within professional networks for schools showing promise with 21st century skills instruction. Seven schools identified using these methods were visited; informal interviews were conducted with the principal and key staff and informal visits were made to classrooms. Other schools not in the pool of potential sites were visited for comparison purposes. From the seven schools visited, three were chosen based upon three criteria: high-level test performance based on the method described above, >25% low income student population, and evidence of 21st century skills instruction.

A fourth school was chosen using somewhat different criteria. This was done to address a curious phenomenon that surfaced as the research was underway. In identifying schools that met the study's first two criteria (>25% Free School Meals and test performance well above demographic peers), it was observed that all of the schools in the resulting list were either Maintained (*de facto* Catholic) or Integrated (deliberately mixed faith). There were no Controlled schools (*de facto* Protestant) that made the list. While we could have left this fact aside and simply studied the highest performing schools in Northern Ireland according to our criteria, we felt this would be ignoring a potentially important phenomenon. While this study is not primarily focused on sectarianism in Northern Ireland, the sectarian divide is an enormous fact of life within the province, influencing virtually every social institution. Because this study is about the education of marginalized youth, it seemed essential to, in some way, pay attention to the apparent phenomenon

that a whole class of youth, namely Protestant youth in low income communities, were marginalized, as a group, when measured by this study's criteria. We therefore sought out a fourth school within the Controlled sector which might shed some light on this striking and, indeed, alarming fact. What are the challenges for 21st century learning faced by schools within the controlled sector that are unique to controlled schools? If there were a principal and school staff who were attempting to push a controlled school in the direction of 21st century learning, what obstacles and opportunities would they encounter? Could such a school be found? The school constituting case study 4 is such a school. It was identified in consultation with professors at Stranmillis University College in Belfast which maintains strong links with primary and secondary schools across Northern Ireland. A preliminary visit was conducted at the school including an interview with the principal and a tour of the site. From the visit, it was clear that 21st century learning was on the minds of the principal and many staff members and significant efforts were underway to advance 21st century skills among the pupils. It should be noted that attempts were made, as well, to initiate case studies in several other controlled sector schools that were high performing relative to the controlled sector. For various reasons, these efforts were not successful. The school that was chosen, while not high performing relative to other controlled sector schools has shown recent significant gains when student skills are measured on a value added basis.

Case Study Sites

Case #1

This case study site was a rural, secondary, Maintained (de facto Catholic) school in Northern Ireland. The school serves approximately 1500 students within an attractive and well provisioned campus constructed within the last ten years. The percentage of students eligible for free school meals stood at 28%. This school ranked an impressive 6 overall out of 75 secondary schools in Northern Ireland for GCSE scores with >25% FSME calculated in the manner described above under "Research Questions and Methodology". This school also exhibited attributes in inspection reports suggesting a potential focus on 21st century skills. It was also recommended by professional networks as a school that focuses on 21st century skills, and, during an informal preliminary visit, showed itself as a site where 21st century skills were being taught and practiced by students.

Case #2

This case study site was an urban, secondary, Maintained (de facto Catholic) school, for girls only, in Northern Ireland. The school serves approximately 1079 students within an attractive and well provisioned campus constructed within the last ten years. The percentage of students eligible for free school meals stood at 38%. This school ranked an impressive 7 out of 75 secondary schools in Northern Ireland for GCSE scores with >25% FSME calculated in the manner described above under "Research Questions and Methodology". This school also exhibited attributes in inspection reports suggesting a potential focus on 21st century skills. It was also recommended by professional networks as a school that focuses on 21st century skills, and, during an informal preliminary visit, showed itself as a site where 21st century skills were being taught and practiced by students.

Case #3

This case study site was a rural, secondary, Integrated school (50% Catholic, 30% Protestant, 20% other) in Northern Ireland. The school serves approximately 670 students within an attractive and well provisioned campus constructed within the last ten years. The percentage of students eligible for free school meals stood at 28%. This school ranked an impressive 2 overall out of 76 secondary schools in Northern Ireland for GCSE scores with >25% FSME calculated in the manner described above under "Research Questions and Methodology". This school also exhibited attributes in inspection reports suggesting a potential focus on 21st century skills. It was also recommended by

professional networks as a school that focuses on 21st century skills, and, during an informal preliminary visit, showed itself as a site where 21st century skills were being taught and practiced by students.

<u>Case #4</u>
This school is situated in a semi-urban community. The main building is over 80 years old and a more recent addition is approximately 50 years old. The school serves students from year 8 to year 12 and approximately 35% of students are eligible for free school meals. There is no post-16 program at the school. Of the 76 schools in the initial pool for this research study (all secondary schools in Northern Ireland with at least 25% students on free school meals), this school ranked 72 for GCSE scores (as calculated above). The school is approved for an enrollment of 600 students and currently serves 401. Enrollment over the last four years shows a clear downward trend (South Eastern Education and Library Board, 2013).

Despite these concerning patterns, there is evidence that the school is positively impacting the learning of its students. In recent years, the school has begun calculating a value-added measure of student growth based on a standard diagnostic test of literacy and numeracy. The school administers the Progress in Maths (PIM) test and the Progress in English (PIE) test produced by GL Assessments and widely used in the United Kingdom (http://www.gl-assessment.co.uk/). The test measures progress from one key stage level to the next. According to the Department of Education for Northern Ireland "individual pupils should progress at least one level between each Key Stage" (Department of Education for Northern Ireland, 2014). At the case #4 school, all year 12 students sat for the tests (both PIE and PIM). Results show that the median pupil in both Maths and English scored *above* 1 level of growth from one key stage to the next.

It is important to note that while the case #4 school ranks near the bottom of similar schools for GCSE scores, when assessed using a value-added measure, the school clearly demonstrates a positive impact on its pupils. Because DENI does not calculate value added measures for the schools within its jurisdiction, it is impossible to know how these results compare with other schools.

Data Sources

The lead researcher spent approximately eight days at each of the three schools chosen. While there, he observed classes and staff meetings, conducted focus groups with teachers, administrators and students, including follow-up interviews, and guest taught several classes. Including these activities, data sources were as follows:

- GCSE exam results, demographic data and school inspection reports from the Department of Education for Northern Ireland
- Notes from classroom observations
- Student handouts and related materials provided by the teacher during classroom observations
- Transcription of focus groups including teachers, administrators, and students
- Notes from observations of staff meetings
- Reflective journals from the lead researcher created while serving as a guest teacher
- School publications available on the website or from the main office

Data sources for the Controlled sector school (case #4) included in the study are somewhat less robust than those used in the other cases. The chief differences are the absence of classroom observations and reduction in the volume of data overall. Though classroom observations were

requested, the staff declined due to concerns about the potential for negative publicity. Given the recent history of the school and the considerable challenges it faces, the wishes of the staff to exclude an outside researcher in this way are quite understandable. Due mainly to the absence of classroom observation, the visit, overall, was considerably reduced. Instead of the seven to eight days of visiting associated with the other schools in the study, this school was visited just three times for less than a full day each time.

Data Analysis

All data were coded using a taxonomy for skills designed by the researchers, as discussed above. Data were also coded according to when and how 21st century skills were taught by the school and practiced by students. From the coded data, themes were identified that were responsive to the research question. Data were also coded for whole school traits, as discussed above.

Each case was treated initially as a complete research study. Data were collected and analyzed, results were identified, findings and recommendations were generated, and a stand-alone case study paper was written. Each paper was about 15,000 words long. Next, a cross-case analysis was conducted identifying patterns common to the schools and significant differences among them. Findings and recommendations were synthesized, and representative data were selected to illustrate findings.

Findings and Discussion

The following is based on the questions pursued for this study.

Analysis revealed three broad findings, each of which encompassed several more specific findings that held across most schools. The ways in which these findings manifested themselves revealed, also, some interesting differences from one school to the next. The three broad findings are:

1. the variety of assessment strategies in use across all four schools strongly influenced the presence and absence of 21st century skills instruction from classroom to classroom;

2. the pastoral care program tended to foster 21st century skills schoolwide; and

3. whole school traits identified in the literature review above significantly advanced 21st century skills instruction.

1. Assessment strongly influenced students' exposure to 21st century tasks

In all schools a variety of strategies - depending on the subject, academic track, and year (grade level for American audiences) - were used to assess student learning. Strategies included externally administered, traditional exams (time-bound, on demand); locally developed traditional exams; performances and projects accompanied by rubrics and often collected into a portfolio; practical exams; and a mix of familiar teacher-developed assessments such as daily homework, participation, quizzes, essays, labs, problem sets, etc. In general, we observed that as reliance on performances and projects collected into a portfolio increased, so too did the instructional demand for 21st century skills. Inversely, as reliance on an externally administered traditional exam increased, instructional demand for 21st century skills decreased. In addition to these varied assessment strategies, the

occasional <u>absence</u> of any assessment associated with a given learning experience appeared to be an influential force with respect to 21st century skills as well. In learning situations where teacher-developed assessment strategies were used and in situations where there was NO formal assessment, the instructional demand for 21st century skills also tended to be strong.

Across all schools, instruction emphasizing 21st century skills was evident in courses in which assessment was something other than a traditional external exam, meaning a written, on-demand, time-bound test. Such courses tended to include key stage 3 courses (KS3: which encompass years 8-10 when students are typically ages 11 to 14), GCSE courses with less than 50% exam assessment, and A level courses with less than 50% exam assessment. 21st century skill instruction was especially evident in courses driven by an assessed project with a product, meaning an extended, complex task, contextualized by a real-world scenario, culminating either in a performance or a product or both.

For example, in a science class from KS3 in school #3, students were asked to work in pairs to create several different ratios of ingredients in a set of test tubes to produce solutions with various pH levels. The task required students to think like scientists, thereby using strategic reasoning in order to make sense of the phenomenon they observed. Indeed, the teacher set before students a task that required them to demonstrate their ability to apply major aspects of scientific investigation, namely collecting data through observation, questioning and hypothesizing about what they have observed, and testing and evaluating their hypothesis. Moreover, the collaborative nature of the task meant that students served as a resource for learning—potentially expanding the pool of knowledge students have of the scientific principles that underlie pH levels. The collaborative nature of the task also necessarily meant that students had to practice interpersonal skills (e.g., effectively communicating, cooperating) in order to produce solutions with various pH levels. By exposing students to a task with inherently high cognitive and interpersonal demand and with application to the worlds of medicine, oceanography, forestry, food science, water treatment, etc., the teacher provided opportunities for 21st century learning.

In this class, there was no external exam. As students move from KS3 into KS4 (GCSE), assessment in many courses shifts to external examination. For science, most of the assessment in KS4, measured as percentage of mark, is based on an external exam. Teachers commented frequently in focus groups that the shift in assessment from KS3 to KS4 across many subjects produced a shift in teaching featuring a reduction in demand for 21st century skills and an increase in demand for recall and application. One teacher commented, "In key stage 3 classes, all the wider skills [21st century skills] have been planned for, but at key stage 4, they're not. It's all tests." Another teacher during the same focus group said, "I find a gap between key stage 3 [and key stage 4]. The first [key stage 4] exam is very much about [recall, application, and analysis] skills. And there's so much to learn that it is incredibly content-led." During another teacher focus group, a third teacher commented, "Our revised curriculum at key stage 3 is all about skills - managing your own learning, interpersonal skills - and we all assess those. But at key stage 4 they're not really in the exam papers. So it seems to be important at key stage 3 but it's not in there in key stage 4. There are gaps there." The evidence from KS3 classes and these representative comments from teachers suggest that a reliance on external exams tends to produce a reduction in the level of demand when compared with courses that are not assessed with an external exam. And, while teacher comments could be interpreted as reinforcing critics' concern about a "gap" between discipline-specific content and 21st century skills (in applying discipline-specific knowledge), the classroom instruction highlighted here suggests that addressing both is possible when the primary means of evaluating students' learning is not an external exam.

Not all GCSE and A level classes, however, are governed primarily by external exams. For example in Engineering, only 40% is external exam. Interestingly, the skill demand in such courses tends to be high. For example, in GCSE year 12 engineering in school #3, students were charged with the task of designing a table top holder for a tablet computer. Each student had to complete a series of technical drawings with extensive notes. They had to evaluate their drawings and, based on their knowledge of relevant engineering principles, they had to make reasoned decisions about which design to pursue. Moreover, the task required students to think creatively to design a holder that met the specifications - students had to engage in thoughtful planning in order to create a new structure. Following is an excerpt from research notes just as the teacher had finished giving an explanation of the task to the class:

> …students seem quite attentive and engaged. He tells the students to get started. As they start, students ask questions, which he fields while students are starting work.
> 9:42 All students appear to be at work. Some are at computers, others at table with pencils and drawings, one is consulting with teacher with a drawing in front of him. Some students are working quietly on their own. Others are chatting. Talk appears to be mostly about the work. There is an atmosphere that is purposeful but relaxed.

Importantly, the purposeful nature of the task suggests clear lesson intentionality and task accountability. In other words, it is clear to students what they are to produce, they are aware of the resources available to them (including their own notes and the teacher's feedback), and they know that they will be called on to demonstrate their knowledge and skill (when they present their final product). Such an open-ended, high-risk task that requires students to rely on their own creativity could produce anxiety and disengagement in students; often students respond to such task demands by trying to mediate the perceived risk. They do this by asking questions that will transform academically rigorous tasks (i.e., those that require higher level cognitive processes) into low level procedural tasks (Doyle, 1983). In the class highlighted here, a student and teacher are observed in a short exchange:

> Student: Do I get marks for putting a label under the drawing? Do I get marks for putting a wee explanation over here?
> Teacher: You get marks for showing understanding of your design. You get marks for designing something that can actually be made.

While the student tries to mediate the risk associated with this task by trying to boil it down to something easier/more low level, the teacher redirects the student to his responsibility for designing (engineering) a table top holder that can actually be used (i.e., will hold up a tablet). This is not to say that students in the class are not receiving the critical feedback they need from the teacher to execute the task. Rather, the teacher deflects low level questions by offering feedback that is responsive to the technical and creative challenges inherent in the engineering task. Thus, the teacher mediates students' perception of risk and encourages their full engagement by creating a 21st century learning environment characterized by clear purpose, accountability, and support.

This example represents, as well, an additional instance apparent in all of the schools in which 21st century skills appeared to flourish. This category is classes in which a project and a related product were the main object of student attention. Student focus in these classes was especially strong and their engagement overall seemed to spill outside of the classroom. In the engineering class, it was the design of a tablet holder. Interestingly, the teacher's role in such classes was deliberately underplayed or *backgrounded*, while the student's role was *foregrounded*. The importance of the teacher's role is underscored in how the goals of the task are explained, in what resources the students have at their disposal during execution of the task (i.e. peers, teacher feedback, materials,

exemplars, etc.), and in how students will be asked to account for their learning once the task is executed. While the teacher orchestrates the classroom activity in his set up and monitoring, students are the primary actors during class: they are doing the work (Doyle, 1983).

Another interesting subset of courses in which 21st century skills receive emphasis are vocational track courses known at BTEC, for the widely-used, commercially-produced curriculum used in these courses. In BTEC courses, assessment is developed and conducted mainly by the teacher. A science teacher in school #1 who teaches both practical/vocational courses as well as academic (GCSE and A level) courses commented as follows on a lengthy project she oversaw with her practical/vocational class:

> "The GCSEs must stick to lower skills, but this group (practical/vocational) allows me to do higher level work. We work with our business partner X industries (a pharmaceutical company). Each group of students must design a project, then all do the research. Then they come together as a group and decide what to include and what to omit and they decide how to present. They have to present to the rest of the class. Sometimes business partners will help out and sit in on presentations and give children feedback. This took about a month. This was the whole thing they did that month. They were year 12 students. Time constraints keep the GCSE students from doing this. There is no freedom to do this kind of thing. The GCSE and A level subjects in general can't allow for the higher level skills; they're very content driven. And the deadlines—the first exam in November. There are no external exams in BTEC. It's all portfolio."

During an administrator focus group discussion at school #1, the principal bluntly stated, "The BTEC classes, which are sometimes seen as weaker, are actually practicing high level skills more than the academic level classes. Academic students are more at the recall, application and analysis levels." The researcher's field notes show that upon hearing this comment from the principal there were "lots of yeses around room."

Observations and conversations with teachers in all four schools suggested that some of the most interesting learning activities, involving 21st century skills, occur on the margins of the academic experience and involve no formal assessment. For example, a history teacher in school #1 explained that his A level class received an invitation from a local political party to participate in a debate on the question as to whether a united Ireland is any closer. He commented, "It didn't fit with the curriculum; therefore it was a voluntary event. The class researched it on their own. They had to produce political and economic evidence to support their argument. The class chose which two students would make the presentation. They did it after school and during lunchtime." In all four schools teachers told similar stories of interesting and challenging learning experiences at the margin of school life with no formal assessment.

A major challenge for all of these schools is finding ways to infuse higher level thinking into classes that are dominated by traditional, external exams. While teachers in KS3 classes, BTEC classes, and KS4 classes without a formal exam were able to bridge the ostensible gap between rigorous content and 21st century skills (or application), KS4 classes continue to be dominated by teaching and learning that promotes recall and procedural application.

2. The pastoral care program tended to foster 21st century skills schoolwide

We turn next to the broad area of pastoral care, which encompasses the schools' efforts to nurture the social, emotional, and spiritual development of its students. According to the Department of Education for Northern Ireland (DENI), pastoral care is also concerned with preparing post primary

school students for the demands and challenges of adult and working life. As such, the Department argues that it is "most effective when it is all-pervasive and fully integrated into the school's daily routines, its curriculum and its extra-curricular activities" (www.deni.gov.uk.). According to policymakers, the quality of pastoral care can influence the whole school ethos and it is particularly powerful when tied directly to the revised curriculum area of Learning for Life and Work. Based upon observations and focus group conversations and document review, this is an area rich in task demands for 21st century skills. We argue that schools can leverage their pastoral care policies to foster 21st century teaching and learning.

Data from school #2 provide a representative window. The pastoral care program of this school was extensive. Each student was potentially supported by an array of individuals, providing a wide range of support services. While the more formal support services were provided by adults, students were deployed on a regular basis for peer support in both academic and social/emotional capacities. The use of students in this way was so extensive that it is fair to consider participation in peer support a regular and expected part of student life and therefore meets this study's standard of looking only at student experiences that are the norm, as opposed to an elective activity in which only a few students take part. Through the school's peer support network, both provider - usually an older student - and beneficiary - usually a younger student - practiced collaboration skills. In addition, the provider practiced skills associated with leadership while the beneficiary gained practice in metacognition (such as academic planning sessions and study skills tutorials). The students worked together to improve academically, to address areas of peer conflict, and to advocate for school-level changes that are important to the students. Each of these broad areas of activity - supported by the school's pastoral care program and the ethos it nurtures - promotes 21st century skill development. More specifically, the tutoring role calls on students to demonstrate important interpersonal and intrapersonal skills. In collaborating with peers, they learn how to communicate effectively, how to take different perspectives, how to negotiate and resolve conflict, and what it means to take on a service orientation. In their work as leaders, they learn to be flexible, adaptable, responsible, and assertive. While not necessarily directly tied to academic subject matter, these skills prepare students for the demands of both the evolving labor market and a democratic society (Anandiadou and Claro, 2009; Murnane and Levy, 1996; Voogt and Roblin, 2012).

One morning in a year 11 registration, the teacher was calling roll and, of about 20 girls on her list, seven were absent because they were working as tutors with year 8 students in a Reading Recovery Program. According to one of the students, two or three girls are recommended by the teacher to participate in the tutoring program. She noted that "you team them in what they're doing in class" and you "do it after school, before school, and during study classes." Teachers also described such peer-to-peer support as typical, given their school's pastoral care approach. This was evident during a staff focus group in which pastoral care became a dominant topic of conversation. In a representative remark, one teacher pointed to a range of activities outside of academics in which students build 21st century skills.

> "If there are difficulties between two students, we take a pastoral approach (as opposed to a disciplinary approach) and we get the students to think about the other pupil, getting them to put themselves in the position of the other student. Thus, they evaluate their own actions to inform further behaviour. Leadership is regularly practiced through a buddy system we have with the sixth years talking to junior girls. We also have school council and head girls. All of the girls apply for head girl. It is very competitive, but also empowering, as they move through the application process. Finally, 12-16 girls make it to the interview process, but many more apply. And they have to get used to the idea of disappointment and not getting chosen. I do a lot of work with girls with a cup of tea and a box of tissues, supporting the disappointed girls. In general, staff talk with each other about particular

students. We're very good about filtering up and filtering down concerns about a girl; girls feel generally comfortable coming to a girl."

This comment attests to a range of activities beyond the classroom through which students practice 21st century skills: conflict mediation, a peer "buddy" system, application for leadership positions, and informal peer interventions. The highly competitive nature of the application process for leadership positions and the pervasive atmosphere of trust in which "girls feel generally comfortable coming to a girl" attest to the widespread participation of students in these and similar activities. These teacher comments were corroborated consistently in a focus group conducted with the school's senior prefects (student leaders).

Another example comes from school #4, in which all year 8 students participated in a required afterschool program (grant funded) that provided academic support and enrichment activities intended to expose students to community organizations and cultivate personal aspiration. Because the program was in its first year, there is no longitudinal data showing ongoing participation in community organizations, however the principal commented that her perception was that students in the year 8 cohort were showing much greater interest for participation in organizations meeting after school and on the weekends. This is particularly important for school #4 because the neighborhoods serving it are noted for active paramilitary groups that prey on pre-teens to fill their ranks.

In addition to various student support services, each school maintained a focus on one or more ongoing, whole-school projects which engaged students at all levels from one year to the next. For example, school #1 has a very successful international travel program that engages many students indirectly and some students quite intensively. Going back several years, there are annual service trips to Kenya, Belarus, and elsewhere. The entire school is involved in fundraising and the entire school also benefits from face-to-face presentations and virtual presentations (e.g., web based journal with daily updates) by those students who are selected to go. During the past year, more than 100 students submitted an application to participate in the Kenya trip. The application process required higher-level thinking and, for finalists, all of the interpersonal skills associated with an interview. Other large group activities are organized by the school chaplain. Each year there are retreats for all students in years 8, 10, 13 and 14. The retreats vary in purpose, but all build metacognitive skills through activities requiring personal reflection.

A further example comes from school #3, where there is an annual theatrical production which regularly engages at least half of the student population in some way. Sponsored by the school's Gifted and Talented program, but not limited to students in the program, the production draws upon an integration theme each year. One such production had just gone up several weeks before the researcher's visit. It was called "Brighter Together." The teachers who were in charge of it were art teachers. One day, the researcher was visiting their class and they took time to explain the production and showed the rough cut of a video about the production that was not yet complete. Field notes on the viewing state, "It is visually impressive and clearly took a ton of work and engaged students in some very imaginative thinking and collaboration. The theme was integration and multiculturalism and it used four dance forms - Celtic, tribal, street, and Oriental - as the anchor for the production. Great art work, great choreography!"

In the ways described above, each of the four schools fosters 21st century skills through innovative pastoral care programs and regular whole school initiatives that touch the lives of all or nearly all of the students in challenging ways. While there is no formal assessment of higher level skills for any of these activities, there is substantial evidence from observations and interviews with students and teachers that task demands for 21st century skills are a signature element of these sorts of activities.

The pastoral care policies created an ethos that touched all aspects of school and fostered a sense of shared vision and purpose while also instilling in teachers and students a sense of collective responsibility for moving the school forward.

3. <u>Whole-school traits identified in the literature review significantly advanced 21st century skills instruction</u>

A wide body of existing research strongly indicates a set of whole-school traits that are regularly associated with schools that perform well on external exams. That is to say, such schools are "high performing" by conventional measures. These are traits found within the adult culture of a school that directly or indirectly influence the quality of learning of students. The traits we looked for included the following: shared vision and mission, high expectations for all students, shared responsibility for student learning, collaborative examination of instructional/pedagogical practice including thoughtful use of data, and shared instructional norms. In this study we looked first to see if these traits were present in each school and then to what degree, if any, they fostered 21st century skills. An analysis of field notes revealed the very strong presence of most of these traits and in many instances they were directed toward 21st century skills. This pattern held strongly for schools #1 through #3. They were significantly less in evidence in school #4, though interviews with staff suggested an upward trend. Of greater significance than the mere presence of these traits was the regular deployment of these traits in ways that advanced 21st century skills. This pattern is especially important in answering *why* these schools show promise with 21st century learning. While the findings regarding assessment and pastoral care go a long way in explaining *when* and *how*, the patterns of activity surrounding whole school traits say much about *why*. Furthermore it is with this finding that differences among the schools become particularly evident. While all of the first three schools are high performing on tests and show promise with 21st century skills, the varied pathway that each school has blazed to achieve excellence is unique. In what follows, we re-examine the story of each school with respect to selected whole school traits highlighting interesting differences among them.

School #1

Situated within a Catholic community of several local parishes and the broader community of Northern Irish Catholicism, this school exhibits a faith-based vision and mission at all levels. For example, in classes, students engage in choral prayer and the school is studded with religious iconography. A statue of an important saint adorns the front lobby, crosses are visible in classrooms. Bulletin boards display news about mission work in Africa. Several of the year groups attend religious themed retreats each year led by the school's chaplain who is on site two days a week to lead mass, counsel students and plan special events. Beyond the specifically religious elements of the Catholic community there are embedded cultural components that reinforce the shared culture of students and staff. In sport, for example, students engage in Gaelic football which is closely associated with Irish (and Catholic) culture. On a special day each year, for example, all year 8 classes are suspended and the school holds a Gaelic football tournament for the boys and a netball tournament for the girls. One school administrator commented that "to understand Irish culture in the North, you need to understand the GAA." GAA stands for Gaelic Athletic Association, which, in many parishes, maintains sports clubs that sponsor gaelic football and serve as hubs for Irish Catholic culture.

While religion and politics provide a shared vision for the school community, this vision does not, by itself, ensure a focus on 21st century skills. What it does is to lay a strong foundation on which stand *other* whole school traits that *do* focus on 21st century skills. These traits emanate from the school

leadership's focus on improvement. The principal at the time of our visit had been at the school for 12 years. In an interview, he said:

> "We hired great people over the years. I wanted people who work hard and get along with kids and staff and have a sense of humour. We got to work on curriculum, created pathways for all students - not just academic students - so that other students could feel they have a clear plan and a future. This improved school climate. We worked with curriculum to make it so students in all pathways could stay on for two years post GCSE if they wanted. This is very unusual. We used statistics to mark growth and to diagnose problems. We sent teams to visit schools that were doing interesting work."

This focus on improvement has been sustained in the ensuing years. A vice principal commented during an administrative focus group session, "You have to keep re-inventing the wheel for management initiatives. QUILT (Quality in Learning and Teaching) is our latest. Claire (another vice principal) invented it and Liam (the principal) came up with the name, and there are now 12 members taken from the staff. Our approach generally now with staff is to issue an invitation to the staff in general and then volunteers step forward. If they don't attend, then they just come off the mailing list." Claire said the goal of QUILT was to look at certain areas of program such as summer examinations.

> "All department heads submit summer exams to the QUILT team. We look at them particularly as they pertain to literacy and extended writing. We want to see 'describe', 'explain', 'interpret', 'analyze'. That should all be brought into the summer exams. And we discovered several issues: one department had only closed questions, one answer. Another problem was lack of vertical alignment within subjects. These issues were brought back to the department head and the department had to fix the issues. The committee works under the aegis of vice principals who have authority to go to a department head and bring these conversations to the department head and insist on change."

With a shared vision rooted in Catholic/Irish culture and a sustained focus on improvement through program development for both academic and vocational pathways, school #1 has built a robust and sustainable school culture fostering 21st century skills instruction. In particular, the development of its BTEC (vocational program) coupled with the school's focus on 21st century learning, coupled with the assessment freedom of the BTEC system, has fostered the flourishing of higher level learning in an area (vocational education) which has often been dismissed as intellectually dull. In school #1, it is anything but dull.

School #2

Like school #1, school #2 displayed a strong identity rooted in religious faith, but where that faith overlapped strongly with nationalistic pride and sports in school #1, school #2's faith connects more to community life and family outreach accessed through local parishes. Also, while both schools actively pursue success for all students, their approaches differ. School #1 has made a concerted effort to build a high quality vocational program emphasizing 21st century skills along with an effort to build its A level program. School #2 has chosen to focus on the social-emotional needs of students and the systematic identification of individual students for thoughtful intervention who appear to be facing academic or personal difficulty. While both schools have worked tirelessly on both program improvement and individual student intervention in the pursuit of 21st century learning, the difference is one of emphasis.

Several observations from school #2 illustrate this pattern of systematic efforts on behalf of individual growth. The first is from a focus group interview of staff members who play a significant role in the school's pastoral care. One teacher referred to a survey of the students and how the results have informed school practice. "We feel we have a good ethos, but we were concerned a couple of years ago if the girls felt the same. So we did a survey of one-third of the girls and we got back data finding that they do share our view, but we learned they sometimes lack self-confidence. On reflection, going through that process, we now try to empower girls with self-confidence, but it's a work in progress." Another example comes from the meeting of a staff committee convened to review the school's homework policy. One teacher commented, "At the moment, I'm doing an audit of the homework. I've collected the homework diaries from all the year 8s and 9s to see what they're getting." (This teacher is the KS3 coordinator for the school). During the same meeting, another teacher explained to the researcher, "We have a system… called tracking in which we can enter six assessments through the year in different classes so we can track progress across all subjects. It's a traffic system, green light is above target, red light below target. We correlate this with their cognitive tests, which can help teachers in placing students and when teachers are setting a target because they can see what the student's ability is." Another example comes from a field note documenting a casual conversation with the coordinator of KS5. She and the researcher were talking about students who do not pass their A level exams and what happens to them. From the conversation, it was clear that the school rallies around these girls even though, officially, there is no requirement by the authorities that the school should do anything at all for them. During this conversation, she said that there were currently 21 "year 15s", which are girls who did not pass their A levels and are trying again. She said there are more girls who would like to be year 15, but they don't have room in their classes. What the school does for these girls is to pay the fee so the students can sit for the exam at the end of the term and they let them sit in on classes unofficially during the term. The final example, from another staff focus group meeting, shows how the staff jointly value an ethos of caring even in matters of student discipline. One senior teacher commented, "Today we had three suspensions, which is unheard of. But all of them felt good as they left. As they left I tried to say one thing positive. I told mommy this girl has made mistakes today, but she fessed up and wants to make amends." Another teacher added, "All of these kids are used to getting shouted at, so when we don't, it breaks the cycle." Yet another teacher commented, "We try to pre-empt what might happen and we get on it straight away. What's going on here, what happened over the weekend. Let's get the parents involved." In all of these examples, the teaching staff focuses on students (as opposed to programs), sometimes in a systematic way - through surveys and an extra chance for failed A level students - or in an individualistic way - through sensitivity in disciplinary cases. In addition to the teaching staff's efforts, the school has students in peer mentor and peer tutoring initiatives (as described above) to extend its efforts to intervene on behalf of individual students.

Both school #1 and school #2 evidence the traits of high performing schools but the particularities of vision and high expectation take a different form in each school. In one, the focus has been on program development and in the other, identification of and targeted intervention for students in need. In both schools, the emphasis on these activities tends to foster higher level task demand for students.

School #3

Before examining the particularities of school #3, we want to point out first that the consistent attention to 21st century skills across all aspects of school life in school #3 was noticeably greater than at any of the other three schools. Three factors appear to account for this phenomenon. The first is the school's effort to place integration at the center of its community life. Second is the school's Gifted and Talented program which is deployed in a way that influences the experience of

all students regardless of their formal participation in the program. The third factor is the principal's approach to leadership in which he positions himself as the lead teacher of the student body as a whole and as an instructional coach to the teaching staff.

As an integrated school, this school has enrollment targets of 40% Protestant, 40% Catholic and 20% other. Integration, however, extends far beyond the mere identification of students for enrollment purposes. The staff makes a concerted effort to use the diversity of the student population and the idea of school integration to advance mutual understanding and, along the way, a host of 21st century skills. For example, the researcher's visit coincided with the United Kingdom's Remembrance Day, which uses the anniversary of the World War I Armistice, November 11, to commemorate soldiers who have died in any and all wars. In Northern Ireland, this day is highly revered within the Protestant community and involves the whole community in public ceremonies in the town square, churches and schools. Within the Catholic community, however, the day is problematic since, for many, the British Army has been seen as the enemy through much of Irish history, including the recent Troubles, and, for some, the ongoing conflict in Northern Ireland. Despite all this potential for conflict, in the week before Remembrance Day, the principal made it the focus of Junior and Senior Assemblies. He opened the assembly by saying, "We know that in Northern Ireland, Remembrance is seen as something that is celebrated by one community and not the other. That's not how we do it at [name of school]. You will see I am wearing a Poppy. You are welcome to wear one too or you can choose not to. It is up to you. I don't tell the staff to wear one. If you choose to wear one, you can get one at the Reception." The principal continued with a moving speech and slide show about the tragedy of war and the power of positive peace-building. He concluded: "Creating peace is full of adventure, and we stand for that at this school. It needs bravery, imagination, determination and resourcefulness. Are you strong enough to stand up and be different? Are you brave enough to stand for non-violence? We believe there is always a way to stand and face each other and avoid conflict. Making peace is something everyone can do. It just takes the right attitude.… Our theme this year is to be a trailblazer, to be different." In this excerpt, we see the principal turning a potentially divisive occasion into a powerful opportunity to cultivate intellectual openness among all attendees. Immediately after the assembly, students met in their registration classes for a lesson from the Personal Development Curriculum. In the year 9 registration class attended by the researcher, the teacher led a lesson in which students related their personal connections to war by discussing the involvement of family members.

The care and thoughtfulness with which Remembrance Day was treated is not an isolated event in the school's life. Integration, and the opportunities/challenges it presents are regularly exploited for their instructional potential, even to the extent that the school has an integration coordinator. In an interview, she said, "Assemblies have remained a key feature of my work but it has expanded. Prior to my doing this there was no structure to the assemblies… We now have key stage assemblies Tuesday and Thursday, and on Monday and Wednesday we have year assemblies. Every week has a theme. Around May, I send around to staff a request for ideas for themes and I put together the calendar for the coming year."

The second distinctive feature of this school is its Gifted and Talented program. Originally conceived by the principal as a lure for high achieving students who tended to apply to grammar schools in the area, it has been designed in a way that benefits all students, exposing them to 21st century learning. Participation in the program is by application and students may apply each year by subject. This approach opens access considerably across the student body. Additionally, students in the program remain in regular classes and are tasked with special assignments and activities. The principal and several others at the school explained that staff development often includes gifted and talented teaching strategies which teachers regularly apply beyond the gifted and talented cohort, thus

bringing opportunities for deeper learning to many, many students. As the Gifted and Talented Coordinator said during an interview, "A rising tide lifts all boats".

The third distinctive feature of school #3 is the principal's approach to leadership. He regularly places himself before the entire student body, through weekly assemblies, as a kind of lead teacher. As with the Remembrance Day assembly described above, he often brings lessons focused on deeper learning to the whole school. In addition, he serves as an instructional coach to the entire staff. He designs and leads many of the professional development workshops, focusing on such topics as teaching for higher level thinking and differentiation of instruction.

Implications and Recommendations

Implications and Recommendations for Policy

Before proceeding with the implications, it should be noted that this study is not a whole school inspection, nor does it provide a comprehensive picture of each school, nor is it an evaluation of the school as a whole. It is focused narrowly on the question of 21st skills instruction. That said, the authors would like to note informally that the level of pastoral care and the focus on academic achievement (as defined by exam marks) was striking in all four schools. These are clearly schools that expect much of their students within the accepted framework of achievement and provide outstanding support for all the students under their care, not only in the interest of academic achievement but out of a concern for the well-being of each pupil and the larger needs of a post-conflict society. They are all quite remarkable schools in all of these regards.

With that said, there is a strong indication, based on these four case studies and the existing body of relevant literature, that external exams as currently administered by the Department of Education for Northern Ireland (DENI) have a deadening influence on 21st century learning. While the evidence of these cases suggests policy makers ought to consider alternatives to traditional exams, in the meantime, these schools must cope. The use of external exams is particularly intensive in core academic subjects, therefore, given the extent that students are enrolled in such courses, they risk reducing their exposure to 21st century learning. If the patterns apparent in these cases hold generally across secondary schools in Northern Ireland, then DENI should immediately begin an exploration of alternative assessment strategies in core academic subjects. A promising alternative is suggested by this research, namely extended projects with a clearly articulated product, portfolios and some other locally based assessments. The use of these assessment instruments was strongly associated in these case studies with instruction in 21st century skills.

In addition, DENI should prioritize cross-community integration as a means to fostering 21st century skills. The benefits catalyzed by integration for the integrated school in this study were unmatched in the other schools as a lever for 21st century learning. DENI's Shared Education Program (SEP) was created under the Northern Ireland Assembly's Delivering Social Change framework, which seeks to tackle poverty and social inclusion, to help meet the Programme for Government commitments on Shared Education (Office of the First Minister and Deputy First Minister, 2015). The SEP has involved over 100 schools at Post-Primary and Primary level in cross-sectoral collaborations concentrating on substantive, curriculum based activities. SEP offered programming and encouragement for controlled and maintained sector schools to share resources. This could take the form of professional development or busing of students for selected courses not offered in their home school. In schools #1 and #2, frequent mention of SEP was made during teacher, administrator and student focus groups in association with 21st century learning. While SEP had a noticeable impact on schools #1 and #2, integration had a transformative impact on school #3. This pattern suggests that

substantial cross-community contact, developed in meaningful ways, is a powerful lever not only for peace-building in the province, but high level learning for the province's youth. Greater policy level emphasis should be placed on such efforts. A new DENI program, the Shared Education Signature Program (SESP), will begin in 2015 and make funding available over the next four years to schools which meet the SESP criteria (Northern Ireland Executive, 2015).

Implications and Recommendations for School Level Practice

School leaders control levers that powerfully influence classroom level learning. Results from this study suggest that the whole school traits associated with high performance (as measured by conventional means) can be directed toward 21st century learning, and when they are, the impact on classroom instruction and school ethos is powerful. It can even serve as a strong countervailing force against the negative force of external exams on quality of instruction. It is up to school leadership teams to choose whether their focus will be entirely on test results (for which there are great pressures and strong incentives emanating from education policy) or whether 21st century skills will also be valued and deliberately pursued, even though there is little to no policy pressure or incentive. These four cases should give school leaders confidence that if they focus on 21st century learning, while paying strategic attention to exam performance, they will be rewarded not only with deeper learning but strong test results as well. As the principal of one school pointed out, "Test prep is like driving by looking at the steering wheel. The fact is, we are a child-centered school, not curriculum-centered or exam-centered, we are deliberately child-centered. Happy children learn better. The more you work on emotional intelligence and learning skills the more you prepare them for exams." The principal's words are very clearly borne out by the evidence of the four schools.

In addition, school level practitioners should study the ways in which integrated schooling can leverage cross-community contact for the teaching of 21st century skills. Many schools in Northern Ireland, while not integrated, nonetheless participate in cross-community programs such as Shared Education, which put students and staff into regular contact with counterparts across the sectarian divide. Such opportunities should be more systematically mined for their 21st century learning potential.

Implications and Recommendations for Classroom Level Practice

It is possible for teachers, when supported by their school leaders, to focus on 21st century learning, even in courses dominated by external exam-based assessment. Teachers in schools that lack supportive leadership should band together with like-minded colleagues to foster deeper level learning and to advocate for more support from the school leadership team.

Implications and Recommendations for Colleges of Education

If 21st century skills are to be advanced as a major focus of primary and secondary education, then colleges of education should resist and counter those policy initiatives that advance traditional testing as a dominant force in state education. At the same time, colleges of education should engage with policy makers in order to educate policy makers based on their expertise as researchers and leaders of teaching practice. Also, colleges of education should infuse their teacher training and leadership training with the theoretical foundation and practical skills associated with 21st century learning. There should be an emphasis on 21st century skills as integral components of school subjects as opposed to a separate subject. Also, colleges of education must prepare teacher initiates for the culture of many conventional schools that do not actively promote 21st century skills and the external assessment practices that discourage instruction in 21st century skills. This preparation should include training in advocacy for the infusion of 21st century skills into instruction.

Implications for Academics, Educationists, and Other Thought Leaders

The variation in assessment instruments for GCSE and A level courses from one subject to another raises the questions: why is one form of assessment chosen over another? and why do assessment instruments vary from subject to subject? Currently, the Mathematics GCSE in Northern Ireland is 100% on-demand examination. The History GCSE is 75% on-demand examination. For Art and Design, the GCSE is 100% portfolio and controlled assessment, both of which are externally moderated. (This and further information available at www.ccea.org.uk). Quite likely, these choices are based on the ways in which the various disciplines are conceptualized and the types of skills required for proficiency within a given conceptualization. But why are these particular conceptualizations adopted? Why is Art and Design focused mainly on the creation of original work and History mainly upon the recollection of historical facts and theories, or Maths on procedural skills and analysis? Why is Art not focused on the recollection of various artists and artistic epochs? Why is History not focused on the creation of original historical investigations and hermeneutics? Why is Maths not focused on applications of mathematical principles to real world contexts? To the extent that academics play a role in the development of key stage 4 and 5 curricula and assessment, they need to advocate learning that brings together domain specific knowledge ("the basics") and 21st century skills. How academics, educationists and other thought leaders choose to answer questions such as those above and thereby conceptualize various school subjects carries enormous implications for the intellectual experience to be had by students.

Acknowledgments

This case study grew out of an earlier international study entitled, *Redefining High Performance*, James Nehring, University of Massachusetts Lowell; Stacy Szczesiul, University of Massachusetts Lowell; Martin Hagan, St. Mary's University College, Belfast; Frank Hennessy, St. Mary's University College, Belfast; Rivka Eisikovits, University of Haifa; Lily Orland-Barak, University of Haifa; Merav Ben-Nun, University of Haifa.

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