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“Northern Ireland Case Study #2”

James Nehring

University of Massachusetts, Lowell

Fulbright Scholar

Institute for the Study of Conflict Transformation and Social Justice,

Queen’s University Belfast, Belfast BT7 1NN

j.nehring@gub.ac.uk / james_nehring@uml.edu



Institute for the Study of Conflict Transformation and Social Justice

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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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Contact: james_nehring@uml.edu

Introduction

This paper reports findings from a case study of a secondary school in Northern Ireland. The case study reported here is part of a larger study of secondary schools across Northern Ireland which is, in turn, part of a still larger international study of secondary schools in three nations: The United States, the United Kingdom, and Israel. The international study has been led by James Nehring and Stacy Szczesiul of the University of Massachusetts Lowell; Martin Hagan and Frank Hennessy of St. Mary's University College, Belfast; and Rivka Eisikovits, Lily Orland-Barak and Merav Ben-Nun of the University of Haifa. This case study was prepared by James Nehring.

The next section of this paper ("Background of the Current Study") provides an explanation of the larger studies within which this case study is nested. The section after that ("Conceptual Framework") situates this case study within relevant existing literature. The next section ("Policy Context") provides an overview of the Northern Ireland educational policy surrounding the case study. The section following that ("Research Questions and Methodology") identifies the questions which this case study sought to answer and the methods used by the researchers. The next section ("Case Study Site") describes the school where this case study took place. The final two sections describe results and implications under headings using those terms.

Background of the Current Study

National and provincial policies governing primary and secondary education within OECD nations 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 twenty-first 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. 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. 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.

Since 2010, a team of seven academics from three universities in Israel, the United States, and the United Kingdom (Northern Ireland) have been exploring the nature of the twin policy demands for test performance and 21st century knowledge. We have focused our exploration particularly on the lives of marginalized children and youth because each of our nations has a

history of deep educational inequality rooted in differences related to race, class, sectarianism, language, nationality, and/or immigration. We believe that the future well-being of our nations' peoples depends heavily upon whether we are able to close achievement gaps and ensure that all students leave school equipped with 21st century knowledge.

Our team has designed a multi-year project that is identifying and studying outlier schools, serving marginalized children and youth, that show promise *in meeting both policy demands simultaneously*. Findings from the study will inform policy and practice within and across political jurisdictions. Outcomes of the project will include several scholarly articles focused on policy and practice within each jurisdiction, a scholarly book showcasing findings from the study across all three jurisdictions, several policy papers, and practitioner institutes that we hope will cement a long term teaching-research relationship among our respective institutions.

From August 2013 to January 2014, James Nehring is in residence in Northern Ireland to conduct school case studies and lay the foundation for a prototype practitioner institute for teachers from the Controlled (Protestant), Maintained (Catholic), and integrated sectors.

Conceptual Framework

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 constitute 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.

Deeper Learning and the Emergence of the 21st Century Skills Construct

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. Costa and Cogen-Drew compared and synthesized the substance of these schema (Costa & Cogen-Drew). The synthesis of “21st century skills” identified in their report includes the following:

1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
2. Work independently and collaboratively to solve problems and accomplish goals.

3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.
6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

The rationales driving the major “21st century skill” initiatives are quite similar and are summarized well in the (early) Department of Labor (1991) report.

Two conditions that arose in the last quarter of the 20th Century have changed the terms of our young people’s entry into the world of work: the globalization of commerce and industry and the explosive growth of technology on the job. These developments have barely been reflected in how we prepare young people for work or in how many of our workplaces are organized. Schools need to do a better job and so do employers. Students and workers must work smarter. Unless they do, neither our schools, our students, nor our businesses can prosper. (p. viii)

Though labor economics has been the chief driver of policy activity surrounding 21st century skills, various education stakeholders, including economists, 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 “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).

For the purpose of this study, various definitions of 21st century skills were reviewed and synthesized into a rubric (Brookhart, 2010; Doyle, **YEAR**; Hattie, 2009; Pellegrino & Hilton, 2012). The rubric, which follows as Figure 1, was used as an analytical tool for the current case study.

Figure 1: 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.

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 reorganizing 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 the information in a graph in narrative form).

Interpersonal Domain

Interpersonal Standard 1: Teamwork/Collaboration*

The task asks students to work with others by effectively communicating, 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 Standard1: 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.

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

“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 is paid lip service. The problem is particularly acute in schools serving low Socio-economic status (SES) populations in many OECD nations which are experiencing intensifying 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 outcomes.

School level Traits associated with high performance

External 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. Table 1 below identifies studies that support these findings showing traits associated with high performance as well as traits associated with low to moderate performance. 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.

Table 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.

The Northern Ireland context

(This section contributed by Martin Hagan, St. Mary's University College Belfast)

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 of Northern Ireland (DENI). In the primary school sector the main measure of educational achievement are 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 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 are 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 cannot 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 is 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 criteria 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 would be 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 percent students eligible for free school meals, showed an average of 38.4 percent of all students leaving school with at least 5 GCSEs at grade A*-C including English and Maths in the year 2011-2012. By comparison, non-grammar schools with 50 percent or more students eligible for free schools meals showed an average of 18 percent (DENI 2013). In addition to this, 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.

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 Questions and Methodology

This study sought answers to the following questions:

1. When, how, and why do *schools* that serve a large percentage of low income students and that significantly outperform their demographic peers on state mandated, standardized achievement tests, *teach* 21st century skills?
2. When, how, and why do *students* in schools that serve primarily low income families and that significantly outperform their demographic peers on state mandated, standardized achievement tests, *practice* 21st century skills?

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 (Department

of Education of Northern Ireland, 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. 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. Six 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 six 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.

The lead researcher spent approximately 8 days at each of the three schools chosen. While there, he engaged in the following activities: notetaking during extensive classroom

observations; transcription of focus groups including teachers, administrators, and students; notetaking during observation of staff meetings, reflective journaling while serving as a guest teacher; and collection of school publications available on the website or from the Main Office. All data were coded using a rubric for skills designed by the researchers, based upon relevant literature (Brookhart, 2010; Doyle, 1983; Hattie, 2009; Partnership for 21st Century Skills; Pellegrino & Hilton, 2012). The rubric included ten skills spread across three domains. Seven of the skills were considered “21st century”. The full list of skills, categorized into three domains, appears below. Those skills considered “21st century” are marked with an asterisk.

- Cognitive domain: recall, application, analysis, evaluation*, creative thinking*, information literacy*.
- Interpersonal domain: teamwork/collaboration*, leadership*
- Intrapersonal domain: intellectual openness*, metacognition*

In addition, data were coded according to when and how 21st century skills were taught by the school and practiced by students. Also, data were coded inductively for reasons why 21st century skills were taught by the school and practiced by students. From the coded data, themes were identified that were responsive to the two research questions: when, how, and why does each school teach 21st century skills; when, how, and why do students in each school practice 21st century skills.

Data Sources

The following data sources were used in this study:

- GCSE exam results, demographic data, and school inspection reports from the Department of Education of 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

Case Study Site

The 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 stands 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.

Results

Before proceeding with the results, it should be noted that this study is not a whole school inspection, nor does it provide a comprehensive picture of the 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 author would like to note, informally, that the level of pastoral care and the focus on academic achievement (as defined by exam marks) was striking. This is clearly a school that expects much of its students within the accepted framework of achievement and provides outstanding support for all the students under its care, not only in the interest of academic achievement but out of a concern for the well-being of each pupil. It is quite a remarkable school in both of these regards.

Following are results based on the particular questions pursued for this study, representing a much narrower field of focus than the whole school view described just above. Analysis revealed five situations that tend to result in students practicing and/or the school teaching 21st century skills. The four situations are as follows:

1. When students are at work on an extended project that includes a culminating product.
2. In courses that are driven *mainly* by local (“controlled”) assessment and portfolios, and only *partially* or not at all by a traditional (on-demand) external exam (GCSE or A Level). Such courses include Key Stage 3 courses, vocational/practical courses, as well as GCSE and A Level courses in which assessment is mainly local or portfolio-based.
3. When older students participate in the provision of pastoral care for younger students.
4. When school level traits associated with high performance (e.g. shared vision and mission, shared responsibility, collective examination of practice, etc.) are directed toward higher level instruction.

In addition, two related patterns were observed, as follows:

1. Demand for 21st century skills noticeably deepened student engagement in learning
2. Courses that were assessed exclusively by external exam were described by teachers as difficult and challenging while courses that were assessed mostly by portfolio or local means were described by teachers as easier and less challenging.
3. Students sometimes described courses that were assessed mostly by portfolio or local means as difficult and challenging.

Next, we describe the results in detail.

1. When students are at work on an extended project that includes a culminating product.

For example, in a year 14 (A-level) class, each student was designing a rock and roll magazine including cover and contents. On the day I visited, the class was getting instruction in some technical aspects of cover design. Instruction was mostly procedural in nature, but it was in service of a project for which students had to make artistic choices grounded in research of artistic conventions. The procedural learning was therefore not for its own sake but instrumental for work that demanded 21st century skills. Following is an excerpt from my notes for this class.

9:15 Students are seated at computers at tables around the room. Teacher says, Open up photoshop and magazine so we can continue making your rock music magazine.

Teacher says working on cover today. She shows the technical procedures for working with an image in photoshop and how to work with a title.

9:25 Teacher finishes explanation (straight presentation no Q and A), tells students to get started. Says "Are you happy enough?" One girl says "No." T. joins her and gives her some help.

9:27 There are 20 girls in class. All appear to be engaged in the assigned task. Some are talking with other students and all the talk appears to be about the work. Teacher is circulating, providing help. The help is mostly in the form of clarifying/explaining how to use photo shop.

9:30 Teacher says she's going to explain how to work with color "for the girls who were absent last week." She explains you do X to make the image lay over the text "because remember that was a convention we noticed last week when we were doing our research."

9:32 Presentation ends. Girls work on their own.

9:36 Teacher calls for class's attention to explain how to blend background of image with background of text. This takes a couple minutes. Then teacher continues to circulate, providing help.

9:38 Addressing class: What usually is the cover image associated with?"

Students chorus: Main story.

Teacher directs students to do some research to study conventions governing the text to put on the cover that announces the main story. She suggests they go to a file that each student previously created to review how various magazines have handled this.

9:55 Teacher has been alternating explanations of various technical details associated with cover and time for students to apply the various steps as she teaches them.

I look at what girls near me have created. Some magazine titles: “Kadence” “Shred” “Scream” “Trash” “Bang”. Each one has an attractively composed cover with attention to font, sizing, balance of image and text, thematic unity (font, colors, sizing, etc)

The tone of the class is noteworthy. Both teacher and students appeared relaxed but focused and purposeful. Students appeared fully engaged in the technical instruction because it provided the means by which they could realize their artistic choices and make progress toward the completion of their project. The teacher spent little energy trying to win student attention. All of her energy was directed toward improved technical understanding and coaching students in the development of their magazines. The students had a goal which was meaningful and they saw the teacher as the key resource for achieving their goal.

Two more examples of a complex project in association with 21st century skills come from drama classes for year 11 and year 14 students respectively. In the first (year 11) drama class, approximately 20 students were divided into three groups. Each group was at work on the production of a play that was collaboratively written by members of the group. The girls were working on blocking and dialogue using their own scripts, all of which require creative thinking. They were also self-assessing, which is a form of metacognition. They were also working together to create the play, which constitutes collaboration, and they were, at times, doing the work on their own without the teacher’s direct attention, which requires leadership. Several A level drama students were in the room assisting the teacher by serving as coaches to the acting groups. Following are notes from a representative 10 minutes of the class:

[about 9:25AM] They start scene 3. Girls practice dialogue. Girls explain transition to next scene to teacher. Teacher and students discuss how to block scene. They trade

ideas back and forth. Meanwhile the other group continues to practice with a 6 year director at the other end of the room. The third group remains outside the classroom (presumably filming).

T and students work together to figure out how to block and act the scene. They practice the scene and transition to next scene with music. T turns her attention to the other group who need some advice on costuming.

9:38 T returns her attention to group she's directing. They're discussing the next scene. T. praises the girls for their script. T. coaches one girl through how to pass out from pill-taking.

Girls act final scene. T. praises them "Brilliant! Really brilliant what you've done here. Let's do the whole thing again all together without stopping."

They do the whole scene.

T. What's the purpose of this performance?

S. It can get out of control [dieting>>anorexia]

T. Everybody is looking at the magazines. Maybe we should look at some of the statistics about eating disorders. What do the magazines show?

S. They show the before and after.

T. Who's that girl who was thin and now she's really really thin. What if you show that with some statistics. You wanna really shock them at the end? Or is this enough? Do you want to put some statistics up and some pictures?

S. Girls nod. A couple comments I can't hear.

T. This is brilliant. Do you want to look for pictures or do you want to run it again?

S. Run it again.

T. Leaves to join the other group in the room. First group is discussing their play. Other group starts to run through their play. First group pauses to watch. They run the play.

T. offers suggestions and direction as they go. 6 year girls participated in the directing.

Play is about bullying. A girl is portrayed as a bully at school. Then we see scenes at

home where she is bullied by her mother (“You think you’re better than me?”) T

suggests they shout more. 6 year director takes over and continues with that group. T

is doing something on her laptop by the engineering station.

In addition to the 21st century skills that were abundantly present, this class exhibited a relationship between teacher and students that was similar to the media class. The students were at work on a project which had meaning for them. The teacher was viewed by them as a key resource for completing their project well. They wanted what the teacher had to offer. The tone of the class was relaxed but purposeful and productive.

On a different day, I observed a year 14 drama class with the same teacher. Again, girls were at work rehearsing productions they had created while the teacher served as coach. In this class one group rehearsed at a time while the other groups served as audience. All of the skills apparent in the year 11 class were present in this class, too, only at a somewhat more sophisticated level.

10:35 I arrive 10 minutes into the period. Five girls start a rehearsal (which I interrupted and they had to restart). Play is about a culturally mainstream girl and a Muslim girl.

The mainstream girl gets radicalized by the Muslim girl and becomes a suicide bomber.

After they play several scenes, the teacher asks them a series of questions. How does

this girl get from being mainstream to so suddenly becoming extreme? She says, As someone in the audience, it's not clear to me how that happens? Discussion with girls. T.: Is the [mainstream] girl a strong character? She includes in this discussion the girls in the class who are seated as an audience. What do they think. More discussion. Mostly between teacher and actors. The six of them are intently discussing how to move forward. T. concludes by saying "strong, hard-hitting, topical drama but it needs to be researched more."

10:55 next group of girls is on stage and starts their performance. This play is set in the American South in 1952. A group of six married women have a poker club. Each one has some story that has to do with her husband that the others don't know. Excellent dialogue, really pulls the audience in. Great southern accents. T and I (at T's invitation) engage with girls afterwards. We have thoughtful discussion. I'm wondering why they're playing poker and drinking martinis when women of the time and class would more likely be playing bridge and drinking tea and maybe slipping in a mint julep. They explain that this is intentional. I say, as an audience member, I need to be reassured that it's intentional and not just a flaw in the script.

11:05 Next group does their scene. T. stops it and says, you've got a lot there, but you need to be working in your group more. She offers some pretty blunt commentary, mentioning due dates and how they need to get their play together, work harder, etc.

11:10 T. gets ready to dismiss class and then realizes the class still has 15 minutes. She says, "This is brilliant, we can go to the notes." She puts "Coursework Questions" on screen and says students should do this as their homework.

1. How is the initial material being researched and developed at significant stages during the process of drama?
2. How effectively are you personally exploring and developing your role/s?
3. How did you and your group explore the possibilities of form, structure, and performance style?
4. Etc.

Again, creative thinking and collaboration were earnestly demanded by the work this teacher set for her class. In addition, metacognition was required by the critical questions raised by audience, the teacher (plus me), and the actors themselves. Again, the students were at work on a project that had considerable meaning for them and they viewed the teacher as a key resource whose expertise they needed in order to carry their project to completion.

A fourth example of the power of a thoughtfully planned project comes from a year 13 ICT class. In this class, the teacher provided students with technical instruction for database management. The same relaxed but purposeful tone pervaded this class as the previous examples of project driven instruction.

Okay, so we're going to tackle this database today.

Okay so I'm going to do this a couple of times. You're going to get a table with 60 properties in it. You're going to create queries, and you're going to create reports. A report for [town A], a report for [town B], and Report for [town C] and a report for all three. You can play with the energy rating, the price and so on. I'm going to show you how to do a query.

Students are seated at four rows of tables oriented sideways, each with a desktop computer. There are 13 students in class.

T calls students to roll their chairs toward front of room so they can see screen. She demos how to make a query. She walks students through an example.

[Note: students have been given a larger, complex project first. Now they are being taught a procedure that is needed to do the larger project. They have a good, authentic reason to pay attention and learn the procedure. The procedure involves a lot of keying protocols to carry out various operations.

T asks questions of the girls as she goes through the presentation.

Example T questions:

What is the relational operator here?

Is this information relevant here?

EPC. What are we doing here?

And then a star. Why a star?

Right, guide price. What was this one? What kind of a query was this? What was special about this query? What did you have to have in order for it to work?

So you're going to do your queries by 10 past ten. You can do your introduction page or your queries first, it doesn't matter.

t. sends students back to their individual computers .

While the instruction in this excerpt was purely procedural, the project to which students were applying it involved conceptual understanding and creative thinking. The procedural skills

acquired were not the end, but the means to an end that was meaningful to students and involved deeper learning.

Shortly after the time represented in the above excerpt, a technology problem surfaced. Interestingly, the teacher approached the problem in a way that engaged the students in higher level thinking. In the following excerpt, students engage in creative thinking to attempt to solve the problem and also show self-direction (a metacognitive skill) in figuring out how to use their time well given that the lesson can't proceed as planned.

There's a little glitch with the computers. T. looks puzzled, includes the students in brainstorming a solution. [This moment of cooperation seems very natural to both the teacher and the students. The teacher does not appear to take it as a threat to her effectiveness or as an exposure of some inability.]

...The glitch is still unresolved after about 5 minutes. Various students and the teacher suggest new possible solutions,

S Maybe we don't have access because we're students?

S Maybe you can email the database to us?

T Maybe I can send you a screen shot.

S. Or we could just work on our introduction for now.

While some students continue to work with the teacher to solve the problem, others appear to be starting work on the introduction on their own.

At one point in the glitch solving work, a student points out some detail. As soon as she announces it, there is laughter by all, including the teacher. It appears the teacher has made a small, simple oversight. She laughs with the students at her error. One girl

makes a ribbing comment directed at the teacher that I don't quite hear. The teacher says, laughing, "Just you wait. I'm liable to get cross one day and you'll see then."

Everyone is laughing. There is clearly a very nice rapport between teacher and students.

The students are very eager to work for and please their teacher. They see value in their work. They see the teacher as the person who will help them master their tasks, which they see as challenging and engaging.

The fact of the project appears to be playing a powerful role in the dynamic of this class. It leads students to want to use their time well in the face of the technology glitch because they know they are accountable for their work. Also, because the teacher is in the position of facilitator and valued resource and not authoritarian ruler making (seemingly) arbitrary demands of them (in the eyes of the students), the glitch in the lesson does not completely derail the class. Work continues and a cooperative ethos prevails as students and teacher work together to navigate the complications caused by the glitch.

In all of these examples—media studies, drama, and ICT—students are focused by a complex project and related product, for which instruction and coaching from the teacher are resources highly valued by the students. The role of teacher shifts, in the eyes of the students, from enforcer of curricular demands to facilitator of success. The introduction of a project and product appears to also shift the attitude of the students toward their work and the skills demand placed upon them. Rather than focusing on daily exercises that require only procedural skill, they must practice metacognitive strategies to master a complex project, on top of a host of deeper cognitive skills.

2. In courses that are driven *mainly* by local (“controlled”) assessment and portfolios, and only *partially* or not at all by a traditional (on-demand) external exam (GCSE or A Level). Such courses include Key Stage 3 courses as well as GCSE and A Level courses in which assessment is *mainly* local or portfolio-based.

A pattern strongly sustained across classroom visits, professional meeting observations, and focus groups was the greater likelihood of 21st century skill demands in key stage 3 courses and GCSE/A level courses that were governed in part or in whole by a portfolio or other local assessment. That is to say that there was a *reduced likelihood* of 21st century skill demands in courses governed mainly by a GCSE or A level external exam. Following are several situations evidencing the practice of 21st century skills. In all of them the assessment that governs the situation is primarily local in nature either in the form of a portfolio or controlled items.

The first example is a year eight history class in which students are learning about primary and secondary sources and their uses in historical research. The Teacher is soliciting stories from the students of their families and asking questions that direct students toward the distinction between primary and secondary sources. The following dialogue includes the teacher and several students.

T. If we want to discover more about your granny’s first day at school what primary sources could we use?”

S. Maybe a video or a photo.

T. Excellent. Good girl.

S. If your granny took some notes.

T. Well done.

S. Her uniform.

T. Excellent

S. Your granny.

T. Excellent. I was hoping someone would say that. Now, can you think of a secondary source?

S. Your grand dad

T. Interesting. Tell me more.

S. Maybe your granny told your grand dad.

T. Yes so your grand dad wasn't there, but your granny told him.

Key stage 3 classes frequently evidenced moments such as this in which students are invited to engage in higher level thinking in the course of a lesson on what might be considered a fairly basic topic. Key stage 3 courses are governed by local assessments.

Often GCSE and A level courses in which assessment is mainly local or portfolio-based evidence 21st century skills, as well. Each of the examples provided above that involve student projects took place in courses governed mainly by portfolio or other local assessments. This was true for GCSE Drama, A-level Drama, A-level ICT and A Level Media Studies.

Another interesting example is from a GCSE music class. I was visiting an A-level music class in which students were working individually. The teacher invited me to review a controlled assessment completed by one of her A-level students from the previous year. She handed me an envelope and a CD. The envelope contained an essay and a musical score and the CD contained a recording of an original composition. My notes follow:

I review Emily's composition "Woodwind Ensemble" which consists of a CD recording of her composition and a spiral bound booklet with three sections. The first section is a single sheet labeled "Statement of Authenticity" identifying the AS level music task this represents and certifying that it is the student's "own, unaided work" signed by the student and the teacher. The second section is 5 pages long and is labeled "Music Annotation" This is a text written by Emily in which she describes her aim in creating the piece, the organization of the piece and rationale, and a self assessment of her work. (What worked well, what she would do differently). This section uses a good deal of technical language and shows good evidence of compositional knowledge. The final section is the composition "Woodwind Ensemble". It is 7 pages long and shows the full orchestration for four instruments: flute, flute, oboe, and piano.

I listen to the piece, which is 2 minutes 33 seconds long. Though I'm not especially knowledgeable about composition, I can say that I like it, that the chord progressions and lines for each instrument are quite pleasing—not too predictable but not wildly disconnected. Lovely!

Clearly, the original composition required creative thinking informed by a great deal of technical knowledge and theory, while the Music Annotation required evaluation and metacognition.

In both student and teacher focus groups, examples that focus group members gave of instances requiring 21st century skills tended to come from courses driven primarily by portfolio or other local assessment. Below is an excerpt from a student focus group, in which one

student after another gives a brief example of a 21st century skill demand. The prompt was simply to give one example. No direction was offered as to the choice of academic subject.

- In English we do a lot of creative thinking with poems and stories. We had to write six short poems which we made up ourselves. To get us started, she gives us things to work on and you have to go from there. Like she gave us fear. The poems are short, four lines each.
- Creative thinking. We have to do a lot of it in art. We were doing African masks in art, and for homework, we had to make one up by ourselves. Mine looked really good. Our teacher photocopied some pictures of African masks.
- In English we had to write an autobiography. I asked my mommy and daddy questions. It was just a few pages.
- We use creative thinking in drama, thinking of ideas for a play. In a group we discuss different types of genres for a play and what characters there will be. We've done one where a girl was being bullied at school.
- Metacognition in geography class. We had to do a spelling test and I got 8 out of 10, and I wasn't happy with that. And so instead of just revising that, I rewrote the words and covered it and tried to spell it. Me and my friend were talking, and we were discussing what we would do differently. And we did that in class because our teacher said try and think of what you could do differently.
- In English we were writing a debate speech, and you had to do a first draft and a second draft, and you had to look at it and see what you could do differently.

- In drama we had to make a wee play on a song. And one person got picked to be a captain of the group, and she had to sort out who would be what characters, and we had to read the lyrics, and see what it was about, and, at the end, we had to see what ideas the song was telling you and we had to put it in a play and perform it in front of the rest of the class.

A bit of discrepant data comes from a student focus group in which a student talked about the use of 21st century skills in her GCSE and A-level history and Religion classes which are governed primarily by external exams. Interestingly, however, the instance she cites relates to the small portion of the course mark which comes from a local (controlled) assessment.

As part of A-levels, we do evaluation for exams in both history and religion. We have to evaluate our topic... In my exams in June for GCSE I had to give my opinion on Germany and had to discuss whether Hitler had always planned what he did with the Jews. I believe it was the outbreak of the war that led Hitler to come to that conclusion.

Adult focus groups evidenced instances drawn similarly from courses governed mainly by local assessments. The prompt in this instance was to identify an occasion from one's teaching that requires 21st century skills. At least one teacher whose classes are governed by external exams (maths) chose not to speak about her A level or GCSE maths class, but instead about her form class and her Key stage 3 maths class (governed by local assessment).

- Creative thinking occurs in connection with the class assemblies. With my form class I like them to come up with the idea. As a [key stage 3] maths teacher I have my

students do investigations that require collaboration, metacognition, and evaluation. There is creative thinking on a daily basis.

- I'm teaching home economics Level 3. It's a new course, Care and Development. I have my students do a longitudinal study in which they follow a child for 18 months. They have to organize it themselves, get permission, describe the study, recall all of the data, decide the methodology. Then they have to self-evaluate at the end and link it all together with the literature. These are girls who are vocational girls who find it hard to be self-critical, but they do it.
- As a PE teacher, creative thinking is built right in. Students need to devise sequences and routines. We give them action cards and they have to figure out the action. It's what we value in our lessons for gymnastics and dancing, for example. I ask them to identify two things that were good about the routine, and one thing to do differently. This is a regular feature for each unit. I have them self-evaluate at the end of each unit. I say give yourself a mark and say why; they also do this for their peers. For information literacy, we might look at a sport and I ask them to find three components of the sport on the internet. Collaboration is contained in working as a team; leadership quite often you'll see in a practical lesson, the leader comes naturally to the fore, whoever has the best ideas. Rather than designate a leader it comes naturally.

One of the teachers in this group serves as the Year Head for Year 8 but teaches classes across all levels. His account of teaching 21st century skills across all levels in science, including GCSE and A-level, runs somewhat against the trend. He spoke about how he especially valued

deeper learning and apparently valued it enough to make the added effort to extend his practices beyond key stage 3 to include the older girls as well. His comment follows:

- In psychology, we just finished a module on mental health. Because of the stigma of mental health issues, I wanted them to see mental illness from a different perspective. I asked them to pretend as if you were schizophrenic. How would you see the world? How would the world see you? In my science classes, no one is allowed to say I can't in my room. We try to give them leadership skills. I read a lot of Seligman, we employ his tactics. To bring out the quiet ones in group work in science, I change the groups constantly. Each group has one triangle. Whoever gets the triangle is the leader and has to work out tasks for the group, solve conflicts, and speak with the teacher. That's to ensure they all take part and show responsibility. In all my subjects, I give girls self-evaluation sheets. We work on goals and targets, skills they may be lacking. I give them feedback on experiments and exams, I give them one on ones—we make decisions together rather than me telling them what to do. For creative thinking we'll do mind mapping. I give them a goal and they come up with the procedure and they have to come to me to get it approved.

This last bit of discrepant data suggests that, for a teacher who is well trained in deeper learning and has a strong desire to make it happen, it is possible to infuse it to some degree in a course governed by an external exam.

3. When students participate in school governance, whole school projects, and the provision of pastoral care for each other.

The pastoral care program of this school is extensive. Each student is potentially supported by an array of individuals providing a wide range of support services. While the more formal support services are provided by adults, students are deployed on a regular basis for peer support in both academic and social/emotional capacities. The use of students in this way is so extensive that it is fair to consider participation in peer support is 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—practice collaboration skills. In addition, the provider practices skills associated with leadership while the beneficiary will gain practice in metacognition (such as academic planning sessions and study skills tutorials).

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. During a staff focus group, 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 other student. Thus, they evaluate their own actions to inform further behavior. 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.

During a focus group held with several of the senior prefects, one of the head girls went on at length about the range and nature of pastoral and leadership roles that students regularly assume in the school. This extended comment, by one person, is broken into bullet points with a bullet point for each peer support activity available to students:

- In the Student Council there are one or two reps from each class from each year group. Up to sixth year it gets less from each class. They talk collectively as a group about what they would like to see changed. And I bring it to Mrs. X [principal], and I give feedback to the students about what can be changed for legal reasons or not.

For example, junior school used to have to wear ties up until May, but school council said you should be able to wear open neck all year round. We said to the staff they looked untidy, girls were refusing to cooperate. The teachers wanted to show that something could happen and so the school went with the change...

- There's also a Buddy role. As a buddy you work with an individual student, mostly first years but sometimes second or third. They come to you if they're having a hard time and you basically counsel them. You're meant to really just ask them how they're doing and reassure them. Prefect is over a whole class but buddies are one on one. The prefect is also a part time classroom assistant. At the minute there are over 20 year-13 buddies. Also some year 14 buddies if they're continuing from the previous year if they're needed. You apply to be a buddy and interview. Usually the whole year applies and interviews for buddy.
- There are also literacy and numeracy mentors. You have 2-3 girls recommended by a teacher. You teach them in what they're doing in class. Sometimes you use Accelerated Learning, which is a computerized system that helps with literacy. We do it after school , before school, and during study classes.
- You can also be a literacy mentor for p7s. You do this in morning registration or afternoon registration or maybe even lunch.
- Another job is homelinks monitor. [helping out with evening parent information sessions].

- All this is good for job applications and uni applications. It helps you with your leadership skills and you might have a situation like that in the future and it builds your confidence.

Closely related to peer-support in the pastoral care realm, is the involvement of students in whole school projects. During the time of my visit, the school was engaged in fund raising for a community in Nigeria with which they have a long term relationship. Over several years the school has raised over 100,000 pounds to support the construction of a primary school and a rehabilitation center. Fund raising is organized by year groups through the form classes. For example, the year 9 students were organizing a “Freaky Fitness” event during which individuals would be sponsored to exercise on a piece of gym equipment, such as a training bike, for a period of time. As another part of the fund raising effort, six formers were being deployed to local parishes on the weekend to make presentations during worship services and take up a collection. There was also an upcoming disco and Christmas Craft Fair being organized by students with staff support.

4. When school level traits associated with high performance (e.g. shared vision and mission, shared responsibility, collective examination of practice, etc.) are directed toward higher level instruction.

Existing research strongly indicates a set of traits that are regularly associated with schools that perform well on external exams, that is to say, they are “high performing” by conventional

measures. In this study we looked first to see if these traits were present in this school and then to what degree, if any, they fostered 21st century skills.

Many of these school level traits were readily observable across many dimensions of school life. In the following, we present them sometimes in clusters and sometimes singly, reflecting the ways in which the school staff tended to deploy them. First is a cluster of traits reflecting a staffwide orientation toward professional learning. This cluster includes tendencies for inquiry, adaptive thinking, and experimentation. The second trait, closely related, is the thoughtful use of data to inform professional learning and decision-making. The third school level trait is, again, a cluster of traits that includes, high expectations for all students, a commitment to success for all students, and shared responsibility for student learning. The final trait we describe is shared vision/mission.

1. Staffwide orientation toward professional learning (inquiry, adaptive thinking, experimentation)

Staff related tasks at the school are often delegated to a staff committee. One such committee was tasked with reviewing the school's special needs policy. Before the meeting, the chairperson of the committee explained to me,

We're a cross section of staff and we are going through the special needs policy. Our special needs population was recently at 47 percent and now its going up to 55 percent on the special needs register. So we're addressing policies to see how we can improve, if at all. So basically we're just figuring out questions for a staff questionnaire and from that we'll get our focus for our goals.

What is noteworthy is that the task of reviewing the committee takes not simply as a matter of reading the existing policy and tinkering with the language. Instead, the review begins with the design of a questionnaire for the staff, in order to gather data. The following excerpt from the committee's conversation reveals a stance toward the task that is thoughtful, restless with overly simple solutions, and questioning.

So we have a menu on the questionnaire that asks, 'What areas are your staff development needs in' and then 'please tick as appropriate'.

We can't have someone coming in doing a powerpoint; we need practical training.

We can reword these questions, as long as we get the main areas.

What about the testing of children?

We have a section on testing and use of data.

I need practical training. When I see someone teaching with a powerpoint it bores me.

That's why I never use powerpoint.

We want someone who works with pupils every day who says here's what I do, rather than someone from the board who gets paid to, to... I don't know what they get paid to do.

It would be nice to bring a parent of a child with aspergers to see what goes on at home; and to bring in a child, I mean a child should be telling us how it is.

Another committee was established to review and revise the school's homework policy. Like the special needs committee, this committee is inquisitive, thoughtful in its approach, drawing on knowledge within the organization and, as needed, engaging experts from outside the

organization to augment the staff's knowledge. One member of the committee is gathering student data about homework.

Teacher 1 [Committee chair, explaining to me] We were given this task on a short time frame. We wanted to do more than just update the policy. We wanted to promote a culture of study. Last week we had a meeting with year 11 parents. They were given a study skills course. [Teacher 2] ran it.

Teacher 2: We were trying to get the parents involved with home learning of the students. We started with the year 8s a few years ago. This year we hired a company. They did a great presentation. We did the same presentation with them and then the year 11s. Unfortunately, we had a bomb scare so that kept the turn out low for the year 11s. The year 8 turn out was good though. Part of the company's package is to do an exit survey. We got that yesterday which we shared with year heads. So the purpose, overall, is to help students with home study, pressures, different learning styles, where to study, how long to study for. This home study policy builds on that.

Teacher 1- Our Department of Education has launched an advertising campaign lately to encourage parents to get involved in their children's learning.

Teacher 3- We've gone to the parents to say we need your help. This year the parents of our younger students are being asked to sign the homework diary at the end of each week.

Teacher 2: We often get queries from parents, and we get the same questions, and so this has been an opportunity to send the same message at the same time...

Teacher 4- In years 13-15, we're trying to encourage a culture of independent learning to take on A levels. So in August we had a session on study skills and presentations.

Teacher 2- In year 8, students are coming from many different schools and have different experiences and different expectations.

Teacher 1- Let's turn to our work. So we're going through the document. On the sheet "A Policy for Pupils" we were concerned about the tone. It didn't sound very friendly.

Teacher 4- So Jim we talk about parents a lot and that's what makes St. Genevieve's different. We involve the parents a lot.

Another example of the staff's learning orientation comes from a conversation between the principal and a member of the senior leadership team. In this conversation, the two school leaders explain to me some experimenting with ability grouping. My notes from the meeting follow:

An informal meeting with the principal and the vice principal for pastoral care. They tell me that children are "streamed" into "three bands" (ability level) but they are experimenting at the moment in the earlier grades by putting some of the lower band students in the upper bands to see how it works out for all of the students. They said they need to move slowly with this because some of the teachers would have difficulty teaching girls from different bands in the same class.

The final example of the school's learning orientation comes from a meeting of the senior leadership team. The head of the Maths department has been invited to the meeting to make a pitch for a new initiative involving I pads. This excerpt demonstrates adaptive thinking by the group as a whole, directed toward the use of a newly available technology. The initiative is

deliberate and the process of implementation is reflective. It is also very explicitly justified in terms of improvement of student learning outcomes. What follows are my notes with embedded quotations.

Head of maths says that they've found that while the Ipads were obtained primarily for helping students with learning, the teachers are finding that they can use the Ipads for their work as well. Teachers put detailed lesson plans on their Ipads in a shared teacher planner program and they share their lesson plans with each other, which stimulates conversation about instruction, more than what used to happen. They're now visiting each other's classrooms and swapping materials. They're also using dropbox to share resources and data. We're sharing this info and it is stimulating conversation, he says. He adds, Since it is hard to schedule meetings since we're all so busy, we find we can communicate without having to all be in a meeting together.

The main purpose for the ipads was for students to use. "We're rewriting the key stage 3 curriculum to incorporate the ipad into key stage 3 and we believe, I may be going out on a limb here, this could be worth 3 or 4 points. We set our target at 54% and this could move us to 60%. We find when we deliver a lesson on the ipad, you can hear a pin drop, the students are very focused.

Students have to self assess their performance on each topic. They put 3 ticks if they think they're fine, 1 or 2 ticks is they want the teacher to give them some extra help.

Accuracy is a problem with the lower students if they're copying off the board, so using the ipad eliminates that. Their focus if it's a worksheet is maybe 5 minutes. With the Ipad it's about 15 minutes.

Three years ago, maths started a new key stage 3 regime, very uniform, common assessments, and three levels.

After the Head of Maths makes his presentation, members of the Senior Leadership Team ask questions. Again, my notes with embedded quotations follow.

Other members present at the meeting ask [maths head] a number of questions.

Member 1: So you're using the I pads for a specific purpose.

Head of M.: It has to be relevant. You can't just throw them out on a Friday afternoon as a time filler. If we show the students that they're to be taken seriously, then they take them seriously."

Member 2: Costs?

Head of M.: We have the GCSE textbooks on the ipad, which saves us thousands of pounds. We have the other textbooks. The fifth years love this. Once again, the students totally engage with this whereas they won't if it's a book. So we see something happening just because it's an Ipad.

Member 1: So you're saying this helps with literacy. The problem with maths is often the words.

Head of M.: Exactly. They seem to buy into it much more just because it's a device and not a piece of paper in front of them. This is the best thing we've come upon in a long time, but you can't use it alone.

Head of Maths closes by asking for 25 more I pads (which are apparently all on site, they just need to be "built"). The Senior Leadership Team approves his request.

2. Use of data to inform professional learning and decision making

Closely connected to the staff's learning orientation is the staff's inclination to identify data sources of potential value in answering questions that they are at work on, and then, once identified, gathering and analyzing the data. The examples above about the school's learning orientation make mention of several such uses of data. Below are further examples. The first example of thoughtful use of data comes from a focus group interview of staff members who play a significant role in the school's pastoral care. In the excerpt below, the teacher refers to a survey of the students and how the results have informed school practice.

Teacher: we feel we have a good ethos, but we were concerned a couple 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. No one is allowed to say I can't in my room, we try to give them leadership skills.

Another example comes from the staff homework policy committee, mentioned above. In this excerpt from the committee meeting, a teacher mentions an audit of student homework diaries currently underway as a data gathering method for the committee's work.

Teacher 3- 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 key stage 3 coordinator for the school]...

At the same meeting, committee members paused to explain a system that the staff uses for monitoring student academic progress.

Teacher 1- We have a system, Jim, 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.

Teacher 2- We can also see residuals. This girl is plus 15 or minus 6 relative to the other girls.

In the next example, a staff committee was designing a questionnaire for the full staff. The conversation shows how the staff were thoughtfully identifying what data they need. It also shows them considering their own internal resources (each other) that can be deployed to improve the collective competency of the staff

Teacher 1: So we should turn to the questionnaire.

Teacher 2: What should we do first?

Teacher 3: How about professional development since that's the easiest. We have staff who have more knowledge than the rest of us. They could be sharing with us.

Teacher 1: So a question that asks, do you have coursework in special educational needs? Would you be willing to share your expertise?

Teacher 2: What about trainings?

Teacher 3: I remember we had a session a couple years ago and it was like Death by Powerpoint.

Teacher 2: We had 53 girls out of 81 this year who went on to university. How many of them had an identified special need?

Teacher 3: Just because you have a masters in special needs doesn't mean you are a special needs teacher.

A brief final example is an excerpt from a visit to a registration (form) class, during which the teacher paused to explain a computerized flagging system for students' positive behavior and negative behavior.

T explains red flag system, which is computerized. Each day any student can get a red flag for something good or bad. E.g. 100% on a test, didn't do homework. Shows up on the system which all teachers can access. Registration teacher manages it and keeps on top of girls—assigning detentions, offering praise.

3.High expectations for all, commitment to success for all, shared responsibility for student learning

There is a cluster of school level traits centered on staff expectations for students. It includes high expectations for all students, a commitment to success for all students, and shared responsibility for student learning. Following are examples of these traits present in the day to day interactions of the staff.

First is a note from a casual conversation with the coordinator of key stage 5. We 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.

She also said that there are 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. So what they do for these girls is to pay the fee so they can sit for the exam and they let them sit in on classes unofficially.

The next example is taken from my notes on a consultation that the assistant vice principal for pastoral care had with an outside social worker who liaises with the school on students who have particularly acute need. Here again, it is clear that even or especially for those students with the greatest needs, the school remains committed to their success and will go to great lengths to assist them.

They agree to run down list of open cases. They speak candidly about family details. A mom on mental health meds that make a big positive difference. A student who takes a taxi to school. The school stepped in to pay for it because there was a dispute about who should pay. The social worker reports about various home visits: A dad who has ADHD and the uncle, too, but the mom at this house is much better to deal with.

Another girl who’s been out because the pins in her hip needed adjustment. The social worker found this out through some home and health provider research. Another student: “She doesn’t need any rope at all. She’ll just take it” Another student “We’re dropping her down to six or seven A-C GCSE from 8 or 9” [since she has been absent so much.]

The school's shared commitment to student success emanates from the top. The following excerpt from a meeting of the senior leadership team makes this clear during a conversation about the school's plan to improve student literacy.

Literacy is next topic. Principal wants feedback on a literacy policy that she wants to present to the board. I review the policy. Under roles and responsibilities, there is a long list of persons/roles that comprise an interlocking whole-school press to improve literacy. List of roles and responsibilities is as follows:

"SMT, Head of English, SENCO, KS DoS, other subject leaders, form tutors, class teachers of English, class teachers of other subjects, classroom assistants, literacy mentors, accelerated reading mentors."

During the meeting, the group gave feedback to the principal on the proposed policy, underscoring the wide array of services and the number of staff persons who were behind this whole school press to improve student literacy.

Another example comes from a casual hallway conversation with the staff member in charge of staff development. He commented on the way the staff was redefining their understanding of success for the students. The brief conversation reveals much about the level of expectation as well as the school's inclination to work collectively in the absence of direction from state authorities. My notes follow.

While waiting for maths I chat with head of staff development. He says the school's focus now is on helping each girl find success (not necessarily pushing maximum GCSE courses). He says there's no consistent vision for education from govt. It seems to change every year.

The next example illustrates how the staff organizes itself to share responsibility for student learning and provide wrap-around support. By building staff-student relationships that remain constant over the years, the staff builds trust. An excerpt from my notes follow.

12:25 Lunch in the staff room

I sit down next to a man who is the year head for year 8. Snippets from our conversation:

“Here, the year heads stay with their year, they follow their year from year 8 through year 14, which is good because you get to know the girls and build trust. You can tell when something is wrong, something needs to be addressed, and you get to know their families.”

“So far this year, I’ve met with the year 8 form teachers three times. We have a focus this year on study skills, which we weave into all the classes.”

“Here we have key stage heads (mostly academic), dept. heads (mostly academic), and year heads (mostly pastoral)”

5.Shared Vision/mission

Closely related to the staff’s strong sense of shared responsibility for student learning is the staff’s strong sense of shared vision and mission. This was regularly evident in staff conversations both formal and informal. During a staff focus group interview, for example, I asked what makes the school special. An excerpt from the discussion follows.

Teacher 1: The principle of justice is important which ties in with fairness and forgiveness. There’s a big government thrust called CRED which is an

emphasis on mutual understanding. They have a kind of mapping tool, and when I went on a course [with teachers from many schools offered by the Department of Education] , I thought, we're already doing all this stuff. Our pastoral under-structure has all of these. Our students are not numbers, they're people. What struck me was that the other people in the course were not doing this in their school. We remember how last year we did a school ethos survey [with the students]. A key finding was that we see each student as an individual . Other schools are not doing that.

Teacher 2: We really develop the whole child.

Teacher 3: There isn't this hierarchy of levels of importance in this school. We all feel included.

Teacher 1: I was at a course and we did introductions and everyone named subjects. When it was my turn I said I teach mixed ability children. Our program is never delivered in one format. We're always thinking who is the child in front of me and how can I adjust my teaching.

Teacher 2: We have a lot of school trips, such as ski trips and they'll say I can't do that and [then they go on the trip and] they come home and they say I can. Overcoming that 'I can't' thing.

Teacher 3: So many of our children come in from primary school with that attitude.

Teacher 4: They're constantly being given the idea that we are a community. [In my form class], we always say we are team 8H. Today a girl came in with a

cake and it said “We’re team 8H”. The girls know pastorally all the people who they can go to.

Teacher 1: The key word is, They [the students] trust us. When they come to you, you put yourself out. You’re willing to inconvenience yourself, repeat things a thousand times.

Teacher 3: Lots of parents pay for tutoring, we do it for free.

The next excerpt, from another staff focus group meeting shows how the staff jointly value an ethos of caring even in matters of student discipline.

Teacher 2: Teacher 1 and I do a lot together. Teacher 1 gives it a fancy name, but I just call it sunshine. Give them the sunshine. Don’t tell girls the negative, it doesn’t work with my husband. 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.

Teacher 3: Yes, we carry out the punishment, but we’re very caring, and when she returns it’s a clean slate. When the mother came in she was afraid they were all going to get yelled at and they weren’t.

Teacher 2: Positive behavior care management runs throughout our policy.

Teacher 1: What Mary said—all of of these kids are used to getting shouted at, so when we don’t, it breaks the cycle.

Teacher 3: 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.

Teacher 4: [We ran a] staff day on de-escalation last year. It was very good, good reminder for staff on how to do that.

Teacher 2: This came out of the questionnaire, it was quite good.

The school also evidences its shared vision and mission through its religious affiliation. There is a chapel in a prominent location near the reception area, the principal opened a meeting with the senior leadership team meeting with a choral prayer, the approach taken in a religious education class suggested a prominently Christian perspective. The Catholic tradition is also evident in the school's charitable work in which students are integrally involved. In recent years the school has worked with an order of nuns located in a community in a west African nation on the construction of a primary school and a rehabilitation center. Students and staff have worked together in fund raisers at the school and the community, as described in an earlier section.

Having now established that many of the whole school traits associated with high performance (as conventionally measured by external exams) are very alive in this school, we turn to the question of the degree to which these traits are directed toward the cultivation of 21st century skills. While the school clearly directs much of its energy, as a whole school, toward the pursuit of ever higher results on GCSE and A-Level exams, it is also clear that some of its whole school energy catalyzes student involvement with 21st century skills. The school's

deeply shared vision and mission results in a sustained, whole school approach to pastoral care that regularly leads students into practice with collaboration, leadership, and metacognition. The staff's learning orientation was, in some ways, indirectly supportive of 21st century skills, for example, in the development of a questionnaire for students about the school's ethos. Also, the collection of data relative to revision of the school's homework policy shows a variety of activities directed toward developing students metacognitive skills. At the same, however, most of the 21 century skill activity (among students) that results from whole school traits is indirect. That is to say, whole school traits are not explicitly or primarily focused on the development of 21st century skills. They tend to be focused on test results and ethos, and to the degree that tests results and ethos overlap with 21st century skills, they get some attention.

Related Patterns

In addition to the five situations just described in which students practice 21st century skills, several related patterns were evident. Though listed previously, they appear below as a reminder.

1. Demand for 21st century skills noticeably deepened student engagement in learning
2. Courses that were assessed exclusively by external exam were described by teachers as difficult and challenging while courses that were assessed mostly by portfolio or local means were described by teachers as easier and less challenging.
3. Students sometimes described courses that were assessed mostly by portfolio or local means as difficult and challenging.

In what follows, we illustrate each of the patterns by way of examples.

1. Demand for 21st century skills noticeably deepened student engagement in learning

This pattern was strong and consistent across classroom observations. In those classes where 21st century skills were called upon to complete an activity, students appeared thoroughly engaged. In classes where only shallower skills (recall and application) were required, students were marginally engaged or merely compliant and often restless. For example, The following set of notes is from a class in which the teacher gave a quiz and then presented information for the entire period of just under an hour. Cognitive demand tended to be at the recall level or, at times, there was no cognitive demand. *The year is deliberately not identified and the subject has been changed.* No conclusions should be drawn based on those two factors. Several other identifiers have been altered as well. In all other respects, the class notes reflect what took place. The excerpt is lengthy in order to fully convey the nature of the cognitive demand.

11:30 American Fiction class

I introduce myself to class... Teacher explains that he gives a test at beginning of class every other day on the class notes.

While girls take test, I ask T. what the prompt is for the test. It turns into a discussion about the course between him and me while students take the test. Following teacher quotes stand out from the discussion:

“It’s very exam focused [course]; It’s all facts and details.”

“I give a test every other day so I have them in the habit now of writing down everything they can remember from the days before.” [He shows me a print out of yesterday’s

powerpoint. It is filled with details under headings such as “John Steinbeck’s Life” “Of Mice and Men”.

“The girls have to learn the facts and the details first. Then, later we discuss the how and the why.”

“I want the girls to experience success, not failure. They come in saying I want a C or a B, and I say I want you girls striving for As and A stars”

“I’m training their brains. I get them into the habit and now they’re getting the hang of it.”

“When I read these I look for these words [he shows me a list of words], which is what examiners will do on the GCSE”

A few minutes later, T. comes back to where I am sitting and shows me the test of a girl who has finished. He shows me proudly how it has almost perfectly reproduced the powerpoint notes from the previous two days. He sets the two [test and powerpoints] side by side. They are nearly identical.

11:48 T. begins a presentation with Q and A recall of what they were just tested on.

T. why were the migrant workers unhappy with their lot? Because they didn’t have any what?

S. chorus: money

T. And who was getting the money?

S. chorus: the land owners

T. What were we talking about yesterday?

S. chorus: Relationships

T. Relationships between who?

S. Lenny and George.

T How come George was unhappy?

S [Something I can't hear]

T Come on now is that the only reason? What else was there? We had this discussion.

Come on, girls.

At one point, T goes to white board and creates a graphic organizer. "Lenny and George" are written at the center of the board. Spokes radiate from each one. As T proceeds with Q and A presentation, she adds details to each of the spokes.

T. What they definitely didn't want was what?

S. No response.

T. To get what"? To get...

S. [chorus] caught.

12:00 T continues with presentation. Class is arranged in U shape with inner & outer U.

Questions that require only a common sense fill-in-the-blank answer (without having to listen at all) prompt a wide chorus from the girls. Questions that require marginal listening get a weak chorus. Questions that require listening plus a recollection from the text or previous class lecture induce one or two hands in the air. There are two girls who tend to reliably answer these questions.

...The engagement in this class is strongest at the inner U of five girls, at the head of which the teacher stands for most of the period, and with whom he maintains the most eye contact.

12:25 T. That's us for today. Thank you for your attention.

This sort of class was decidedly NOT the norm in this school. It is a somewhat extreme example of a pattern present in a significant minority of classes that demanded recall or nothing at all. The pattern in all observed classes with a similar level of demand was the same sort of marginal engagement observable in this class. This pattern suggests that not only do students in such situations lose out from the absence of practice with deeper learning, but they become alienated from intellectual activity altogether and, with time, could become disinclined to continuing their education.

Two other patterns, which are related to each other was the persistent characterization of courses governed chiefly by external exams as difficult and challenging, while courses governed chiefly by local assessments were characterized as less demanding. This characterization was held by both teachers and students. Two representative teacher remarks offered during casual conversation follow:

“In ICT we get students who leave the courses that are all exams because it's easier. You know we guide them more, and they're doing applied work. It's not as difficult. And it's a lot more work for the teacher.

Another casual remark by a teacher is representative of the same pattern between key stage three and key stage four/five courses, as follows:

“You can really have some fun with the key stage three students. But when they hit year 11, it's a culture shock because you've got to just deliver content and deliver content. And they're sitting there saying, He [teacher] wasn't that way last year.”

This characterization was often heard among students in casual conversation as well; however, when pressed, one year 13 student admitted a different view as excerpted from my notes below:

Informal chat with year 13 student: I chat with student as she escorts me through the hall. I ask her if the fact that ICT is more coursework-based is appealing to her. She says, "Well initially, yes, it was. You don't have as much pressure for the exam, but I think I didn't realize how much coursework there would be, and it's hard."

Findings and Implications

Instruction in 21st century skills is evident in many classes throughout the school. In those classes where the teacher taught 21st century skills, the topics of study were often similar to or even identical with the topics in classes where the teacher was not teaching such skills. The difference can be attributed to one or more of four factors. In the first instance, 1) the teacher *knows how* to teach 21st century skills; 2) the teacher is *comfortable* teaching them; 3) the teacher *values* them; 4) the teacher is *expected* to teach them.

21st century learning is especially evident in courses that involve an extended project with a clearly articulated product. 21st century learning is also especially evident in courses that do *not* culminate in an external exam and in courses where the weight of the external exam is lessened by the presence of course-based assessments. Where the pressure of an external exam is greatest, instruction tends to focus on shallower, more conventional skills (recall, application, analysis). Twenty first century skills are also evident when students engage in pastoral care work on behalf of their peers.

When school-level traits linked in previous research with high test performance were deployed to foster deeper learning, they appeared to foster deeper learning. That is to say, the same school level traits that have been shown to foster higher test performance appear to also foster deeper learning when they are deliberately directed toward deeper learning.

The main drivers of school activity appear to be assessment demands and the school's idiosyncratic vision and mission. Deeper learning is not an explicit priority for either of these drivers however there are some areas of overlap between deeper learning, assessment demands and school vision and mission. One notable area of overlap is assessment that is project-based and/or portfolio-based, or in some other way locally rooted . This means that deeper learning remains a somewhat marginalized aspect of school life. One should bear in mind that this school was chosen because it shows promise with the inclusion of 21st century skills, and, in comparison to other similar schools, is an exemplar of forward-thinking practice.

This study highlights the power of assessment demands and school vision and mission in driving school activity. It finds that deeper learning thrives at the margins of academic activity and diminish toward the center. An important implication is that if assessment demands and/or school vision/mission made deeper learning an explicit priority, then deeper learning surely would move from the margin to the center of school life.

Implications for Policy: There is a strong indication that external exams as currently administered by the Department of Education of Northern Ireland (DENI) have a deadening influence on 21st century learning. Since the use of external exams is particularly intensive in core academic subjects, then, to the extent that students are enrolled in such courses, they are being largely denied instruction in 21st century skills. If the patterns apparent in this case hold

generally across secondary schools in Northern Ireland, then DENI should immediately begin 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 this case study with instruction in 21st century skills.

Implications 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. It is up to school leadership teams to choose whether their focus will be entirely on test results (for which there is great pressure 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.

Implications for Classroom Level Practice: If teachers are to take up the call for teaching 21st century skills, they must equip themselves with the pedagogical repertoire to do so. As this study demonstrated, classroom demands that require only low level skills tend to disengage students while activities that require 21st century skills tend to stimulate and engage students. In addition, some teachers may need to shift their conception of academic rigor from coursework that requires intensive memorization and procedural skills, to coursework that requires 21st century skills.

Implications 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 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 strategies for GCSE and A-level courses from one subject to another raises the question, why is one form of assessment chosen over another? Currently, the mathematics GCSE in Northern Ireland is 100% on-demand examination. The history GCSE 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. 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? How academics, educationists and other thought leaders choose to answer questions such as these and thereby conceptualize various school subjects carries enormous implications for the intellectual experience to be had by students.

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