

## New Technology High Schools USA

### Introduction BLC conference Boston 2005

In July 2005, our Education Director, Michael Buchanan, attended the **Building Learning Communities** conference in Boston, USA. The conference provided access to direct experience of innovative educational practice in the USA (and Australia, Singapore et al). One of the most reassuring elements of the conference was the recognition that, although education systems and structures might vary internationally, educationalists are dealing with the same challenges globally – disaffection and disengagement, social exclusion, curricula and pedagogy which are inappropriate for the 21<sup>st</sup> century, the impact of new technologies, the desire for greater social mobility and the need for an education system which enables young people to develop the skill sets and personal qualities to become successful participants in a fluid, global society.

Coupled with this was the recognition that we need to innovate, to come up with new learning scenarios and education systems which transform learning and achievement, not simply tinker with what was designed for the 20<sup>th</sup> century. One element of this new thinking is the development of the **New Technology High School** network in the USA, features of which have become the focus of close examination in the UK, with a view to their potential transferability across the pond. This knowledge share sets out some of the purposes, key principles and organisational strategies of the New Technology High Schools and, as a postscript, makes links to some other related developments.

### New Technology High Schools

“Supporting new Small High Schools”, The **New Technology Foundation** assists communities across the US in bringing New Technology High Schools into existence. There are now 14 New Tech schools, with 11 more starting up in September 2006. The demonstration school is in Napa Valley Unified School District (California), selected as a model for national replication by the **Bill and Melinda Gates Foundation**. The intent of the Replication Project is to develop a network of high schools:

“as an example to the national educational reform movement of what a high school of the future looks like and how it can improve and expand the learning experience”.

Weblink: [www.newtechfoundation.org](http://www.newtechfoundation.org)



Over the last 9 years, over 8,000 people have taken tours of the schools, organised by Tours New Tech (TNT), a student-led organisation. General tours are available at the Napa school site; one-day study tours are available (at a cost) at Napa (opened 1996) and Sacramento (opened 2003); and Executive Tours are available for leadership teams interested in launching 21<sup>st</sup> Century high schools. For more information about the Napa and Sacramento schools, visit their websites:

[www.newtechhigh.org](http://www.newtechhigh.org)

[www.scusd.edu/high\\_schools/SacNewTech/](http://www.scusd.edu/high_schools/SacNewTech/)

## Bob Pearlman

**Bob Pearlman** is the Director of Strategic Planning for the New Tech High Schools ([bobpearlman@mindspring.com](mailto:bobpearlman@mindspring.com)). As a strategy consultant, Bob has been working with some LEAs in the UK, including Liverpool, Manchester and, currently, Kent.

In October 2005, over 100 Kent Headteachers (under the auspices of Kent County Council (LEA) led by Graham Badman ([Director](#)), Chris Gerry (Executive Head of the Maidstone Federation, member of Kent Leadership and Innovation Centre (KLIC) et al...) visited US schools on a study tour to Seattle, Boston, New York and San Francisco. In an email to Michael Buchanan, Bob described this as “unique... no other LEA on the planet has invested in this kind of visioning trip”.

For further information, visit: [www.bobpearlman.org/Kent/SF.htm](http://www.bobpearlman.org/Kent/SF.htm)

## Rationale

New Technology High Schools (NTH) grew from a concern in a community one hour north of Silicon Valley, in the emerging dotcom era in the mid-1990s, that the high level workforce requirement of the booming technology industry was not being met by the local school system: “kids have no skills”. This led to a series of questions:

“What skills/competencies are required?”

“How do children develop these skills/competencies?”

“What sort of school system is required to enable them to do this?”

The first NTH school (Napa) was set up in 1996 to respond to this challenge.

## Key Principles

The NTH model reflects a commitment to certain **key principles**:

- Small schools: 400 students or fewer



- Non-selective admissions policy
- A curriculum which meets state requirements for 'college readiness'
- Use of the NTH 'Learning System' (see below)
- Project-based learning
- Cross-curricular integration
- Team teaching
- 'Authentic', innovative assessment strategies
- A culture of trust and responsibility
- Ratio of 1:1 student to networked computer, with email, internet access, storage and a Lotus Notes environment
- Business, community and college partnerships
- Shadowing and training for staff on project-based learning and technology
- Technology-rich classroom environments which support team teaching.

## The NTH Learning System

The **NTH Learning System**, applied in all NTH schools, comprises methodology, tools and resources. In time, the system may be made available to schools and school development organisations elsewhere. The system uses:

- Learning outcomes which combine content and skills;
- Project and problem-based curriculum units;
- Clearly articulated evaluation criteria and assessments; and a
- Student-managed portfolio-based assessment system.

## Project-based learning

At NTH schools, pupils follow integrated, project-based programmes. At any one time, pupils might be working on 4 projects, each project lasting 3-8 weeks. On this basis, they will complete 10-15 projects per year in mostly interdisciplinary courses which integrate two subjects. The typical mode of teaching is 45-50 pupils, with two teachers, working in double-size classrooms. Each project is organised on a 'need to know' basis:

- Starting with a 'key entry question', created by the teacher (what do we need to know?)



- Identifying a project team (to develop skills of teamwork and project management)
- Utilising technology (1:1 access is assured)
- Using oral communication (to parents, 'experts' etc.), evidence-based digital portfolios and exhibition as the principal forms in which skills, knowledge and understanding are demonstrated (not tests or exams).

### Team working

The principles underpinning the team approach are that the best way to develop team working skills is to be on a team, working on a real project, producing something, and getting feedback. The penalty for not pulling your weight on the team is to be voted off the team by your peers; in which case, you still have to do the work – but on your own, without the support of others. Pupils quickly learn that team working is more efficient and productive.

### Project management

Project management skills involve understanding the scope of the whole project, giving people what they need to do their bit, keeping the project on track and ensuring standards. It is a vital role and a job skill in its own right.

### Internship

While at the school, students need to complete a minimum of 50 hours internship, which is not simply vocational work experience.

### Classroom environment

To achieve the right working environment, a typical classroom is double size; half is set out as workstations (desks, IT); the other half is for presentations and lectures. (The concept of 'learning sheds' at Hugh Christie School, Tonbridge, Kent is similarly designed).

Examples of projects can be accessed on the website [www.newtechhigh.org](http://www.newtechhigh.org)

### ICT

As well as giving access to a wide range of resources, including the internet, the ICT network supports project-based learning in three specific ways:

- The 'project briefcase' – every pupil is provided with all the resources they require for the project, their calendar and deadlines and the assessment criteria / expected standards;
- The 'project library' – examples of successful projects from this and other schools, which can be used for ideas and as comparators of expected standards;



- Assessments – including evaluations by peers (which can be used as legitimate evidence in the digital portfolio).

## Learning outcomes

Pupils need to demonstrate evidence of all 8 learning outcomes in order to graduate:

- Technological literacy
- Collaboration
- Critical thinking
- Oral communication
- Written communication
- Career preparation
- Citizenship and ethics
- Curriculum literacy

## Assessment

The assessment system is based on principles familiar as ‘Assessment for Learning’ (as in the national KS3/Secondary Strategy in the UK), rather than assessment of accountability (league tables etc.). The right kind of assessment information is seen to be critical for students to become self-directed learners. The ‘Grade Report’ is based on assessments made by the student and his/her peers, as well as the teacher, against learning outcomes. Rather than a sense of deficiency (“this student needs help...”), the emphasis is on personalisation (Student: “I need help with...”; Teacher: “In that case, we will...”).

## Design requirements

At the preconference workshop on “Designing 21<sup>st</sup> Century Secondary Schools” there was much concern expressed that schools are too often designed and built according to how things have always been, rather than being designed to support a new, 21<sup>st</sup> century curriculum. It was argued that the ideal sequence is: “capture the programmatic design first (essentially the curriculum and pedagogy); then the facilities design (the building etc.). Bob Pearlman proposed a three-part sequential approach to school design should be adopted - establishing positions on:

1. **Design criteria** (outcomes), e.g:
  - Safety, respect, supporting personal interests...
  - Real world experience



- A learning community
  - Child-centred
2. **Design principles**, e.g:
- Personalisation
  - Intellectual mission
  - Adult world immersion
  - Student voice
  - Performance-based student work and assessment
3. **Design elements** ('the execution', what you actually put into practice), e.g:
- Curriculum and projects
  - The building, site and its management
  - Technology
  - Internship
  - School size and teams

## Related themes at the conference

Australia

Project-based learning, in a real-life context, as espoused by NTH schools, is known as **Rich Tasks**, and is credited with the outcome of “deep learning”.

Buck Institute for Education

Reference was made to the **Project-based Learning Handbook** published by the Buck Institute for Education, accessible on [www.bie.org](http://www.bie.org)

Design Share

For particularly interesting information and designs for innovative schools internationally, visit [www.designshare.com](http://www.designshare.com) – the **International Forum for Innovative Schools**

Boston Small Schools Project

The **Boston small schools project** (Kathi Mullin) seeks to break down what the US sees to be large schools (say 1000 pupils – average in the UK) into small units: 300-400 pupils are seen to be the optimum size for a school community. For further information about Boston’s High School Renewal programme and the small schools programme, including profiles of the individual schools, visit:

[www.highschoolrenewal.org/](http://www.highschoolrenewal.org/) or [www.bobpearlman.org/BestPractices/KathiMullin.htm](http://www.bobpearlman.org/BestPractices/KathiMullin.htm)



For a general introduction to small schools, an excellent link is:

[www.whatkidscando.org/portfoliosmallschools/](http://www.whatkidscando.org/portfoliosmallschools/)

At a similar innovative small high school in **San Diego, High Tech High, part of the High Tech High network of schools**, created in a former aircraft hanger, students “go to work” in the knowledge economy. They have office-style workstations (and desk, coffee mug, chilled water), on-line curriculum, and the teacher acts in the role of coach / facilitator, moving between the students rather than ‘teaching’ a class. It is seen to be important to recognise that kids are territorial (developmental psychology support this) and that ‘owning’ their space allows them to create an environment in which they feel secure and stimulated (look at the environments they like – their bedrooms, Starbucks).

Being in control of and personally responsible for their work and learning, supported by rather than directed by a teacher, is demonstrated to lead to better attendance, earlier starts and later finishes, and improved progress and attainment – including the highest test scores in the state for minority students.

For further information, visit [www.hightechhigh.org](http://www.hightechhigh.org)

**Met schools** are another network of schools being developed with the support of the **Bill and Melinda Gates Foundation**. The base school, a unique state-funded public school, was opened in Providence, Rhode Island in 1996 by the founder company – **The Big Picture Company**. Currently 20 new small schools are being developed at 8 sites.

The student body represents the ethnic mix of Providence public schools – 39% Hispanic, 37% White, 22% African-American and 2% Asian. More than half qualify for free lunch. 42% come from homes where English is a second language. There are currently 336 students (grades 9-12), in six buildings (‘school’). The principle is “**small schools, human scale**”. Each building has a capacity for 110 students and it is intended to expand to approx. 700 students in total.

The school’s motto is: “**One student at a time**”, a combination of personalisation and pushing students “again and again, outside their comfort zone”. The school’s philosophy is based on three Rs – rigour, relevance, relationships. Each day begins with a community meeting, known as a ‘**Pick Me Up**’.

The Met’s curriculum (program) is based on:

## Related themes at the conference

Australia

Buck Institute for Education

Design Share

Boston small schools project

Small schools





Small schools

- Independent ‘**real world**’ projects, in which the question is identified by the student, tailored to their interests
- Workplace ‘**Learning Through Internship**’ (LTI) projects, in which students are mentored in the workplace and present “an end product that both contributes to the work site’s needs and advances their own learning goals”.

High Tech High San Diego

Projects operate on a range of strategies including, ‘developing designs and inventions’ and ‘entrepreneurial and non-profit ventures’. The principle underlying this approach is the importance of practical, real life learning and the learner’s ownership of the ideas.

Much of the approach is based on the ‘need to know how things work’; it is argued that learning is more likely to be derived from using Meccano, coat hangers, clay or wood than from written resources and newer technologies .... and, apparently, 80% of paperclips never clip anything(!).

The Met has five categories of learning goals:

- Personal qualities
- Communication
- Empirical reasoning
- Quantitative reasoning
- Social reasoning.

Met schools

These projects and learning goals are supported by an infrastructure which includes: personal learning plans; Learning Through Internships; ‘advisories’ (tutoring/mentoring on a 1:14 basis consistent for 4 years); exhibitions, senior institute and coursework at nearby colleges. This is described as a “**learning journey**”.

- An on-line portfolio for the Met school (and other small schools) is accessible on: [www.whatkidscando.org/portfoliosmallschools/MET/Metintro.html](http://www.whatkidscando.org/portfoliosmallschools/MET/Metintro.html)
- A comprehensive description of the Met’s philosophy, design and practices is given in the book: ‘One Kid at a Time’, Eliot Levine, pub. Teachers College Press, 2001.
- The key contact is **Elliott Washor**, Co-Director of the Met School and the Big Picture Company, the overarching organisation. [www.bigpicture.org](http://www.bigpicture.org).
- Also see articles by Elliot Washor at <http://www.bobpearlman.org/BestPractices/ElliottWashor/ArticlesElliottWashor.htm>.

