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Science teachers are developing their own standards

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Abstract

In 1999, the Australian Research Council funded three three-year collaborative research projects designed to develop professional standards and performance assessments for science, English and mathematics teachers. This paper gives an overview of the ASTA/Monash Standards Project which aims to support the development of a national voluntary system to provide professional certification to teachers of science whose practice has attained high standards set by the profession. It also discusses the place of this work within the wider context of educational reform, including improved career paths for teachers, clearer long term goals for their professional development, and greater responsibility within the profession for quality assurance.

This year marks a significant stage in the development of the Australian Science Teachers Association (ASTA) as a professional organisation. ASTA has embarked on a three year collaborative research project with Monash University to develop standards for highly accomplished science teaching and methods for assessing whether teachers have attained those standards¹. The project is jointly funded by the Australian Research Council (ARC) and ASIA. The long term goal of the project is to lay the ground work for a national voluntary system for professional Certification of excellent science teachers.

Background

The ASTA professional teaching standards project is the latest stage in a process that began back in the early 1990s when ASTA Council first discussed whether the Association should get involved in developing teaching standards.

Teachers will remember the flurry of ill-conceived and incompetent attempts across Australia back then to develop generic criteria for assessing applicants for Advanced Skills Teacher (AST) positions. Employing authorities and unions dominated the process. Standards for the AST classification varied widely from one school system to the next. Teacher associations like ASTA were not invited to the party, so the standards said nothing, for example, about what an Advanced Skills Science Teacher should know and be able to do.

Because the process was dominated by short term industrial and political priorities, there was little expertise or commitment to rigour or validity in developing the standards and methods for assessing teacher performance. As a result, the AST appellation rapidly lost respect among teachers. This splendid idea for placing more value on good teaching became a ironic joke when ASTs became so overloaded with extra administrative jobs that most were forced to give less attention to their preparation and their teaching.

There was no doubt in the minds of ASTA Council members back then that the primary responsibility for developing standards for good science teaching should rest with the teaching profession itself. This should not be taken to mean they believed unions and education authorities should not be involved. However, it was clear from the AST experience that the industrial relations setting is not a suitable place to do the hard, long term thinking about teaching and learning that must underpin the development of valid and challenging teaching standards. These standards must articulate deep educational values and give young teachers a clear direction in which to develop over the first ten to fifteen years of their careers. New settings were need outside the fray- stable settings in which all stakeholders and people with relevant experience could concentrate on n talking about quality teaching and learning. The ASTA project aims to create such new settings for the development of teaching standards.

Just as important, perhaps more so, was the validity of the methods used to assess AST applicants for career progression. These methods had to be radically rethought. Interviews by poorly trained school-based panels were used, for example, to assess~ teachers for AST status. While interviews might be suitable for selecting people for: future jobs, research evidence indicates they are hopelessly unreliable and invalid for assessing whether practitioners have reached high levels of performance, in their particular specialist fields (Scriven, 1990).

One of the core purposes of the present ARC project will be to develop more subtle processes for assessing the performance of good science teachers: processes that probe the subject-specific nature of what good science teachers know and do; processes that call for the kind of judgment that only expert science teachers can make; and processes that promote teachers professional development as a direct result of undertaking them.

Recent activity in the development of teaching standards

Since the Advanced Skills Teacher days, there has been increasing activity around the development of teaching standards across all states and territories. A National Framework for Beginning Teachers was developed by the National Project on the Quality of Teaching and Learning (NPQTL, 1996). Education Queensland has established a Centre for Teaching Excellence to develop standards as a guide for professional development. Western Australia has a similar body. Victoria now has a body misleadingly called the Standards Council for the Teaching Profession (as its standards apply only to state school teachers and are designed primarily to be used by school managers in the conduct of their staff management responsibilities. The NSW Department published a report in October 1998 called *Toward Identifying Professional Standards for NSW Schools* (NSWDET, 1998).

Until now, most of this standards development work has been done by state education departments and state government agencies, not teachers' own subject associations or unions. Because its main audience is school managers, this work has concentrated on defining generic standards for the purposes of personnel decisions such as dismissal, annual appraisals for salary increments (as in Victoria) or selection for administrative jobs outside the classroom.

One of the odd things about teaching is that it is the only profession where state governments feel they have the right to initiate and control the development of standards for professional practice with scarcely a blush at the presumption that they have more expertise than practitioners. Why do they do this? Why do state governments act in such a paternalistic way toward the teaching profession? Perhaps it is a legacy of over 100 years of centralised state education department bureaucratic thinking that some people still can not shake off, even when the world has moved on.

The promotion of self-governing schools in a stringent financial context, for example, surely calls for the development of teaching standards by a strong, accountable, self governing profession. School managers may come under increasing pressure to compromise on conditions necessary to attract and retain quality teachers. They may also be pressed to allocate teachers to areas of teaching shortage outside their training and expertise. Markets cannot and will not provide professional leadership in the interests of the public in these situations. Who will be held accountable when schools in less advantaged areas are unable to employ teachers who are appropriately qualified in science and well trained to teach it? Equity in education is fundamentally about ensuring every student has a quality teacher, well educated in the particular subject area and well trained to teach it.

No matter what reasons lie behind state paternalism with respect to standards for teaching, it is a counter-productive strategy not to recognise that responsibility for quality practice must be a shared responsibility between a profession and government. It is now a truism that government can not mandate what matters so far as quality teaching is concerned. Responsibility helps a profession to grow up- to grow up in the

sense of accepting responsibility to define standards for good practice and to hold colleagues accountable for using them. The days of accepting that teachers should be free to “do their own thing” without reference to professional norms are over. The days of accepting that employers can re-deploy inadequately qualified people to teach science should be over also,

Things are changing though Dr Kemp, the Commonwealth Minister for Education, has strongly advocated that teachers should play a stronger role in articulating their own standards and promoting excellence in teaching (Kemp, 1996). The main recommendation in *A Class Act* (Senate Committee, 1998), the report of the 1998 Senate Inquiry into the Status of Teachers, stated that the Commonwealth Government should:

facilitate the development of a national professional teaching standards and registration body to have the responsibility, authority and resources to develop and maintain standards of professional practice. The body should work closely with State governments and peak teaching organisations.

A key function of this body would be the certification of teachers who had “attained advanced standing in the profession”. A central aim of the ASTA standards project is to support these national trends to strengthen the role of teacher organisations in professional issues related to the quality of teaching and learning.

Where education authorities have delegated responsibility for decisions about who should join and who should stay in their profession, teachers have shown themselves to be more rigorous than administrators in evaluating colleagues. When US teachers, for example, were asked by the National Board for Professional Teaching Standards (NBPTS) to set standards for National Board certification, their standards proved to be very high indeed, such that only one third of applicants gained National Board certification in the first few years². They cared deeply about who gained the right to say they were National Board certified teachers. We hope ASTA members will come to feel the same way about national certification in Australia.

Four of the largest subject associations in Australia have now committed themselves to developing their own professional standards and performance assessments. It is too early to say, but perhaps this represents a critical mass that will lead eventually to a truly national professional body for teachers, embracing, of course, employer and union stake holders as well. Its functions would stand outside, but complement, the role of industrial relations in making determinations about pay systems, career structures and working conditions.

The ASTA Standards Project

ASTA took the lead among teacher associations in Australia and commissioned its own study of the latest developments internationally in the development of teaching standards in 1994 (Ingvarson, 1995).

Subsequently, ASTA Council made a firm commitment to seek funding to support a national effort to develop its own professional standards.

This responsibility was not handed to ASTA on a plate. It has been hard won and there is as yet no guarantee that education authorities will recognise a certification system managed by an independent professional body, as argued for in *A Class Act*. There has been difficulty in developing a national view on curriculum standards for students in Australia. It seems likely that there will be even greater difficulty in gaining acceptance for the idea of national standards for teaching even though, by definition, professional standards can not be specific to particular employing authorities, or schools.

Aim of the Project

The aim of the ASTA/Monash Project is to develop a national voluntary system to provide professional certification to teachers whose practice has attained high standards set by the profession. Certification is an endorsement or guarantee that a teacher can teach in ways conducive to high quality student learning. It is based on assessment of performance; it is not an academic qualification. Certification is available to all teachers; it is not specific to particular employing authorities. It is portable; it belongs to the person. We envisage that certification would be awarded by a yet to be established national independent professional body embracing all education stakeholders.

In brief, the main research aims of the project are to:

1. Develop and validate standards for highly accomplished teaching of science in primary and secondary schools;
2. Develop and validate methods for assessing the performance of highly accomplished teachers of science; and
3. Build understanding and support nationally for the project among education and school authorities who will determine whether national certification is recognised by states and school systems. To facilitate this process, a national reference group comprising employing authority and union representatives will be formed.

"Standards" as defined here are not competencies or criteria derived from some kind of breakdown of a job into its component parts, with checklists of indicators. They are based on values and research, not the deconstruction of competence. National training bodies such as the Qualification and Curriculum Authority in the UK now recognise the limitations of competence models when it comes to professions such as teaching, medicine and caring professions. These models usually omit key areas of competence such as values. They have problems in the specification of higher level performance and higher order skills such as those necessary for good teaching, and they have difficulty in devising methods for assessing performance that integrate knowledge, skills and values.

The ASTA project will approach science teaching standards as more holistic, yet observable, descriptions of teaching. These descriptions will be founded on a vision of the kind of science learning we value as well as relevant research on learning and teaching science. The standards will provide a framework describing the knowledge, skills and attitude that teachers need to produce successful learning. They will aim to capture the essence of effective' performance in teaching science.

Why do it?

There are at least three related reasons why teacher associations like ASTA should get involved in a certification system for highly accomplished teachers. The first is to provide its professional credential; its capacity to provide professional leadership. A body that aspires to professional status should be able to define what it expects its members to be able to know and do. With a set of standards, a professional body increases its legitimacy and earns the right to be taken seriously in national policy formation. With the ability to operate a credible certification system, a profession greatly enhances the contribution it makes to quality assurance and professional development. Standards and certification are powerful ways regularly to redefine the nature of teachers' work and to change public perceptions of teaching as an occupation.

The second reason is to strengthen ASTA's contribution to the public and the profession through enhancing the quality of science teaching in schools. Certification does this by providing powerful incentives for all teachers to engage in long term standards-based professional development planning. Employers who come to trust the reliability of the certification process will provide salary increments and career paths for certified teachers. Over time employing authorities with lower proportions of profession-certified teachers in their schools may experience pressure to lift their own standards to attract more high quality teachers. Experienced teachers who repeatedly fail to gain certification and, therefore, career advancement may begin to think about leaving teaching.

A third reason is to improve the quality of professional development. Profession-defined teaching standards describe what young teachers should aim to get better at, long term. A standards-based professional development system (Ingvarson, 1998b) thereby enables a profession to gain greater control over the goals and methods for the continuing professional development of its members. With teaching standards to aim for, professional development becomes much more than providing short courses to help teachers catch up with the latest change in employer policy. It becomes a long term quest for young teachers to develop their practice toward enduring educational values, such as the promotion of independent thinking and learning skills in their students.

Given these incentives and these challenging professional standards, teachers will inevitably create their own learning infrastructure to help one another develop toward the standards. Teachers applying for National Board certification in the US, for example, devise or seek out myriad ways to meet with fellow applicants to analyse what the standards mean for their practice and to gain feedback on their portfolio

entries, their videos, and their students' work. A professionally credible certification system like the NBPTS is also pressing universities to reorient their higher degree programs for on-going professional learning so that their courses relate more directly to teaching standards and the quality of student learning.

Because it can lead to these kinds of initiatives and to higher levels of teacher engagement, a rigorous certification system is just as valuable to governments and employers as it is to the profession. With certification, employers have a valid basis for giving recognition to those teachers who have continued to develop professionally and who prefer a career path based primarily in teaching. Such teachers are as essential to school effectiveness as teachers who prefer to move into administrative jobs, arguable more so. Numerous national and state reports have recognised the need to provide better career paths and salaries that keep expert teachers close to students. A certification system gives a basis on which to do this with some confidence that it will enhance the quality of teaching.

The challenge for science teachers

Developing a certification system depends first on getting better at defining what good science teachers should know and be able to do. This is the heart of the standards development task for ASTA -clarifying what distinguishes highly accomplished science teachers from beginners.

Can science teachers do this? Can members of the science teaching community reach a consensus about high quality science teaching? Can they define what science teachers should get better at? Can they devise standards that allow for teachers to be good in different ways? Can different teaching styles be accommodated within a deeper conception of what counts as quality? Can standards be written in a form that does not force teachers into one mould, and does not privilege one teaching style? These are some of the main research questions for the first phase of the ASTA standards project.

If we get satisfactory answers, the research focus will turn to the problem of assessing teacher performance for professional recognition and advanced certification. The thought of ASTA, or some national professional body with which it may be affiliated, doing this horrifies many teachers at first. However, when asked, "Well, who should develop standards for something like a Master Teacher or an Advanced Skill Science Teacher? Science teachers have no doubt that they can and should do it themselves.

Until recently, most members of subject associations have not seen their associations as appropriate bodies for assessing teacher performance. However, so far as the ASTA project is concerned we are talking about a voluntary assessment for profession recognition and certification, with a strong potential to involve all teachers and enhance the quality of teaching. We are not talking about assessment by school managers for basic managerial accountability purposes, such as dismissal, or annual appraisals, or selection for administrative positions. Teacher evaluation for these purposes and decisions is properly the

responsibility of state government and other employing authorities. The distinction between these two different purposes for teacher evaluation should be kept clearly in mind.

Stages In the project

Stage 1. Mobilising support and building a support structure for the project

ASTA has been building support for this venture gradually over a number of years. In this sense the task of mobilising understanding and commitment from the membership is well down the track. The first time an ASTA Council discussed whether it should get involved in developing its own standards was in 1990 or 1991 when John Anderton was President. Succeeding Presidents Ann Semple, Debra Smith and Jane Wright, with the stalwart support of executive officers Robin Groves and Jan Althorp, and many others at the state and territory level, have strengthened understanding and support for the project among the ASTA membership, to the extent that by 1998 ASTA had decided to go ahead with the standards project with or without ARC support.

Now that external funding support from the ARC has been gained, ASTA needs to build an infrastructure at state and territory, and local levels as well, to support the work of the project. The process of promoting participation and feedback at the local level will be the responsibility of State and Territory Professional Standards Coordinating Groups (PSCGs). The task of forming these groups will be the responsibility of state and territory science teacher associations and PSCG membership will include representatives from employing authorities. They will be the backbone of the project in terms of engendering widespread participation and ownership among science teachers. One of their first tasks could be to start generating a debate within the membership about the knowledge, skills and attitudes that distinguish highly accomplished teachers of science.

Stage 2. Forming the ASTA Standards Committee

The formation of the standards will rest with a National Science Standards Committee. ASTA is in the initial stages of a nation wide process of seeking nominations and selecting members for this committee. Members will be responsible for writing the initial draft set of standards - and rewriting them in the light of successive waves of critical feedback from stakeholders.

In forming the National standards Committee it will be essential that its membership consists primarily of people widely regarded as outstanding teachers of science and science educators. Validity and legal defensibility of the standards requires this. Membership will be representative of the wide range of contexts in which science teachers work across Australia and the range of perspectives on science teaching in the profession. It will also need to include people with expertise in research on learning science relevant to the task of defining what a highly accomplished science teacher should know and be able to do.

The National Standards Committee will be formed through a process of nomination. The State and Territory Professional Standards Coordination Groups will have responsibility for coordinating the first stage of this project. Each Professional Standards Coordination Group (which will include representation from employing authorities) will invite expressions of interest in membership of the National Standards Committee. These invitations will be extended to all teachers of science as well as science educators in school systems and universities. CVs will be requested that provide independent evidence of a strong track record in science teaching. Each PSCG will be asked to nominate five to ten people. Final selection of the National Committee from the nominees will be the responsibility of the ASTA Standards Project team.

Stage 3. Developing the standards

Writing the first draft set of standards will be the responsibility of the National Standards Committee, though it will use processes that engender wide participation and feedback from state and local groups and individuals. We are planning a website to facilitate this process. The Committee will meet three times in 2000. Each meeting will last five days, as past experience from others who have undertaken this task indicates the need for these extended periods of time. The first meeting will be in January, the second in March and the third in June, 2000.

Further, but shorter, meetings of the Standards Committee will take place to enable the Standards Committee to redraft the standards in the light of comments and reactions from the profession. It may also be necessary to modify the standards further during the process of developing the performance assessments.

Stage 4. Validation of the standards

The standards development and validation process is expected to take the first eighteen months of the project. Validation is a period enabling professional and public comment, critique and review in the professional community prior to consideration for formal adoption. Validation meetings will take place in each state before work on the final draft of the standards begins.

Stage 5. Development and trialing of methods for assessing teacher performance in relation to the standards

The assessment development phase will begin at the start of the second year of the project. An Assessment Development Team (ADT) will develop and test a set of performance assessment exercises to ensure they meet high standards for educational measurement. This team will include a small group of experienced science teacher consultants who will examine current methods for gathering evidence about a teacher's practice, such as the teaching portfolio and the assessment centre exercise. These methods will be modified and added to in the light of field tests and discussions with major stakeholders about their reliability, validity, fairness, feasibility and acceptability to the profession.

When the assessment exercises have been developed to an acceptable operational level, they will be field tested with larger numbers of science teacher volunteers. Other science teacher consultants will be trained to score and benchmark these performances and to set standards for certification. All these processes will provide valuable additional opportunities for involvement and professional development for many science teachers across the country.

Stage 6. Evaluating the impact of the performance assessment on teachers' professional development
As mentioned above, one of the central purposes of this project is to introduce a standards-based system for teachers' professional development, a system for which the profession takes responsibility. The portfolio exercises, for example, will be designed in such a way that, as a result of doing them, teachers will develop professionally³. The exercises will engage them in processes of gathering, describing, analysing and reflecting on evidence about their teaching (such as student work samples over time, and videotapes of whole class discussion and small group work).

For example, a primary teacher might describe and illustrate how s/he helps students to acquire important science knowledge as they explore an interdisciplinary theme. A secondary school teacher might demonstrate how s/he engages students in active scientific inquiry, using videotape extracts from the different stages of the inquiry process. Teachers would describe their teaching context and their students. They would explain their goals for learning and the activities they use to promote that learning, and they would analyse and reflect on their practice in the light of the standards. They would use colleagues, and perhaps the students themselves, to provide feedback on their students' work and the videos. Teachers might come together to help each other prepare their portfolios in a variety of settings; in their own schools, in ASTA sponsored groups; in university courses and so on.

In these ways professional certification promotes the development of a new infrastructure for professional learning whose primary purpose is to enable teachers to gain the knowledge and skill embodied in the teaching standards. It will not be possible to complete this stage of the research program within the life of the current ASTA project. Nevertheless, we plan to apply for further research funds next year to assess the effects on teachers' practice and student learning that result from preparing portfolio exercises.

Standards for primary teachers

Each of the current ARC projects is developing standards for primary as well as secondary teaching. We envisage that secondary teachers of science will be applying for national certification as science teacher specialists. Primary teachers, in contrast, teach across all curriculum areas and the certification standards will need to recognise the broader base these teachers must have across subject areas. Their standards will need to map or fit the job that primary teachers do.

Most primary teachers will be interested in a generalist certificate: one that might make them, for example, a nationally certified primary teacher, Separate certificates for English, maths, science and so on across

the curriculum may not be a practicable proposition for primary teachers. However, standards for a generalis primary certification will still need to be embedded in the curriculum that primary teachers have to teach, and in what they need to know and be able to do to teach it. The certification standards for primary teachers will need to bring standards for teaching English, maths, science and the other key learning areas together. Whether primary teachers use integrated themes or not, they will be expected to teach and know each of the curriculum areas or subjects well, at the level they teach them. It seems unlikely that a professional body of teachers would be willing to award certification to a primary teacher who could provide evidence of quality teaching in some key learning areas such as maths and science, but not others such as literacy and SOSE for which they are also responsible.

Building wider recognition for professional certification.

Professional certification will not realise its full potential if it does not lead to tangible forms of recognition from employing authorities and unions. It will be vital that employers and unions eventually build recognition for national certification into industrial agreements. An employer may choose to give recognition to certification by salary increments, or certification could be seen as a way of meeting the need for re-registration, or a pre-requisite for promotion. This means it will be vital for ASTA, and other associations involved in the ARC projects, to work with these bodies over the next three years to gain recognition for professional certification in industrial agreements

One recent development of particular interest to the ASTA standards project is the introduction of the Level 3 Classroom Teacher classification in WA state schools. This policy provides a career step and a salary increment of about \$5-6000 for excellent teachers, taking them to a salary of \$56,890, equivalent to the salary of a Level 3 school administrator. In our view, Level 3 represents about the right salary level for a teacher who gains professional certification- the step which takes them well beyond the top of the existing incremental pay scale.

One of the unique things about the WA development is the fact that the Education Department contracted out the task of developing standards and assessments for selecting applicants to a consortium of university and private human resource consultants. In the first year of its operation, nearly 800 teachers applied for Level 3 status and around 250 were successful.

With the Level 3, we have a precedent for an employing authority to use an outside body to develop standards and conduct assessments. Could this outside body be a national professional body of teachers, of the kind envisaged in *A Class Act*? We have no doubt that it could. In another precedent, Victoria has used a private consulting firm to conduct assessments of the leadership and management skills of Leading Teachers. It is hard to see that private consulting firms could offer a better, or more rigorous, or more stable, service of this kind than that which a national professional body of teachers could provide.

The introduction of the Level 3 Teacher in WA is one example of a reform designed to meet the widely recognised need for better career structures for teachers. There are many other examples here and overseas. A recent Green Paper issued by the UK government (*Teachers -Meeting the Challenge of Change*)⁴, for example, aims to reform teacher career structures by introducing a performance-related pay threshold at the top of the old salary scale, somewhat like the Level 3 in WA. Unlike the ASTA project, however, the UK scheme does not have the same potential to provide powerful incentives for professional learning and improved practice. In the UK reform, the standards will be generic and developed by a private consultancy firm. Teacher commitment to them will be low. Moreover, the task of assessing teachers will be left to the principal of the school where the teachers work - raising concerns about uncontrolled bias and the effects on staff morale.

In contrast, the ASTA project is working toward a more valid form of performance-related pay-one we believe overcomes the weaknesses of previous schemes based on standardised student test scores or brief inspector visits. It will concentrate on evidence about the quality of learning opportunities that a teacher can provide.

Some people express concern that a career structure based on professional certification of the kind being proposed will be elitist, or will create a special class of super teachers. This is not true. The ASTA project will develop standards that represent an achievable goal for all teachers who take opportunities to develop professionally over the first ten to twenty years of their careers. The certification system will aim to lift the performance of all teachers to the standards, not to sort teachers out or to select an elite. Certification provides a broad developmental pathway for all teachers based on criterion-referenced, not norm-referenced, assessment of performance.

For recognition to happen though it will be important that the three current ARC projects continue to move in concert. Employer recognition will obviously require close comparability across the standards and the assessments developed for science, mathematics, English and literacy teachers, and those of teacher associations who will follow. Recognition for certification will be slow if each association sets its own certification standards and runs its own certification operation. It is unlikely that employers and unions will want to be involved with a clumsy system that requires them to negotiate with multiple bodies, each with different standards. Teachers who apply for certification in one field will expect the standards and the amount of work they have to do for assessment to be comparable to what is expected in other certification fields.

A national system for certification

While it is understandable that each subject association might expect to operate and control its own certification system in isolation, we do not believe this will be the way to go in the long run. At the present time it is important that ASTA and fellow national associations show professional leadership to get the standards projects under way. No one else can do it, or will do it. As other professions have realised,

there is no one to stop them doing it. In the long term we will need to evolve a new kind of independent national professional body with final responsibility for the quality and comparability of the standards and assessments and the day to day operation of the certification system. We believe advanced certification should be its only function. Separate bodies should be established to carry out the other important quality control functions of registering new teachers and accrediting teacher education institutions. In the present climate, it will be a long time before state and territory education authorities delegate these two functions to a national body. However, there is no similar constitutional impediment to teachers establishing their own national certification body.

A national certification body will rely heavily on the teacher associations for their expertise in the development of standards and the performance assessments. While such a body should have a majority of practising teachers, it must also embrace all stakeholders, especially those who are asked to accept the credibility of the certification and give it recognition.

Integrity and independence will be critical to the success of a professional certification body. It must be able to carry out its core function without fear or favour. It should be judged on one basis - the rigour of the certification process. The sole basis of its authority within the education community will rest on the credibility of the certification it provides. ASTA and fellow subject associations have now made a bold start down the path toward the establishment of a national professional certification body for all Australian teachers. It is up to their memberships to support them in this important endeavour.

Notes:

1. The ARC has also funded similar collaborative projects between Monash University and the Australian Association for Mathematics Teachers, the Australian Association for Teachers of English and the Australian Association of Literacy Educators. The ARC has allocated \$185,000 to the ASTA project.
2. See www.nbpts.org for further information
3. A detailed example of what a teacher might have to do for a portfolio entry can be found in Ingvarson (1998a), together with evidence of how the task embodied good professional development principles and how it improved student learning.
4. See <http://www.dfes.gov.au/teachers/greenpaper/index.htm> for further information.

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