Teachers for the Future: An Unmet Need

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Abstract

In 2000 Central Queensland University conducted the first major review and redevelopment of its teacher education programs. Consequently the Bachelor of Learning Management (or BLM) came into being. A central premise of the BLM was the concept of graduate teachers having a 'futures orientation'. In this article the results of a study into the perceptions of mentors and graduate teachers, with respect to a futures orientation, are reported.

This article is about the future of teacher education and teachers who can better prepare their students for the 21st Century. The article sets the scene for such a vision and draws some conclusions drawn from a study of a disruptive teacher education program called the 'Bachelor of Learning Management' [or BLM[1]] (Smith, 2001).

A central feature of the BLM was a determination to be 'futures orientated'. In an industry chararcterised by its propensity to mirror the past, the BLM set out to teach new knowledge and skill sets in order to redefine the what, when, where, why and how of teaching post-2000[2]. The future orientation was combined with the idea of teaching as 'design with intent', borrowed from *architectural* sources, in the concept of 'Learning Management' (Smith, 2000, 2001).

Learning Management signified a new teaching paradigm that focused primarily on teachers being able to accomplish defined student achievement outcomes by designing pedagogical strategies based on research findings about effective teaching. In an industry that traditionally eschewed 'achievement' in the search for 'equality' and ignored the 'how of teaching' in favour of the what of 'curriculum, this was a seminal move. The over-arching question was "would it work?"

As it turned out, at the time of the first BLM graduation, the last graduates from the pre-existing conventional Bachelor of Education (BEd) were also graduating, providing a unique opportunity to compare the success of each program in producing effective teachers. The remainder of the article is concerned with comparisons of graduates from the BLM and BEd and their implications.

The reasons for adopting such a view on 'futures orientation' and 'teaching' are not difficult to fathom if the history of teacher education is taken into account. Conventional teacher education was based on the general tendency in that field over decades to misconstrue moral advocacy for objective historical analysis of the effects of teacher education models. While there is no end to the noble sentiments of social justice, equity, equality of opportunity and so on, the field had

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[1] This program is explained in more detail in; Ingvarson et al, (2005) and Smith and Lynch, (2010)

made few systematic attempts to intervene in the practice of teaching on behalf of the primary stakeholders, the objects of the rhetoric, students. Instead, it abdicated the 'practical', the practice of teaching, to working teachers, thus fragmenting purposes and practice and surrendering the strategic political importance of "teaching" to educational fads and ideological struggles.

Yet, the political importance of teaching, and in turn, teacher education, was clear: as a profession, it prepares new generations to deal with the future world in which students are already living. Its effectiveness in students reaching nominated achievement levels was and is of high value to the social, cultural and economic futures of the nation. Focusing on the logic of the teacher education arrangement, it is apparent that teacher education sets the educational knowledge and practice environment for *future* teachers and teaching while reflecting and being embedded in the real world of teaching work now. The boundaries of now and 'in the future' are blurred in everyday practice but analytically they are different realms.

This can be seen in the conventional approach to teaching. Educational analyses of the 'social context' tend to dwell on ideas such as the 'the individual child', student 'home backgrounds', social-psychological obstacles to 'learning' and so on. They are noble ideas but are both myopic and rear-vision in nature, necessary but insufficient for the preparation of tomorrow's teachers. In periods of rapid and decisive social change, they are second order. There are good reasons for holding such a view.

Globalisation

Australia, like other countries, is shaped by, and helps shape, international alignments. The growing interconnectedness from the information technology revolution, expanded flows of information, technology transfers, capital, goods, services, and people worldwide is a 'mega-trend' called 'globalisation' (OECD, 2006; Christensen, et al, 2004).

Growing global interconnectedness and the present flux and rapid change conditions have dominated recent history and appear to be the defining features of the world for the foreseeable future. They herald a new world order in which most countries will be affected by their processes and effects. Indicators suggest that Asia, Brazil, North and sub-Saharan Africa and Indonesia look set to displace Western countries as the focus for international economic and social dynamism. They have enormous populations, fast-growing consumer markets, more firms

becoming world-class multinationals, and greater science and technology stature (Florida, Gulden and Mellander 2007).

The transformative power of economic modernization has given birth to a global middle class. In Asia alone, 500 million people have recently emerged from poverty, and that number will be roughly 1.75 billion by the end of the decade. Most will be in Australia's 'neighbourhood'. What Mahbubani (2013) finds striking is the consistency of middle-class values and aspirations in disparate settings: most of the world's people live outside of the West, but they increasingly want the same things and embrace the same ideals as people in the West. Their national education and economic systems are geared to such ends. At the same time, European countries and Russia face changes in their education and tax systems, reforms to social welfare, work forces, and shrinking populations as they contemplate protracted economic stasis.

Moreover, Florida, Gulden, and Mellander (2007) point to the rise of a new socio-economic unit called 'mega-region' (see Florida, et al, 2007) representing the comparatively free allocation of capital and labour in the 21st century. Their prediction is that a state-bound world and a world of mega-regions and cities will co-exist, linked by flows of telecommunications, trade and finance (Moser, 2003; Doyle, Kurth & Kerre, 2000). This arrangement contrasts with the more clearly defined world of "nations" in a previous historical time[3] These mega-regions have shown that growing Internet connectivity may well be accompanied by the proliferation of virtual communities of interest, complicating the ability of states to govern (International Business Times, 2012).

In these circumstances, 'First World' countries and regions are bound to see themselves as being in relative decline as China and India close the gap. Countries like Australia and the USA are particularly prone to seeing their relative power eroded while remaining global leaders. The old categories of East and West, North and South, aligned and nonaligned, developed and developing as traditional geographic groupings appear certain to lose salience in international relations.

Implications

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[3] Note the critical comment about Shanghai being included in the international comparison of PISA results. Some commentators, opposed to the comparisons, cried foul over Shanghai's inclusion, missing the point that it is a mega-region with a population exceeding that of Australia. See Sean Coughlan (2012) China: The world's most clever country? http://www.bbc.co.uk/news/business-17585201

Trends such as these sign post a different kind of world to that of the past (Lynch, 2012; Fullan, 2007). Schools today, the fundamental formal education mechanism in most societies, face significant changes to their operating principles if they are to fulfill the function of preparing the young for a different kind of world. There are bell weather signs about such changes within countries such as Australia. Discernible changes in the structure and character of families have blurred the nurturing nuclear family of the 'home' assumed in much curriculum development. Furthermore, there are new patterns of employment and underemployment, greater mobility and new concentrations of poverty in both rural and urban settings as these changes become entrenched (Hargreaves, 2003; Edgar, 1999).

As an example, employers seek different kinds of education outcomes in and work arrangements from their employees. The diffusion and use of information and knowledge as well as its creation are more important than ever in formerly labour-intensive industries such as mining. There are expectations that workers at all levels will possess a skill-base, strategic 'know-how' and the competence to interact and share with sub-groups and networks in the workplace. The role of networks, increasingly international, foster continual innovation and learning (OECD, 1996).

School systems everywhere are thus under increasing pressure to meet these challenges and to prepare students for a globally competitive and technologically driven world economy (Schofield, 1999). In Australia, such circumstances are thrown into stark contrast by intense and acrimonious public and professional debates about such indicators as international achievement comparisons, suggesting that schooling that has changed little from its nineteenth century roots, (Grattan, 2010, Edgar, 1999).

Given the school sector's charter to prepare the next generation for living and working in a globalized world, there are direct and quite urgent implications for change in teaching and in teacher education. 'Getting a good education' is even more important for individuals and groups that it was when the main goal was getting a job locally. Faced with intense international competition in all spheres of life, not having appropriate education qualifications is the greatest social justice issue for Australian individuals, families and society. Without the requisite education and capacities to apply it, younger generations of Australians will be relegated to the relative unskilled by international standards.

All Australian school systems now have policies and imperatives that require school graduates to have the skill and knowledge repertoires and conceptual toolkits to prosper in a globalised

environment (Smith and Lynch, 2010). This is quite a new role compared to the even recent past and it is largely dependent on teachers and teaching. Teachers have come centre stage in a large vision of national renewal via the schools. The existing teacher force doing what it presently does, cannot fulfill this aim. The enormity and difficulty of the task requires teachers then and now with new capabilities especially in 'teaching' and the mindset that targets student achievement as a core requirement of teacher work. These are referred to as "learning management" in the BLM program (Lynch, 2012; Smith and Lynch, 2010).

The BLM architects did not have a specific vision of a complete changed teaching and schooling paradigm *per se*, but they did make clear in their published material that their intention was to prepare teachers so that they could deal with and operate in a fundamentally different world that globalisation would invariably create for students and teachers alike. A Queensland policy document of the time--- *Queensland State Education 2010* (Education Queensland 2000) covered much of the same ground and provided BLM program architects with a reference point for such futures orientated teaching goals. Before proceeding, let us set out what the BLM proposed as its 'context' of teacher education in the early 2000s. It included the following components.

(i)   The future: it was proposed that all teacher education lecturers, participating teachers and graduates would have a working knowledge of 'future' trends and likely developments that would affect the nation and in turn the requirements on schools and their students

(ii)   Globalisation: Similarly, that Learning Managers (the term given to graduate teachers of the BLM) would have the capacity to ensure that school students would understand and be prepared to participate in a multicultural society, in a globalised world

(iii)   Innovation and Entrepreneurship: Learning Managers would have the theoretical capabilities and practical application experience to lead, steer and influence educational organisations to improve student achievement, especially by using intensive data gathering and analysis of a clinical kind

(iv)   Illumination to performativity: Learning Managers would stress 'doing' over talking about doing and be able to demonstrate it in their preparation years, signified especially in pedagogical strategies that improve student achievement

(v)   Mindset: Learning Managers would have personal characteristics such as courage, planned risk taking skills, imagination, intuition and creativity that could be leveraged

to eradicate organisational and pedagogical barriers to student achievement (Smith and Lynch, 2010).

These components constituted a 'futures orientation' that conceptually connected the broader world debates in social change and effective pedagogy without being locked into the exclusive discourse and practices of conventional teacher education. In this sense, it broke new ground in the field, where, until the emergence of the BLM, a 'future' perspective was nowhere to be found in programs or policies.

The key workplace readiness and futures orientated teaching attributes shown in Table 1 were developed within the above framework.

Table 1: **Workplace Readiness Verses Futures Orientations in Teaching** (Smith and Lynch, 2010, p.97)

Element	'Workplace Ready'	'Futures-Orientated'	Difference
Media	Computers in school	Web 2.0 social networks	Computers are a burden Vs. software and internet are pedagogical tools
Teaching	Focus on Curriculum	Focus on pedagogical practices based on evidence that they work	Curriculum planning postpones attention on pedagogy Vs. details of required outcomes inform pedagogical planning
Approach	Cover the curriculum content	Learning judged by pre-established standards referenced to global trends is the main game	Curriculum content blurs outcomes Vs. relevance and specific pedagogical practices
Change Agent	I/me	We/you	Teachers as 'island' Vs. professionals working together
Message	Experience	Continuous learning	You can't beat experience Vs. need to match skills with changing society
Teacher Education	'Us' and 'Them'	Strategic partnership that integrates school and university capabilities	Teachers' work does not include teacher education Vs there's something in this for all of the profession
Main Strength	'Love children'	Professional responsibility for research-based teaching strategies and preferred outcomes	Attachment to clients Vs. professional interest in outcomes

Mindset	Individual learner	Individual learning	Individualised, asocial view of students, especially their socio-cognitive development Vs. professional interest in what and how the student learns
Professional Identity	Teachers are unique individuals	Professional standards and skills are paramount	Every teacher is different Vs. working to research-based professional standards
Workplace	Public service and unions mindset	Creative, innovative and flexible	Public service hierarchy, low trust Vs. creative class/knowledge worker
Professional Approach	Learning theory	Instructional design theory	The growth patterns of the individual student Vs. shaping pedagogical strategies to achieve required outcomes
General Capabilities Attributes	Skills that are associated with cognitive / academic skill; Technical skills associated with teaching; Inter-personal skills, and a professional knowledge base associated with teaching.	Solve problems in a school situation; initiate change in a school situation; envisage different education programs outside of traditional schooling; and do their work outside a school situation.	Conventional work as a 'teacher' and later 'principal' dominated by bureaucratic procedures and 'keeping a quiet ship' Vs. building capacity and capabilities of staff and the community including the development of a language of instruction based in research

Having set the background, the concern for the remainder of this article then is the identification of the effects of a 'futures orientated' program on graduate student teachers.

Methodology

The study used a Likert scale questionnaire and semi-structured interviews aimed at determining the effect of the existing BEd program and the BLM on near-to-graduating teaching students and their school-based mentors (classroom teachers employed to coach and mentor teaching students whilst on their final year practicum). There were 221 graduating teaching students, 91% female and 9% male, approximating the enrolment ratios in the programs. 61.2% were 25 years or younger a little over 21% of the respondents were 36-45 years. 54% were enrolled in the existing program. The majority of students in both programs were enrolled in either Early Childhood Education or Primary (Elementary) strands. Most mentors were interviewed. They

included those who had mentored only a pre-existing program graduate student; those who had mentored only a BLM graduate student; and those who had mentored both pre-existing program and BLM graduating students. There were 153 mentors.

Analysis of variance (ANOVA) and t-tests were performed on both the student and mentor data. A factor analysis was performed on the student data, followed by a path analysis in order to specify which variables define each factor. A number of results of interest to this article were found.

The Results

The Likert scale questions mirrored those asked of graduates from both the pre-existing program and the BLM. However, in addition, the mentors in their survey were asked to make judgments about the graduate student teacher. T-tests and ANOVA statistical tests were carried out on the Likert scale questions to determine if there were any statistically significant differences in responses according to the various demographic variables. No statistically significant differences were found. That is, there are no location, age, gender, age or degree differences between mentors or graduates.

Graduates of the BLM rated more highly their degree expectations as having been met than did the pre-existing program graduate students. In some instances, the BLM graduate students' mean for survey responses was greater than 4, indicating a 'good' level. Graduate students' preparedness to begin teaching is apparent as there were positive responses to associated questions from both the pre-existing 'existing program and the BLM graduate students. Further, the mean for BLM graduate students was higher than for the pre-existing program graduate students, indicating their perception of better preparedness.   Students completing the BLM ranked their perceived teaching abilities at a higher level than those doing the pre-existing 'existing.

On closer examination a number of key attributes of the BLM appeared to contribute to the positive responses of graduate teachers and their mentors. Principally, these included: close contact with a university, increased amounts of time spent by the student teacher in a school, a knowledge and skill base in students that reflect workplace readiness, scope for the mentor to vary prescribed tasks, and the notion of having opportunity to input the teacher education program to be key components of what mentors consider is a successful teacher education

partnership. Interestingly, if a mentor had the opportunity to make an input into program planning, this had the corresponding effect of guaranteeing positive comments about that program. Opportunity for input was only identified in the BLM.

Returning to the specific theme of 'a futures orientation' in graduate teachers the data are somewhat indecisive.

We asked mentors to rate how prepared their graduate student was for work as a teacher *in the future*. The majority of BLM mentors considered that their student teacher was prepared to be a 'teacher of the future'. They made comments that BLM graduate students were generally open to change and 'new situations' and that this was underpinned by current knowledge of what was happening in the world of education. These points are exemplified in the following comments:

> *(Student) is aware of changing situations, and (I) presume she will cope very well (1-1-3)*

> *(The student) knew the QSE2010 document inside out. IT abilities were fabulous, knew the '4 resource models' – knew very well (1-4-1)*

In these examples, both mentors mention the student's awareness of changes taking place in education, and the student's familiarity with State government policy documents of the time, such as QSE2010[4]--- which highlighted the strategic changes required by policy makers.

In comparison, few BEd mentors considered their graduate student to be prepared for work as a teacher in the future. Mentors generally commented that BEd students did not have a detailed understanding of the future, with some mentors feeling this was reflected in the lack of futures orientation courses in the BEd program. The two mentor comments that follow illustrate this point:

> *(the student) did not understand where research and professional information came from. (1-24 – primary teacher)*

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[4] Queensland State Education 2010 See *deta.**qld**.gov.au/**public**ations/resources/report-99-project-**2010**.pdf*

I think that the University's expectations weren't as high as what I've just experienced (with a BLM student), or as open when compared to my BLM student. (1-22 secondary school teacher)

However, comments made by both types of program mentors about a 'futures orientation' tended to reflect the elements that best fitted with 'workplace readiness' attributes. This tends to indicate that mentors themselves are not familiar with what a futures orientation actually entails. Table 2 exemplifies such responses.

Table 2: Mentor Identified Workplace Ready Capabilities

Cognitive / Academic Skills	Technical Skills	Inter-personal Skills	Professional Knowledge Base
- Reflect on practice - Intellectual capacity - Organised - Apply critical thinking - Flexible attitude	- Manage behaviour - Plan lessons - Use ICTs - Manage / use resources	- Communicate with various stakeholders - Work as a team player - Accept advice and guidance	- Curriculum knowledge - Pedagogic strategies - Child development

With this point in mind, further interviewing asked mentors to make comments on their graduate student's capabilities with respect to *specific* and supplied futures orientation elements (see Table 3). These elements are detailed as capability to: solve problems in a school situation; initiate change in a school situation; envisage different education programs outside of traditional schooling; and do their work outside a school situation. The data associated with these interview responses appears in Table 3 where the percentage of mentors who identified such attributes in their graduate teaching students is revealed.

When analysing data concerned with the BLM student teachers' capabilities to *solve problems* in a school situation, the majority of mentors considered their students to be 'capable'. The same was found for: initiating change in a school situation; BLM student ability to envisage different education programs

Table 3: Specific Elements of a Futures Orientation provided to mentors for comment and their response frequencies.

(a) Specific Elements of Futures Orientation Capabilities	Mentor Response Frequencies (How many mentors identified these elements in their graduate teaching student)
New content and models of curriculum organisation	3.5%
Student-centred approaches to teaching and assessment	7.5%
Learning partnerships that link the school, the community and the workplace	3%
Technology-based approaches to learning that emphasise self-directed and independent learning	3%
Courage, planned risk taking, imagination, intuition and creativity	6%
(b) Elements of Workplace Ready Capabilities	
Elements which do not fall into a futures orientation category and which exemplify workplace ready elements. See Table 2	77%

outside of traditional schooling; and their ability to do work outside of the school context. These findings were in contrast for BEd students, where few mentors considered such graduate student teachers to possess similar level of capability.

Table 4: Mentor Identified Futures Orientation Capabilities

Mentor Defined Attributes	Example of Attribute
Developed and maintain effective relationships with students and others	Easy to get on with Approachable Liked children Good communicator
Had professional knowledge sets associated with the business of teaching	Planning skills Assessment strategies Delivery strategies Knowledge of curriculum and its content
Had personal attributes that underpinned the work of a teacher	Listened to advice Had a 'presence' in the classroom Organised and reliable

BLM and BEd mentors were asked to provide a reason for the judgment they had made about their students' aforementioned futures orientation capabilities. Mentors identified that BLM graduate students have or need to have attributes falling within one or more the following themes:

1. Mentors must have seen the student experience the element (at school or university) or they tended to rate them low,
2. The student showed resourcefulness and / or
3. Demonstrated their willingness to 'have a go'. By this mentors meant the student was inclined to try new or different things.

Mentors who had only a BEd student were reluctant to offer a reason for the ratings they gave their BEd graduate students, however, those who had mentored both a BEd and BLM student made comments typified by the following:

> *The BEd student lacked confidence overall (1-24)*

> *This really depends on the individual student and in this case (BEd) they had no idea (4-22)*

> *The BEd student hadn't heard of QSE 2010, so not at all (5-4)*

> *There was a lack of professional independence [BEd]. (2-2)*

It might be argued that mentors lacked yardsticks for judging either BLM or BEd students against futures-orientated capabilities. This is because mentors did not fully appreciate the characteristics of future-orientated capability. However, in the cases where mentors had experiences of both BLM and BEd students, they detected differences in the capabilities of BLM students and universally rated them higher in all four futures orientation themes. To illustrate this point, mentor 1-16 provides an insight into the capabilities of his BLM students compared to those of his BEd student:

> *This student (BLM) would have changed everything in this school. It was part of her professional make-up. She challenged everything I did, in a nice way and was keen to get in have a go and change things if needed. Didn't see this profile with my BEd student....more keen to fit in where they could (1-16)*

Summary

Mentors rated BLM students higher in respect to their preparedness for work into the future than did BEd mentors of their graduate teaching students. Mentors remarked that BLM graduate students were generally open to change and 'new situations' and that this was underpinned by a sound knowledge of what was happening in the world of education. BEd mentors made comments that indicate BEd students did not have an understanding of the future, with some mentors feeling this was reflected in the lack of futures orientated study in the BEd program. This comment is not simply a reference to a lack of 'content' but reflects a general predisposition to reproducing the past, to reproducing what is rather than changing it.

Overall, BLM students, with respect to four key futures orientation capabilities (capability to: solve problems in a school situation; initiate change in a school situation; envisage different education programs outside of traditional schooling; and do their work outside a school situation) were deemed 'capable' by mentors. Only a few BEd mentors considered BEd students to possess similar levels of capability.

But it is the mentors' apparent lack of a specific understanding and appreciation of a 'futures orientation' that we want to emphasise. As we reported earlier, mentors detected a difference in outlooks and the capabilities of BLM graduate students, compared to BEd graduate students, but could only vaguely 'put their finger' on what contributed the differences. This leads us to argue that if a 'futures orientation' is the strategic intent of government policy documents, such as QSE2010 and the desired outcomes of teacher education program architects such as in the BLM, then such capabilities must first be accomplished in mentors before they are chosen to mentor future teachers. While BLM architects report various professional development sessions for aspiring BLM mentors around such topics, it is clear from the data that the acquiring of such new capabilities in mentors requires more thought to overcome the apparent lack in the profession.

So what might have contributed to this circumstance around mentors and a futures orientation in the BLM program? It is important to first highlight that the literature is littered with details

about the problematic nature of teacher education program partnership arrangements with schools. A study by Allen (2009) offers some insights into this kind of arrangement.

Allen (2008) compared the logic of the BLM with the effects of university lecturers and school mentors on the teaching practice and beliefs of recent graduates employed in a local school system. Her results indicated a number of crucial points. First, where there is a weak partnership between schools and the university, the logic of the BLM breaks down and often becomes non-existent. Examples include such things as failure by BLM in-school mentors and university staff to establish and nurture relationships with schools and teachers. Presumably some university staff and in turn principals and teachers, do not see 'partnership' as a worthwhile exercise, indicating the resilience of the 'us and them' mentality of schools and universities when it comes to teacher education programs.

Second, where the logic of the BLM is unknown to or is not sustained by either lecturers or mentor teachers, the logic is undermined and has little effect on the graduate teacher. Here Allen provided evidence indicating that university staff either ignored the BLM theoretical framework or actively undermined it by substituting alternative content in their teaching. Similarly, teacher mentors required student teachers and later graduates to conform to school practices. For others there were misunderstandings and often little understanding at all of BLM concepts and practices, in spite of several years of professional development and learning, especially with university-based staff.

Third, where lecturers and teachers insist on teaching their own knowledge components outside of the BLM curriculum, such as substituting constructivism and learning theory for instructional theory, or requiring student teachers and new graduates to conform to a 'school' practice, the BLM model collapses into the conventional BEd routines. Also, Allen's data show clearly that the school ethos of every teacher doing 'their own thing' was shared with university-based staff. There seems to be little appreciation of the BLM's avowed intention to develop a "consistently applied, 'deep structure' model of pedagogy, based on standards for effective teaching"[i] in either university teaching or in the school mentoring.

As Smith and Lynch (2010, p.26) explain, " … there are few rewards in universities for the conduct of programs like the BLM which are heavily 'professional' and are time-heavy. Similarly, if the BLM model is poorly understood and implemented, it appears to have few upsides for

schools as the different demands of the BLM are perceived and interpreted in the old 'prac' model terms."

Conclusions

Scheerens (1993), summarizing his research, stated:

> 'teacher and classroom variables account for more of the variance in pupil achievement than school variables. Also, in general, more powerful classroom level variables are found that account for between-class variance than school-level variables in accounting for between-school variance.'

This means 'teachers matter!' That is to say, teachers doing teaching ought to be a major focus for educational reform in a period of large-scale socio-economic change. But just having teachers there doing what they normally do is radically insufficient: they must have the *pedagogical* skills that enable them to ratchet up the education achievement of all students. That in turn requires the kind of school leadership that nurtures and fosters effective *teaching*. Putting into practice what is now known about effective teaching strategies while phasing out folk-lore is one aspect of such leadership. Another is using performance standards that relate to teach*ing* rather than the *characteristics* of teachers.

In teacher education, such a vision calls for more focused research and development and a different kind of teacher preparation. Translational research[5], compared to basic research, is a kind of research that helps turn early-stage innovations into new education products. Its aim is to advance innovations to the point where they become attractive for further development by the profession or other interested agencies. Teaching and teacher education research are candidates for intensive translational research.

Rather than blocking attempts to bridge the gap between basic research and a deliverable educational product with the potential to improve student achievement outcomes, translational research welcomes it. It attempts to turn innovative ideas into deliverable products by making use of the right combination of expertise to develop the product and position it by anticipating ahead for what the industry will be looking.

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[5] http://commonfund.nih.gov/clinicalresearch/overview-translational.aspx

Reforms such as those discussed here require vision, courage, and know-how. It follows that teachers and school leaders, quite apart from the bureaucrats who administer school education, need to be equipped with the intellectual tools to constantly analyse and interpret weak signals as well as strong trends in international affairs that affect education. The trick is to be able to transition them into processes and programs that enhance student achievement.

Professional development that makes such agendas central of course require a re-think of the whole supply chain between teaching and the professional preparation of teachers. As we noted earlier, being futures oriented in the quest for better student achievement outcomes is not a strong card in the teaching profession or in the teacher education community. This is a warning light in need of urgent attention in the teacher education world. Having a feel for the 'futures' and being able to do something about it are high priority because of their importance in the geo-politics of the nation and the lack of capability that burdens teacher education today.

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