Education Policy Brief

P-TECH Schools are Unproven and Threaten Public Education

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Summary

Last year, the Federal Government announced $0.5 million funding for a new type of school in Australia incorporating high school education and two years of tertiary training. It is based on the P-TECH (Pathways in Technology Early College) school in Brooklyn, New York, established by the giant IT multinational IBM and now being rolled out in several US cities. The model is personally endorsed by the Prime Minister, Tony Abbott. Under the proposal, two existing schools in Ballarat and Geelong will be converted into P-TECH schools.

The introduction of P-TECH schools is proceeding without any evidence that they work and without any open discussion of their implications for the curriculum, how public schools are governed and how education is delivered in the classroom. IBM says that the new schools will replicate the New York model but it appears to be incompatible with the provisions of the Victorian Education and Training Act relating to school councils and curriculum development and accreditation and with the national curriculum for Years 9 & 10.

There are good reasons for concern about the introduction of P-TECH schools in Australia. First, the model is unproven. The flagship school in New York continues to be one of the lowest performing schools in the city after four years of operation and its results are well below those of many other schools with a similar demographic composition.

Second, the P-TECH curriculum is much narrower than the requirements of Australia's national curriculum for Years 9 & 10. There is a very real danger that students will be tracked into vocational specialisation too early. It gives priority to serving the labour demands of individual firms rather than providing a broad education needed by all young people.

Third, the model also involves IBM having a key leadership role in public schools. An IBM Vice-President has said that it will "take responsibility" for the Ballarat school and have a support role in the Geelong school. In effect, the P-TECH model represents a new form of school privatisation with IBM and other firms having de facto control over public schools.

Fourth, the two schools and their students will be hostage to the future profitability of IBM and the other corporate sponsors. Students will not be guaranteed a future job and the schools could be abandoned in the event of a profit downturn or a change in global corporate strategy.

Fifth, P-TECH initiative is part of IBM's ambitious program in education to use data analysis to "transform" education. 'Big Data' could dramatically change the nature of schooling and how it is delivered. But, this could be more about delivering greater profits than better student outcomes. Data analysis can help good teaching but it cannot substitute for good teaching.

Sixth, the heavy involvement of IBM and other IT firms also raises a very significant privacy issue about firms having access to detailed student records, a development which is being strongly resisted by parents in the US.

For all these reasons, the P-TECH model should be carefully assessed before it is implemented in Australia. The details of the program are shrouded in secrecy and are being developed and negotiated behind closed doors. If it is to follow the New York model it will require changes to the Victorian Education Act. Parent, teacher and principals' and other public school organisations should be consulted about the proposal to convert existing schools to P-TECH schools.

P-TECH schools in Australia

Last year, the Federal Government announced funding support for a pilot program for a new type of school in Australia which incorporates high school education and two years of tertiary training. It is based on the P-TECH (Pathways in Technology Early College) model first established in Brooklyn and now being rolled out in the United States. The schools will be opened in Geelong and Ballarat with Government funding of $0.5 million and support from the IT giant IBM. According to a recent report in the *Australian Financial Review*, the two schools are expected to be set up within existing high schools in partnership with employers and local TAFE colleges or universities.

The *Financial Review* also reported that IBM would employ a person with an education background to work with the Ballarat P-TECH school and integrate workplace learning into the curriculum. During his recent visit to Australia, IBM's Vice-President of corporate citizenship and corporate affairs, Stan Litow, said the company will take responsibility for the pilot P-TECH school in Ballarat and would support the other pilot school in Geelong. He said that students who completed P-TECH with the required skills would be "first in line" for jobs with IBM, which has an IT services centre in Ballarat providing IT services, support and consulting together with a customer service and call centre facility.

IBM will have a central leadership role in the Ballarat school. Litow said that the Ballarat school would follow the IBM model established in the US. He said that in the US the IBM employee "leads the IBM model" in each school and "help support the mentors, help support the teachers and lead in a collegial fashion".

There are no details yet on the corporate sponsor for the Geelong school. The CEO of the Skilling Australia Foundation, Nicholas Wyman, has been commissioned by the Federal Government to organise sponsors and establish the Geelong school.

The Federal Education Minister Christopher Pyne told the ABC last year that fast food giants and mining firms could be among the corporations interested in the concept in Australia. "We could have McDonalds or IBM or BHP Billiton or Iluka or Santos or manufacturing businesses involved in their local schools," he said. Parliamentary secretary for Education, Scott Ryan, said that the government was not prepared to rule out allowing McDonalds to participate in its P-TECH trial. Nor has the Prime Minister ruled out a role for McDonalds. He has said that McDonalds could have a role "if it's about the application of engineering principles to the fast food sector".

The Federal Government's innovation and competitiveness strategy released last October stated that the pilot P-TECH schools will utilise existing school, vocational and tertiary qualifications, rather than create a new qualification. Students will undertake regular high school curriculum subjects alongside technical subjects such as computer programming, graphics, logic and problem solving. Workplace learning subjects including workplace visits, project-based learning and internships will be embedded in the curriculum and school timetabling.

The report said that employers will be actively involved in the design and delivery of the courses. Students will have identified pathways to employment with the school's industry partners. Students will be able to graduate with a Year 12 qualification, but will be supported to complete further study and gain a post-school ICT diploma or advanced diploma with opportunities for employment with the businesses involved in the programme.

The concept of P-TECH schools in Australia has received support from several quarters. The Prime Minister is completely enamoured with the model following his visit to the flagship school in Brooklyn last year, and pushed for its introduction in Australia. It has been endorsed by the Business Council of Australia with its CEO, Jennifer Westacott, calling for initiatives like P-TECH to be "unleashed" in Australia. Nicholas Wyman from the Skilling Australia Foundation is also a key advocate and has been closely involved in the project, having accompanied the Prime Minister on his tour of the original P-TECH school.

The details of how the new schools will operate are subject to negotiations between the Federal and Victorian governments, IBM and other potential sponsors. A key issue is which existing schools will be nominated for conversion to P-TECH schools, what changes will be made to existing governance arrangements to provide for corporate involvement and whether parents and teachers in these schools are consulted about the proposal.

P-TECH schools in the United States

P-TECH schools in the US were designed to provide students with the final four years of high school and two years of a tertiary study (Years 9-14) with a specialisation in information technology. P-TECH schools are developed as a public/private partnership. As noted above, the first P-TECH school opened in 2011 in Brooklyn, New York, and was established by a partnership between IBM, the New York City Department of Education and the City University of New York. Students graduate with an associate degree in applied science in computer systems technology or electromechanical engineering technology which qualifies them for entry level jobs in the IT sector. The general P-TECH website sponsored by IBM proclaims that its goal is to "re-invent the high school as we know it".

Four other P-TECH schools supported by IBM have opened in New York since 2011. IBM has also supported another five in Chicago together with other high tech companies including Cisco, Microsoft, Verizon and Motorola. There are currently 27 P-TECH model schools in New York, Illinois, and Connecticut and there is a virtual program in Idaho. New York State plans to launch 10 more this year and the Governor has proposed tripling the number of P-TECH schools by 2016. It is expected that there will be about 100 P-TECH schools in the US by next year.

Each P-TECH school is established by a partnership between at least one school district, employer and tertiary college. The partners participate in all key decisions about the development of the school through a Steering Committee made up of their representatives and the principal. For example, there are 13 members of the Steering Committee of the original P-TECH school in Brooklyn consisting of four from IBM, four from the City University of New York, two from the NYC College of Technology, one from the NYC Department of Education, a community co-ordinator and the principal. Teacher and parent organisations have no direct role in the development or running of P-TECH schools.

The curriculum is designed to meet the longer term needs of the firm(s) involved in the partnership. The P-TECH website states that the Employer Partner describes the job skills and training needed for future employees and the curriculum is designed to deliver these skills.

Each lead Employer Partner places a staff member in the school who helps design the curriculum and workplace learning. The staff member also recruits and matches mentors to

students, identifies appropriate internship opportunities and coordinate visits to the firm's facilities by students.

According to IBM there are 70 large and small companies affiliated with existing P-TECH schools. That number is expected to grow to 100 by the beginning of the 2015-16 school year.

The P-TECH model has been much hyped, especially with President Obama lauding it in his 2013 State of the Union speech.

P-TECH school results

A fundamental issue is whether the P-TECH model will work. At this stage, it is very much an experimental program even in the US. The first class of students at the Brooklyn school will not complete high school until this year and not graduate until 2017. As a result, there is no data on how many students graduated, how many got a job, where they work and whether they stayed employed. The model is being widely replicated in the US and Australia without any hard data on its success.

IBM claims that the model has already proved successful. Stan Litow told the US House of Representatives Education and the Workforce Committee in 2013 that the results of P-TECH are "impressive" and that its students "are excelling". An IBM media release issued at the time of Tony Abbott's visit to the P-TECH school in Brooklyn cited Litow as saying:

> The academic results to date in P TECH schools both in New York City and Chicago have been truly impressive, and is the reasons [sic] why it is being expanded so rapidly in the United States.

Last year, the Chief Technology Officer and a Vice-President of IBM, Katherine Frase, asserted that the model is "highly successful" [IBM Education Solutions on the Cloud, p.2]. Nicholas Wyman from the Skilling Australia Foundation, says that it is a "very successful model". An article co-authored by Wyman and Litow in the *Sydney Morning Herald* last December claimed that educational outcomes from P-TECH "have been extremely positive" and that "students are scoring very well on achievement tests".

However, contrary to these claims, the evidence so far is that P-TECH is not achieving any better results than many other New York schools with a similar student demographic profile. Tables 1 & 2 (see Attachment) compare the results of the New York Regents exams for P-TECH and 40 other schools that are classified by the New York City Department of Education as similar (peer) schools.[1] The average scores and percentage of students achieving a pass rate at P-TECH were generally much lower than those of its peer schools, except for Integrated Algebra, a subject that receives a strong focus at P-TECH.

P-TECH had the lowest average score in Geometry and the equal lowest score in Global History (Table 1). It had the second lowest score in Algebra 2/Trigonometry, the third lowest in Living Environment, the fourth lowest in English and the fifth lowest in US History. The only exception to these poor results was in Integrated Algebra where P-TECH achieved the third highest score.

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[1] The spreadsheet of New York City high school results for 2013-14 was provided to SOS by US education blogger Gary Rubinstein. The results were initially posted on the New York City Department of Education website and then taken down. The results for 2012-13 are on the website.

Only two per cent of P-TECH students passed the Geometry and Algebra/Trigonometry exams compared with averages for the other peer schools of 46 and 27 per cent respectively (Table 2). These were the lowest and second lowest pass rates for these exams of P-TECH's peer school group. P-TECH had the second lowest pass rate for English and Global History and the equal fifth lowest for US History and Living Environment.

However, it is possible that P-TECH is disadvantaged in comparisons with other schools in its peer group. The student characteristics used by the NYC Department of Education to create high school peer groups only indirectly take account of the percentage of low socio-economic (SES), Black and Hispanic students according to the Educator Guide for the New York City High School Progress Report. P-TECH has a much higher percentage of these students and a lower percentage of students with disabilities than many other schools included in its peer group and this may distort comparisons of school results.

A different comparison of schools is provided in Tables 3 & 4. P-TECH's results are compared with 25 other schools that have a similar percentage of low SES, Black and Hispanic students. In 2013-14, 67 per cent of P-TECH students were eligible for free lunches (a measure of low SES) and 96 per cent were Black or Hispanic students. The other schools included in the tables had 65-70 per cent free lunch students and 90-100 per cent Black or Hispanic students.

Here, also, the results of P-TECH were generally much lower than those of the other schools with a similar demographic composition, except for Integrated Algebra. It had the lowest result on the Geometry and Algebra 2/Trigonometry exams of all the comparable schools for which results are available (Table 3). P-TECH's English score was slightly below the average for the other schools, but was exceeded by 17 of the 25 schools. It had the fourth lowest score in US History, the third lowest score in Global History and the fifth lowest in Living Environment. In contrast, it had the second highest score in Integrated Algebra.

Only two per cent of P-TECH students passed the Geometry and Algebra/Trigonometry exams compared with averages for the other schools with a similar student composition of 44 and 29 per cent respectively (Table 4). Only seven of the 25 schools had a lower pass rate in English and Living Environment than P-TECH and only three had a lower pass rate in US History. Only 28 per cent of P-TECH students passed Global History compared with an average of 46 per cent for the other schools.

These comparisons suggest IBM executives and their acolytes have vastly exaggerated the success of P-TECH. Indeed, one US education writer says that P-TECH is one of the lowest performing schools in New York. Its rapid expansion looks like another education program based on faith rather than hard evidence.

Tracking students into specialised vocational training

Another key issue is whether students will be forced into specialised vocational education in IT-related areas too early. The results from the OECD's PISA 2012 tests show that the SES background of students and schools has a stronger impact on performance where students are grouped into different tracks at an early age and where more students attend vocational programmes than where students are selected into different tracks later [OECD, *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, p. 36]. Certainly, specialised vocational pathways should be offered as part of the curriculum in

the senior years of high school, but these results suggest that this is a mistake in Year 9 or earlier, and perhaps in Year 10 as well.

The breadth of the curriculum in P-TECH schools in Australia and the extent to which it will conform with the national curriculum will be central issues to be resolved. There is a huge difference in the breadth of the curriculum required under the national curriculum for Years 9 & 10 and that in P-TECH schools.

The curriculum of P-TECH schools in the US is very narrow and is largely focused on English, maths, technology and workplace learning. The details of the curriculum are provided in a Development Guide published by IBM. For example, in Year 9 there is no general science, no general mathematics, no geography, no history and no civic studies. The maths curriculum consists solely of algebra and trigonometry at this Year level. In contrast, the Australian curriculum for Year 9 includes arts, English, health and physical education, civics and citizenship, economics and business, geography, history, languages, mathematics, science, technologies and work studies.

Up to Year 10, the curriculum should provide for a broad general education including generic, not specialised, vocational education. The technical school model didn't work in Australia because students were tracked into vocational courses too early and were denied the broad education necessary for broader work opportunities and further education and training. The P-TECH model may repeat this mistake. As the former President of the Australian Education Union, Angelo Gavrielatos, said last year:

> Students leaving schools today can expect to have several different careers. They need a broad curriculum that prepares them for this, not one that is designed for the short-term staffing needs of one company.

No exemption should be given to the P-TECH pilot schools to provide a narrower curriculum than required by the national curriculum, especially in Years 9 & 10.

It is an open question whether the kind of jobs P-TECH students are being trained for will continue to exist in Australia. The objective is to prepare students for entry-level technology jobs such as software developers, technical support staff, or people who can work in call centres. IBM is not guaranteeing future employment for P-TECH graduates, only that they will get an interview. The supply of P-TECH graduates in Ballarat and Geelong could well exceed the demand by IBM and other corporate sponsors, in which case students could find that their qualifications are too narrow and they cannot find suitable employment.

Increasingly, the IT jobs that P-TECH students will be trained for have been shifting off-shore. There has been a huge decrease in the IBM workforce in North America in the last decade as it outsourced skilled technology jobs overseas. In Australia, IBM has been shifting services offshore to Singapore, Malaysia and Ireland in recent years. About 1500 jobs were made redundant in Australia in the last two years as part of its global restructuring program. One US analysis of IBM's P-TECH program referred to the contradiction between training more young people for IT jobs and shifting those jobs offshore as "cognitive dissonance":

> IBM's cognitive dissonance illustrates the philosophical tensions between corporate responsibility and profitability, and between sustainability and creative destruction. It also underscores the inherent limits of any educational model which depends on close

corporate partnerships to either guide curricula or promise the first crack at a well-paying job at the end of six years — because no one can guarantee IBM will still need their skills when P-TECH's first class graduates in 2017.

The Ballarat school is to be configured to supply a stream of graduates to IBM's facility in the city. While the facility is substantial, there is no guarantee it will remain in the long term given the ongoing re-structuring of IBM's global operations in response to competition from other IT giants.

IBM says that the P-TECH program is aimed at engaging students who are in danger of dropping out of schools. However, students who drop out of school before the end of Year 12, on average, have very poor literacy and numeracy skills. While practical hands on vocational subjects may help keep them in schooling to Year 12, the priority should be to provide the funding and learning support to improve their literacy and numeracy skills before they enter the senior secondary years.

A new form of school privatisation

There are also important issues at stake for school governance in the public education system. There is a long history of links between public schools and industry in Australia, but it is highly unusual for one firm to be so directly involved in the development and implementation of the curriculum of a school and the way a school is run as is the case with P-TECH schools.

The extent of the involvement of IBM in P-TECH schools is revealed in its Development Guide for establishing these schools, recently updated as an on-line guide. Indeed, the fact that the guide was developed and publicised by IBM rather than the NYC Department of Education reflects the central role that IBM has in the program.

Each P-TECH school is established under a Memorandum of Understanding between its partners - the school district administration, the corporate sponsor, and the tertiary institution. The Memorandum sets out the governance structure of the school and the roles and responsibilities of each partner organisation. It shows that IBM and other sponsor corporations have a direct leadership role in these schools.

The key decision-making body in P-TECH schools is the Steering Committee made up of the principal and representatives from each of the school's partners. The powers of the Steering Committee cover all aspects of the operation of the schools such as determining teacher hiring and professional development, developing curricula including workplace learning, reviewing student performance data and making decisions regarding technology, infrastructure, and funding. The Steering Committee also selects the school principal and is closely involved in the recruitment of teachers. The Development Guide sets out the criteria for the employment of the principal and teachers. It also states that all the school partners should be involved in the interview process for the principal and teachers.

Under the Steering Committee there are a number of planning committees with representatives from each partner and authorised to take decisions in their particular areas. For example, there is a curriculum committee responsible for developing aspects of the school curriculum.

Under the Memorandum of Understanding, each IBM sponsored P-TECH school has a lead IBM employee working with the principal and school staff. The employee recruits and

matches IBM-based mentors to students, identifies appropriate internship opportunities in workplaces, and supports teachers and faculty in developing curricula. There is no requirement that the IBM employee should have a teaching qualification. The Development Guide states that IBM has led the development of the P-TECH's workplace learning curriculum. All students are matched in one-to-one relationships with IBM mentors – note, not teachers.

There are no details available at this stage on the precise role that IBM employees or other corporate sponsors will play in developing the curriculum and the general operation of the two P-TECH schools in Australia. However, the IBM vice-president behind the scheme says the firm "will take responsibility" for the Ballarat school and that its employee in the school will take a leadership role as is the case for P-TECH schools in the US.

IBM's requirement for it and other corporations to have a leadership role in the pilot schools means that the existing governance structure has to be overturned. At present, the functions of school councils in Victoria are very narrowly defined in legislation compared to those of P-TECH Steering Committees. Moreover, there is no provision for corporate representation on school councils, let alone for a corporation to take responsibility for a school, and there is no provision for direct corporate involvement in developing the curriculum. The Victorian Education and Training Reform Act would need to be amended to allow for these changes.

Expanding the functions of school councils and permitting IBM and other corporations to be directly represented on school councils and involved in developing curricula would give these corporations de facto control of the schools. Formally, the schools will remain in public hands, but in practice they will be outsourced to IBM and the other sponsors. It is a new form of school privatisation in Australia, with one giant multinational firm effectively running a public school and being closely involved in the other.

P-TECH is part of IBM's global strategy

The question must also be asked as to what IBM's interest is in establishing P-TECH schools. The answer is that they form part of IBM's global expansion strategy in two ways. One is about training future IBM leaders and breading into new markets. The other is about transforming the company into a data management and analytics firm supplying these services to a vast range of industries, government agencies and non-profit organisations. IBM sees this as the basis for its future profitability and long-term viability.

P-TECH is part of IBM's Corporate Services Corp, the brainchild of Stan Litow, to train and deploy thousands of IBM's future leaders, promote new partnerships with local governments and NGOs, and open new markets in countries and industry sectors. The program attracts the most elite, up-and-coming leaders at IBM. The firm forms teams of skilled volunteers to perform pro bono consulting for government and businesses in various parts of the world to develop new markets and train future leaders. It helps the locals become more familiar with the company's capabilities, and provides IBM with insights into unfamiliar cultural and business environments.

As explained in a Forbes magazine article, the Corporate Services Corp is part of IBM's growth strategy. "This allows us to build the experience and relevance to enter new markets," says Litow. He says that P-TECH is a prime example of IBM's "sustainable" approach to corporate philanthropy, which refers to the company's ability to sustain profits.

P-TECH is also a cog in IBM's Smarter Planet strategy designed to use data gleaned from large IT systems to find "smarter" ways of providing goods and services, whether it be monitoring food chains, designing water management, power and traffic systems, or providing health care and education. The Smarter Cities program part of the Smarter Planet strategy provides hardware, software and service solutions for local governments to improve efficiency and lower costs across a whole range of services, including health care and education. IBM is "moving away from a company specializing in the supply of technology to a company handling how to apply technology," according to Michael Dixon, the Smarter Cities general manager.

IBM and other multinational IT firms are striving to convince governments and education administrators around the world that "Big Data" is their answer to lowering costs and improving education outcomes. For them, more data is the answer to better teaching and learning. As IBM Vice-President of IBM, Katherine Frase, has stated:

> With deep capabilities in big data and analytics, as well as industry leadership in social, mobile and cloud, IBM is in a unique position to drive the transformation of the education industry in the coming decade. [IBM Education Solutions on the Cloud, p. 3]

P-TECH provides an opening for IBM in the data-driven market of transforming secondary and higher education, which Rupert Murdoch has described as "a $500 billion market in the US alone that is waiting desperately to be transformed". In this project, IBM is in competition with other giant firms such as Pearson, Microsoft and Murdoch's Amplify, in selling how to use technology rather than just the technology itself. For example, Microsoft has recently embarked on a similar strategy to IBM with its City Next program.

IBM is using P-TECH and its clones as test sites to expand its Smarter Cities program. It sees today's public education system as "a collection of cottage industries" ripe for change. One goal is to integrate district and school operating systems, measurement and management processes to reduce costs. But, the other more far-reaching goal is to use data on students' background, achievement, attendance and mobility that is stored electronically to identify student needs and prescribe solutions for teachers and schools. IBM and other technology services companies are establishing huge data warehouses on students which include names, addresses, phone numbers, attendance, test scores, health records and so on.

IBM has a very ambitious agenda to transform schools and classrooms as revealed on its website:

> School solutions from IBM can help your school take a new approach to student performance, teacher training, low performing schools and school administration.... Our solution is designed to drive improved student academic achievement using predictive analytics, instructional case management and education portal capabilities.

Indeed, the extent to which IBM believes it can use data analysis to deliver better student and school performance is quite startling and incredibly ambitious:

> The underlying systems will provide "decision support" for teachers to identify students who are most at risk, recognize their derailment factors and deliver insights

for tailored interventions to overcome each student's challenges. [IBM Education Solutions on the Cloud, p. 11]

As one analyst of IBM's education strategy writes, it wants:

> A single system for collecting, aggregating and analyzing data from students and teachers alike, then writing algorithms to prescribe how to cope with a troubled student just as one might try to reroute a traffic jam.

Katherine Frase put it this way:

> The big challenge now is whether we can become prescriptive. Can I not just tell you these kids are at risk, but that they're best handled this way and not that way?

Such a vision of education makes teachers and school leaders virtually redundant. As an article in the Washington Post explains:

> IBM envisions a future classroom that is digital and tracked by instruments. Every student will have a digital device in front of them. When a confusing part of a lesson emerges, students can comment on their devices that something is difficult to understand. Researchers then aggregate those comments from hundreds of schools, and realize what parts of a lesson plan need fine-tuning. That leads to better instruction, and better-educated students.

Jeffrey Henig, professor of political science and education at Teachers' College at Columbia University, has called this ambitious, almost arrogant, reliance on data collection and analysis to transform education "policy by algorithm".

The danger of the enthusiasm for Big Data is that it will encourage reliance on computer generated solutions and substitute standardised teaching for good teaching based on professional judgement drawing on a range of data, observations and experience. As one writer in the business magazine Forbes commented:

> ....the rush to collect and use data....may end up degrading, rather than improving, the quality of the teacher-student connection.

Data analysis can help good teaching but it cannot substitute for good teaching.

Moreover, Big Data is not foolproof. Big Data has produced some big failures in other fields; most notably, all the incredibly complicated computer analysis of financial data used by hedge fund managers and investment bankers failed to predict or avoid the financial crisis of 2008. Hedge funds and banks still went bust. In this case, Big Data proved to be worthless and algorithms led to bad decisions.

There is also widespread resistance in schools and amongst parent groups in the US to allowing IT companies like IBM have access to, or have control over, data on students. There are increasing calls for restrictions on how information from educational sites, apps and cloud services is used by the education technology industry. There is growing parental concern that sensitive information about children such as data about learning disabilities, disciplinary problems or family trauma might be disseminated and disclosed.

P-TECH provides IBM with a unique opportunity to get the data it needs to sustain its strategy. Being involved in running schools is a way to get access to the data. It will help IBM to experiment how to use this data.

> P-TECH, basically, is a research project for gleaning best practices that can be codified into software or peddled by IBM's consultants to other clients — in this case, schools.

The implications of the collection of data on students by education technology companies have been little discussed in education circles in Australia. The introduction of P-TECH schools in Australia makes this discussion imperative and urgent.

Another possible consequence of the entry of IT firms into education is that the schools and their students will be abandoned if profits turn sour. This has already occurred with many for-profit schools and tertiary providers in the United States (the most recent being the collapse of Corinthian College, one of the largest for-profit education companies in the US), Sweden (the bankruptcy of JB Education, one of the largest operators of independent state-funded schools) and Australia. Governments are then left with the wreckage.

This could well happen in the fiercely competitive environment facing IBM and other giant high tech firms. For example, Bloomberg recently reported that Rupert Murdoch's billion dollar Amplify venture is riddled with failures. As one analyst of IBM's program states:

> IBM's interest in public education will last for as long as profits are able to sustain it....
> Despite flashes of interest at times when labor markets tighten up, the attention deficit disorder that comes with being a public company beholden to earnings targets means private employers will inevitably lose interest when conditions change.

Conclusion

P-TECH initiative in Australia is part of IBM's worldwide strategy to transform itself into a data management and analytics company. It has a very ambitious program in education which would dramatically change the nature of schooling and the delivery of education which could serve more to increase corporate profits rather than student outcomes. P-TECH schools give priority to serving the labour demands of individual firms rather than providing the general education needed for all young people to take their place in society as adults in a variety of roles. There is no employment guarantee for students in P-TECH schools. They also undermine the principles of public education by giving private corporations a leadership role in public schools and close involvement in the development of curriculum. It would mean that these corporations have de facto control over public schools. It also gives them access to, even control over, detailed student records which raises highly significant privacy issues.

The program is yet another example of copying from the US without first looking at the evidence and potential implications for the nature of public education. It has been widely acclaimed simply on the basis that it sounds like a good idea rather than relying on sound evidence. This is educationally irresponsible; students deserve something more than this. As Professor Stephen Dinham from the University of Melbourne recently wrote in the journal *Education Policy Analysis Archives*:

It might appear naive but surely it is up to the proponents of major change to provide supporting evidence prior to its widespread introduction. It should not be left to others to disprove or question these significant developments. In the medical sphere there are well-established protocols that need to be adhered to prior to the introduction of any new drug or treatment. No such protocols apply in education, an area in which lives are also at stake. [pp. 13-14]

The final word comes from senior education officials in New York who have warned against declaring victory too soon in using the model to prepare at-risk students for careers. Education commissioner John King said that all of the attention and praise that has been heaped on the P-TECH model is meaningless if the schools don't ultimately yield results. The Board of Regents chancellor, Merryl Tisch, said "we've got to watch this model," especially as New York undertakes a massive expansion of P-TECH schools.

We too must watch P-TECH closely in Australia. In particular, the Victorian Government should examine potential consequences for students and public education of Tony Abbott's pet project very carefully before taking it up. There are many reasons to reject it. P-TECH schools should not proceed if they involve a leadership role for IBM and other corporate sponsors in public schools, a narrowing of the curriculum or giving those firms access to detailed student records.

The details of the proposed P-TECH schools including which schools will be converted, how they will operate and the extent of involvement of IBM and other corporate sponsors in school governance and curriculum development should be made public. At present, the details are shrouded in secrecy and negotiations between governments and corporate sponsors are proceeding behind closed doors. Parent, teacher and principals' and other public school organisations should be involved in an open discussion of the proposal.

If the new schools are to follow the IBM model established in the US as IBM Vice-President, Stan Litow, says, it will require amendments to the Victorian Education and Training Reform Act 2006. Such amendments should be open to extensive public consultation and discussion and not rushed through the Victorian Parliament.

Attachment

Table 1: Average Scores in Regents Exams, Peer Schools, 2013-14

School	Integrated Algebra	G/metry	Algebra 2/Trig	English	US History	Global History	Living Environment
Pathways in Technology Early College High School (P-Tech)	72	47	36	66	63	53	62
High School of Hospitality Management	72	58	48	71	74	64	74
Urban Assembly School of Design and Construction	69	69	65	74	71	58	67
Manhattan Business Academy	66	71	52	71	79	72	76
High School for Language and Diplomacy	66	65	43	73	71	69	73
Urban Assembly Gateway School for Technology	71	67	48	74	87	78	76
Murry Bergtraum High School for Business Careers	61	56	49	63	56	58	61
Union Square Academy for Health Sciences	70	70		76		74	74
Chelsea Career and Technical Education High School	68	72	65	74	81	70	77
Life Sciences Secondary School	62	72	62	72	65	64	68
Eximius College Preparatory Academy	66	57	46	71	77	64	68
Bronx School for Law, Government and Justice	65	60		71	70	68	72
Marie Curie School for Medicine, Nursing, and Health Professions	61	54	57	72	73	61	67
Knowledge and Power Preparatory Academy	70	54	43	72	72	68	73
Belmont Preparatory High School	71	62	61	69	65	65	74
Pelham Preparatory Academy	64	58	44	75	80	67	66
Dr. Susan S. McKinney Secondary School of the Arts	57	50		70	62	53	65
Science Skills Center High School for Science, Technology and the Creative Arts	68	57	60	67	70	60	66
George Westinghouse Career and Technical Education High School	61	53	56	72	69	58	59
City Polytechnic High School of Engineering, Architecture, and Technology	70	66	49	71	75	70	69
Brooklyn Preparatory High School	67	61	38	69	69	61	72
Williamsburg Preparatory School	75	69	65	77	78	71	70

Park Slope Collegiate	66	61	45	70	75	61	68
School for International Studies	66	53	52	74	72	63	66
Brooklyn High School for Law and Technology	68	70	66	68	59	64	72
Brooklyn Academy of Science and the Environment	71	64	49	70	73	68	63
Clara Barton High School	65	56	46	71	76	58	65
Academy for Young Writers	66	62		73	69	62	70
Rachel Carson High School for Coastal Studies	69	65	56	78	74	70	71
Abraham Lincoln High School	64	58	68	66	61	62	65
Life Academy High School for Film and Music	75	48	35	78	86	74	81
Grover Cleveland High School	64	69	56	65	71	61	67
Veritas Academy	71	70			69		72
High School for Law Enforcement and Public Safety	61	65	58	73	74	63	66
Pathways College Preparatory School	65	61	45	72	74	58	64
Humanities & Arts Magnet High School	63	59		70	58	64	62
Long Island City High School	65	58	54	65	67	59	64
Information Technology High School	68	70	74	70	71	63	73
New Dorp High School	70	68	62	77	77	68	71
Curtis High School	69	64	51	73	74	63	70
New Visions Charter High School for Advanced Math and Science	66	65	45	68	74	64	65
Average	**67**	**62**	**53**	**71**	**72**	**64**	**69**

Source: New York Department of Education, High School Results 2013-14

Table 2: Pass Rates on Regents Exams, Peer Schools, 2013-14 (%)

School	Integrated Algebra	G/metry	Algebra 2/Trig	English	US History	Global History	Living Environment
Pathways in Technology Early College High School (P-Tech)	76	2	2	64	53	28	51
High School of Hospitality Management	82	34	13	82	77	54	91
Urban Assembly School of Design and Construction	73	68	50	83	76	37	63
Manhattan Business Academy	67	77	18	87	88	73	80
High School for Language and Diplomacy	57	57	14	78	71	69	79
Urban Assembly Gateway School for Technology	80	70	17	88	95	87	85
Murry Bergtraum High School for Business Careers	39	29	19	59	35	41	40
Union Square Academy for Health Sciences	74	68		86		78	75
Chelsea Career and Technical Education High School	72	82	57	91	92	79	94
Life Sciences Secondary School	47	76	54	76	56	58	69
Eximius College Preparatory Academy	60	29	13	79	83	57	69
Bronx School for Law, Government and Justice	52	33		78	71	54	81
Marie Curie School for Medicine, Nursing, and Health Professions	46	20	29	80	73	47	64
Knowledge and Power Preparatory Academy	78	23	9	83	80	75	79
Belmont Preparatory High School	77	49	42	76	57	58	82
Pelham Preparatory Academy	53	35	11	86	87	57	58
Dr. Susan S. McKinney Secondary School of the Arts	29	11		77	53	19	52
Science Skills Center High School for Science, Technology and the Creative Arts	67	30	49	68	67	42	60
George Westinghouse Career and Technical Education High School	40	23	19	81	68	40	42
City Polytechnic High School of Engineering, Architecture, and Technology	70	61	15	78	80	70	65
Brooklyn Preparatory High School	63	43	0	73	72	43	74
Williamsburg Preparatory School	87	69	52	88	81	70	71
Park Slope Collegiate	55	42	8	80	78	50	66
School for International Studies	57	20	11	85	76	51	51

School							
Brooklyn High School for Law and Technology	69	76	58	73	47	59	89
Brooklyn Academy of Science and the Environment	73	52	13	76	82	68	49
Clara Barton High School	57	22	8	77	82	42	58
Academy for Young Writers	60	37		84	65	47	72
Rachel Carson High School for Coastal Studies	69	52	27	91	82	64	69
Abraham Lincoln High School	51	32	65	68	47	52	55
Life Academy High School for Film and Music	96	3	0	97	100	90	100
Grover Cleveland High School	53	66	36	64	71	49	64
Veritas Academy	74	82			67		78
High School for Law Enforcement and Public Safety	42	59	38	82	79	55	62
Pathways College Preparatory School	56	43	23	83	76	37	57
Humanities & Arts Magnet High School	49	36		82	29	52	49
Long Island City High School	55	33	31	65	63	42	54
Information Technology High School	62	73	77	78	74	50	79
New Dorp High School	73	65	49	87	82	64	71
Curtis High School	71	48	20	83	76	54	67
New Visions Charter High School for Advanced Math and Science	59	51	8	70	83	55	57
Average	**63**	**46**	**27**	**79**	**72**	**55**	**68**

Source: New York Department of Education, High School Results 2013-14

Table 3: Average Scores in Regents Exams, Selected Schools, 2013-14

School	Integrated Algebra	G/metry	Algebra 2/Trig	English	US History	Global History	Living Environment
P-Tech	72	47	36	66	63	53	62
Kurt Hahn Expeditionary Learning School	67	54	42	68	72	59	68
Automotive High School	59	48	na	50	61	52	56
High School of Fashion Industries	na	na	na	58	59	55	63
Teachers Preparatory High School	65	64	54	72	74	73	72
Victory Collegiate High School	61	na	na	68	70	56	68
International Leadership Charter High School	69	na	na	75	80	79	81
Clara Barton High School	65	56	46	71	76	58	65
Transit Tech Career and Technical Education High School	60	62	36	73	65	58	64
Bronxwood Preparatory Academy	65	66	70	68	65	57	66
Bronx Guild	60	na	na	64	60	56	65
Academy for Scholarship and Entrepreneurship	64	63	na	69	66	52	58
Boys and Girls High School	58	59	59	62	55	58	60
Washington Irving High School	60	na	na	57	67	55	53
Science, Technology and Research Early College High School at Erasmus	79	74	64	77	74	82	75
Academy for Young Writers	66	62	na	73	69	62	70
Urban Assembly Institute of Math and Science for Young Women	65	53	na	76	72	64	65
Theatre Arts Production Company School	70	na	45	63	73	63	71
Brooklyn School for Music & Theatre	64	55	46	70	69	60	61
Excelsior Preparatory High School	70	72	90	70	72	65	65
Academy for Conservation and the Environment	62	55	40	69	64	57	63
Frederick Douglass Academy VI High School	58	68	na	73	63	54	59
New Design High School	70	na	na	75	71	64	64
Eagle Academy for Young Men	66	na	51	65	68	56	70
International Arts Business School	65	na	na	66	69	63	na
Life Sciences Secondary School	62	72	62	72	65	64	68
Average	**65**	**61**	**53**	**68**	**68**	**61**	**65**

Source: New York Department of Education, High School Results 2013-14

Table 4: Pass Rates on Regents Exams, Selected Schools, 2013-14 (%)

School	Integrated Algebra	G/metry	Algebra 2/Trig	English	US History	Global History	Living Environ ment
P-Tech	76	2	2	64	53	28	51
Kurt Hahn Expeditionary Learning School	67	13	0	76	74	39	65
Automotive High School	35	8	na	28	46	27	34
High School of Fashion Industries	na	na	na	49	50	30	54
Teachers Preparatory High School	51	55	26	79	82	68	76
Victory Collegiate High School	46	na	na	71	75	29	76
International Leadership Charter High School	76	na	na	91	89	89	98
Clara Barton High School	57	22	8	77	82	42	58
Transit Tech Career and Technical Education High School	37	45	1	83	61	37	50
Bronxwood Preparatory Academy	53	50	73	70	59	37	61
Bronx Guild	39	na	na	57	44	33	56
Academy for Scholarship and Entrepreneurship	49	52	na	72	60	31	32
Boys and Girls High School	41	47	38	57	31	40	43
Washington Irving High School	39	na	na	52	65	37	35
Science, Technology and Research Early College High School at Erasmus	96	86	55	92	82	93	87
Academy for Young Writers	60	37	na	84	65	47	72
Urban Assembly Institute of Math and Science for Young Women	56	16	na	94	82	57	56
Theatre Arts Production Company School	82	na	13	52	79	53	72
Brooklyn School for Music & Theatre	52	38	7	79	63	46	42
Excelsior Preparatory High School	79	91	100	78	76	60	62
Academy for Conservation and the Environment	45	35	0	79	57	36	57
Frederick Douglass Academy VI High School	35	67	na	79	57	36	57
New Design High School	76	na	na	90	70	58	53
Eagle Academy for Young Men	62	na	27	55	68	35	75
International Arts Business School	63	na	na	70	76	50	na
Life Sciences Secondary School	47	76	54	78	56	58	69
Average	**57**	**44**	**29**	**72**	**65**	**46**	**59**

Source: New York Department of Education, High School Results 2013-14