Ms Margery Evans  
Chief Executive Officer  
Australian Institute for Teaching and School Leadership  

23rd June, 2012  

Dear Margery,  

I am pleased to be able to provide you with the Final Report on the AITSL project on Standards 3.1 and 3.2.  

The Report includes a main document and a number of appendices which provide important data which inform the findings and recommendations of the project.  

This Report has the endorsement of the ACDE Board and is presented to AITSL on behalf of the ACDE.  

We very much look forward to discussing the Report with you and our AITSL colleagues in the near future.  

Yours sincerely,  

[Signature]  

Professor Toni Downes  
ACDE President
ACDE REPORT to AITSL

on

STANDARDS 3.1 and 3.2

Australian Council of Deans of Education

23rd June, 2012

Project Team

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1. EXECUTIVE SUMMARY

In April 2011 the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) endorsed standards and procedures for the accreditation of initial teacher education programs in Australia. These standards included Program Standards 3.1 and 3.2 directed towards preservice teachers in teacher education programs, in particular, concerning the expected literacy and numeracy attainment of preservice teachers either before beginning a teacher education qualification or for them to have attained before completion of the qualification. Specifically, these standards state:

3.1 All entrants to initial teacher education will successfully demonstrate their capacity to engage effectively with a rigorous higher education program and to carry out the intellectual demands of teaching itself. To achieve this, it is expected that applicants' levels of personal literacy and numeracy should be broadly equivalent to those of the top 30 per cent of the population.

3.2 Providers who select students who do not meet the requirements in 3.1 above must establish satisfactory additional arrangements to ensure that all students are supported to achieve the required standard before graduation (AITSL, 2011).

In seeking to determine how these standards will be implemented the Australian Council of Deans of Education (ACDE) worked with the Australian Institute for Teaching and School Leadership (AITSL) to conduct research designed to develop an agreed set of principles and benchmarks associated with the requirements for Program Standards 3.1 and 3.2.

On 8th February, 2012, AITSL commissioned the ACDE to provide:

a) a synthesis and analysis of literature, evidence, arguments and effective practices associated with addressing the requirements of Program Standards 3.1 and 3.2;

b) a report of Workshop 1 and 2 consultations with the Network of Associate Deans of Learning and Teaching in Education (NADLATE);

c) a summary of actions within and across the 39 ACDE member institutions on shared principles and benchmarks and recommendations and/or advice; and

d) a report endorsed by ACDE on national and institutional commitment to working within agreed principles and benchmarks in relation to Program Standards 3.1 and 3.2.
Standards 3.1 and 3.2 as developed through this project, including but not limited to identifying entrants who do not meet the required standard (Achievement at Entry); forms of intervention and support (Learning and Development); and assessing whether these students meet the Standard upon completion of the program (Achievement Prior to Graduation).

The ACDE and AITSL confirmed the methodology, including:

a) a survey of current and intended practices which respond to the Program Standards 3.1 and 3.2 across all higher education institutions where teacher education programs are accredited;

b) an extensive review of the international literature with regard to the development and achievement of literacy and numeracy, and in particular for preservice teachers; and

c) two extended consultation workshops with the NADLATE (15th March and 15th May, 2012) which tested, expanded and worked to validate the Survey of Practices, the Framework for Achieving Program Standards 3.1 and 3.2 and provided authentic Exemplars of Practice.

On 8 May, 2012, AITSL provided a response to a concern around the challenges of defining the parameters of the terms 'literacy' and 'numeracy', with the following direction: Although definitions of literacy and numeracy are contested, AITSL views achievement in English and mathematics as a reasonable measure of the intent of Ministers in setting this Standard. This is not to deny that initial teacher education programs develop multiple literacies and numeracies, and other related characteristics, in their graduates (see Appendix 1).

In response, the ACDE presents in this report a Framework for achieving Program Standards 3.1 and 3.2 and supporting data, including a comprehensive survey of current and emerging practices across member institutions. This Framework demonstrates an ACDE endorsed national commitment to the principles present in the Program Standards 3.1 and 3.2 and a set of exemplars which have been provided by member institutions to demonstrate their capacity to enable graduates to meet Program Standard 3.2.

The Framework is the result of a collaborative national consultation with the ACDE and the Associate Deans/Heads of Schools and Faculties of Education, with responsibility for teaching and learning, through the ACDE affiliate Network of Associate Deans Learning and Teaching in Education (NADLATE) members. This report has been developed in close consultation with AITSL and has the endorsement of the ACDE Board.

**Framework for Achieving Program Standard 3.1 and 3.2**

This Framework is proposed as a response to the Standards and incorporates all
stages of development of preservice teachers throughout their education. It assumes and encourages achievement of the Standard 3.2 prior to graduation as effective from as early as possible in a degree program. This recognises the essential nature of these levels of literacy and numeracy achievement and also the significantly higher level of achievement outlined in AQF level standards which are required at graduation from a degree.

**Table 1: Program Standard 3.1 & 3.2 Framework.**

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<thead>
<tr>
<th>PHASE</th>
<th>PRINCIPLES and PRACTICES for ACHIEVEMENT</th>
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<td>2. Other assessment of English and mathematics within their preservice program including one or more of the following identifying and diagnostic tools and approaches including one or more of the following:</td>
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<td>e. AQF undergraduate Level 7 standard or above in English and/or mathematics.</td>
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<td>2. Distributed knowledge development through a range of units of study in both substantive knowledge and knowledge for teaching</td>
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<td>8. Embedded literacy and numeracy assessment rubrics in all appropriate degree units.</td>
</tr>
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<td><strong>Phase 3: Achievement at the Standard and beyond</strong></td>
<td>Identification of meeting Standard 3.2 can be evaluated and achieved through the application of a various tools and approaches including one or more of the following:</td>
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Preservice teacher's evaluation and demonstration of meeting Standard 3.2 in English and mathematics and beyond to AQF appropriate to their method discipline level. While this may occur at any stage of the degree, it is likely to be able to be realised well before course completion.

1. in class tasks  
2. a portfolio of evidence of achievement and capability assessed by the University  
3. illustration of capability in tasks designed to reflect 3.1 achievement through Year 12 Study Scores equivalence based on work samples provided through the Study Scores project  
4. AQF undergraduate Level 7 standard or above in English and/or mathematics; and/or  
5. Successful completion of a 2 unit sequence in English or a two unit sequence in mathematics or science in an Australian recognised higher education degree course.

Other Regulatory Frameworks and Standards

The work presented here is set within the broader higher education regulatory context including reference to the Australian Qualifications Framework (AQF) which establishes level 7 and level 9 standards for graduates of all bachelor and master degrees, the ALTC Threshold Learning Outcomes for the broad discipline of Education at AQF level 7 and 9 for bachelor and master degrees and the specialist knowledge requirements for registration as a teacher across various disciplines and sectors, such as mathematics, sciences, early childhood and vocational education. All of these other frameworks demand course and graduate standards above the AITSL Program Standard of 3.1 and 3.2. It is specifically recognised that while English language skills may be broadly achieved for all graduating teachers, the achievement of mathematics knowledge is more challenging, in that it is not as widely applied through these other requirements.

Recommendations and Advice

A. Achievement of AITSL Standards are demonstrated through development across the degree as reported in the Program Standards 3.1 and 3.2 Framework

One of the key recommendations to come from the workshops, literature review and survey of practices is that the best means of improving student literacy and numeracy are those which seek to develop skills over the entire life of degree programs and which are responsive to the prior learning of preservice teachers.

Concurrent with this project DEEWR (DEEWR, 2012) have published their English Language Standards for Higher Education (see attachment 7). It is noted that the recommendations of that report generally inform the findings and recommendations of this report. These are:

- That Higher Education Providers (HEPs) assess their students to ensure they have the skills necessary to be successful at higher education
• That students are informed of their responsibilities in relation to their own success
• That students are provided with the resources they will need to succeed
• That HEPs design their courses to ensure students have every opportunity to develop their skills
• That HEPs ensure their students are proficient upon graduation, and
• That this proficiency be established using a variety of means best designed to assess student abilities.

It is the intention of Program Standards 3.1 and 3.2 that those students entering teacher education who are not able to demonstrate attainment of Program Standard 3.1 will, prior to completion of their degree, be able to demonstrate equivalent skills through mechanisms identified, as at Program Standard 3.2. Standard 3.2, therefore, needs to be transparently comparable to the level of literacy and numeracy obtained by students who have achieved entry via Standard 3.1. To ensure that this is the case, work is currently being undertaken by Louden and Blagaich (2012 not yet published) to establish the year 12 study scores necessary in a variety of English and mathematics subjects, so as to demonstrate meeting the requirements of Program Standard 3.1.

With this knowledge in place fixing Program Standard 3.1, it is hoped that in the near future a bank of critically annotated preservice teacher work samples will be developed to illustrate the achievement of Program Standard 3.2. This will enable the exemplars of best practice presented in this report to then be linked with these annotated work samples so as to provide a basis for moderation and investigation within and across universities. This will assist in benchmarking practices and in confirming successful learning outcomes. This current project seeks to provide exemplary work samples, while recognising that the development of rigorous and reliable examples will take more work than is possible given the restrictions imposed on the current project and likewise the need to link such samples to the Louden and Blagaich project for these practices and outcomes to be meaningfully applicable.

The main recommendation of this report is that, in line with best practice principles in higher education, HEPs will report, in response to the Framework, on the kinds of assessment and development tools they currently use so as to assess and improve the literacy and numeracy capabilities of their students. These tools have been divided across three phases of the education journeys of students: assessment at entry, learning and development throughout their degree and assessment prior to completion as detailed in Table 1 of this report. It is anticipated that HEPs will demonstrate how their students are meeting the literacy and numeracy standards expected of Standards 3.1 and 3.2 using some combination of the assessment and development strategies detailed in this Framework.

B. The identification of the achievement of preservice teacher numeracy and literacy must be developed and take account of the context of the program, including the communities in which graduates complete their professional experience and the background of the preservice teacher.
Contextual issues impact the learning and achievement of preservice teachers and demand that teacher education programs respond proactively to these. To the extent that many HEPs only admit students who already meet Standard 3.1 and that 3.1 is a minimum entry standard, these standards may appear irrelevant to those institutions. Nevertheless, these Standards are still timely in that they focus all teacher education providers on the need to continually improve the literacy and numeracy capacity of all of their students over the period of their degree. This is only possible if literacy and numeracy are highlighted as essential learning areas across the full range of subjects necessary to be completed so students can obtain provisional registration as a teacher. It is not the view of ACDE that HEPs will need to fundamentally change their practices to ensure they meet the minimum requirements that these Standards present. Rather, by concentrating attention on how HEPs assess their students’ capacity on entry, develop this capacity throughout their degrees and finally assess student attainment of this standard prior to graduation, HEPs will be able to clearly demonstrate how they are improving the literacy and numeracy capabilities of all of their students.

Whilst it is essential to have clear benchmarks to establish the minimum expected literacy and numeracy standards of preservice teachers, HEPs can only respond to these standards by establishing processes that assess and develop student skills in these areas. This report recommends the adoption of the Framework as a series of exemplars of practice designed to improve student literacy and numeracy. This report presents the Framework as the foundation upon which HEP reporting on attainment of Standards 3.1 and 3.2 will be demonstrated. It is not the intention of this report that all HEPs adopt and implement all of these processes – however, it is the intention of this report that all HEPs are able to demonstrate that they assess and improve student literacy and numeracy over the three phases indicated in the Framework, that is; at entry, over the period of learning and development, and finally at attainment of the Standard.
2. SURVEY OF PRACTICES

A survey was sent to all ACDE and NADLATE member HEPs seeking responses to five questions concerning the Program Standards 3.1 and 3.2. These were:

- What are you doing currently in Literacy assessment and development?
- What are you doing currently in Numeracy assessment and development?
- What changes are you making to respond to the new requirements for Literacy?
- What changes are you making to respond to the new requirements for Numeracy?
- What would you like to be able to do to meet Program Standard 3.2 in Literacy and Numeracy?

The detailed results of this survey are provided as Attachment 3 of this document, although its main conclusions are summarised here. Further, meetings of NADLATE were held on 15 March 2012 and on 15 May 2012 where these practices and responses to the Standards were extensively discussed and debated. The Framework was developed from and critiqued in these meetings also. Summaries of those discussions are also included as Appendix 5 of this report.

The following table summarises the range of assessment and development activities HEPs currently use to assess and assist their students in improving their literacy and numeracy skills and abilities.

Table 1 – University Responses to 3.2

<table>
<thead>
<tr>
<th>University</th>
<th>At Entry</th>
<th>Learning and Development During Degree</th>
<th>Achievement of Standard</th>
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### At Entry

1. Had referred to HEPs who only accepted students who already met the standard – however, this was not worded clearly and was misinterpreted by HEPs. Nevertheless, many HEPs do believe the vast majority of the applicants to their degree courses are already at standard 3.1

2. Assessment of Portfolio – generally for students without a current ATAR

3. Alternative Pathways – TAFE or University Study Preparation Course

4. Entry Test – STAT or other used by university

### Learning and Development During Degree

5. Early Assessment of Student’s Literacy and Numeracy Ability – test or assignment focused on determining student abilities

6. Mentoring Program – with more advanced current students supporting struggling students

7. Academic Staff Additional Access – whether library or tutorial staff providing additional support

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</table>
8. Additional Required Subjects to Achieve Degree if Below 3.1 – some HEPs have compulsory subjects if students determined below standards

9. Compulsory Literacy and Numeracy Extension Subjects – the degree itself contains subjects designed to improve literacy and numeracy standards.

10. Literacy and Numeracy Embedded Assessment Criteria in Assessment Tasks – literacy and numeracy are key marking criteria in all assignments

11. Academic Literacy Skills Development Units – these units exist to improve student skills and students are made aware of the availability of this support

12. Online Skills Assessment and Development – students are able to access online computerised tutorial assistance to develop their literacy and numeracy skills.

13. Additional Support Advice, no Compulsion – after assessing student abilities they are made aware of the range of assistance available to them, but are not required to access these services or subjects.

Demonstration of Achievement of Standard to Graduate

14. Integrated Specific Test – the use of a test in the final phase of study as a health check of student literacy and numeracy skills

15. Tasks – assessment tasks are designed to clearly demonstrate student abilities in literacy and numeracy

16. Portfolio of Work – whether or not related to practicum, in part students demonstrate both their skills in literacy and numeracy and their abilities to teach these.

The initial analysis of the data received from HEPs confirmed many similarities in how HEPs approached the task of improving their students’ literacy and numeracy skills. This enabled the project to group these processes across the three main phases of the teacher education cycle so as to assess and improve student improvement and their attainment of the standards.

These general practices provide a broad framework of actions HEPs use in both assessment and development of their student populations. The practices used by institutions depend on the nature of their student populations and the developmental needs these students present with.

A key aspect of these practices is the variety and range they display across the HEPs. Such a variety of practices relates to the fact that students require a broad range of opportunities to allow them to establish and to demonstrate their attainment of the literacy and numeracy skills implied in these standards. It is also important to note that more than half of the exemplars of practice are concerned with the development and consolidation of skills and that these, therefore, form the key focus of the report.
Further and more detailed discussion of these processes and exemplars of practice is provided in Appendix 4, while the full responses received from the universities to our survey is provide in Appendix 3.
3. LITERATURE OVERVIEW

The following are snapshot summaries of the two literature reviews attached in full as Appendix 6 to this report. These literature reviews were prepared by Associate Professor Judy MacCallum, Murdoch University (literacy) and Professor Ian Hay and Associate Professor Rosemary Callingham, University of Tasmania (numeracy).

**Literacy**

There is a widely held assumption that one of the best ways to improve the literacy and numeracy of Australian school students is to first ensure high levels of literacy and numeracy of Australia's graduate teachers. This assumption is prevalent in both the general community and among senior teachers who have voiced concerns that the literacy and numeracy of graduate teachers is currently too low and has been in long term decline.

The *Teaching Reading* report expressed concern that minimal time was spent in reading and literacy in primary education courses and the *Top of the Class* report recommended the use of diagnostic tests for student teachers and that the data gleaned from these tests be used to identify and improve any gaps assessed in their skills. There have also been calls for the recruitment of better qualified entrants to teacher education courses.

Very similar concerns have been identified in other countries and these countries have proposed and implemented changes to help address these concerns. The report presents some examples of tests given to teacher education students in these countries and used to assess preservice teacher literacy skills.

The link between literacy, verbal ability and subsequent performance of teachers, while generally assumed, is very difficult to establish. In fact, a number of studies have found little or no demonstrable or significant relationship between these. Where relationships have been found they have sometimes proven to be of less value than other factors in predicting teacher effectiveness.

**Numeracy**

The teaching of mathematics depends not only on a teachers' mathematical content knowledge, but also on their attitudes to teaching mathematics and their understanding of mathematical pedagogy.
The Australian policy scene has been strongly focused on the level of teacher competency in literacy and numeracy and this has been exemplified in reports such as *Top of the Class* and in the concerns raised by COAG and DEEWR.

Nevertheless, it is difficult to define ‘personal numeracy’ despite this being a general capability identified in the Australian Curriculum as one of the general skills all teachers in all subjects need to teach.

Other countries, most notably the US and UK, have more specific definitions of numeracy – whereas Australia tends to see numeracy as a series of skills related to problem solving in the real world. The question of what constitutes the population from which teachers are to be drawn and thus what constitutes the top 30 per cent of this population is raised but not resolved in this literature.

Proposals for establishing a benchmark include the use of ATAR scores, STAT, NAPLAN, ALLSS and PAT Maths – however, all of these prove to have deficiencies and are highly dependent on the underlying definition of numeracy adopted. International tests, such as, TIMMS, PISA, SAT and ACT could prove difficult and expensive to adapt to Australian circumstances. However, the literature review does propose the *Australian Core Skills Framework* as a possible way forward in providing exemplars of the skills needed by graduating teachers.

In addition the report presents the idea of a ‘points system’ whereby students who fail to meet the required standard of numeracy prior to enrolment, would need to accrue ‘points’ throughout their degree by means specific to their identified numeracy issues.
4. PROGRAM STANDARDS 3.1 AND 3.2 FRAMEWORK

This Framework was developed and endorsed by the NADLATE and responds to the data and analysis gained in this project and outlines the practices applied across HEPs in achieving the Standards. It also outlines a strategy for continuing improvement and learning in relation to literacy and numeracy attainment as well as for authentic assessment of achievement across degrees. It assumes the Standards are a minimal achievement and ACDE encourages and promotes further development for high quality graduate outcomes. It also encourages achievement of Standard 3.2 early in degree programs rather than only at graduation as often the higher AQF standards are identified for graduation.

The Framework outlined below in Table 1 suggests three phases: those of identification of achievements, actions for improvement and development, and finally strategies for identifying achievement of the Standard 3.2 prior to graduation. Elaborated exemplars of the practices which support and identify achievement are discussed in detail for each phase later in this report (Appendix 4). These exemplars suggest current benchmark practices for achievement of the Standard 3.2 prior to graduation. These benchmarks will be further informed by the school leaver benchmarks for Standard 3.1 developed by Louden and Blagaich (2012 forthcoming).

Table 1: Program Standard 3.1 & 3.2 Framework.

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The identification of the learning strengths and needs of preservice teachers in English and mathematics early in the degree, leading to a program of Learning and Development to ensure capability and achievement demonstrated at Standard 3.2 and for AQF in method disciplines.

4. Distributed knowledge development through a range of units of study in both substantive knowledge and knowledge for teaching,

5. Additional programs and activities which complement preservice teachers courses and work to engage, improve and enrich their skills in English and mathematics,

6. Mentoring programs in English and mathematics

7. Academic Skills units, Student advisors and extra-curricula programs,

8. Library programs,

9. Online courses and programs, and/or

10. Embedded literacy and numeracy assessment rubrics in all appropriate degree units.

Phase 3: Achievement at the Standard and beyond

Preservice teacher’s evaluation and demonstration of meeting Standard 3.2 in English and mathematics and beyond to AQF appropriate to their method discipline level. While this may occur at any stage of the degree, it is likely to be able to be realized well before course completion.

Identification of meeting Standard 3.2 can be evaluated and achieved through the application of a various tools and approaches including one or more of the following:

11. in class tasks,

12. a portfolio of evidence of achievement and capability assessed by the University,

13. illustration of capability in tasks designed to reflect 3.1 achievement through Year 12 Study Scores equivalence based on work samples provided through the Study Scores project,

14. AQF undergraduate Level 7 standard or above in English and/or mathematics; and/or

15. Successful completion of a 2 unit sequence in English or a two unit sequence in mathematics or science in an Australian recognised higher education degree course.
APPENDIX 1: AITSL Advice on Standards 3.1 and 3.2

May 8, 2012

Professor Brenda Cherepnichenko
Pro-Vice-Chancellor
Deakin University
Faculty of Arts and Education
221 Burwood Highway
Burwood, Vic. 3125

Dear Brenda

RE: ACDE Project to develop an agreed set of principles and benchmarks for Program Standards 3.1 & 3.2

I write to acknowledge receipt of Progress Report 1 and to thank you for the work that has been undertaken to date. The report exposed several important issues which were further explored at our meeting on April 17, 2012. It was agreed at this meeting that the report revealed a need for clear direction from AITSL on some issues surrounding Program Standards 3.1 and 3.2. I can therefore confirm AITSL’s position on some important matters including that:

- These Program Standards refer specifically to personal literacy and numeracy as measures of pre-service teachers’ general academic attainment which “will successfully demonstrate their capacity to engage effectively with a rigorous higher education program and carry out the intellectual demands of teaching itself…” (Page 13, Accreditation of Initial Teacher Education: Standards and Procedures). These two program standards therefore do not deal with pedagogical content knowledge in literacy and numeracy (or other areas), or any other attributes that students might be expected to have on graduating from, or indeed entry to, initial teacher education.

- Program Standard 3.1 requires that entrants have levels of personal literacy and numeracy broadly equivalent to the top 30% of the population. Work underway to apply these standards to entrants coming directly from Year 12 is examining the use of senior secondary English and Mathematics scores as proxies for personal literacy and numeracy.

- Although definitions of literacy and numeracy are contested, AITSL’s view is that achievement in English and Mathematics is a reasonable measure of the intent of Ministers in setting this standard. This is not to deny that initial teacher education programs develop multiple literacies and numeracies, and other related characteristics, in their graduates.

- Work relating to entrants from Year 12 uses the Year 12 age cohort (including those who do not complete Year 12) as the relevant population. For comparability, and to avoid the difficulties involved in identifying other relevant populations, it would be appropriate to use this cohort as a benchmark for all entrants.

- Program Standard 3 deals with entrants to initial teacher education. Although the individual standards make reference to students being able to achieve these standards during a program, they are intended as standards to be met on entry. It is therefore reasonable to expect that the vast majority of graduates will achieve levels well above these, as well as meeting the National Professional Standards for Teachers at the Graduate career stage.

- Program Standard 7.2 requires that providers “report annually to the Authority outlining challenges encountered or any changes in programs”, while Program Standard 7.3 states that providers “supply data as required”. AITSL would expect that the annual reporting around all accredited programs will include data about the number of program entrants admitted without meeting Program Standard 3.1, the number provided with support to achieve the required standard, the nature of the support provided and the outcome for students of that support.

We also discussed the importance of consistency between this work and the work undertaken on the application of Standard 3.1 to entrants coming from Year 12. I can confirm that AITSL intends to
expand work commenced with the WA School Curriculum and Standards Authority to include all jurisdictions. The product of this work will be a list of subjects and scores within them that demonstrate that an applicant is in the top 30% of the age cohort for literacy or numeracy. This will provide guidance as to the standards to be achieved. We anticipate undertaking this work during May.

Finally, we discussed the products of this work. For the operation of the accreditation system, the critical product is a relatively short set of guidelines for providers and panels that identifies:

- Approaches to identifying entrants requiring additional support in relation to literacy and numeracy. This may include identifying particular forms of assessment that are widely used and appear to be effective for this purpose, although providers would not be limited to using these.
- Approaches to providing additional support within programs.
- Approaches to assessing literacy and numeracy prior to graduation. This may overlap with the first point, but a wider range of assessment approaches may be possible at this stage.

I would anticipate that the final report of this project will provide a draft of these guidelines that can then be considered and endorsed by NITEAC and the AITSL Board.

We look forward to continuing to work with ACDE to develop an agreed set of guidelines for Program Standards 3.1 and 3.2 that have the confidence of the profession. We look forward to meeting with you again before the next ACDE Workshop on 15 May to confirm progress and strategies.

I thank you and your team for the work you have put into this project to date.

Yours sincerely,

Edmund Missen
General Manager
APPENDIX 2: Participating Higher Education Institutions

The Australian Council of Deans of Education is an incorporated peak body which represents and comprises Heads of Schools and Deans of Schools and Faculties of Education in higher education institutions across Australia. The following institutions have participated in this project:

- Australian Catholic University
- Avondale College
- Central Queensland University
- Charles Darwin University
- Christian Heritage College
- Curtin University
- Deakin University
- Edith Cowan University
- Flinders University
- Griffith University
- James Cook University
- La Trobe University
- Macquarie University
- Monash University
- Murdoch University
- Notre Dame University
- Queensland University of Technology
- RMIT University
- Tabor College
- Southern Cross University
- University of Adelaide
- University of Ballarat
- University of Canberra
- University of Melbourne
- University of Newcastle
- University of New England
- University of New South Wales
- University of South Australia
- University of Southern Queensland
- University of Sunshine Coast
- University of Sydney
- University of Tasmania
- University of Technology, Sydney
- University of Western Australia
- University of Western Sydney
- University of Wollongong
- Victoria University
APPENDIX 3: Survey of Higher Education Practices

The responses from universities have come from three main sources: responses to a survey supplied to all universities, a meeting of the NADLATE held on 15 March and a further meeting held 15 May. Specifically, the survey sought responses to the following questions:

- What are you doing currently in Literacy assessment and development?
- What are you doing currently in Numeracy assessment and development?
- What changes are you making to respond to the new requirements for Literacy?
- What changes are you making to respond to the new requirements for Numeracy?
- What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?

Responses from Universities to Survey Questions

Universities have a wide range of mechanisms and processes to ensure the literacy and numeracy abilities of their students meet acceptable standards. The question is whether or not these processes and mechanisms meet the requirements of AITSL’s standard 3.1 and 3.2.

The issue here is as much definitional as anything else. The universities in New South Wales and Queensland believe that the stringencies of their local accreditation bodies mean that they would automatically meet or surpass the requirements of the proposed national system. This is not the case in most other states, which are concerned that without a clear definition of what the top 30 per cent of the population might mean, they have no means of ensuring that they meet this benchmark. As students can and do apply for entrance from other states and from overseas to NSW and Queensland Universities, this issue then becomes universal.

As part of the process of responding to this report ACDE surveyed all Australian universities with teacher education departments asking them five questions in relation to their literacy and numeracy standards. What follows is a summary of the responses received from these universities. The questions asked will be addressed in turn.

Question One - What are you doing currently in Literacy assessment and development?

Many universities incorporated a unit into the first year of their degrees, or even during orientation prior to students commencing at university, that presented students ‘foundation skills’. In this unit students are taught the basics of academic literacy, including academic writing skills and referencing. Other universities included assessments in subjects in the first weeks of the degree
with 'trip wire' tasks - that is, literacy and writing tasks that would indicate student literacy skills and therefore help evaluate their needs. On completion of these tasks universities are then able to direct students towards assistance.

Universities generally have quite strict entry requirements for teacher education courses and therefore believe that, in the main, their students meet the proposed standards. However, many universities also enrol students on equity grounds and they have a range of methods to ensure that these students eventually do meet the high standards expected from the new standard.

In some cases students are directed to student support services either as a condition of provisional entry to the degree or as a highly recommended option. Other universities offer a Diploma of General Studies which they use as a bridging course for students who do not initially meet the entry requirements of their teacher education courses. These diploma courses invariably contain both literacy and numeracy subjects and before students can articulate into the degree course they must have successfully completed these subjects.

Over two-thirds of universities surveyed mentioned that they had a unit which provided students with free access to academic skills development. These units were generally accessed at the discretion of the students and provide both online and face-to-face services to students.

Some universities have literal skills tests – diagnostic tests that determine student weaknesses and can therefore direct their students to materials or additional courses provided by academic skills units within the university or perhaps even require students to take certain 'electives', sometimes referred to as 'forced electives', designed to improve literacy or numeracy skills. Other universities make achieving certain scores on such diagnostic tests a requirement of continuing with the degree. This is particularly the case with students who have not been able to prove they meet the entrance literacy or numeracy standards and who therefore must prove, as in Standard 3.2, that they have met this standard by the time they complete their degree. Not meeting this standard means not being able to graduate.

Many universities are concerned that making it compulsory for students who fail to meet the minimum standard to attend such skills development courses, currently at the students discretion, would place far more pressure on these units than they are currently resourced to meet. Other universities have extended such assessments to all enrolled students in all subject areas in the university – not just the literacy and numeracy abilities of students in teacher education courses – and therefore all students potentially can be directed to skill improvement resources for literacy and numeracy. However, many universities are concerned with the cost implications of such a policy.

A number of universities have peer support programs. Many of these programs serve the dual purpose of supporting students who do not meet the minimum standards while also giving valuable experience to other students in teaching
and learning. Often the ‘peers’ are students from a year ahead of those they are assisting and who have already successfully completed the various units.

Another innovative process adopted by some universities is to have academic or library staff available at nominated times to assist students with their studies. Whilst this does not necessarily directly relate to either literacy or numeracy, such staff are trained to identify literacy and numeracy issues presenting in students and to then direct these students on for additional assistance.

A number of universities also provide students with access to proprietal skills assessment and development websites. These sites specialise in identifying student needs and in providing online content to improve student performance in both literacy and numeracy.

All universities have subjects in their degree courses designed to alert preservice teachers to the literacy and numeracy needs of the students they will be teaching. Often universities require students to achieve a certain mark in these subjects before they are eligible to go on practicum. These units invariably present students with the literacy and numeracy needs across the curriculum and therefore help to build the literacy and numeracy skills of preservice teachers in a pedagogically appropriate manner. Universities stressed that decontextualized literacy and numeracy was almost impossible to measure and that it was also difficult to assess just how useful such ‘general’ literacy might prove in assisting preservice teachers in their later teaching career. Whereas, the more pedagogically focused literacy that occurs in both these ‘literacy across the curriculum’ subjects and also in more focused teaching method specific subjects was essential training in the kinds of literacies most needed by graduate teachers.

In some courses students are required to take a Year Nine NAPLAN tests in the last year of their degree. Primarily this is to give preservice teachers an understanding of what is required in NAPLAN, but it also provides the added benefit of highlighting any weaknesses final year students may have with their literacy or numeracy that can then be addressed prior to graduation.

It is also generally held that the universities are providing teacher education degrees, at either graduate or post-graduate level, and that these degrees have been both accredited by various bodies to meet the standards documented in the Australian Qualifications Framework. There is no teacher education course which does not require high level literacy skills – particularly in essay writing, but also in preparing lesson plans and portfolios – and so the idea that students might be able to pass such a degree with skills less than those of the top 30% of Year Twelve students seems ludicrous to many universities.

One university has developed a test designed to ensure it matches NSW Band 4 in both literacy and numeracy. Students not able to prove they have obtained this level on entry are therefore required to take this test. The test is given each year of the degree and students are unable to graduate until they have achieved a pass in this test.
Other universities are much more stringent and students who fail the test are
given only one more opportunity to pass and if not able to pass on this occasion
they are terminated from the degree.

Another university, in recognition that MTeach students may have not been in
educational settings for some time, provide them with additional time to
consolidate their literacy and numeracy skills.

The majority of subjects taken in a teacher education course have some literacy
requirements and in recognition of this fact some universities have developed
literacy rubrics for assignments in all subjects taken in teacher education
courses. In one university the mark a student gains on the literacy criterion in
the rubric represents the highest possible mark the student can achieve for the
assessment. That is, if the student gets 100 per cent for the literacy component
they are eligible for up to 100 per cent in the assignment, whereas, if they only
achieve 50 per cent for the literacy component of the assignment then 50 per
cent is the top mark they can achieve for the entire assignment. Such a marking
system ensures students are made aware of the requirement that they meet
minimum standards in literacy before they can expect to become a teacher.

A number of universities have suggested that it should be either up to AITSL,
ACDE or a consortium of universities working together to develop such rubrics,
benchmarks or templates that clearly identify the literacy and numeracy skills
necessary for graduate teachers. This is an interesting issue as it goes beyond
the 30 per cent benchmark on entry and looks rather at what literacy and
numeracy skills teachers should have on graduation and therefore how
universities should approach the teaching of their courses to ensure they end up
with graduates who meet this level.

Universities also require students to display literacy and numeracy skills on their
practicum experiences and students are assessed as a matter of course on their
ability to meet these requirements on their practicum.

Not all universities currently have the same IELTS standard for overseas
students from non-English speaking backgrounds as detailed in the standard.

There is quite some concern over what ought to be included in a test of literacy,
however, one university has directly linked the attainment of personal literacy
for preservice teacher candidates to STELLA.

**Question Two - What are you doing currently in Numeracy assessment and
development?**

Much of what has been said about literacy also applies to numeracy. This is
because universities that provide tests to ensure their students achieve
standards in literacy also provide similar tests to ensure numeracy standards are
met. The issue with numeracy is that while the entry requirements to university
teacher education courses have strict and clear literacy entry requirements, this is not always the case with numeracy. For example, there are clear differences in how universities treat different cohorts of students applying for teacher education – foremost, those applying for Early Childhood, Primary and Secondary. As most teachers in Primary Schools are likely to be called upon to teach mathematics there is a clear and unambiguous entry requirement of a mathematics subject in Years Eleven or Twelve prior to entry to most Primary Education courses.

However, it is difficult to know if successfully completing Year Eleven mathematics places the applicant within the top 30 per cent of the population in personal numeracy. Also, there is no similar requirement in many states on applicants to either Early Childhood or Secondary courses.

For Secondary mathematics and science method students, there is little question that those entering into these methods would have personal mathematics abilities that would place them well above the top 30 per cent of the general population. However, whether this translates into personal numeracy is a definitional issue many universities find very difficult to answer.

Some universities have developed programs that focus less on the ‘personal numeracy’ of students so that they can meet abstract requirements associated with mathematical principles and understandings and more on numeracy as problem solving. These courses are concerned to give students an understanding of the pedagogical skills needed to teach numeracy across the curriculum, rather than subject content knowledge as such. Still others see the development of numeracy, as is defined in the Australian Curriculum, as a cross curricula skill that must be taught in all subjects. So that, in English, for example, the need to be able to read charts and graphs is a fundamental skill essential for the functional and critical literacy of the students taught in the classroom and therefore for the teacher to be able to teach.

**Question Three - What changes are you making to respond to the new requirements for Literacy?**

Many universities said they were likely to need to add subjects to their teacher education courses that would more closely align them with the literacy and numeracy requirements of the standards. Mostly universities would prefer the literacy standards to be embedded in the courses already offered and to be closely related to the pedagogical needs of their students, rather than some general literacy that is difficult to define or assess.

It is often pointed out in the responses received from universities that literacy should not be narrowly defined and that issues concerning digital, oral, aural and personal literacies need to also be validated in the standard and stressed to students as being equally important and necessary skills for twenty-first century teachers.
Many universities that do not currently run assessments of newly enrolled students' literacy and numeracy skills are considering introducing such a test. The issue here is in finding an evaluation tool that clearly meets that prescribed by the standard.

Some universities are suggesting there may be capacity to provide students who do not meet the standard extra tutorials or perhaps even additional subjects that are purely designed to lift student literacy or numeracy skills. There are several issues with this – not least that these subjects would be unlikely to be counted towards a graduate or post-graduate teaching qualification. As such these would likely need to be funded in some way outside of normal government funding standards.

Quite a few universities are currently or have just finished reassessing and reviewing their assessment and support of literacy for their teacher education courses. While literacy requirements ought to be constantly under review, this again highlights the need for there to be clear and unambiguous criteria provided to universities as to the nature of the standard required.

The question of how much responsibility there should be on the university to provide services as requirements and how much should be left to the student to seek out those services at their own discretion to improve their own skills is repeatedly asked throughout the responses received.

A key feature of the responses to the survey is that universities from NSW and Queensland clearly feel their current state based standards ensure that they will meet the new national standards.

Some universities are in the process of trailing online assessment tools designed to diagnose student needs and to provide them with suitable exercises to help them improve their skills.

Some universities have also sought to integrate changes they will need to make to meet the new standards with the requirements of the Australian Curriculum, particularly around the teaching of grammar.

There is a view that meeting the new standards will place additional pressure on academic skills units and that these will not only need to be better funded, but also better organised to meet the new demand and the need for these to not only provide skills assistance, but also provide some form of assessment and evaluation proving students have met the standard. This may involve a substantial reorganisation of these units, with some suggesting they eventually become a kind of one stop shop. Again, additional funding is likely to be required by these units to meet their new roles.

**Question Four - What changes are you making to respond to the new requirements for Numeracy?**
Some universities are considering making some core mathematics subjects that are currently required for Primary teaching degrees compulsory for all education degrees. There is a general recognition that ensuring preservice teachers meet the numeracy standard, particularly in education streams that do not explicitly require mathematics as an entry requirement or to be taught in the method streams, is going to be hard to both assess and to ensure students meet these standards. Virtually any undergraduate degree is certain to raise a student’s literacy to well above the stated literacy standard; however, there is no reason to assume this would be the case with a graduating student’s numeracy.

Some universities are adding additional subjects for students who do not meet the standard on entry; however, asking students to do additional subjects over and above their standard course requirements ultimately is an expensive option.

Some universities are also developing courses in which the kinds of numeracy needs graduate teachers will be confronted with ‘on-the-job’ will be addressed. Skills such as making sense of NAPLAN data, for example.

The Queensland accreditation body is mandating that all teacher education programs will have senior mathematics as an entry requirement by 2016 – this will, it is assumed, ensure students meet this standard.

There is, again, a call for universities to better coordinate their approach to addressing the issue of numeracy and how bests to meet these new standards and that university defined benchmarks be established.

**Question Five - What would you like to be able to do to meet standard 3.2 in Literacy and Numeracy?**

The main theme which runs through the responses from universities to this question revolve around the issue of what is it that standards 3.1 and 3.2 are really seeking to address. There is a general concern that stating that all teacher candidates should be in the top 30 per cent in literacy and numeracy is easily stated, but almost impossible to measure and verify. That there are also simple ways of appearing to achieve this entry standard – such as mandating ATAR scores – but that these only address the issues associated with those directly entering teacher education courses from Year Twelve, and that much of the point of Standard 3.2 is to address how to ensure those who do not meet a simple test for 3.1 can also be covered by the standard. There is scepticism that ATAR scores actually achieve a guarantee of literacy or numeracy attainment.

Some universities look to AITSL or ACDE to provide more guidance on what these standards literally mean. What is the population, what is the literacy and numeracy that is being measured, why these literacies and numeracies and not others that appear to be at least as important to a graduate teachers career, what research has been done to show teachers who meet these standards prove to be more effective as teachers?
Some universities would also like AITSL or ACDE to provide a generic test that could be used to ensure students meet the standard, while other universities are opposed to such a test, seeing it as counter-productive, in that it would be unlikely to actually test anything other than a vague notion of literacy and numeracy (rather than the kinds of subject specific literacies and numeracies needed by graduate teachers in order to teach) and would likely only encourage universities to ‘teach to the test’ in any case. There is a clear divide in how confident universities feel in the ability to devise a simple test to diagnose student literacy and numeracy skills. Evidence of such an assessment tool’s efficacy would need to be presented to all universities before there would be any likelihood of such a test’s general acceptance, and such evidence would be hard to come by.

Some universities would like to see teacher education move to post-graduate courses only. This would (on the surface at least) remove the issue for literacy – if not numeracy – ensuring all entrants are in the top 30 per cent of the population virtually by definition. However, this would clearly present universities with issues for equity of entry to teacher education, as only those students prepared to study for up to five or six years at tertiary level would be eligible to become teachers.

Another view is for AITSL to provide universities with exemplars of what a literate and numerate graduate teacher should look like. This would then allow universities to direct their efforts towards producing teachers who meet this standard. The skills of entrants could be assessed and those not meeting the standard on entrance would be evaluated over the life of the degree to ensure they progress towards and finally achieve the required standard – however, yet again this will require clear and unambiguous core competencies to be developed that map to and match the needs of the broad range of different cohorts of teacher education students. This would not be a simple task. Many universities would rather they were involved in the process of developing these exemplars and benchmarks than having such imposed on them from outside.

There are also concerns that just because students meet the entry standard does not in any way guarantee these students have adequate literacy and numeracy to be effective teachers or that there are no holes in their knowledge that will need to be addressed. For example, a student can pass a mathematics test because they have memorised the necessary steps to the right answer without having a clue as to why those steps produce that answer. This difference between correct knowledge and true knowledge is one of the things teacher education seeks to address.

There are various suggestions that students who clearly do not meet the standards should be admitted to teacher education courses on a probation basis and if they fail to meet the standard over the course of the degree that they will have their enrolment terminated. Again, there will need to be clear benchmarks to establish these standards and universities would also like to look at alternative pathways for students so that their time at university could not be considered to have been wasted.
There has been a suggestion that students be required to complete a kind of literacy and numeracy ‘passport’. An initial diagnostic test would establish which ‘pages’ of the passport a particular student needs to address and over the life of their degree they will need to have those pages ‘stamped’. However, there may be a wide variety of ways in which those pages can be stamped, including online courses, electives, portfolio examples of teaching practice and the results students achieve in literacy and numeracy compulsory subjects in their degree.

There is also a general view that by graduation most preservice teachers already actually meet the required standard, particularly in relation to their method specific literacy and numeracy. That this is difficult to demonstrate is more a function of the difficulty of what is being asked to be demonstrated, rather than an unwillingness to demonstrate this achievement.

In New South Wales the current standard requires that students who do not meet the initial entry requirements to meet the standard over the course of their degree by completing additional courses. Some universities believe this is not appropriate as their standard degree subjects would adequately address these issues.

Overall, universities are concerned with issues that may arise concerning funding for projects designed to improve base grade literacy and numeracy of student teachers and how to go about assessing that students meet standards set.
### ACDE REPORT AITSL: Program Standards 3.1 & 3.2

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<tr>
<th>Institution</th>
<th>What are you doing currently in Literacy assessment and development?</th>
<th>What are you doing currently in Numeracy assessment and development?</th>
<th>What changes are you making to respond to the new requirements for Literacy?</th>
<th>What changes are you making to respond to the new requirements for Numeracy?</th>
<th>What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?</th>
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<tbody>
<tr>
<td>University One</td>
<td>Foundation Unit for all students in essay writing and referencing.</td>
<td>Teaching and Learning Centre numeracy skills courses.</td>
<td>First Year Literacy unit – considering requiring 60% pass mark and if student not successful require additional support.</td>
<td>First Year Maths subject result triggers further action.</td>
<td>Believe students will meet standard by graduation anyway</td>
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<td></td>
<td>Teaching and Learning Centre literacy skills courses.</td>
<td>Elective unit available for students without Level 2 Year 12 Maths</td>
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<td>Considering making this subject compulsory for all students without Level 2 Maths in Year 12</td>
<td>Like to have recognition that Lit/Numeracy difficult to measure.</td>
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<td>Core subject in degree on language and learning</td>
<td>Core subject in degree on language and learning</td>
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<td>No Single Measure</td>
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<td>Avoid testing regime as counter-productive and not informative.</td>
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<td>University Two</td>
<td>Meet NSW State requirements – which university interpret conservatively. (similar to those being proposed by AITSL) Entry requires Band 4 English and Numeracy Equivalent measures for students from interstate and overseas Special entry for students from Rural, TAFE and Special Entry Pathway all offered additional support</td>
<td>Meet NSW State requirements – which university interpret conservatively. (similar to those being proposed by AITSL) Entry requires Band 4 English and Numeracy Equivalent measures for students from interstate and overseas</td>
<td>Two additional required subjects for students who do not meet Band 4 (not electives – additional) Focus not ‘remedial’ but ‘embedded’ subjects to increase competence in English and Maths</td>
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<td>Prefer initial teacher education to be post-grad level only (as per Finland and Canada) Funding support for practice based literacy and numeracy—particularly for equity groups</td>
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<td>University Three</td>
<td>An Academic Literacy and Cultural Support Coordinator to support students.</td>
<td>Early Childhood PASS support and expected to demonstrate numeracy skills on professional experience</td>
<td>Have working group looking a developing a Oral and Aural literacy task</td>
<td>Early Childhood University site to have maths ed support for students (Maths Education Support Hub MESH)</td>
<td>Early Childhood and Primary</td>
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<td></td>
<td>Academic Literacy Task completed in first week by students to assess standard. Students assessed as Satisfactory, Caution and Unsatisfactory</td>
<td>Two core units are maths related</td>
<td>Working Group to include academic literacy standards for those wanting to enrol in teacher education degree.</td>
<td>Secondary</td>
<td>Construction of online base skills test to assess student entry level skills and to gauge improvement over course of degree</td>
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<td>Unsatisfactory students invited (not required) to attend additional workshops.</td>
<td>Primary</td>
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<td>MESH also linked to core maths units</td>
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<td>A writing mentor program where students with good writing skills assist those without those skills</td>
<td>2 core units maths related</td>
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<td>PASS (Peer Assisted Study Sessions) where students who have successfully completed a unit assist a group of students who may be</td>
<td>Student access to web based training tutorials and study support in maths</td>
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<td>2 Units maths related building hands on numeracy</td>
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<td>struggling Roving academic at library at given times to assist students with their studies</td>
<td>requirements deliver students who meet these criteria Exam in maths unit provides additional check. Students can access web based training</td>
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<td>University Four</td>
<td>Courses (MTeach, BEd (Primary), BEd (Early Childhood) BEd (specialisation)) assumes literacy be developed over degree. Development of literacy/English units scaffold building of literacy skills of students – particularly in BEd prim and EC (3xliteracy/pedagogy units). If students fail any of these units, they are required to repeat and course progression (including professional experience placements) may be stalled. Student self assessment encouraged as is their actively taking steps to address their own weaknesses Students take a literacy test to ensure they meet As per literacy.</td>
<td>As per literacy.</td>
<td>Competency testing – offered 4 times over the course of a degree (both MTeach and BEd) with advice provided as to how to remedy identified weaknesses 80% pass mark required New courses (implemented in 2010) were developed with the foreshadowed AITSL literacy requirements in mind Faculty involved in the development of a Diploma of University Studies (Education) for the less well prepared students wishing to become teachers, where there is a focus on BOTH numeracy and literacy development amongst other things. First offered 2012.</td>
<td>As per literacy. As per literacy. As per literacy. A new unit has been developed as an elective for students as one option for improvement – can be incorporated as a 'forced elective' for the very weak students if necessary (offered in both semester 2 and summer school).</td>
<td>Currently activities are in place, but they need further resourcing and enhancement of model Any enhancement activities will be undertaken in the light of advice from the ACDE project and in the light of new evidence of best practice outcomes More discrimination in terms of the MTeach intake (cognisant of PG capping) – important to note that not all MTeach students pass the competency tests even though they hold a degree. A key activity: Map the needs (if data not already available) of</td>
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<td>a standard – they must pass this test (80% pass mark) to show they are competent. This is a test that has been developed by the Faculty based on best practice outcomes. For failing students, they are provided with advice about how to improve (resource provided) and they also have access to a variety of university assistance, most of which is currently designed for on-campus students, and which is under-resourced.</td>
<td>As per literacy.</td>
<td>As per literacy.</td>
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<td>teachers (from birth to adult learners) in regards literacy and numeracy personal and professional (PCK) needs e.g. what are relevant numeracy skills for a secondary art teacher. The map of the domain will inform the level of competency education students needs upon graduation.</td>
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<td>University Five</td>
<td><strong>B Ed Primary</strong>&lt;br&gt;4 core literacy based subjects in degree</td>
<td><strong>B Ed Primary</strong>&lt;br&gt;4 core literacy based subjects in degree</td>
<td>No Literacy or Numeracy prerequisites for Graduate entry – assume undergrad degree enough</td>
<td>No Literacy or Numeracy prerequisites for Graduate entry – assume undergrad degree enough</td>
<td>Cooperation with other institutions to Re: methods, strategies, models and initiatives to meet std particularly around graduate entry</td>
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<td><strong>B Ed Disability</strong>&lt;br&gt;2 core literacy based subjects in degree</td>
<td><strong>B Ed Disability</strong>&lt;br&gt;2 core literacy based subjects in degree</td>
<td><strong>B Ed Primary</strong>&lt;br&gt;Current ATAR of 68-72 and must have maths in years 11 or 12 and English score of at least 25</td>
<td><strong>B Ed Primary</strong>&lt;br&gt;Current ATAR of 68-72 and must have maths in years 11 or 12 and English score of at least 25</td>
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<td><strong>Grad Dip Primary</strong>&lt;br&gt;1 core literacy based subjects in degree</td>
<td><strong>Grad Dip Primary</strong>&lt;br&gt;1 core literacy based subjects in degree</td>
<td>Top Up Course available – English for Academic Purposes&lt;br&gt;Linking to university-wide initiative on improving student literacy skills.</td>
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<td><strong>Grad Dip Secondary</strong>&lt;br&gt;Academic literacy is often part of assessment criteria in courses across programs</td>
<td>Not Applicable</td>
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<td>University Six</td>
<td>Currently, we use an online literacy competency test offered through Pearson Education. Our students are required to purchase an access code that gives them access to practice tests, specific study sessions in diagnosed areas of weakness, and the test itself. Students who do not pass are required to take remedial courses offered by the Uni and then re-sit the test. Writing and personal literacy courses are available through university Student Support and students with observed weaknesses and problems are strongly advised to enrol in one of the available courses.</td>
<td>With regard to mathematical content knowledge (preferable to the term 'numeracy' here) we currently attempt to ascertain incoming preservice teacher content knowledge, as well as their attitudes, fears, anxiety, confidence etc. towards mathematics in itself, about doing mathematics, and about teaching it. This is the subject of on-going research into mathematics competence and confidence of preservice teachers on which several staff are working. The tools used are questionnaires and a competency test. The competency test is offered as an on-line test through Pearson</td>
<td>University is introducing a Uni-wide requirement that English competency is checked as part of First Year in all courses and support is arranged for students who need it.</td>
<td>We are designing new B.Ed, Early Childhood and Primary courses to be introduced in 2013. It is likely these courses will include a 'Developing Numerate Teachers' unit in First Year, which will include students verifying their personal numeracy and taking remedial action if necessary. This unit has embedded in it, the mathematics needed by teachers to be able to understand and interpret test data such as that generated by NAPLAN. The competency test, attitudes questionnaire, anxiety/confidence questionnaires are embedded in the new unit.</td>
<td>Regarding both Literacy/English and Numeracy/Mathematics, we could require incoming students to sit an 'entry test' or similar. Failure on this test would not necessarily preclude them from entering the course but it would enable us to identify students with issues that we could then address by provision of appropriate workshops or online materials. This process would reflect best practice ('practise what we preach') about early intervention.</td>
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<td>Assessment items for units have components related to professional/academic writing and in some units targeted help is provided in topics such as referencing and particular writing skills.</td>
<td>Education (OUA and Regional) as well as a paper test (Perth students). This is done in Semester Two because that is when the first Mathematics Education unit is situated. Workshops are provided to help students who need it.</td>
<td>We plan to integrate a literacy development program into core units. This comprises an initial diagnostic assessment followed by an extra tutorial each week for those who are identified as needing specific literacy support. Materials will be available online, adaptable to each unit.</td>
<td>personal mathematics knowledge is built alongside pedagogical skills. The competency test will be done on a yearly basis (possibly with increasing levels) to monitor increased knowledge of preservice teachers as part of their on-going development.</td>
<td>Longitudinal research is being conducted to follow a cohort through the whole course from their 1st year to their 4th year. This involves the use of the competency test, attitudes questionnaire, anxiety/confidence questionnaires, personality traits survey, professional learning workshops and personal mathematics plans. The research will investigate links between factors related to competency</td>
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<td>The core units include a stream of three English/Literacy Education units where students’ personal English knowledge is built alongside pedagogical skills. Embedding research skills throughout our courses as part of the assessment regime is an integral part of developing students’ literacy skills.</td>
<td>The core units include a stream of three Mathematics Education units where students’ personal mathematics knowledge is built alongside pedagogical skills. All students are required to pass the mandatory mathematics test prior to being approved to enrol in the Internship. Every student’s result is checked before enrolment is cleared.</td>
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<td>being approved to enrol in the Internship. Every student’s result is checked before enrolment is cleared. To help support Literacy development, online students are given free access, via Blackboard, to the Gateways to Academic Literacy and the UniEnglish services. Tutors regularly advise students to access these services. B.Ed. (Secondary) students are required to meet the same literacy requirements as those for Primary and Early Childhood.</td>
<td>B.Ed. (Secondary) students have no assessment of their mathematics/numeracy skills as a course requirement.</td>
<td>and confidence in an attempt to ascertain which factors have the greatest impact and to identify the measures which best assist our preservice teachers to improve competency and raise confidence. The Personal Mathematics Plan is established during Semester Two of 1st year and preservice teachers identify their own levels of conceptual understanding and mathematical knowledge and set up a plan for what they need to do to further develop in these areas. The plan is continued through all of the four years and is part of the on-going research described above.</td>
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<td>University Seven</td>
<td>University offers Bachelor of Early Childhood Education (BECE) where students with TAFE qualifications enter into the course as third year students; two secondary teaching double degrees: Bachelor of Teaching (Science)/Bachelor of Science; and Bachelor of Teaching (Secondary)/Bachelor of Arts; a Bachelor of Health &amp; Physical Education; a Bachelor of Education (Primary) and an Associate Degree Arts, Business and Science. University has iDeaL – Uni's English Language Development Tool. All beginning students are requested to take the test and academic skills advisors contact those who need additional support.</td>
<td>NB: Entry requirements and the literacy &amp; numeracy support available differ depending on course. In Secondary Science course: all students are required to pass a literacy-based core unit, 'Communicating Science'. All students must undertake and pass a university level mathematics unit as a core component of their science degree. In the Secondary Arts degree, E-type applicants are required to complete a STAT test to demonstrate mathematics competency. All students enrolled in this course must complete two compulsory units, 'Literacy across the Curriculum' and 'Mathematics'.</td>
<td>BECE would like to see an initial competencies assessment as compulsory and students required to take support courses depending on diagnostic results. All of the Secondary courses were recently reaccredited and literacy&amp; numeracy requirements were addressed as part of this process. BECE course currently in redevelopment and new requirements will be addressed as part of this process.</td>
<td>In BECE, based on the results of each student after entry assessment, compulsory remedial/support classes for those who require this should be offered a self-learning centre or on-line program can be offered to such students for them to study and complete before their graduation. Continuous assessment may be used, to gauge students' improvement. A clearer and more comprehensive definition of what constitutes numeracy/mathematics competencies as per new requirements developed and a means to identify and support those students who may not yet have achieved such skills.</td>
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<td>help. Additionally, a Peer Assisted Student Support (PASS) program on offer to BECE students. Most four year courses require VCE entry levels that would meet the literacy standard already. Faculty-wide initiative “Ask Jan”. Any students whose literacy skills are in need of support are referred to University’s Academic Skills Unit. Rates of those in Australia with a degree are around 30%—therefore, successful completion of courses means graduates meet 3.1 standard.</td>
<td>‘Numeracy across the curriculum’. In Bachelor of Health and Phys Ed course, academic writing is part of induction sessions. Second year students with poor literacy skills are identified for academic writing support. Students articulating from the Associate Degree to the Bachelor of Education (Primary) must successfully complete two university level units, one in mathematics and one in literacy. Completion of these units has been accepted as evidence by the credentialing authority of an equivalent standard to the entry requirements for the B.Ed (Primary).</td>
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<td>University Eight</td>
<td>All applicants must have achieved Band 4 or better in English to be accepted. If this is not achieved then applicants do further studies as a requirement. Overseas students are required to meet standards specified by UAC website. Students who do not meet the English standard must complete LING291: Writing in English. This is additional to any KLA requirements. All students are advised through the respective unit outlines about the uni’s “Study Skills Support” unit in the library and the online resources that are available.</td>
<td>Consistent with the requirements of the NSWIT, Primary teachers need to have achieved a Band 4 or equivalent, or better in their result in Mathematics. If that has not been achieved, further studies at a 100 level in designated units at the uni must be undertaken. The unit, MATH106 (A view of Mathematics) encourages students to develop problem-solving skills and recognise real-world applications of mathematics concepts. Unit convenors in the primary program are conscious of their role in developing students’ numeracy across the KLAs. For example, EDUC108 (Science in the</td>
<td>We believe we are already addressing the basic requirements. That said, literacy is an ongoing concern especially as we should now be concerned about this with an understanding of it in its plurality. Students need to develop skills in print and digital literacies as well as improving their own aural/oral skills. All of these areas are now being addressed in units such as EDUC260 in 2012. The standards of 1.2; 2.1; 2.2. 2.5 from AITSL in regards to literacy as important learning outcomes have been incorporated. Continued emphasis is placed on integrating literacy development in core units.</td>
<td>We believe we are already addressing the basic requirements. We are currently developing a new 100 level unit for intending primary teachers. The unit will have a strong focus on numeracy and statistical literacy. The unit will include not only aspects of numeracy appropriate to the primary classroom, but also showcase applications relevant to intending primary school teachers (e.g., how to analyse and use NAPLAN data). Continued emphasis is placed on integrating numeracy development in core units.</td>
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<td>Primary School</td>
<td>Primary School includes a specific focus on numeracy in the context of the primary science classroom.</td>
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<td>We have an increasingly diverse student population in Education. We will be looking very closely at what is expected in this regard at 100 level units in our Department so as to start to address the whole literacy standard very early on. More work needs to be done as communicative acts increase in their complexity.</td>
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<td>There is an ongoing need to raise awareness among academic staff of their role as teachers of numeracy. Although this is a feature of our program, more work needs to be done.</td>
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<td>University Nine</td>
<td>Compulsory first year course “Competence in English” with 80% required to pass. Students not achieving 80% are offered additional support by the course coordinator. This course is designed to cover structural and functional grammar, spelling etc. Compulsory first year course “Principles of Uni Learning” covers academic writing and referencing. University has a Communications Learning Centre for the ongoing support of students. Academics refer students and/or students can self-identify and receive individual and group enabling support.</td>
<td>Compulsory first year course that is 50% dedicated to personal maths competence. Primary education students have an elective in “mathematics”. University has a Maths Learning Centre for the support of students requiring additional skills in this area. Students are referred by academics. Dedicated Moodle site accessible to all students, for the purpose of self-paced numeracy development.</td>
<td>It is envisaged that school leavers who cannot demonstrate “top 30%” in literacy, and all mature-age entrants will need to complete a 4 course/1 uni term bridging/enabling program consisting of an appropriate selection of courses. On successful completion, they can enter the program mid-year. University offers such a program.</td>
<td>It is envisaged that school leavers who cannot demonstrate “top 30%” in numeracy, and all mature-age entrants will need to complete a 4 course/1 uni term bridging/enabling program consisting of an appropriate selection of courses. On successful completion, they can enter the program mid-year. University offers such a program.</td>
<td>May consider an “entry” assessment of literacy skills, with both self-paced online support and uni-provided support (Learning Centres mentioned previously). Unsure how much this will be required if 3.1 is achieved.</td>
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<td>course Communication in Educational Settings builds a focus on effective communication in the modes of verbal, non-verbal and written forms including the use of ICTs. This course will incorporate peer and self assessment of personal and professional strengths and weaknesses in these modes and the folio of tasks and reflective blog used as assessment for this course will provide an avenue for referral of students to the Communications Learning Centre for additional support in print-based literacy. Also in the first year, students will participate in a group community-based task that requires the development of a range of texts for</td>
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<td>communicating with a range of local businesses, organisations and community groups. This task will support the development of professional literacy competence. Embedded Professional Learning in the first year will focus on professional documentation of observations, assessment, reflections and lesson planning. A specific focus on functional and traditional grammar and spelling will move to the second year to account for articulation into the program from the Diploma of Children’s Services. Grammar and spelling knowledge will include evaluation and support for the development of personal competence along with</td>
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professional pedagogical knowledge associated with teaching the Language and Literacy strands of the Australian Curriculum English.
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<td>University Ten</td>
<td>Students enter from multiple pathways. i.e ATAR, Portfolio, Uni Preparation Course – therefore literacy standards vary considerably</td>
<td>Students enter from multiple pathways. i.e ATAR, Portfolio, Uni Preparation Course – therefore numeracy standards vary considerably</td>
<td>School of Education has had a long-term commitment toward the development of teaching students’ literacy skills. Existing strategies have been developed over a number of years. The School is currently reviewing: • assessment and support of literacy throughout units in teacher education courses. • balance between student self-directed learning and uni support for students and ways in which this is delivered. New units in BEd Secondary have improved the focus on literacy competence.</td>
<td>Increased emphasis on literacy and numeracy competence in B Ed Secondary The School is currently reviewing: • assessment and support for numeracy throughout units in teacher education courses. • balance between student self-directed learning and uni support for students and ways in which this is delivered. New units in BEd Secondary have improved the focus on numeracy competence.</td>
<td>Greater clarity with respect to numeracy and mathematical competence required for teaching graduates. Develop benchmark levels for literacy and numeracy for final year teaching students rather than single test. Improved capacity to support student development in literacy and numeracy in teacher education programs.</td>
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The School of Education uses PELA for the Bachelor of Secondary only. The BECS and BEd Primary are exempt b/c

Weekly English language workshops/Assignment writing classes/Online resources to develop English proficiency.

Learning advisor support is provided to numeracy and mathematics units

Mathematics units are core units in the BEd Primary and BECS programs and occur in all years levels of the program. Units include
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<td>these two programs contain a first year unit that is designed to assess and build writing skills. Learning advisors support the tutorial program in units of study – particularly in the first year writing units. Literacy units are core units in the B Ed Primary and Early Childhood Studies programs and occur at all levels of the program. Third and fourth year electives provide an intensive enrichment option for literacy. The B Ed Secondary includes writing and communication skills as core Education units</td>
<td>the use of numeracy competency assessments with individualised feedback to students. Competency assessments are conducted throughout the course to ensure weaker students maintain skills. Online support is provided – e.g. mathematics Third and fourth year electives include a stream for enrichment in mathematics.</td>
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<td>University Eleven</td>
<td>NSW&lt;br&gt;Primary and Early Childhood/Primary Programs&lt;br&gt;In the BEd Primary students are required to complete 4 units in Maths and 4 units in Literacy. Two of these are discipline units and two are curriculum and teaching units. This provision exceeds the minimum NSWIT requirements for Literacy and Numeracy.&lt;br&gt;Through the NSWIT registration and accreditation process School of Education NSW has negotiated with the NSWIT that successful completion of these units in Maths and Literacy equates with HSC Band 4 levels of achievement as a minimum standard. This</td>
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<td>Secondary Programs (BTBA)</td>
<td>means students exit our programs with the required standards of literacy and numeracy. In the MTeach (Primary) additional tutorial time is provided in all literacy and maths curriculum and teaching units to ensure understandings of content are consolidated. Students in the BTBA Maths specialisation are required to have completed 2 Unit Maths in the HSC. In addition, students complete a unit EDFD 454 Curriculum Literacies and another</td>
<td>means students exit our programs with the required standards of literacy and numeracy. In the MTeach (Primary) additional tutorial time is provided in all literacy and maths curriculum and teaching units to ensure understandings of content are consolidated. Secondary Programs (BTBA) Entry into the BTBA requires Achievement of Band 4 English. Students in the BTBA Maths specialisation are required to have completed 2 Unit Maths in the HSC. In addition, students complete a unit EDFD 454 Curriculum Literacies and another</td>
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<td>Victoria</td>
<td>EDFD transition to the profession wherein competence in literacy and numeracy is assessed. As core units of the program students must successfully complete these in order to graduate, therefore demonstrating the equivalent of Band 4 levels of achievement in numeracy and literacy. As per the NSWIT Registration and Accreditation of Preservice teaching programs, all Curriculum and Teaching units in these programs are required to address issues of literacy and numeracy in relation to specific discipline content and curriculum practice.</td>
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<td>In the past we have been well ahead of many other universities by having in our B'Ed &amp; B'Ed EC &amp; Primary courses the 2 Exploring Maths units and in Literacy, Linguistics for Literacy. These units are designed to assist our students develop their personal skills in these areas. Our other Maths &amp; Literacy units deal with how to teach these disciplines. So we are well equipped to deal with developing students' personal skills in these areas. With our Postgrad courses there is an expectation that because they have passed an initial degree they would have personal literacy skills. It does not however cover personal Maths skills. This is</td>
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something we have not fully addressed other than the requirement for admission to the MTeach Primary course that all applicants need general Maths units 1 & 2. This is not the case with secondary as it depends on their method areas. | something we have not fully addressed other than the requirement for admission to the MTeach Primary course that all applicants need general Maths units 1 & 2. This is not the case with secondary as it depends on their method areas. | The BT/BA courses require for Admission general Maths 1 & 2 and English 3 & 4 but due to the majors and method areas personal literacy & maths is not addressed throughout the course if we were to prove an increase on personal skills at the completion of the course. | Not sure how we could address this in what is already a very tight 32 unit course with 3 non credit point PEP units. However we do in Vic |
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<td>QLD</td>
<td>tack on an extra hour lecture to EDFD 177 where the Study Skills staff provide extra assistance on a weekly basis to these first year students. We do this also for BEd &amp; BEd EC &amp; Primary on top of the Exploring Maths &amp; linguistics for Literacy units. We could perhaps target this further for the BT/BA course but it does have staffing implications.</td>
<td>tack on an extra hour lecture to EDFD 177 where the Study Skills staff provide extra assistance on a weekly basis to these first year students. We do this also for BEd &amp; BEd EC &amp; Primary on top of the Exploring Maths &amp; linguistics for Literacy units. We could perhaps target this further for the BT/BA course but it does have staffing implications.</td>
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<td>academic skills into a number of the first year units. One thing we would like to do in the first year of all our courses is to have the students undertake a literacy and numeracy skills test. We would like this test to be self marking and designed to give an indication to students of any areas in which they may need to seek additional support early in their course. It would be anticipated that the outcomes of the test could be used to guide academic skills staff to develop focused support programs for students. Of course there would be cost and possible workload implications for such a program and as such it would be good academic skills into a number of the first year units. One thing we would like to do in the first year of all our courses is to have the students undertake a literacy and numeracy skills test. We would like this test to be self marking and designed to give an indication to students of any areas in which they may need to seek additional support early in their course. It would be anticipated that the outcomes of the test could be used to guide academic skills staff to develop focused support programs for students. Of course there would be cost and possible workload implications for such a program and as such it would be good.</td>
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<td>if there could be some funding made available to support the development of the project.</td>
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**University Twelve** | All students enrolled in the Bachelor of Primary Education undertake a compulsory personal literacy subject (EDLL101: Language and Learning). This subject is also compulsory for our Students undertaking the B.Physical Health Education and Bachelor of Maths / Science Education(Secondary) Programs who do not meet Band 4 English requirements | All students enrolled in the Bachelor of Primary Education who have not met Band 4 requirements in Numeracy undertake 2 undergraduate mathematics subjects taught by the University Faculty of Informatics | University will continue to deliver in the first year first session of the Bachelor of Primary Education and as a replacement for an elective subject for B Sc/ B Ma and B PHE the compulsory personal literacy subject EDLL101 for all preservice teachers. The curriculum review of Primary B.Ed program has demonstrated that the subject is meeting the needs of students and faculty requirements in the area of personal literacy competencies. | Based on the internal B.Primary Education Review it has been decided that a compulsory mathematics content subject will be developed and delivered by the Faculty of Education for all B. Primary Education students will be implemented. The subject will focus on the development of student content knowledge and understandings in numeracy and mathematics | Two compulsory subjects that meet the needs of students will be implemented. We have found that even when students enter into University preservice teacher education programs with Band 4 maths and English there are deficiencies in their knowledge and understandings of personal literacy and core numeracy and mathematic concepts. In the area of numeracy students are often competent in mathematical processes but do not have a deep understanding of the underpinnings of mathematics and numeracy. At University all B. Primary Education students will undertake compulsory subjects in numeracy and literacy so we are assured that their
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<td>content knowledge meets requirements for our teacher education programs, prepares preservice teachers adequately for the profession and meets national accreditation requirements. For our B Ed Secondary programs all students will undertake a compulsory literacy subject.</td>
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**SUMMARY**

University proposes that a possible way forward would be for ACDE/NADALATE to develop the framework and main elements required for a subject that develops preservice teachers' personal literacy competencies and a numeracy/ mathematics subject that develops preservice teachers deep knowledge of numeracy and mathematics.
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The subjects should be developed based on the research and evidence that is currently being collated by the group. If these subjects were compulsory (i.e. embedded) subjects delivered by the individual universities early in a preservice teacher program, then we would be assured that all universities would meet the requirements of 3.2 and address the issue of preservice competencies in literacy and numeracy and account for the issue of gaining clarity of what top 30% accounts for across the different sectors.
## Institution

**University Thirteen**

(post-grad only Minimum WAMS 65). Application process involves personal statement, with declaration of own work and a CV (This is not a portfolio – it’s an application)

Prior to 2012, use of an “in house” literacy assessment involving spelling (PAT R), editing and writing completed by all students. Feedback provided and students given opportunities for development through student support services and sessions run internally. Opportunity to resit three variations of the test. In Primary students complete 2 Literacy and Language units in Year 1. In ECE students complete a Literacy and Language unit in Year 1.

In Primary students complete 2 Maths units in Year 1. In ECE students complete a Maths units in Year 1. Successful completion of the unit is considered an indication of their numeracy abilities. In the secondary programs only students enrolling in the area of Maths curriculum have requirements for successful completion of 4 or 6 units of undergraduate maths.

Trialling a change to the Pearson MyWriting Lab instrument which includes all students completing pre-tests and for those failing to achieve a minimum standard students work through an online study plan and then complete post tests. Process involves monitoring of pre-test scores, provision of additional support through student services and counselling by course coordinators. The test outcomes are compared to results/samples from end of unit handwritten exam (a moderation process).

Still working on this.

Used Pearson as a development tool for those who don’t meet the right Standard. Offer individual support through student services. Accessible to any student. Groups were held for students in education for specific purposes.

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<td>Trialling a change to the Pearson MyWriting Lab instrument which includes all students completing pre-tests and for those failing to achieve a minimum standard students work through an online study plan and then complete post tests. Process involves monitoring of pre-test scores, provision of additional support through student services and counselling by course coordinators. The test outcomes are compared to results/samples from end of unit handwritten exam (a moderation process).</td>
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<td>Still working on this.</td>
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<td>University Fourteen</td>
<td>Literacy assessment is done through study in undergrad studies. Staff can advise students to go to student learning centre for help.</td>
<td>Preliminary talks</td>
<td>All ECE and primary students do a maths content topic in 1st year</td>
<td>South Australia currently takes students to uni who have no senior school English or maths – this needs to change so all applicants should complete senior years English and Maths courses OR sit an entrance exam.</td>
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<td>University Fifteen</td>
<td>Currently, University has a non-compulsory assessment tool, ELSAT, which students may choose to take. 60 minute test which assesses the language and learning needs of students and allows access to various additional services provided by the institutions L3 program. L3 provides services to improve students’ academic literacy – workshops and online materials as well as access to Language and Learning Advisors for up to 8 half hour sessions per year. Also feedback from Advisors on two already marked assignments per year. All students can access the Learning &amp; Teaching Unit for one 1:1 session with an advisor before doing the test.</td>
<td>The Mathematics Education courses in B Ed JP/P have run a Diagnostic Tool alongside the work that is covered in their first mathematics course. The purpose being to determine which students needed extra support in which areas of the Mathematics Curriculum at Year 7 or 8 level. After marking the paper, special tutorial assistance was then set up for the remainder of the semester. Between 10 and 20% of students required support. Staff in the course would work with individuals, pairs or small groups of students. Students were required to meet 80% mastery on their Diagnostic Tool in all sections (number and patterns; measurement</td>
<td>New B Ed and M Tch (to be introduced in 2013) include core courses in numeracy and literacy as well as 2 additional courses in curriculum maths and English courses. Academic literacies are mapped across courses in B Ed and M Teach – all courses teach some literacy.</td>
<td>New B Ed and M Teach (to be introduced in 2013) include 3 core courses in numeracy and literacy as well as 2 additional courses in curriculum Maths and English courses.</td>
<td>Probation period for students who do not meet the required literacy and numeracy standards in the first year. These standards to be based on nationally developed exemplars available to all staff and students. Inclusion of explicit literacy criteria in all assignments. Include: academic, personal and professional literacies. Moderation of literacy assessments within courses, programs and across universities. Development of on-line videos of excellent teaching – particularly as example of digital literacy. Literacy specialists to work with subject</td>
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<td>and geometry; data and chance. They had three chances week 1, 7, 13 to do this. This basic level of mastery was required to pass the course. Some fails were implemented when students did not pass and did not make the effort to improve their skills. In the previous two years, with the MaSc 21st century course an online mathematics test has been used. Additional tutorials on line could be done by students and a pass at 65% was required. A final attempt was offered in July last year and about a dozen students were required to do it. Additional support face to face was provided last year and the year before but adhoc due to staffing. This year the test (based on the previous year's test) was offered in a different location. The students were required to pass the test with 70% to pass the course. The students who did not pass were given additional support and were required to attend tutorials and pass the test with 65%.</td>
<td>specialists to support in teaching and assessing literacy requirements of subjects. National drive to raise awareness of literacy and numeracy needs of teachers so as to attract the right candidates. Development of measures which ensure rigour. Project to map literacy demands across courses and programs. Additional funding for cross-institution collaboration for research and reform purposes Post-graduation support for all graduates to ensure they continue to improve their literacy and numeracy.</td>
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<td>mostly on number) was implemented again in week 2 and students were informed immediately of their results. A special group of 30 students have been identified (under 65%) and I will be providing weekly tutorial support (week 4 to 13) before the second attempt of the test.</td>
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<td>Cross-institutional moderation of first year teaching courses. Analyse Australian Curriculum to assess literacy and numeracy needs of students by subject method.</td>
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<td>University Sixteen</td>
<td>University Graduate Capability for Writing formally assessed. Literacy development embedded in subjects Learning Advisor embedded- essay and other writing Voluntary workshops – Language and learning workshops in the first six weeks of each semester first year, small group and drop in literacy and numeracy support and development through the Academic Language and Learning unit for all year levels. Entry: ATAR 63-70 for the various teacher education Minimum scores: Eng 25 and 30 TESL Maths Passes in Units 1</td>
<td>Diagnostic numeracy test and re-tests Numeracy workshops - voluntary and for identified students.</td>
<td>More formal assessment of literacy and numeracy, e.g. In a Grammar test- students may have to get x% to pass</td>
<td>Considering a bridging course for students who don't have maths for entry</td>
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<td>&amp; 2 (not easy Maths option). Informal diagnostic assessment from learning activities across first year foundation subjects in literacy and numeracy leading to additional support and in some instances a compulsory academic skills subject. Grammar quiz embedded in first year subject Residential academic mentors.</td>
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<td>What are you doing currently in Literacy assessment and development?</td>
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<td>What changes are you making to respond to the new requirements for Literacy?</td>
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<td>University Seventeen</td>
<td><em>(WA)</em></td>
<td>Refer previous column</td>
<td><em>(WA)</em></td>
<td>Staff are regularly reviewing the performance of students in all units in terms of their academic competency. Intervention strategies are used to support any student that is deemed to be at risk. Close monitoring of all procedures currently in place are part of the strategy to ensure that the Bachelor of Education is meeting the new literacy requirements.</td>
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<td></td>
<td>Academic Literacy Competency</td>
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<td>Task: All students enrolled in the Bachelor of Education are required to undertake an Academic Literacy Competency assessment within the first 2 weeks of the Semester. If a student's performance is deemed to be below the benchmark in reading or writing, the student must attend a short course to address their academic literacy. If a student fails to complete such a course, the grade for the unit in which the assessment is placed, is marked as On Hold, until the appropriate course has been completed.</td>
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<td>ED1611: English 1 Functional literacy</td>
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<td><em>(NSW)</em></td>
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<td>It is essential that the support for the current strategies operating within the School of Education are maintained and staffed accordingly. It would be desirable to increase the support offered to students through the AESC, however additional funds would be needed to staff extra workshops and tutoring.</td>
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<td><em>(NSW)</em></td>
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<td>The School of Education in NSW has found the current HSC Band 4 literacy and numeracy requirements workable and successful in making clear to applicants what is expected in terms of literacy and numeracy for teaching. The School is keen that this approach is maintained within a national</td>
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</table>
### Institution

**What are you doing currently in Literacy assessment and development?**

As part of the course of study for the Bachelor of Education all students must undertake a 13 week course that incorporates the academic writing, personal literacy competency, and introduces the pedagogy of language acquisition for teaching. This unit requires the student to complete an on-line study program focussed on building functional literacy competency. Achievement of competency is essential for passing the unit.

**Academic Enabling Support Centre (AESC)**
The University has developed the Academic Enabling Support Centre (AESC)

**What are you doing currently in Numeracy assessment and development?**

single national endeavour. Sydney’s School of Education is currently still required to fulfil NSW Institute of Teachers entry requirements.

**What changes are you making to respond to the new requirements for Literacy?**

**What changes are you making to respond to the new requirements for Numeracy?**

**What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?**

framework.
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<td>as a resource that students can access to improve their academic performance at university. Numerous courses are offered, free of charge, to all students. Small classes, group lessons and individual tuition are all services provided by the AESC. These courses are regularly promoted through the School of Education.</td>
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**Academic Literacy**

The School of Education has developed a policy for Academic Literacy in the marking of all written assignments. This is represented as a rubric with the statement: *“The overall grade awarded for the assignment cannot be greater than that*
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<td>(NSW) NSW Institute of Teachers Accreditation of Initial Teacher Education Entry Requirements.</td>
<td>awarded for the Academic Literacy component.&quot;</td>
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The University fulfils the requirements legislated by the NSW Parliament that students undertaking preservice teacher education demonstrate competency in literacy and numeracy at the level of Higher School Certificate Band 4 or above (an examination result of 70% or higher). The majority of students demonstrate this with a Band 4 or higher assessment from their HSC examinations. Where a student does not demonstrate this, additional support is provided to help them achieve the required level.
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<td>not have an HSC result the University, as permitted by the legislation, requires them to undertake a bridging unit in HSC mathematics and/or English set at the HSC Band 4 Performance Outcomes. Students undertaking the bridging unit to fulfil the entry requirements must pass the unit(s) in order to graduate.</td>
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<td>&quot;Post Enrolment Literacy Assessment&quot; - diagnostic test.</td>
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<td>All students enrolled in undergraduate education courses undertake this diagnostic test within the first two weeks of Semester 1. If a student’s performance is deemed to be below the benchmark in reading or</td>
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<td>writing, the student must attend a short course to address their academic literacy needs.</td>
<td>ED1111 Information Literacy Skills for Education Studies; ED1112 Academic Writing for Education Students. These two units address specific academic literacy skills for preservice education students. The units have written literacy assessment tasks, graded as Pass/Fail. Students who fail a unit must repeat it; a second fail of a unit leads to termination from the course.</td>
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<td>A part of the accreditation requirements with the NSW Institute of Teachers, each secondary teaching area 'methods' unit includes components that address the literacy and numeracy requirements of the teaching area.</td>
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<td><strong>Academic Enabling and Support Centre (AESC)</strong>.</td>
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<td>The University has developed the Academic Enabling and Support Centre (AESC) as a resource that students can access to improve their academic performance at university. Numerous courses are offered, free of charge, to all students. Small classes, group lessons and individual</td>
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<td>tuition are all services provided by the AESC. These courses are regularly promoted through the School of Education. Academic Literacy assessment criteria within course units. All units in the education courses address academic literacy skills in each assessment item's marking rubric. Separate criteria address academic literacy standards in writing, referencing and presentation skills. Students who score below a pass are referred to the University's Academic Enabling and Support Centre (AESC) for assistance with their particular needs. Students who receives</td>
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ACDE REPORT AITSL: Program Standards 3.1 & 3.2
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<td>and &quot;Unsatisfactory&quot; grade in school experience (practicum) evaluations are also referred to the AESC for support work.</td>
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<td>Academic Literacy assessment criteria within school experience (practicum). Students who receives and &quot;Unsatisfactory&quot; grade in school experience (practicum) evaluations are also referred to the AESC for support work.</td>
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<td>University Eighteen</td>
<td>Academic Skills Centre offers assistance to students across the campus – but is under-resourced to cope with the identified needs. Bachelor of Educ Primary &amp; EC have a compulsory ‘Literacy for Teachers’ unit. School leaver requirements about literacy standards are not enforced. Secondary PG students could be deemed to have met the requirement by completing the first degree Unit conveners are encouraged to include specific literacy criteria in all assessment pieces with attendant requirements to participate in the Academic Skills Program</td>
<td>Bachelor of Educ Primary &amp; EC have a compulsory unit called ‘Reconstructing mathematical understanding.’ School leaver requirements about numeracy standards are not enforced. Secondary PG students could be deemed to have met the requirement by completing the first degree</td>
<td>What does top 30% mean? We are holding off on changes until the direction is clearer. Entry scores into the courses may need to be lifted as insufficient resources are available to support lower achieving students (assuming the level of achievement could actually be articulated) Current revision of course design is taking literacy issues on board in terms of mapping benchmarks through the courses.</td>
<td>What does top 30% mean? We are holding off on changes until the direction is clearer. Entry scores into the courses may need to be lifted as insufficient resources are available to support lower achieving students (assuming the level of achievement could actually be articulated) Current revision of course design is taking numeracy issues on board in terms of mapping benchmarks through the courses.</td>
<td>It has been said that an ATAR of 70 equates to the top 30% - this is a totally simplistic and inadequate way of measuring levels. It appears to be a decision of expedience to respond to the designers of the standards rather than any of any real relevance or possibility. Perhaps the Departments of Ed could tell how top 30% translates to a Year 12 score. Funding models to universities do not provide for the 3.2 perspective. The resources needed to be expended on the least able is disproportionate. While there are equity arguments for low SES, lack of opportunity etc, these should be more</td>
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Institution | What are you doing currently in Literacy assessment and development? | What are you doing currently in Numeracy assessment and development? | What changes are you making to respond to the new requirements for Literacy? | What changes are you making to respond to the new requirements for Numeracy? | What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?
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 | when students fail the criteria. Peer assisted | | | | targeted, not just an open enrolment for all.
Establish what are the requisite literacy skills for a teacher ed graduate. This becomes a literacy passport. At the beginning of their program through a diagnostic assessment we establish what pages in that passport they are eligible to 'stamp' (it could, for example, be part of the Portfolio we are now building through the course). We then provide both the external resources e.g. opportunities for them to achieve the missing 'stamps'. The aim, a completed passport at the end of the course...
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| University Nineteen  | Students identified with need for additional support in academic literacy offered a unit in academic literacy.  
   Literacy assessment in year 1 - underperforming students are required to successfully complete a unit before being reassessed.  
   Band 4 HSC English or equivalent standard to be met prior to graduation.  
   Literacy assessment and skill development integrated in selected subjects.  
   In addition, A support unit within University provides literacy support to students from all programs at University. | Numeracy assessment in year 1 - underperforming students are required to complete a unit before being reassessed.  
   Students must demonstrate mastery (80%) in a test in order to enter maths teaching methods subjects.  
   Without passing the numeracy test students cannot graduate.  
   Band 4 HSC Mathematics or equivalent standard to be met prior to graduation.  
   In addition, A support unit within University provides literacy support to students from all | none                                                                 | none                                                                 | Believe students already required to meet standard.  
If universal testing is proposed and implemented it would require significant additional funding above current funding for implementation.  
If implemented it will be counter productive and generate a private industry which teaches to the test without delivering better literacy and numeracy outcomes. |
Institution | What are you doing currently in Literacy assessment and development? | What are you doing currently in Numeracy assessment and development? | What changes are you making to respond to the new requirements for Literacy? | What changes are you making to respond to the new requirements for Numeracy? | What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?
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| programs at University.
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<td>University Twenty</td>
<td>Across the suite of education programs in first year courses preservice teachers are explicitly taught academic writing, referencing and information literacy skills. Personal literacy skills are assessed in assessment tasks in these courses – a criteria in all rubrics. Preservice teachers who have been identified as requiring additional literacy support are advised to seek support from Student Services. Student Services Academic skills advisors run workshops, online materials and one-to-one appointments to assist students with academic language and</td>
<td>All primary and early childhood preservice teachers are required to undertake a formative and summative maths content exam embedded in the course EDU341 Teaching Mathematics. The summative maths content exam requires an 80% pass grade in order to successfully pass the course. Preservice teachers have the option to attend an extra voluntary one hour tutorial to improve their personal numeracy skills. Information on online resources to support mathematical content understandings is provided in the course outline. There is also a required course in first year that</td>
<td>The compulsory weekly first year Study Group Program includes sessions on academic writing, referencing, note taking &amp; personal support &amp; study services has been made available to University students across all programs. The number of required literacy courses within each program has been increased. Student Services Academic skills advisors workshops have been increased and integrated into the study group and course more closely. Secondary programs are currently being redeveloped to incorporate aspects of literacy for all teaching areas.</td>
<td>All primary and early childhood preservice teachers are required to undertake a formative and summative maths content exam embedded in the course EDU341 Teaching Mathematics. The summative maths content exam requires an 80% pass grade in order to successfully pass the course. Preservice teachers have the option to attend an extra voluntary one hour tutorial to improve their personal numeracy skills. From 2016 the QCT has mandated entry requirements for teachers to include the equivalent of senior</td>
<td>Potentially conduct literacy and numeracy 'test' in first year study groups so preservice teachers have an early opportunity to address any identified 'gaps' in their personal L/N skills. Develop a foundation level personal literacy and numeracy component within first year of each program of study.</td>
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<td>literacy.</td>
<td>covers foundational knowledge in numeracy in the primary and early childhood programs.</td>
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<td>mathematics across all programs.</td>
<td>Secondary programs are currently being redeveloped to incorporate aspects of numeracy for all teaching areas.</td>
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<th>University Twenty-one</th>
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<tr>
<td><strong>What are you doing currently in Literacy assessment and development?</strong></td>
<td>Successful completion of VCE including prerequisites of Units 3 and 4 VCE English (any) with a study score of at least 25; or interstate or overseas equivalents.</td>
<td>Successful completion of VCE including prerequisites of Units 1 and 2 VCE Mathematics not including Foundation Mathematics;</td>
<td>For overseas PSTs commencing in 2013, the selection criteria outlined above must be met and, in addition, applicants must have an overall academic IELTS (or equivalent) score of 7.5 (with no score below 7 in any of the four skills areas, and a score of no less than 8 in speaking and listening), either on entry to or on graduation from the program. Once again, student support is available within the School and the University to promote success in this area.</td>
<td>BEd (P-6/P-10) has been restructured to ensure that all PSTs will study three courses in each of the areas of literacy and numeracy/mathematics, as well as a course in assessment, reporting and data. Demonstrations of personal literacy are essential components of all assessments in the program.</td>
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<td><strong>Non Year 12</strong></td>
<td><strong>BEd (P-6/P-10)</strong></td>
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<td>Applicants can apply to the University through the Victorian Tertiary Education Access Scheme. Non year 12 applicants may be required to attend an interview. The additional details form will provide information on applicants' level of English and numeracy attainment, while the interview offers the opportunity to gauge an applicant's spoken language. There are also mechanisms within the program structure, that ensure that all students meet VCE equivalence in numeracy.</td>
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<td>Development of the new Masters program will include the new requirements and the inclusion of two maths curriculum and two language and literacy based courses</td>
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<td>program structure, that ensure that all students meet VCE equivalence in literacy. Students who may have issues with personal literacy are also identified through a written assessment task early semester 1, year 1, and are then referred to Academic Skills Advisor for assistance. All entrants to the program undertake a Year 11 equivalent competency test that must be passed (90% = pass mark) before results from EDBED 1006 Learning and Teaching Mathematics I are released. Extra support via extra classes is provided to students before they are allowed to re-sit the exam.</td>
<td>All entrants to the program undertake a Year 11 equivalent competency test that must be passed (90% = pass mark) before results from EDBED 1006 Learning and Teaching Mathematics I are released. Extra support via extra classes is provided to students before they are allowed to re-sit the exam. as well as a course in assessment, reporting and data. Demonstrations of personal literacy are essential components of all assessments in the program.</td>
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<td>Grad Dip Ed (Primary)</td>
<td>Upon entry as well as a minimum of a three year degree, applicants should be able to produce evidence of satisfactory completion of a study score equivalent to at least 25 in one of the VCE English group of studies at units 3 and 4. During the time of the program, students will complete a course in language and literacy. For overseas PSTs commencing in 2013, the selection criteria outlined above must be met and, in addition, applicants must have an overall academic IELTS (or equivalent) score of 7.5 (with no score below 7 in any of the four skills areas, and a score of no less than 8 in speaking. An Academic Skills Advisor is also available to help students with any personal concerns.</td>
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<td>and listening), either on entry to or on graduation from the program. Once again, student support is available within the School and the University to promote success in this area. An Academic Skills Advisor is also available to help students with any personal concerns.</td>
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<td>Bachelor of Education (Early Childhood)</td>
<td>Bachelor of Education (Early Childhood)</td>
<td>All applicants for the Bachelor of Education (Early Childhood) must have successfully completed at least 25 in VCE English at year 12 level. No specific requirements are imposed for the e Bachelor of Teaching (Early Childhood Education) as these</td>
<td>All applicants for the Bachelor of Education (Early Childhood) must have successfully completed year 11 maths. No specific requirements are imposed for the e Bachelor of Teaching (Early Childhood Education) as these</td>
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<td>students have already completed a Diploma of Children's Services (Two year program). Students can receive academic support from a designated staff member in the School of Education and Arts. This support is mostly offered in person on an individual needs basis. Support sessions are also offered to students through library support services. Compulsory subjects are as follows and if not successfully completed then a student will fail to complete requirements for the program: - Language, literacies and ICT'S for young children - Language and literacies in the primary years (B.Ed only)</td>
<td>students have already completed a Diploma of Children's Services (Two year program). Students can receive academic support from a designated staff member in the School of Education and Arts. This support is mostly offered in person on an individual needs basis. Support sessions are also offered to students through library support services. Compulsory subjects are as follows and if not successfully completed then a student will fail to complete requirements for the program: - Investigating numeracy and technology - Learning and teaching mathematics (B.Ed only)</td>
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<td>The program offers the following to actively seek to build subject specific literacy or numeracy.</td>
<td>-Language, literacies and ICT’S for young children -Language and literacies in the primary years -Investigating numeracy and technology -Learning and teaching mathematics</td>
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<td>Graduate Diploma in Education (Secondary)</td>
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<td>Students write a response explaining why they want to teach as part of the selection process and this is examined for literacy skills. All students complete workshops and assessment tasks as part</td>
<td>Students who explicitly teach numeracy, have completed undergraduate degrees where this is a focus. Students have the opportunity to act as numeracy mentors for school students.</td>
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<td>IN 2014 we move to a Master of Teaching. In this new course all students will complete a full semester course on teaching literacy and numeracy across the subject areas. This course will not only help to build pedagogical strategies but will help</td>
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<td>Joint Degrees (JD):</td>
<td>A Learning and Teaching course, related to reading and writing across the subject areas. They also examine their own reading strategies as part of a Reading Circle assessment task. All students are involved in literacy programs in schools either as mentors with primary and secondary students or as part of a feedback and assessment project with a local school. Student self assessment is encouraged throughout the program and students set learning goals and provide evidence of development. Some students set learning goals related to literacy and numeracy.</td>
<td>Student self assessment is encouraged throughout the school and student set learning goals and provide evidence of development. Some students set learning goals related to literacy and numeracy.</td>
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| -Bachelor of Arts/Bachelor of Education  
-Bachelor of Visual Arts/Bachelor of Education  
-Bachelor of Mathematical Sciences/Bachelor of Education  
-Bachelor of Science/Bachelor of Education | require VCE units 1 and 2 (any study combination) of general in Mathematics Methods. | under review in 2012 and it is our intention to look at the literacy requirements and existing content and update where appropriate | | under review in 2012 and it is our intention to look at the numeracy requirements and existing content and update where appropriate | |
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<td>of the student). On-line tutorials (online, at the discretion of the student). In Orientation Week we offer a study skills class open to all students (in person, at the discretion of the student). Library Skills Workshops, including 3Rs [researching, referencing &amp; writing] (in person at the discretion of the student). SEA Student Learning support is available from a designated staff member on request (in person at the discretion of the student). B. Maths Sci/B. Ed. All students study maths courses towards their Maths degree B.Sc/B.Ed. All students</td>
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<td>must complete 2 maths courses towards their Science degree as part of the course structure. Students must pass these courses (or equivalent) to complete their degree. All students complete EDDDE1001 in year 1, sem 1. One of the objectives of the course: develop a range of communication and presentation skills useful to teaching contexts (assessed in assessment 1: Essay; and, assessment 2: teaching skills presentation) Students must pass this course to complete their degree. All students study 3 method curriculum classes, all of which</td>
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<td>include a focus on teaching literacy and numeracy in their method area classrooms. Courses include 3 of either Maths, Science, Senior Science, SOSE, Health, English, Psychology History, LOTE curriculum. Students must pass these courses to complete their degree. B. Maths Sci/B. Ed: All students study 11 maths courses and 2 Mathematics curriculum courses towards their Maths degree. B.Sci/B. Ed: All students complete 2 maths courses towards their Science degree as part of the course structure. (Mathematics and Physics; Statistical methods). B. Arts/B. Ed LOTE</td>
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<td>(Japanese) major: Students build literacy in English by studying a language in 10 Japanese courses and Japanese Curriculum. B. Arts/B.Ed English Literature major and minor: Students study compulsory 'Narrative and Text' course as part of their coursework in addition to between 3 and 11 Film, Literature or Language related courses and English curriculum. B. Arts/B.Ed Psychology: Students study 'Statistical Methods' as part of their core coursework. All students complete EDDDE1001 in year 1, sem 1. One of the objectives of the course: develop a range of communication and presentation skills useful</td>
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<td>to teaching contexts (assessed in assessment 1: Essay; and, assessment 2: teaching skills presentation) All students study 3 method curriculum classes, all of which include a focus on teaching literacy and numeracy in their method area classrooms. Courses include 2 of either Maths, Science, Senior Science, SOSE, Health, English, Psychology History, LOTE curriculum. One discipline must be completed as two courses over two semesters.</td>
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**Institution:**

**What are you doing currently in Literacy assessment and development?**

- to teaching contexts (assessed in assessment 1: Essay; and, assessment 2: teaching skills presentation)

**What are you doing currently in Numeracy assessment and development?**

- All students study 3 method curriculum classes, all of which include a focus on teaching literacy and numeracy in their method area classrooms. Courses include 2 of either Maths, Science, Senior Science, SOSE, Health, English, Psychology History, LOTE curriculum. One discipline must be completed as two courses over two semesters.
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<td>University Twenty-two</td>
<td>At University in the BED Primary Program English/literacy courses our current approach to &quot;literacy assessment and development&quot; is: • Begin with what the students can do rather than what they cannot do. • Make explicit the literacy requirements for each assessment task • Use assessment tasks that require a range of literacy capabilities- for eg a personal literacy profile constructed using multiple modes in a digital form requires far</td>
<td>In terms of numeracy assessment and development, we have three courses that are developmental in terms of starting from students’ own numeracy (EDUC1703 Numeracy in Primary and Middle Years Contexts) which has a focus on the real-world nature of numeracy and using mathematics in CONTEXT. It focuses on thinking about being numerate in a range of contexts – and when the context changes, so too do the numeracy requirements. Hence, numeracy is about a mindset of problem solving and reasoning and also having confidence in one’s self. We draw upon the Goos (2008) model of numeracy that considers None – OP entry levels for our programs have been becoming more stringent in recent years so we are already drawing from the upper 30% of graduates in general terms</td>
<td>None – OP entry levels for our programs have been becoming more stringent in recent years so we are already drawing from the upper 30% of graduates in general terms</td>
<td>At this stage we don’t plan to change our practices – we would provide the same sequence of courses for these entrants and expect them to build their capacity across the program.</td>
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Institution | What are you doing currently in Literacy assessment and development? | What are you doing currently in Numeracy assessment and development? | What changes are you making to respond to the new requirements for Literacy? | What changes are you making to respond to the new requirements for Numeracy? | What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy? 
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<p>| different literacy capabilities than a written discussion of a theoretical concept. | elements of numeracy: mathematical knowledge (which includes concepts and skills, problem solving, reasoning, estimating); tools (physical, digital, representational); dispositions (confidence, risk-taking, self-reliance) and a critical disposition (assessing the appropriateness of a solution; asking questions; seeking clarification), with the importance of numeracy emphasized for success in social and personal, work and school life. Through this course, we provide students with tasks that require them to use their own mathematics in real-world contexts. They also carry out a group task requiring them to explore an issue that is of personal value to them | | |</p>
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<td>students to do a personal learning plan for the semester with personal goals developed within the STELLA Framework. We do NOT want to do in relation to 3.2 is do any kind of assessment of literacy capabilities that: lacks context; involves multiple choice items that assess a narrow and limited range of literacy capabilities; is a simplistic solution to a complex problem; involves programs that are not related to the program of study.</td>
<td>(e.g., how much does it cost to get to uni? What is the cost of a university degree? Is red wine good for your health, etc). They need to apply their mathematics to interpret their data and report on their findings. In all activities, we aim to keep the concept of 'numeracy' at the fore of all discussions and investigations to ensure that they feel that they have the confidence to develop their own numeracy in areas they feel are not as good as they might like it to be.</td>
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In EDUC2703 and EDUC2706 mathematics Curriculum 1 and 2, we continue to develop their personal numeracy through exploring the pedagogy of topics within the primary/MYS mathematics curriculum.
### ACDE REPORT AITSL: Program Standards 3.1 & 3.2

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<td>that promote conceptual knowledge, rather than skills development.</td>
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| University Twenty-three | The NSW Institute of Teachers requirement is that Primary and Secondary education students must demonstrate that they meet the NSW Board of Studies 'Band 4' (ie top 30%) English standard either at entry to a teacher education program or prior to completion. Students are deemed to have met the literacy standard if they can demonstrate they have:  
  - Achieved a minimum of Band 4 in any 2 Unit HSC English course or achieved in the 71-80 Percentile or higher in a “pre Band” HSC English course  
  - Successfully completed HSC English Extension 1 for the | The NSW Institute of Teachers requirement is that Primary education students must demonstrate that they meet the NSW Board of Studies 'Band 4' (ie top 30%) Mathematics standard either at entry to a teacher education program or prior to completion. Students are deemed to have met the literacy standard if they can demonstrate they have:  
  - Achieved a minimum of Band 4 in HSC 2 Unit General Mathematics or achieved a position in the 71-80 Percentile or higher in “pre Band” HSC Mathematics in Society  
  - Successfully completed HSC 2 Unit Mathematics, | The current literacy arrangements would appear to satisfy the new requirements.                                                                                                            | The new numeracy requirement appears to apply also to all Secondary ITE students, regardless of their chosen specialisation/s. We will need to adapt our processes to include this group.                                                               | Currently only an additional or elective course in English or Mathematics will be accepted as students’ demonstration of Band 4 equivalence. For example, a Secondary student required to demonstrate equivalence in Literacy can undertake as an elective a compulsory linguistics course from the Primary program by way of doing this. A Primary student who passes the same course, compulsory in their Program, is required to undertake an additional course as an elective to demonstrate their equivalence. It would be preferable if, where students are enrolled in a Program where there are |
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<td>• Attained a PASS grade in any relevant University Enabling Program course</td>
<td>Mathematics Extension 1 or 3 Unit Mathematics</td>
<td>• Attained a PASS grade in any relevant UoN Enabling Program course</td>
<td>• Attained a PASS grade in any Mathematics course completed as part of a Depth Study, Major, Minor, or Elective unit</td>
<td>appropriate compulsory English/ Mathematics courses, they were allowed to use their result in these courses to demonstrate their competence in Literacy and/or Numeracy.</td>
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<td>• Attained a PASS grade in any ENGL-coded English course completed as an elective unit or in any English or HSIE course completed as part of a Major, Minor, or Depth Study</td>
<td>• Attained a PASS grade in any Mathematics course completed as part of a Depth Study, Major, Minor, or Elective unit</td>
<td>• Successfully completed a TAFE equivalent (subject to assessment)</td>
<td>• Successfully completed an overseas qualification equivalent to one of the above (subject to assessment)</td>
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<td>• Attained a PASS grade in selected Linguistics courses completed as part of a Depth Study, Major, Minor, or Elective unit</td>
<td>• Successfully completed a TAFE equivalent (subject to assessment)</td>
<td>• Successfully completed the equivalent of the HSC in another state</td>
<td>• Successfully completed the equivalent of the HSC in another state</td>
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<td>• Successfully completed an overseas qualification</td>
<td>• Successfully completed a TAFE equivalent (subject to assessment)</td>
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## What are you doing currently in Literacy assessment and development?
- Equivalent to one of the above (subject to assessment)
- Successfully completed the equivalent of the HSC in another state (subject to assessment)
- Successfully completed the Education embedded Honours specialisation
- Successfully completed the Special Education specialization

If students cannot demonstrate equivalence, we offer them the following options:
- Attain a PASS in the University Band 4 English test, administered by School of Education staff annually
- Attain a PASS in any 10 unit Mathematics

## What are you doing currently in Numeracy assessment and development?
(subject to assessment)
- Successfully completed the Special Education specialization

If students cannot demonstrate equivalence, we offer them the following options:
- Attain a PASS in the University Band 4 Mathematics test, administered by School of Education staff annually
- Attain a PASS in the University Band 4 Mathematics intensive summer and winter courses, administered by the School of Education once or twice annually, according to need
- Attain a PASS in any 10 unit Mathematics

## What changes are you making to respond to the new requirements for Literacy?

## What changes are you making to respond to the new requirements for Numeracy?

## What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?
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|             | • Attain a PASS in the University Band 4 English intensive summer and winter courses, administered by the School of Education once or twice annually, according to need  
• Attain a PASS in any 10 unit English course taken as an elective  
Primary students undertake compulsory Introduction to Linguistics and Mathematics courses as part of their Program, and academic literacy skills are scaffolded in the first year foundations course.  
Students are able to access support via the University PASS (Peer Assisted Study Sessions) | course taken as an elective | | | |
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<td>and also through the Centre for Teaching and Learning, which offers face to face workshop, online short courses and one to one support.</td>
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<td>University Twenty-four</td>
<td>The School of Education is currently developing a number of strategies and approaches to support Literacy Assessment and Development. Beginning students in their first year are assessed in their academic and general literacies. The School has developed a Literacy Rubric that is being adopted across a large number of subjects and year levels. Intervention strategies and support are being provided. The School also incorporates ICAS (an integrated academic/study skills and literacy development on-line program) into a core first year subject in first semester.</td>
<td>The School of Education is working on the reconceptualisation and realignment of subject offerings in Numeracy and particularly in first year. Approaches for enhancing numeracy standards across the program are being explored.</td>
<td>The strategies and approaches identified will be enhanced subject to resourcing allocations.</td>
<td>The strategies and approaches identified will be enhanced subject to resourcing allocations.</td>
<td>The University is an &quot;open-access&quot; university that has well established support structures in place at both the University and School levels to help students attain satisfactory levels of literacy and numeracy. Further initiatives and funding regimes will be needed in response to 3.2. By 2016, QCT requirements will ensure that all beginning students in teacher education have &quot;Sound Achievement&quot; in Mathematics and Science (with English being required already).</td>
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**University Twenty-five** | All students are required to pass each section of a paper-based English literacy skills test (our own English Essentials) before enrolling in Pedagogy 2 (which includes the second Professional Experience block). Graduate-entry students complete the test at Orientation in their first year, and attend follow-up workshops if needed, particularly for spelling and grammar. Undergraduate students are enrolled in the subject English Literacy in their first year, which covers basic literacy concepts and the English Skills test is given during the first semester. Students who do not reach the benchmark at that point are required to study for a later re-test, which must be passed as | All students are required to pass a Maths Skills test (our own Maths Essentials) prior to enrolment in Pedagogy 2. The test is given at Orientation in the first year, and those students who do not meet the benchmark are enrolled in a non-credit subject, Maths Essentials, delivered in tutorial sessions in Semester 1. The tutorials are designed to address anxiety and basic mathematical concepts, considered important to any professional teacher. Any student who still does not demonstrate an acceptable level of understanding by the end of Semester 1 is required to study for a retest in Semester 2, using resources provided, internet links | We have found our existing system to work well, but are constrained by the workload limits of TEQSA as we prepare for reaccreditation, since basic literacy skills have been delivered beyond the credit-point courses to some extent. There will be an increased requirement to demonstrate competent literacy in both text and non text assignments. Within the ‘culture’ of the University there will be a growing awareness of the need for and the demonstration of Personal/Professional and Academic literacy. | We have found our existing system to work well, but are constrained by the workload limits of TEQSA as we prepare for reaccreditation, since basic numeracy/mathematical skills have been delivered beyond the credit-point courses. | We would like to have clear agreement on the definition of ‘literacy’ and ‘numeracy’, as well as what benchmark can adequately measure ‘top 30%, so we can apply these to our selection criteria and support processes. It would be useful to have some research evidence of the extent to which ATAR scores are predictive of student teacher success in academic study and teaching practice – which must include literate and numerate practices. This could be applied in our selection processes and support programs. We would like to have ‘permission’ from TEQSA to add requirements to a student’s workload if literacy and/or...
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<td>a pre-requisite to enrolling in Pedagogy 2. Students with a diagnosis of dyslexia, who are unable to pass the spelling component, are assessed on their effective management of this skill area during Professional Experience.</td>
<td>and a limited amount of tutorial support.</td>
<td>clear definition of requirements. Another core subject (literature and numeracy across curriculum) will be introduced</td>
<td>We would like clear direction for the non-discriminatory alternatives to any assessment of spelling, for dyslexic students. We believe our current process to be fair.</td>
<td>numeracy skills are in need of improvement, including enrolment in short courses without credit points.</td>
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<td>University Twenty-six</td>
<td>There are several ways literacy is considered in the preservice programs and supporting services. Academic literacy and/or personal literacy are approached both together and separately. An incomplete list of examples: <strong>Undergrad programs</strong> - trip wire assessment pieces in the first semester units to identify instances where there may be personal literacy deficits. If a student is identified they are directed to a remedial online program. Failure to successfully complete results in blockage for further course progression. - Modules available online for all to further develop their literacy. Learning advisers in the library work with individual students.</td>
<td>Numeracy trip wire exercise in first year unit, as for the literacy trip wire. On line modules to support, as for literacy. Maths Drop in centre for concept development for areas of weakness. NAPLAN at year 9 standard in final semester for all.</td>
<td>Expanded core units in literacy across all courses.</td>
<td>Expanded core units in literacy across all courses.</td>
<td>Development of greater clarity around the specific dimensions and standards for literacy required and development of benchmark exemplars.</td>
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<td>-a student support project identifies students with low GPA and contacts them directly to encourage engagement in the development modules. Final year students sit year 9 NAPLAN test predominantly as an exercise to familiarise them with NAPLAN but collaterally enables double checking and development of problem areas through the support team. Core units in first year and linked across the 4 year program directly address development of academic literacies as mapped using John Willison framework as a base. <strong>Graduate Entry programs</strong> IELTS at 7.5 with no less than 8 in two of 4 dimensions, and no less</td>
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<td>than 7 in the others, for international. GPA cutoff in first degree as selection parameter for domestics and internationals.</td>
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<td>University Twenty-seven</td>
<td>Students must meet state and university entry requirements – an Overall Position is used as the basis for selection. International students are required to have done the equivalent of Year 12 with a recent IELTS of 6.5 and no lower than 6.0 in any subset. Students have access to a range of programs to improve their literacy including The Learning Centre, for advice on literacy and numeracy, academic literacy. There is also a peer support program and AWARE, a self assessment program that helps students identify weaknesses and how to get support. Faculty of Education also has a program called FYI which provides online contextualised academic and information literacy.</td>
<td>Much the same as for literacy.</td>
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### ACDE REPORT AITSL: Program Standards 3.1 & 3.2

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<td>support.</td>
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<td>There are also a number of subjects within the degree that must be completed satisfactorily for progression.</td>
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### University Twenty-eight

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<td>For the MTeach and GradDip Ed, as they are intensive programs, we successfully sought the cooperation of the Academic Board of University to raise the English language proficiency requirements for entry. The entry requirements in the handbook and in all publicity material now specify additional English language requirements, that is, a Higher School Certificate minimum Band 4 in Standard English OR a Higher School Certificate minimum Band 4 in English as a Second Language OR a Higher School Certificate minimum Band 4 in Advanced English, or the equivalent OR for overseas students, an overall IELTS score of 7.5, with a minimum of 8.0 in speaking and</td>
<td>We train only secondary teachers so are not doing very much at all to meet this new standard.</td>
<td>None - we think we meet these requirements very well.</td>
<td>We are looking at integrating certain aspects of numeracy into our assessment criteria and making teacher numeracy an additional outcome in one of our core courses.</td>
<td>We are not sure that the new standard regarding Numeracy as reasonable, especially for those prospective teachers in the creative and performing arts and humanities. We are happy with what we do presently for Standard 3.2. in Literacy.</td>
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<td>Listening and a minimum of 7.0 in reading and writing, or the equivalent. Where a mature age student enters with a HSC or equivalent qualification which does not indicate any banding, we ask them to provide evidence that they meet the band levels by submitting already assessed material from their undergraduate coursework.</td>
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For BEd, as it is a 4 year program, we may accept students with less than a Band 4 in HSC or its equivalent, or an IELTS of 6.5 or above, if they have very strong academic results in their proposed teaching subjects, however, we warn students in the handbook and in all publicity material that a high level of competence in spoken and written English is essential to operate effectively as a teacher and it is expected that all
students have a Higher School Certificate minimum Band 4 in Standard English OR a Higher School Certificate minimum Band 4 in English as a Second Language OR a Higher School Certificate minimum Band 4 in Advanced English, or the equivalent OR an overall IELTS score of 7.5, with a minimum of 8.0 in speaking and Listening and a minimum of 7.0 in reading and writing, or the equivalent.

In the first four weeks of the BEd programs we identify the handful of students who do not have the appropriate levels of English language skills from their application forms, and the University Learning Centre undertakes a diagnostic literacy assessment to identify their needs. Their progress towards meeting the
required levels is monitored and coordinated by one of our academic staff (called the Student language and literacy support coordinator) who has qualifications in TESOL and academic literacy development. We also ask all staff to identify other students at risk during their first semester and these students are also referred by the Student language and literacy support coordinator to the University Learning Centre for extra support. Undergraduate students who cannot reach the required levels of personal literacy with individual tutorials and workshops are asked to enroll in a Language skills course worth 6 UOC as part of their UG elective programs.

At the same time, as part of setting up individual e-portfolios every students
must make a self assessment of their strengths in English language use, and areas needing improvement. Their self-assessments must be discussed with, and validated by, three peers through online comments and confirmation. On every assignment during their education program students are also assessed, as part of the overall assessment criteria, on their language use (see attached examples Appendix 3).

These measures help to systematically identify, monitor and support students from the very beginning of the program - as indicated above, students consistently underperforming in personal language and literacy (including oral communication) are required to undertake an appropriate 6 UOC English language or
### Academic Literacies

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<th>Academic Literacies Course Offered by the Learning Centre in the Area in Which They Need Further Development as One of Their Electives.</th>
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<td>Student progress is monitored throughout their program and particularly through professional experience with an English language and literacy competence standard added to the NSWIT standards for assessment by school and university staff. Any students not meeting the English language requirements in the final professional experience placement cannot pass until they do so.</td>
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As with Literacy
| across all components of these tests required for passing the unit. Online and face-to-face tutorials are provided throughout the semester and individualised study schedules are developed based on the pre-test information. This unit has been specifically designed to build students’ awareness and personal capabilities in relation to literacy, numeracy and digital literacy. During Term 1 of Semester 1 of student program, optional ‘Study Hall’ activities are offered each week. Optional additional workshops and tutorials are offered in a number of other units of study. Provision of Student Support Services to assist students in need. All curriculum units include learning | supporting student development across literacy and numeracy. Additional student support services are provided for students challenged by this unit. More direct development and negotiation of this support may be required. | any further testing regimes and to ensure that over-simplification of the literacy and numeracy issue be avoided. Teaching is not just about content mastery. It is also about pedagogy, skills, values, character, personality, … Development of a broad-based, evidence-oriented approach that facilitates students demonstrating capabilities by the end of a course across a range of higher-ed. and professional ‘graduate attributes’ that include, but is not limited to, literacy and numeracy in required. |
outcomes linked to assessment tasks that require students to engage with the literacy, numeracy and digital demands of the specific curriculum area being studied.

All students also engage in a final year unit relating to pedagogical approaches to literacy and numeracy as cross-curricular responsibilities. Early Phase students engage in a unit focussed on developmentally appropriate practices in literacy and numeracy for the early years. All other students engage a unit focussed on pedagogical appropriate literacy and numeracy development across key learning and/or teaching areas. These units provide students with knowledge and practices that support all teachers becoming teachers of literacy and numeracy.
All Assessment Rubrics in all ITE units include a compulsory criterion "Communications at an appropriate tertiary standard" that is unpacked in terms of standards related to:

Correct application of grammar, punctuation, spelling, vocabulary, usage, sentence structure, logical relations, style, and presentation; and Referencing as per Harvard system outlined in University Style Guide.
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<td>University Thirty</td>
<td>First year Foundation Education Unit and the first year English Curriculum unit embed tasks/assessment in first semester to identify students in need of support and to scaffold all students into university expectations of essay writing and referencing. A mentoring scheme is also provided to give additional support for first year students. Teaching and Learning Centre literacy skills courses are offered for any student needing support. The BEd Primary degree has four units on language and learning about literacy with explicit teaching about personal, professional and academic literacy skills. As NSW Institute of</td>
<td>BEd Primary – Numeracy - entrants are always within top 20% of HSC results, but not all have studied 2 units of mathematics to HSC level. All students must succeed in a semester length 'Mathematics and Numeracy' course before proceeding to the curriculum/pedagogy units. In addition, student not meeting the 2 unit requirement must achieve well in a series of mathematics assessments, and receive some support as needed</td>
<td>3.1 The high ATAR for the Faculty of Education and Social Work BEd Primary degree suggests that students who gain direct entry would already be in the top 30% of literacy capability</td>
<td>3.2 Those students who are admitted to the degree through special pathway conditions are already provided with some support but it is necessary to create a more systematic and far reaching program of support for these and any other student who finds the challenge of higher degree study to be demanding. The federal government drive to increase places for low SES students puts greater pressure on universities to provide more support structures for those students who may not have had rigorous preparation for higher education. Or those who just find the switch from secondary education to higher education to be a greater stretch than they expected.</td>
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Teachers require students demonstrate they meet Band 4 by the end of the degree. The program actively works to support this standard through all units run under the English curriculum strand as well as other KLA.

Where oral proficiency is not sufficient for the professional experience held in first semester, students are invited (not required) to attend additional workshops.

IELTS: 7.5 overall, 8.0 in speaking and listening, and 7.0 in reading and writing (and equivalence in other standards).

Assumed knowledge is 2 units of English at HSC level or equivalent. Additional units of academic literacy are offered within the first year of the degree program if a student needs to build up expected background knowledge.
Pathway scheme places offered through the Cadigal program are provided with additional support
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<td>University Thirty-one</td>
<td>Undergraduate programs: Units 1 and 2–two units (any study combination) of general mathematics or mathematical methods (CAS) or Units 3 and 4–mathematics (any). Units 3 and 4–a study score of at least 30 in English (ESL) or 25 in any other English. Postgraduate programs: As above OR Completion of a year of study in English as the language of study (recency limits apply) OR A score of 7.0 in the IELTS (Academic) test, with a minimum of 7.0 in speaking and writing, and 6.5 in reading and listening. Alternatively, applicants may meet the English language requirement with an internet-based TOEFL result of 100 with a minimum of 25 in speaking and writing, and a minimum of 22 in</td>
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reading and listening. Test scores must not be more than two years old.

During first few weeks of classes, support services are outlined to students in one compulsory first year class.

Online Language and Learning support (University service)
Face to Face Learning Skills Drop in service (University service)
Face to Face Academic language and study support (Faculty services)
Both at the discretion of the student unless directed through Intervention and Academic Progress processes

This is a list of units available across the scope of Primary, P-10 and Secondary - a detailed table of courses and offerings can be provided on request
**LITERACY**
- EDF1205 English education 1 (P-10)
- EDF1308 Early literacy
- EDF2213 English education 2 (P-10)
- EDF2301 Multiliteracies: mediating the world
- EDF3306 Literacy

One further P-10 level three unit to be introduced.

**NUMERACY**
- EDF1206 Mathematics education 1 (P-10)
- EDF2304 Early numeracy
- EDF3301 Numeracy

Two further P-10 units (level two and three) to be introduced.

Students who do not pass these units are required to repeat them. Students who fail any unit twice are counseled under Academic Progress. Conditions (such as compulsory attendance at workshops) may be prescribed.

The following elective units are available in
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<td>EDF1128 Gateway to mathematics</td>
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<td>EDF2123 Exploring mathematics</td>
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| University Thirty-two | University applies a number of strategies to ensure our Teacher Candidates are supported to develop high levels of personal literacy skills throughout the Master of Teaching (MTeach) degrees:  
- Written tasks are assessed early in Semester 1 of year 1.  
- Assessment criteria for written tasks are clearly articulated with Teacher Candidates required to show sophisticated structural control over language.  
- When difficulty in this area is apparent Teacher Candidates are encouraged to seek individual and/or group tuition and are also encouraged to attend sessions through the University's Academic Skills Unit (ASU). | In Early Childhood, the aim in all mathematics/numeracy classes is to improve numeracy skills of our Teacher Candidates. For example Teacher Candidates are given a numeracy test to complete in their own time and these are discussed at the beginning of the following workshop. Misconceptions and difficulties are addressed at this time. In the Primary stream hurdle maths tasks are set and offered multiples times if necessary throughout the course to ensure the attainment of appropriate numeracy skills for teaching primary mathematics. In Secondary, where | The Master of Teaching is due for re-accreditation with the VIT in 2012. As part of a continual cycle of development and improvement an internal review was conducted in 2011. Program modifications which require formal course changes, in particular as they relate to all AITSL standards, are currently being considered by the University’s Academic Board for implementation from 2013.  
As the Master of Teaching is a graduate entry program, and candidates must have an undergraduate degree with appropriate prerequisites (in Secondary) it has been assumed candidates have high standards of literacy. Entry is also based on a Grade Point | Course changes, as a result of the internal review and for re-accreditation will ensure the development of high levels of numeracy in our Teacher Candidates. In the Secondary stream, Subject Coordinators are currently considering how they can revise assessment tasks to specifically identify students’ numeracy skills and then follow-up with appropriate remediation if required. | University may consider an entry test for numeracy/literacy which would enable University to identify students with difficulty prior to enrolment so adequate / tailored support can be provided immediately (but not preclude them from entry).  
The University has developed a Capability Assessment Tool for the Teach Next program, and we are exploring how this might be integrated into the application process for the MTeach to aid with selection, and to potentially identify students who score low on literacy and numeracy and therefore be offered further support. This is a longer term objective. |
### Institution

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| Targeted strategies include:  
- academic skills orientation workshop for the entire cohort;  
- a diagnostic review (Early Childhood and Primary streams) of a sample of all Teacher Candidates’ writing to identify those who may benefit from further support from ASU;  
- delivering targeted workshops for the entire cohort with the academics in attendance (Early Childhood stream);  
- providing follow-up individual sessions for Teacher Candidates’ post-workshop if required; and  
- providing staff-recommended individual sessions for students requiring extra assistance as a result of work to be resubmitted. | Literacy is relevant to a Teacher Candidates’ method area the subjects Learning Areas A1/2; and B1/2 will focus on techniques for developing and addressing the needs of their students, and also aim to improve numeracy skills of our Teacher Candidates. | Average (GPA), and standard University criteria are applied when considering candidates for the course (e.g. including IELTS for international non-native English speakers). These criteria are focused on the following:  
- The University is committed to maintaining high international academic standards in its courses.  
- The University will select from those students likely to succeed in its courses.  
Course changes, as a result of the internal review and for re-accreditation will ensure the development of high levels of personal literacy in our Teacher Candidates. | Numeracy is relevant to a Teacher Candidates’ method area the subjects Learning Areas A1/2; and B1/2 will focus on techniques for developing and addressing the needs of their students, and also aim to improve numeracy skills of our Teacher Candidates. |
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<td>We have also been working closely with colleagues at the library to support our Teacher Candidates’ research skills. University is embedding the University's Scholarly Literacy Framework into our Master of Teaching program.</td>
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<td>More specifically in the Early Years stream, as an example: The subject Literacy in the Early Years builds on Teacher Candidates' knowledge of school students' language acquisition and emergent literacy in early childhood to support understandings of literacy development in the early years of schooling. Teacher Candidates’ are introduced to the scope</td>
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<td>and sequence of language and literacy learning in the early years with attention given to the diverse nature of children’s language and literacy experiences in the prior-to school and school years. Emphasis is on theoretical perspectives of literacy acquisition and approaches that support the interrelationship between oral language, reading and writing. The focus here is on the development of school students’ language with particular attention given to aspects of the English language such as phonology, vocabulary and grammar related to early reading and writing; theories of reading acquisition that inform the teaching of reading; the development of writing;</td>
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<td>curriculum frameworks and assessment tools; strategies to support whole, small group and individualised instruction in relation to print-based texts and the use of multi-modal texts to support literacy learning. Each stream has a subject with a specific literacy focus, for example, in the Primary stream, <em>Foundational English Literacies</em>; and <em>Advanced English Literacies</em>; and in the Secondary stream <em>Language and Teaching</em>.</td>
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<td>University Thirty-three</td>
<td>There is strong presence of mature aged and alternative entry students. Emphasis is on individual support. University offers a number of programs based in remote Indigenous communities. The students enter on either 3.1 or 3.2. A range of preparatory programs are offered through University and BIITE. Higher Education Preparation Programs (HEP) are offered externally. The degree level programs have LL&amp;N embedded in all phases. The program is modified to account for multilingual learners in Indigenous communities. Program and material is structured around strategies for second(or more) language. There are academic.</td>
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| literacy units for **all** students in University degrees.  
High level of student assistance is available for individual assistance at no additional cost on a customized basis to external and internal students. These are through the School of Academic Learning and Languages.  
All Indigenous remote students work are moderated and benchmarked for LL&N with the work of other students  
Students develop a final portfolio and this contains several literacy tasks which are situated in the context of the student teachers’ work. |   |   |   |
**Institution** | **Current Activity Re: Literacy Assessment and Development** | **Current Activity Re: Numeracy Assessment and Development** | **Changes Due to New Requirements Literacy** | **Changes Due to New Requirements Numeracy** | **What Would You Like to Do to Meet 3.2?**
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**University Thirty-four** | Entry requirements for applicants to our teacher education degrees are limited to overall ATARS. Bands scored in HSC English and Mathematics are recorded at enrolment however so programs can be provided to get students to the point of being in the top 30% before the end of their first degree year. Students who apply for teacher education programs who have not reached the ATAR cut-off for entry to degree courses need to enroll in the Diploma of General Studies and be successful in that program (which includes a literacy and numeracy component) before being articulated into the degree courses. We have worked closely with the school sector to |  |  |  | 

Because we accept enrolments from all states of Australia and New Zealand, we will be waiting on the report from AITSL that indicates the interpretation of school results from each state and what constitutes 'top 30%' in each jurisdiction.
determine the level necessary for a 'top 30%' decision in literacy and numeracy. The Primary Degree students have a compulsory unit (EDUC15800 - literacy and Numeracy for Teachers) which pretests students at the prescribed level at the beginning of the unit and demands a pass mark of 75%. The test is mastery and can be redone until this pass mark is reached. If the pass mark is not reached in the semester, the student fails the unit and must do it again the next year. This unit can be undertaken on campus or online. One of our lecturers has written a textbook/workbook to aid student preparation for this requirement.

For the secondary degree students, a literacy test equivalent to HSC Band 4 level is given to the first year students in their first week of study. These
are marked and those attaining less than 75% in that test are required to attend an extra tutorial each week for the semester. They re-sit the test at the end of the semester and re-do the whole process in subsequent years until they reach the required level. This extra tutorial help is offered on campus only.

Apart from the units indicated in the previous answer, all teacher education programs also include a mastery exit retest in their 4th and final year. This is part of their final professional development unit and must be passed at 75% for them to be able to graduate. Again they have an in-house textbook to work from which has been moderated by senior English staff at local secondary schools. Extra classes are also offered to help them achieve this.
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## Institution: University Thirty-five

**What are you doing currently in Literacy assessment and development?**

Our focus is on meeting the requirements stipulated by NSWIT/AITSL.

This focus applies students who wish to study primary (Bachelor of Education (Primary)) or secondary (e.g., Bachelor of Science/Bachelor of Teaching) school teaching.

As from 2013, we will have two additional degree programs that also require students to demonstrate Band 4 literacy and/or numeracy competence. These two degrees include:

1. Bachelor of Education (K – 12 Teaching)
2. Bachelor of Education (Early Childhood and

**What are you doing currently in Numeracy assessment and development?**

Our focus is on meeting the requirements stipulated by NSWIT/AITSL.

This focus applies to Primary award only. Students who enrol in the Bachelor of Education (Primary) and have not demonstrated Band 4 competence for numeracy are required to do a compensatory unit to satisfy this requirement.

**What changes are you making to respond to the new requirements for Literacy?**

We have, in response to the requirements stipulated by NSWIT/AITSL, developed a Teacher Enabling Course.

Students enrolling in a Bachelor of Education (Primary) or a secondary combined degree (e.g., Bachelor of Science/Bachelor of Teaching) and who have not demonstrated Band 4 competence in numeracy and/or literacy are required to enrol in this Teacher Enabling Course.

This Teacher Enabling Course contains two units:

1. ENG001 (Literacy Preparation for Teachers (HSC Band 4)).
2. MATH122 (Numeracy for Primary School Teachers (HSC Band 4)).

See our description for the literacy.

**What changes are you making to respond to the new requirements for Numeracy?**

Work with other institutions and national/state bodies to define a benchmark for numeracy and literacy. We do believe this is still ongoing in terms of definition and articulation.

We prefer a consistent system that may be put in place across all institutions to facilitate this process.

This should be ongoing and students should have the opportunity in these studies to experience sequential development in literacy and/or numeracy.

At present, at UNE, we are considering the possible articulation of a suite of units that could be ongoing for students.

**What would you like to be able to do to meet Standard 3.2 in Literacy and Numeracy?**

Work with other institutions and national/state bodies to define a benchmark for numeracy and literacy. We do believe this is still ongoing in terms of definition and articulation.

We prefer a consistent system that may be put in place across all institutions to facilitate this process.

This should be ongoing and students should have the opportunity in these studies to experience sequential development in literacy and/or numeracy.

At present, at UNE, we are considering the possible articulation of a suite of units that could be ongoing for students.
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<td>Primary)</td>
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<td>These two units are not part of the Primary or Combined Secondary degree program, and students are required to complete one or both of these two units within the first two years of their studies (e.g., Bachelor of Education (Primary)).</td>
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<tr>
<td>Institution</td>
<td>Current Activity Re: Literacy Assessment and Development</td>
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<td>University Thirty-six</td>
<td>Courses are available through PLC for Student Support and students with observed weaknesses and problems are strongly advised to enrol in one of the available courses. Foundation Unit for all students in essay writing and referencing. Teaching and Learning Centre literacy skills courses. Core subject in degree on language and learning. Unsatisfactory students invited (not required) to attend additional workshops. Our courses require entry level. All applicants must have achieved Band 4 or better in English to be entered.</td>
<td>With our Postgrad courses there is an expectation that because they have passed an initial degree they would have personal literacy and numeracy skills. Our Maths &amp; Literacy courses deal with how to teach these disciplines. Students enter from multiple pathways. i.e ATAR, SATAC, Uni Preparation Course – therefore numeracy standards vary considerably. Numeracy much the same as literacy – however in some degree courses this is currently under review for reaccreditation.</td>
<td>We believe that we already meet the requirements to satisfy the South Australian TRB.</td>
<td>We believe that we already meet the requirements to satisfy the South Australian TRB.</td>
<td>Construction of online base skills test to assess student entry level skills and to gauge improvement over course of degree. Funding support for practice based literacy and numeracy– particularly for equity groups.</td>
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<tr>
<td></td>
<td>accepted for the Graduate Diploma in Education</td>
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<td>Overseas students are required to meet IELTS standards specified by TRB</td>
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<td>Core units in the B Teach programs at all levels of the program during first, second and third year also includes writing and communication skills as core Education units. The fourth year and the Grad dip have core subject incorporated in their degree on language and learning which provides an intensive enrichment option for literacy.</td>
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| **Please Note:** NESB students entry into all programs:  
IELTS Academic Module must be provided on entry. An average band score of 7.5. A score of at least 8.0 on Listening and Speaking. A score of at least 7.0 on Reading & Writing.  
Or ISLPR: A score of at least 4 in each of the areas: Speaking, Listening, Reading and Writing. |
| **Undergraduate ITE Programs**  
Undergraduate Entry is tied to OP entry requirements.  
In the Primary Program there is a series of three developmental courses in English (literacy). While literacy development is addressed across the various curriculum studies courses, all courses have a literacy focus.  
In the Secondary Program a new course is now mandated on developing Literacy & Numeracy in Secondary settings.  
**Post-Graduate ITE Programs**  
Increased attention has been given to developing students' knowledge and skills for teaching numeracy across the curriculum, and this has been clearly articulated to students through relevant courses.  
In the Secondary Graduate Program an elective is now available. |

### Current Activity Re: Literacy Assessment and Development

| Undergraduate ITE Programs  
In the Primary Program there is a series of three developmental courses in Mathematics (numeracy). While numeracy development is addressed across the various curriculum studies courses.  
In the Secondary Program a new course is now mandated on developing Literacy & Numeracy in Secondary settings.  
**Post-Graduate ITE Programs**  
Increased attention has been given to developing students' knowledge and skills for teaching numeracy across the curriculum, and this has been clearly articulated to students through relevant courses.  
In the Secondary Graduate Program an elective is now available. |

### Current Activity Re: Numeracy Assessment and Development

| A Literacy Working Party was established to:  
1. Develop a post-enrolment literacy assessment tool.  
2. Pilot a post-enrolment literacy assessment of all students entering into selected programs;  
3. Provide additional support for students who were identified through the diagnostic test.  
4. Work with relevant elements in the University to develop/cluster available University literacy resources into a "one stop shop" that is appealing and intuitive.  
5. Compile a set literacy text for all students.  
6. Add a literacy criteria expectation to every suitable assessment item undertaken within each program.  
7. All First Year students are now supported in the development of |

### Changes Due to New Requirements Literacy

| 1) The personal literacy and numeracy skills of preservice teachers have been identified as a current priority area. This is a focus of all assessment requirements of preservice teachers; in the primary programs there are also core courses in Year 1, 3 and 4, with the course in Year 1 marked as designated i.e., it is necessary to pass this course in order to progress in the program.  
2) All practicum courses have as a pass requirement that the preservice teacher displays proficiency in the areas of literacy and numeracy. All Professional Experience Assessment Reports directly relate to literacy and numeracy across the curriculum and students must receive a Satisfactory on each |

### Changes Due to New Requirements Numeracy

| 1) Recommend that international and domestic students who are identified as having difficulties with literacy be required to access EnglishHelp and to avail themselves of free workshops on written and oral communication and to access other free initiatives offered by the university, for example, Peer Assisted Learning.  
2) Continued development of on-line resources that can be clustered and made more user friendly for students. This is currently under development.  
3) Like other universities, we would like to avoid an external testing regime as we see this as being counter-productive to the aims of preservice teacher education. |
A new course in now mandated on developing Literacy & Numeracy in Secondary settings.

**Post-Graduate ITE Programs**

Graduate Entry requires a GPA of 4 or equivalent. Increased attention has been given to developing students' knowledge and skills for teaching reading, writing, spelling and grammar, and this has been clearly articulated to students through relevant courses.

In the Secondary Graduate Entry Program an elective on the Development of Literacy & Numeracy is available to students.

Literacy and Numeracy skills in all undergraduate programs. A Teacher education Organisation Blackboard site has been developed that has provision for supporting the development of academic literacy skills. The site provides interactive activities, guidelines and links to resources to help develop the skills in academic literacy for successful learning at university. Academic literacy includes using language correctly; understanding how the individual student learns; being able to share and discuss learning; knowing how to use language and grammar well; and knowing how to prepare, research and present work.

report before they can progress through the program.
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| University Thirty-eight | **Undergraduate Courses**  
Entry to teacher education courses requires a minimum VCE study score of 25 in Units 3 and 4.  
Non-year 12 applicants need to demonstrate equivalence to the VCE entry score.  
All lecturers and workshop teachers recognise that they are responsible for supporting students’ literacy and academic performance.  
Core unit in Year 1 requires preservice teachers to inquire into their own literacy learning.  
If preservice teachers’ literacy is a concern, they may be | **Undergraduate Courses**  
Entry to teacher education requires successful of Units 1 and 2 in VCE maths (not Foundation maths).  
Non-year 12 applicants need to demonstrate equivalence to the VCE requirement in maths.  
All lecturers and workshop teachers recognise that they are responsible for supporting students’ maths/numeracy and performance.  
Core unit in Year 1 requires preservice teachers to inquire into the mathematical knowledge and understanding required for primary teaching.  
If preservice teachers’ literacy is a concern, they may be | Plan is to ensure that the literacy unit designed for preservice teachers with literacy concerns will extend to 2 semesters. | Plan is to ensure that the maths/numeracy unit designed for preservice teachers with maths concerns will extend to 2 semesters. | Additional funding for literacy and numeracy support for preservice teachers from diverse socioeconomic backgrounds. |
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<tr>
<td>Required to enrol in a further literacy unit of study. This additional unit will be located within the courses' elective sequences. For specific literacy concerns, staff in the courses refer preservice teachers to the Student Learning Support Centre. In addition, the University website offers many online literacy learning supports. <strong>Postgraduate courses</strong> All lecturers and workshop teachers recognise that they are responsible for supporting students' literacy and academic performance. For specific literacy concerns, staff in the</td>
<td>Maths understanding is a concern, they may be required to enrol in a further maths /numeracy unit of study. This additional unit will be located within the courses' elective sequences. For specific maths concerns, staff in the courses refer preservice teachers to the Student Learning Support Centre.</td>
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<tr>
<td>Courses refer preservice teachers to the Student Learning Support Centre. International preservice teachers in 2-year postgrad courses after IELTS-entry are required to take the Grad Cert in Professional English within the M Teaching.</td>
<td>For specific maths concerns, staff in the courses refer preservice teachers to the Student Learning Support Centre. If primary postgrad preservice teachers’ primary course maths understanding is a concern, they may be required to enrol in an further maths /numeracy unit of study. The School of Education also provides access to the Smarthinking online maths support website.</td>
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</table>
| University Thirty-nine | Has developed an online Personal Literacy Assessment Test (PLAT) site which contains a pretest, teaching and learning resources etc. All students in all teacher education courses must pass the PLAT which is attached to a unit. Multiple opportunities to pass the PLAT | For Early Childhood and Primary students only. Has developed an online Numeracy Assessment Test (NAT) site which contains a pretest, teaching and learning resources etc. All Early Childhood and Primary teacher education students must pass the PLAT which is attached Mathematics Education unit. More than one opportunity to pass the NAT | Considering including a compulsory literacy and numeracy unit in all teacher education courses | Considering including a compulsory literacy and numeracy unit in the first session of all teacher education courses | - Early assessment of numeracy and literacy  
- A compulsory literacy and numeracy unit in Session 1 of all courses  
- Mentoring program for students who do not meet literacy and numeracy requirements  
- Scaffolding a literacy across all courses |
APPENDIX 4: Exemplars of Application of the Framework

Below are a series of potential benchmark practices that HEPs are using to improve their preservice teacher literacy and numeracy standards. While these are directly intended to build student ability, confirmation of meeting the required program standards will only be available once this work is mapped to that currently being undertaken by Louden and Blagaich (2012 not yet published).

A pre-enrolment test of literacy and numeracy

There are two main concerns universities have expressed about such a test. The first is that it would seem to run counter to State and Federal Government policies that seek to encourage enrolment from as wide a range as possible of students – students that reflect the character of the Australian community. The second is that it assumes that university teacher education degrees do nothing to increase the literacy and numeracy of students who undertake these degrees. The rank within a population that a student obtains in literacy and numeracy before enrolling in a university teacher education course says little about their subsequent rank on completing that course.

Furthermore, general literacy and numeracy are remarkably difficult to measure. Similar issues arise in relation to the NAPLAN test (Wu, 2011). To provide a test that would reach statistical significance and adequately test the general literacy and numeracy of applicants would be a difficult process. This would need to test across a broad range of attributes of literacy and numeracy and this would make such a test both expensive to conduct and time consuming. There are reasonable concerns as to who is likely to pay for such tests. The statistical variation associated with cheaper tests may well mean both letting in candidates who do not meet the set criteria and excluding others who meet those criteria.

Universities are much more interested in focusing on and in assessing subject specific literacies. While more can always be done, university teacher education courses have strong commitment and take great pride in their ability to prepare future teachers in the metalanguage, pedagogies, assessment and curricula requirements of the method areas being undertaken. Students who pass university teacher education courses are highly literate and, if required within their teaching methods, numerate in what they will be asked to teach. The language needs of subjects are often greatly underestimated, in *The Use of Language Across the Secondary Curriculum* the point is made that, “Many pupils ... are introduced to as many new words in science lessons in their first year in secondary school as in, for example, a modern language course they would also study” (Wilson, 1999).
End of degree test

There are a great many concerns about a test being conducted post graduation to establish the literacy and numeracy of graduate teachers. If all candidates passed this test as a matter of course there would be justifiable concern that the standard of the test would have been set too low. However, if students were to fail this test this would also prove a difficult matter for all parties. It would clearly be embarrassing for the student, perhaps equally so for the university which graduated the student unable to pass a literacy and numeracy test (although, admittedly, this would need to be set at quite a high standard to justify the claim it proved students were within the top 30 per cent of the population if that can indeed be determined), but it could also prove somewhat embarrassing for the government. This is because the government has a clear role in accrediting teacher education courses and if a student passes the requirements of that course and yet fails to meet what may be misconstrued as ‘simple literacy and numeracy requirements’ this may leave the government liable. A candidate denied the ability to teach after meeting all of the requirements to graduate from a teacher education degree, including one to five years study and associated fees and lost potential income, may have a claim against the government at law. Similarly, though it is important to note that a teaching degree is only one requirement necessary for registration and employment, and applicants for registration also must demonstrate other criteria such as a satisfactory criminal records check to be eligible for registration and employment.

It would seem grossly unfair to leave such a test to the end of the degree.

The Queensland University of Technology requires their final year students to take the Year Nine NAPLAN test, which is seen as a final 'health check' to ensure their students are able to easily pass the test. The University of Tasmania has developed their own online personal literacy and numeracy test that requires an 80% pass mark and the preservice teachers are encouraged to present these statements of competency as part of their professional portfolio to future employers and the Tasmanian Teachers’ Registration Board.

Universities, such as Southern Cross, require their students to pass a mathematics test under examination conditions prior to the completion of their degree. They are given multiple attempts, if necessary, but passing is a requirement of the degree.

Use of ATAR as the Standard to Determine those who meet the Standard

The question as to what is the population that students are to be compared against is highlighted by the proposal that the ATAR should be used to benchmark entry scores. However, it is not clear why students ought to be compared with the year 12 cohort. Many universities have a majority mature age entry students, especially those who have graduate entry programs only.
After two decades of *No Single Measure* (Wickert, 1989) it is difficult for universities to accept a measure of literacy and numeracy that does not take into consideration the complexities of ‘general measures’ of literacy and numeracy and that completely ignore the subject specific literacies universities are set up to teach and that will be the most use to graduate teachers.

If the ATAR is used this measure will completely ignore a large section of the Australian population – those who speak a language other than English at home (nearly 16 per cent of the population) and the large number of these who self-judge they either do not speak English well or at all (between 10 and 40 per cent of this group) (ABS, 2008). Wichert also showed that one of the best predictors of literacy issues within the Australian population was length of time away from school.

The ATAR provides a very narrow definition of literacy and numeracy – and one which has not been shown to produce better teachers. Universities have known for a long time that subject specific literacy – understanding the metalanguage associated with the subject methods that will be taught – and an understanding of the most effective ways to teach literacy and numeracy – improving oracy and understanding the language needs of all students within the classroom – are the keys to effective teaching (STELLA).

Tests of general literacy are deeply problematic. However, understanding the subject specific literacies needed for teachers means understanding the language needs in all subjects. University teacher education courses provide preservice teachers with the literacy skills they will need, literacy skills that are directly related to whom they teach, what and how they will teach.

**Early Assessment of Student Numeracy**

It seems that much of the work done by HEPs in identifying the numeracy needs of their students actually involve detecting deficiencies in student mathematical content knowledge. Although it is clear that numeracy and mathematical content knowledge are related, it is clearly not the case that they are identical. As is made clear in the Queensland Board of Teacher Registration report *Numeracy in Teacher Education* (QBTR, 2005), mathematics seeks increasingly abstract rules, while numeracy is always linked to concrete and contextual knowledge and is therefore applicable across the entire curriculum.

Nevertheless, numeracy has tended to be strongly associated with mathematics and this has lead to it being assessed using tests of mathematical content knowledge. The two examples provided here are of just such tests.

Several universities provided exemplars of such tests. In one test that is given to students to explicitly assess their understanding of various mathematical concepts. Students are informed at the beginning of the test that there will be forty questions and that these will test their understanding of Number and
Algebra (20 questions), Probability and Statistics (10 questions) and Measurement and Geometry (10 questions).

The students are presented with a time-limited multiple choice test.

That this is a test of student mathematical content knowledge, rather than numeracy (as defined as: to use mathematics effectively to meet the general demands of life at home, in paid work, and for participation in community and civic life (QBTR, 2005)) is best shown in the following example:

Example Question: What are the prime factors of 30?

2, 3, 5
1, 2, 3, 5
2, 3, 5, 30
1, 2, 3, 5, 30

The mathematical concept of a prime number has little application in solving the kinds of problems numeracy is generally concerned with. Knowing that 1 and 30 are not a prime numbers is the only understanding necessary to gain a mark for this question, but it involves no real problem solving skills.

Nevertheless, there are some test items that do necessarily assess a student’s numeracy skills:

Questions: A $70 pair of jeans is reduced by 20%. What is the sale price?

$20
$35
$50
$56

Another university also provides students with a test of their mathematical content knowledge. The main difference is that this test is not multiple choice and, as the instructions indicate, part marks are able to be awarded on the basis of the working involved in reaching an answer. Again, it would be hard to say this is a test of numeracy as of the 49 questions there are only around 11 that could be said to be framed around practical examples and many of these are more concerned with showing students understand the underlying abstract mathematical concept (ratio or number placement system, for example) than real world problem solving. The test is divided into seven sections: Number, Measurement, Chance and Data, Fractions, Decimals, Space, Area and Volume, and Percentage and Ratio.

There is a question dealing with identifying prime numbers on this test too. The test also has a question that seeks to assess the ability of teachers to create mathematical narrative questions:
Mathematical operations are used to represent story problems that can be modelled with materials in the classroom. For example:

**Operation:** \(3 + 4\)

**Story problem:** 3 birds sitting on a fence are joined by 4 more birds. How many birds are on the fence?

**Model of the problem and answer**

7

Write a story problem and draw a model of the situation that demonstrates the meaning and solution of

\( \frac{1}{5} \div 2 \)

But mostly the questions seek to test direct mathematical knowledge:

96 multiplied by 0.07 = ?

It is acknowledged by many HEPs that numeracy is an ongoing concern with many of their students and that in certain cases, particularly those enrolled secondary teacher courses with methods other than mathematics or science, little is currently done to either assess the level of mathematical or numeracy skills students present with or to improve these substantially over the life of the degree. The tests extant are chiefly of mathematical content knowledge, and while this knowledge is a major source of competence in solving real life numeracy problems (precisely the kind anticipated as needing to be solved in cross-curricula numeracy) it alone is not enough (QBTR, 2005).

**Early Assessment of Student Literacy**

In the main there is not as much need for a literacy test on entry as there may be for a numeracy test. Like numeracy, literacy is often confounded with a score in an English subject – and since English is a compulsory Year 12 subject in all jurisdictions potential students generally present with a score that can guide an assessment of their likely literacy skills.

There are students, however, (particularly mature age and overseas students) who do not present with such results likely to give any indication of their current literacy abilities. It is important to note that the literacy we are discussing is English literacy. It is very possible that a student can be highly literate in their native language and still not meet the requirements of English literacy necessary to fully engage in education within the Australian university system. Best practice principles in the developing international student English literacy are provided by DEEWR in their report *Good Practice Principles for English Language Proficiency for International Students in Australian Universities*(DEEWR, 2008).
Some HEPs make this explicit through the implementation of a post-entry language assessment of all enrolled students. This assessment literally tests student language abilities and is then able to recommend interventions and strategies to improve these abilities that are evidence based and clearly directed at student need.

**Online Skills Development and Assessment**

There is an increasing use of online tools to assist students with literacy and numeracy. Universities use a broad range of online tools to assist their students, from inhouse developed webpages on academic literacy, to proprietary systems either purchased and run on an access controlled website or with granted access on the software developers site.

One university reports that it allows students to access Mathletics - http://www.mathletics.com.au/. This is a website dedicated to improving student learning of mathematics through a series of online learning environments which seeks to motivate students through mathematics type competitions. It is also strongly linked to the Australian Curriculum from K-12 and as such provides extensive coverage of all study areas in mathematics throughout the curriculum.

Moodle - http://moodle.org/ is a website that is based on social constructivist pedagogy and allows users to develop their own content within the dedicated software environment that enhances student learning through their engagement with the topics at hand. This software is used by Central Queensland University.

Smarthinking - http://www.smarthinking.com/ is made available to students at Victoria University. Essentially this is an online tutorial site. Students are able to logon and gain access to experienced teaching staff who can assist them with their study questions.

Another university has developed both an online literacy and numeracy assessment and development tool that provides very practical assessment and learning and development for students.

**Mentoring Programs**

Many universities have student mentoring programs of various kinds. The most popular being PASS – Peer Assisted Study Sessions. Established in the United States in 1973 it is now used in 30 countries internationally. The main idea behind the program is to provide students with access to fellow students who have previously done well in their unit of study as facilitators of weekly workshops. These facilitators receive training and seek to create a learning environment that is both fun and different from those provided in both lectures and tutorials within the subject. Attendance is voluntary and not restricted to either struggling or high achieving students. Generally, students are informed of the impressive success rates achieved by those who attend PASS classes.
Universities also highlight that these sessions are also good ways to meet new people.

One university reports remarkable growth in its PASS program. In 2007 the program covered five units and was provided by 13 facilitators supporting 214 students. By the last semester of 2011 the program was being run on all five major campuses of the university in all schools and covered 53 units with 138 facilitators assisting 2287 students. This is a free service provided to students by students.

**Additional Access to Academic Staff**

Many universities provide extensive additional and timetabled access to academic teaching staff. This can be in the form of trained library staff who can assist with various issues associated with academic literacy, but also may involve there being times set aside when academic staff will be available in the library to assist with any questions arising from the weeks lectures. Other universities provide additional tutorials – either compulsory or non-compulsory – for students to attend.

**Portfolio of Work**

One example provided indicates that students in both the masters and graduate diploma courses develop a personal folio of work based on the Senior VCAL Literacy and Numeracy assessment criteria. This is a very demanding assessment task that requires the students to systematically document evidence of their personal literacy (reading, writing and oral communication in different contexts and for different purposes) and numeracy. The task is remarkably comprehensive and tests a wide variety of literacies and numeracies and in a variety of contexts:

- **Literacy for self expression** (focuses on aspects of personal and family life, and the cultures which shape these);
- **Literacy for practical purposes** (focuses on forms of communication mainly used in workplace and institutional settings and in communication with such organisations);
- **Literacy for knowledge** (focuses on sociological, scientific, technological, historical and mechanical theories and concepts which are relevant to education and training);
- **Literacy for public debate** (focuses on matters of public concern, and the forms of argument, reason and criticism used in the public arena);
- **Numeracy for practical purposes** – design. Can translate between two-dimensional and three-dimensional real life objects and their diagrammatic representations for the purposes of measurement, design, and interpretation;
• **Numeracy for practical purposes** – measuring. Can use measurements, the metric system and simple measurement formulae for the purpose of interpreting, making or purchasing materials in practical situations.

• **Numeracy for personal organisation** – location. Can use the conventions of distance, location and direction to read, create and use maps.

• **Numeracy for interpreting society** – data. Can create, use and interpret tables and graphs, and calculate and use averages, in order to reflect on information of relevance to self, work or community.

• **Numeracy for interpreting society** - numerical information. Can use, and calculate with, fractions, percentages, decimals, rates and large numbers, to reflect on aspects of personal, work or community life);

• **Numeracy for knowledge** - further study in maths (formulae). Can develop and use simple formulae to describe and represent relationships between variables in real life contexts);

• **Numeracy for knowledge** - further study in maths (problem-solving). Can use simple mathematical problem-solving techniques to interpret and solve straightforward mathematical problems).

The second part of this task requires students to draw on the portfolio to analyse their own literacy and numeracy skills in terms of their suitability for teaching. The students are asked to identify areas of strengths and weaknesses in relation to their literacy and numeracy, and to prepare a realistic professional learning plan that will address any weaknesses in literacy and numeracy.

The benefits of such portfolios are that they require students to consider the literacy and numeracy requirements in their teaching practice and to provide examples of exceptional practice they have performed in their teaching rounds.

**Additional Electives**

Some universities require students with identified weaknesses in literacy or numeracy to take ‘compulsory electives (sic)’ as a means of addressing these weaknesses. See detailed summary of survey responses – University Four.
APPENDIX 5: Background to the Project

Initially there was concern from HEPs regarding these standards, particularly in relation to how to define the key terms of personal literacy and numeracy, the reference population and how to ascertain the top 30% of this reference population. HEPs were concerned that, as entrance standards, these would tend to reduce the available pool of students eligible for entrance to teacher education and that this would impact negatively on social equity as many groups other policies are seeking to encourage into teaching may struggle to meet this demanding standard on entrance. HEPs felt they were being denied a way to respond to these standards other than in barring entry to their courses to those who clearly did not meet these standards or could not reasonably prove, prior to entry, how they met these standards.

Clarification was sought from AITSL as to how best to interpret the key terms associated these standards, Standard 3.1 in particular. AITSL’s advice assured the project that Standard 3.1 was to be relevant only to students entering teacher education courses more or less directly from school, that is, with recent study scores, and that all other candidate students would need to be considered under Standard 3.2. The emphasis of the standards shifted to students being broadly equivalent to the top 30 per cent of the population. This meant the focus of many member HEPs changed from concerns around how best to define the such concepts as personal literacy and moved instead to what HEPs have within their power to affect – that is, assessing the needs of their students and providing them excellence in learning and development so as to be able to demonstrate all preservice teachers meet the best possible standards in literacy and numeracy.

This did not mean there would be no effort to ascertain what the top 30 per cent of the population is, nor that students accepted to teacher education courses either below this stated standard or without any immediate way of confirming they match this standard would then somehow not be brought under the rigours implied in 3.1 – rather, HEPs were being advised to document the processes they engage in with their students so as to clearly demonstrate best practice in improving student outcomes.

Concurrent with this project, another is seeking to ascertain the various study scores needed in key English and Mathematics subjects at Year 12 level that will equate to attainment of top 30 per cent of the population. It is anticipated that this study will be able to provide HEPs with work samples at standard and that these will be annotated so as to provide HEPs the ability to monitor and confirm student attainment of a standard comparable to Standard 3.1 prior to their graduation.

It is noted that literacy requirements under AQF 7 and 9 easily place graduating students within the top 30 of the population. It is also noted that, particularly for secondary teacher applicants, numeracy is often overlooked. The requirements
of the new Australian Curriculum, that numeracy be taught across the entire curriculum, makes it timely that HEPs look once again at how best to ensure all graduate teachers leave their courses with the skills necessary to be effective in presenting the curriculum they will be expected to teach.

This project has allowed HEPs the opportunity to meet and to discuss exemplary practices, as such it has been an effective learning opportunity for HEPs. It has also provided motivation for some HEPs, particularly those covered by the same state jurisdictions, to consider ways of working closer so as to moderate work and assessments, particularly in relation to portfolios.

There is a general recognition that HEPs are best placed to judge which students they will admit to their courses, the needs of these students and how to ensure these students are given every opportunity to reach the standard Australia expects of the next generation of those charged with educating our children. Nevertheless, it is also clear that HEPs need to ensure rigorous standards are enforced and that they provide 'health checks' of their courses to maintain the highest possible standards.

This report details the history of the project, including details of both workshops held with NADLATE members while also providing the detailed responses of HEPs to our survey. This report is chiefly focused on what HEPs do to ensure their students are supported in the three crucial phases of their teacher education cycle: that students are assessed early in their education to gauge their literacy and numeracy skills and needs, that those assessed as being in need of additional support are provided with that support throughout their teacher education training and finally that prior to graduation all students are allowed to demonstrate their achievement of this standard in literacy and numeracy and beyond.

This commitment to high quality literacy and numeracy standards for teachers is reinforced by the very strongly held belief that universities already meet this standard and do so, not merely on the basis of general literacy and numeracy, but on the far more relevant measure of subject specific literacies and numeracies that graduate teachers will directly require throughout their teaching careers. Furthermore, teacher education courses extend student digital, technical, personal, oral and aural literacies, all of which remain beyond the scope of Standards 3.1 or 3.2 as currently framed. All of these literacies, when coupled with the metalinguistic and subject specific literacies, produce highly skilled graduate teachers who are able to meet the challenges of becoming professional teachers and thus provide excellence in the educational experiences provided to Australian children.

Australian universities exist in a wide range of regulatory environments and face multiple and very different challenges. Presenting a consensus vision on how best to benchmark and meet the expectations of Standards 3.1 and 3.2 would require additional time and effort on the part of the universities. The current state-based accreditation requirements mean that some states feel they already
meet or, in fact, exceed these standards, in particular New South Wales and Queensland, whilst other states are unsure how they would prove compliance.

Informally universities report their commitment to working with AITSL to address ways to demonstrate achievement of Standards 3.1 and 3.2.

It is generally accepted that universities should be more concerned with the standards of teacher candidates at the completion of their degrees, rather than the standards of those who enter these degrees. As such, various proposals have been presented with the particular focus on the achievement of teacher education graduates who have high and demonstrable levels of literacy and numeracy.

Universities are concerned that such a measure of literacy and numeracy not be an overly simplistic one – such a test would tend to be counter-productive and be unlikely to provide any worthwhile picture of the literacy and numeracy needs of graduate teachers or the skills they require to be effective teachers. Because someone can perform well on a multiple choice test of a limited set of numerical and linguistic skills says remarkably little about their likely effectiveness within the classroom. To formulate benchmarks that are relevant across the diverse cohorts of students engaged in teacher education programs (including early childhood, primary, secondary, vocational education, graduate entry, masters level, undergraduate etc) and to gain the full consensus of all member universities is beyond the realistic scope of this current project and its timeframe. Nevertheless, such a set of benchmarks of what constitutes a highly literate and numerate and therefore effective graduate teacher within each of the various study methods and student populations is clearly needed and forms one of the key recommendations of this report.

Currently, as documented in Table 1 above, HEPs use a very broad range of formative and summative assessment tools and many learning and development strategies to provide their students with every opportunity to improve their literacy and numeracy skills throughout their degrees. While no HEP uses all of these assessment and development tools, most use some of them. These practices are tailored within the various HEP sites to meet the needs of their student communities. Table 1 provides a framework of practices which covers the broad range of strategies HEPs will use to address ensuring their students meet Standard 3.2.
APPENDIX 6: NADLATE Workshops 1 and 2 Report

Workshop 1: 15th March, 2012

The meeting of NADLATE delegates was mostly framed around responses to the five survey questions outlined in Appendix 3 above.

A general review of the discussion concerning these questions is now provided:

There was a general consensus that universities needed clear criteria as to what the standards actually mean. Without such criteria it was felt the standards were likely to disadvantage both local and overseas students.

There was confusion as to whether the standards were seeking to measure ‘general literacy’, and then what such an attribute might be, and why such other literacies, such as, technical, digital, oral and other forms of personal literacies and numeracies did not appear to be considered. Such other literacies appear to be equally essential for twenty-first century teachers.

In some institutions the majority of applicants to teacher education courses are mature aged and therefore do not have an ATAR or anything remotely similar. There was a concern that this would automatically place these applicants under the requirements of standard 3.2.

There seems to be a general view that graduates will automatically qualify as having obtained top 30 per cent status – however if this is true of graduates from undergraduate degrees generally, then why should it not also be the case for graduates from teacher education degrees? The point was made that such graduates have the advantage over even the best of Year 12 students that they have been schooled in subject specific literacies directly relevant to the teaching profession.

There was quite some concern expressed that all applicants to teacher education programs were being considered as somehow identical. However, these applicants belong to a wide range of diverse cohorts. The following table seeks to describe some of this diversity:

<table>
<thead>
<tr>
<th>Duration of course</th>
<th>Degree Sought</th>
<th>Student Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Year</td>
<td>Early Childhood Teacher</td>
<td>School Leaver Undergraduate</td>
</tr>
<tr>
<td>Two Years</td>
<td>Primary Teacher</td>
<td>School Leaver Graduate</td>
</tr>
<tr>
<td>Three Years</td>
<td>Secondary Teacher</td>
<td>International Student</td>
</tr>
<tr>
<td>Four Years</td>
<td>TAFE Pathway</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mature Entry Undergraduate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mature Entry Post Graduate Entry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indigenous Student</td>
</tr>
</tbody>
</table>
State and Federal governments also require universities to encourage groups who do not traditionally enrol in teacher education to be welcomed and assisted to become teachers. Not only on equity grounds for members of these groups, but because such teachers can act as effective role models within their communities. These standards – particularly drawn as hurdles which must be overcome on entry to teacher education programs seem to undermine such efforts.

Universities already seek to improve the literacy and numeracy of their students – but literacy and numeracy are contested notions and without providing a clear definition of what is to be considered ‘literacy’ or ‘numeracy’ will present difficulties for universities in reaching these standards. The need for exemplars or benchmarks, rather than an arbitrary percentage of a population was repeatedly made.

Great concern was expressed that the logic of the standards seemed to imply the desire on the part of AITSL for a test of literacy and numeracy at graduation. This was seen as problematic for a number of reasons:

- Who would pay for such a test? The student? The university? The government? Such tests have been shown to cost up to $600 per applicant in the past.

- How rigorous will such tests be? Given the consequences of a student failing universities would want to certain they tested something worth testing.

- It was also pointed out that in both the US and UK governments had been sued on the basis that they had approved teacher education courses and students who had passed these degrees and therefore ought to be qualified to teach were then immediately found to not have core literacy and numeracy skills to allow them to register as teachers.

Universities also question whether if students must pass this test prior to full enrolment (as an entry level hurdle) will their enrolment be provisional until they pass the test and if they are able to accept such provisional students?

There were also questions raised as to what extent those enrolled in teacher education programs are responsible for their own improvements in literacy and numeracy. At present universities provide Academic Skills units which are available to students to participate in at their own discretion. These are ‘pull’ systems – students can access them if they feel they need to improve their academic literacy and numeracy skills. However, while it is clear the introduction of these standards would require universities to direct certain students toward these programs, this does somewhat undermine the implicit role of universities in providing the community with independent learners capable of perceiving their own needs and finding solutions to those needs.
Delegates noted that the implementation of such standards could be perceived by both students and universities alike as symptomatic of a lack of respect and untrustworthiness towards them. Universities have constructed highly professional teacher education courses – for students who graduate from these courses to then be denied the ability to teach due to failing to meet general literacy and numeracy standards would not only reflect poorly on the whole system, but may well call into question the validity of the test. Quality standards of these tests would mean students will fail – universities need to be certain that if they do fail students that those students deserved to fail and are not part of a statistical aberration associated with a general test of questionable validity. After years of study and the associated HECS debts and foregone salary, this is clearly a path we should tread very carefully.

The major issue is just how will the introduction of these standards impact on the quality of teaching experienced by children in Australian classrooms? There is quite some scepticism from member universities that there is any correlation at all between ‘being in the top 30 per cent of the population’ in literacy and numeracy and the ability to become an effective and engaging teacher.

General similarities between universities

In the main universities are very concerned that the introduction of these standards will have grave and unanticipated consequences by those who proposed them. Many universities have made it clear that they believe the Standard 3.1 is ill-conceived. It is not at all clear which population universities are to measure their students against, nor is it clear what the top 30 per cent in literacy and numeracy means. The fact these are entry requirements is also an issue of concern, as this requirement would seem to do much to undermine State and Federal Government policies to increase access to teacher education from groups currently under-represented. There are clear equity issues raised in such a bar to entry for groups within our community.

The universities are of the very strong opinion that the courses they provide in teacher education already produce teachers with very high levels of both general and subject specific literacy and numeracy skills. Universities are only too well aware of their responsibilities in this area and are proud of their achievements in ensuring their graduates meet the highest possible standards.

This raises the need to define what a graduate teacher ought to look like. If it is difficult to assess what skills a teacher candidate ought to have prior to enrolment, as Standard 3.1 does, it would seem even more reasonable to propose what skills and abilities graduates ought to at the end of a teacher education program. It is a key proposal of this report that research be conducted to provide teacher education providers with exemplars by which it will be transparent to universities, students and the government alike what the literacy and numeracy requirements of preservice teachers ought to be upon graduation.

Academic Skills Units
Virtually all universities provide students access to academic skills courses and online materials throughout their degrees. Generally, although these courses are rarely compulsory, they are strongly recommended to students who clearly do not meet the minimum requirements of academic literacy. The consequences of students not availing themselves of these services when they are recommended accumulate and it becomes increasingly likely that the student will not be successful in their studies if they refuse to access these services when deficiencies are identified.

Universities questioned the extent of their role in relation to encouraging students towards these units. All students at University level are adults and a clear role of universities is to encourage and foster the independent learning skills of their students. This is part of the reason why these services tend to be ‘pull’ rather than ‘push’ services. That is, they are available to students to access if and when they require them, rather than being made compulsory.

Nevertheless, many universities felt that, in order to meet the requirements of Standards 3.1 and 3.2 they would need to become more assertive in the level of requirement that certain classes of students in relation to these skill units. Making such services compulsory to certain students would have funding implications for such units, as would the requirement that they provide some proof that students directed to them have finally met a particular standard.

**Literacy and Numeracy Across the Curriculum**

Most universities reported having at least one compulsory unit of their teacher education qualification that focused on the literacy and numeracy needs of children across the curriculum. These subjects tend to stress the pedagogical challenges that face teachers in multicultural classrooms and give preservice teachers an understanding of how to develop literacy by scaffolding subject specific literacy and providing developmental practices that emphasise oracy and provide children opportunities to experiment and engage with the new subject specific language. (STELLA)

There is some concern, particularly among universities in New South Wales, that such subjects will not be counted towards proving students of teacher education programs are improving their literacy and numeracy. This is because the current standards applicable in NSW appear quite similar to those proposed by AITSL and these currently do not allow compulsory literacy or numeracy subjects to be counted toward the achievement of benchmark literacy or numeracy – only courses additional to the standard course requirements being counted. This seems particularly perverse, as the subjects included in teacher education courses which explain the literacy needs of students generally are precisely the kinds of literacy skills applicable to teachers, that is, precisely the kinds of literacy and numeracy skills teachers need.

Many of the state teacher registration bodies, such as the Victorian Institute of Teaching and the New South Wales Institute of Teachers, have standards that
apply to the registration of approved teacher education programs which place a high premium on graduate teachers being able to take the literacy needs of their students into consideration. For example, this is a mandated requirement of course registration in New South Wales (NSWIT, 2006).

**ATAR as default measure of top 30 per cent**

Since the publication of *No Single Measure* (Wickert, 1989) two decades ago it has been generally accepted that there is no single ‘literacy’ or ‘numeracy’ that we can measure with the kind of accuracy that allows one to say with certainty that a particular person is ‘in the top 30 per cent of the population’. For many universities there are issues with every aspect of such a statement. Literacy and numeracy are qualities, rather than quantities, and so they are not really amenable to being counted in this way.

Deciding what constitutes the population is also problematic for many universities. While it seems the easiest solution is to compare the ‘top 30 per cent’ with the year 12 cohort, this is hardly the same as the top 30 per cent of the Australian population. Of the nearly sixteen per cent of the population who speak a language other than English at home there is between 10 and 40 per cent who self-assess as not speaking English well or at all. This is highly dependent on age (ABS, 2008), something Wickert found was true of literacy and numeracy skills generally. It seem hard to justify excluding these people from a count of the total population. This would be the case the population was defined as those having an ATAR was decided as the default measure.

**Workshop 2: 15th May, 2012**

On 15 May 2012 the second NADLATE workshop was held at Deakin Prime in Melbourne to discuss progress of the report and to gain guidance from members concerning the adopted direction of the project.

It was stressed that Higher Education Providers (HEPs) were best placed to ascertain the literacy and numeracy needs of their various cohorts of students.

Any confusion regarding who the two standards apply to was removed by AITSL making it clear that standard 3.1 is intended to apply only to recent Year 12 graduates with study scores that place them in the top 30% of their year level in subjects in either English or Mathematics, or in related subjects. It was reported that there is another project currently underway to assess the study scores necessary in various Year 12 subjects needed to prove attainment of the standard and that this project will provide samples of student work that would meet the standard.

ACDE has proposed a three phase framework detailing processes HEPs implement to confirm student attainment of the standard involving on entry formative assessment, learning and development during the degree and finally a summative assessment confirming attainment of the standard and beyond.
It is recognised that standards 3.1 and 3.2 are entry standards and that, particularly in terms of literacy, it should be possible at all points in a degree to show the student population are either above these standards or that some process is being implemented to ensure they surpass the standards.

Not all HEPs need to adopt the same strategies, however, those presented in the framework and in the longer survey document attached to the first report, provide useful models of exceptional practice in assisting students to obtain and surpass the standard. It is also not the intention of standard 3.2 that it merely provide a linear confirmation of obtainment of standard 3.1. Rather, HEPs are urged to provide proof students are assessed in their literacy and numeracy needs, that a range of mechanisms are in place to assist students to improve these skills and that HEPs are able to report to a competent authority attainment of the standard.

Numeracy, particularly for those enrolled in secondary education training courses in method areas without a numeracy focus, is difficult to assess at the standard. It is not the intention of this project to encourage a narrow definition of numeracy which fosters a ‘teach to the test’ mentality. Rather, there are clear numeracy skills that all graduate teachers must have and it is these which should be developed by teacher education courses. In both literacy and numeracy the key to this project is that it encourages a broad range of skills that confirm students have met the standards.

It is the opinion of NADLATE that it is not the intention of Standard 3.1 to act as a barrier to entry to teacher education courses for applicants who are unable to demonstrate attainment of this standard prior to enrolment, but rather that this standard provides a minimum achievement which all graduating teachers will be assessed as meeting. While Higher Education Providers (HEPs) cannot influence the marks with which applicants present, other than by exclusion of all those below a certain standard, there exists much greater capacity for HEPs to work with all enrolled preservice teachers towards their achievement of Standard 3.2 and beyond over the life of their degree.

The questions associated with Standard 3.1, such as, how literacy and numeracy are to be defined, what the reference population is to be and how various study scores can be equated so as to confirm membership of the top 30% of the population, are being addressed by research currently being conducted in another project sponsored by AITSL (Louden and Blagaich, 2012). It is expected that the Louden and Blagaich project will provide elaboration of what constitutes attainment of 3.1 and will provide HEPs with exemplars and worked examples of student work that meet Standard 3.1 in both literacy and numeracy. While this work is being completed across school leavers for Standard 3.1, universities will continue to seek to demonstrate literacy standards that meet AQF at the various degree levels and beyond.

It is recognised by universities that Standard 3.1 is an ‘entry level standard’ and that those applicants not meeting this standard on entry must be both identified and assisted so as to ensure they achieve Standard 3.2 by the time they graduate.
Some HEPs currently accept a substantial number of their student cohort from pathways other than those leading directly from secondary school. This means that whatever the means used to determine standard 3.1, these are unlikely to be able to be applied to these students. It is the current view of ACDE that these students will not be directly covered by standard 3.1 and therefore will need to be assessed as meeting the required standard on the basis of Standard 3.2. HEPs take it as their responsibility to ensure the development of the skills of all preservice teachers, and therefore it is the view of HEPs that all preservice teachers be treated as if bound by the considerations of Standard 3.2 and that their learning and development be monitored accordingly over the course of their degree.

On 8 May 2012 the Australian Institute for Teaching and School Leadership (see Appendix 1) provided critical advice to this project which enabled improved clarity of definition and explanation to frame the meaning of the terms literacy and numeracy. While universities have some opportunity to further refine and clarify their approaches, the information provided shaped the work presented here and also the discussions at Workshop 2 of NADLATE on 15th May.

Ensuring preservice teachers meet the numeracy standard is proving more difficult than confirming that they meet the literacy one, particularly for those students enrolled in secondary education programs in methods other than mathematics or science. All students are generally able to show some attainment in English or English related subjects from their various educational pathways and these pathways can be interrogated so as to confirm or otherwise attainment in relation to Standard 3.1.

However, many preservice teachers have not studied any mathematics related subjects since they completed Year 10, and it is therefore difficult to assess their ranking so as to ensure they are within the top 30% of the relevant population at entry. Furthermore, in seeking to meet standard 3.2 in numeracy the difficulty is in determining which mathematical skills will be relevant to the various teaching streams, particularly those not directly associated with either the teaching of mathematics or science. For the attainment of numeracy skills to be more than merely a bureaucratic nicety, universities are keen to ensure that the numeracy skills taught in teacher education courses be directly relevant to all graduate teacher careers. Many HEPs have therefore focused their attention on numeracy related to both the cross curricula requirements of the Australian Curriculum and in ensuring graduate teachers are able to interpret NAPLAN data and results. Questions as to whether this places all teacher education students in the top 30% of the population in terms of numeracy skills are difficult to assess. Nevertheless, the processes suggested both work to improve preservice teacher numeracy while also being directly relevant to graduate teacher numeracy needs.

This current stage of the project has focused on how HEPs seek to show they are currently meeting the requirements of standard 3.2 for both literacy and numeracy. To this aim Higher Education Providers (HEPs) have responded to a
survey circulated by ACDE so as to give HEPs the opportunity to detail their current practices in relation to both ensuring the highest possible levels of student literacy and numeracy upon student entry to teacher education courses and to how student skills are developed throughout the duration of HEP teacher education courses.

The results of this survey have illustrated a number of common practices used across HEPs directed toward improving student literacy and numeracy. It goes without saying that no HEP makes use of all of these practices. Furthermore, it is not the intention of this Project to mandate that HEPs adopt identical practices or even a required core set of common practices. It is clearly understood that all HEPs draw their student populations from a wide variety of student communities and that these communities present HEPs with very different needs and developmental challenges and therefore also a variety of educational pathways. HEPs themselves are best placed to determine the most appropriate means of ensuring their student populations are given the tools that will enable them to become excellent teachers. Nonetheless, it is also clear that best practice implies HEPs need to offer a selection of the general practices outlined in this report. It would seem difficult for a HEP to demonstrate they are doing everything possible to improve their student literacy and numeracy while not making use of any of these practices.

These processes have been summarised from the survey of HEPs conducted by ACDE, the first and second workshops and general discussion. They are presented here in a framework document covering what have been defined as the three phases of preservice teacher evaluation in regards their literacy and numeracy: at entry, during learning and development, and at attainment of the standard. Each of these phases is supported by a range of processes used by universities to either identify attainment of the standard or to assist students in acquiring the skills necessary to demonstrate attainment of the standard.

The information summarised in this framework and matrix directly relates to the practices currently being undertaken by HEPs to improve the literacy and numeracy of their preservice teachers. However, the survey also asked HEPs to provide information on how they felt their current practices would be required to change so as to meet Standard 3.2.

**Summary of HEPs changes being considered to meeting Standard 3.2**

What follows is a list of the main responses to the questions presented in the ACDE survey concerning what HEPs consider they may need to change in their courses to ensure preservice teachers meet Standard 3.2:

1. The need to introduce a pre-enrolment 'bridging course' of six or twelve months duration directed at improving applicant literacy and numeracy when there is a question they may not meet the standard. This course is to articulate directly to the teacher education degree.
2. The restriction of teacher education courses to applicants who hold graduate qualifications and thereby definitely surpass the standard.

3. That core subjects within the degrees be redesigned to ensure that literacy and numeracy are further integrated into teaching practice and assessed so that students develop literacy and numeracy skills throughout the entire duration of their degree.

4. That core literacy and numeracy subjects have stricter and more explicit assessment rubrics with high stakes consequences if not attained.

5. That additional subjects, tutorials or ‘forced electives’ to be required of students who do not clearly meet the standard.

6. That there is a clear definition of what is meant by academic literacy and numeracy so as to facilitate assessment.

7. That a competency test of some description be introduced either pre-enrolment or immediately upon enrolment so as to ascertain student needs.

8. That students be given access to online numeracy tests which, upon completion, direct them to online support and skills development.

9. Some HEPs are considering the introduction of a standard check of academic preparedness in literacy and numeracy for all students, not merely their preservice teachers, and that this assessment will lead to various modes of skill development for identified students.

Discussion of Tentative Recommendations

One of the key recommendations to come from this survey of practices is that the best results in improving student literacy and numeracy are those which seek to develop skills over the entire life of degree courses and which are responsive to the prior learning of preservice teachers.

It is noted that best practice in developing literacy and numeracy in the local student population is not fundamentally different from that required for improving student language proficiency in international students. For this reason this report is recommending a modified version of the Department of Education, Employment and Workplace Relations Good Practice Principles for English Language Proficiency for International Students in Australian Universities to provide the assumptions directing practice in making these improvements to student literacy and numeracy.

The development of bank of Preservice Teacher work samples, critically annotated, which illustrate the Achievement of Standard 3.2 in a range of the exemplars presented here need to be developed for moderation and investigation within and across universities to assist in benchmarking practices.
and successful learning outcomes. This project will work to achieve some illustrations of such work samples, but the development of rigorous and reliable examples will take further work and should be linked to the Louden and Blagaich project practices and outcomes too.
APPENDIX 7: Literature Review

Scope of task

Develop a "Working Document" on literature, evidence, arguments, effective practices associated with addressing the requirements of 3.1 and 3.2 of the National Accreditation on entry to Teacher Education:

- **Standard 3: Program entrants**
  3.1 All entrants to initial teacher education will successfully demonstrate their capacity to engage effectively with a rigorous higher education program and to carry out the intellectual demands of teaching itself. To achieve this, it is expected that applicants’ levels of personal literacy and numeracy should be broadly equivalent to those of the top 30 per cent of the population.
  3.2 Providers who select students who do not meet the requirements in 3.1 above must establish satisfactory additional arrangements to ensure that all students are supported to achieve the required standard before graduation.

The review should look at what the field (both nationally and internationally) currently says are the literacy and numeracy requirements of teachers and contain an executive summary of approximately one page, followed by a 3,000 word literature review and an annotated bibliography.
Literacy Literature Review

Prepared by Associate Professor Judy MacCallum, Murdoch University

Introduction

National and state Australian governments continue to express concern about the personal literacy skills of preservice and beginning teachers. The AITSL Standards and Procedures document, Accreditation of Initial Teacher Education Programs in Australia. Standard 3: Program Entrants requires that the accreditation of teacher education programs depend upon these programs meeting a number of conditions, one of which includes the expectation that applicants’ levels of personal literacy and numeracy should be broadly equivalent to those of the top 30 per cent of the population. This literature review examines the research about the use of literacy and competency tests for admitting students into teacher education courses and the profession and the evidence surrounding the effectiveness of these tools.

I

Attempts to improve the literacy skills of Australian primary and high school students have contributed to increasing attention being paid to the personal literacy of teachers and teacher candidates. It has been argued that the personal literacy of some preservice and beginning teachers is not at a standard required to best support students’ learning. The Teaching Reading report, a report of a national inquiry into the teaching of literacy, observed that many beginning teachers may not have the literacy knowledge or skills to adequately support the growth of their students’ literacy (DEST 2005). It was often raised in the review’s focus group discussions that beginning teachers did not have the high personal literacy skills of knowledge needed to be effective teachers of reading. Concern was expressed that many students needed help to develop their foundational literacy skills and explicit teaching about meta-linguistic concepts. These comments are only impressionistic reports from focus group discussions. Nevertheless, many senior teachers are not confident about the personal literacy skills of beginning teachers, and beginning teachers themselves are less confident about teaching specific aspects of literacy than they are about their own personal literacy (Louden et al. 2010).

There is some evidence that students of preservice teacher education courses today may have poorer literacy skills than past students in these courses. Leigh and Ryan (2006) report a decline in the academic aptitude of preservice teachers. They found that literacy and numeracy standards of students entering teacher education programs in Australia fell between 1983 and 2003 from an average percentile rank of 74 to an average of 61. Other studies also point to the likelihood that many teacher education students do in fact have limited knowledge of or struggle to apply functional literacy and higher order literacy tasks, the latter of which include the capacity to synthesis and analyse information (Fisher and Bruce 2008; Zipin and Brennan 2006). Not all teacher
education students can be characterised as possessing limited literacy skills. There is variability in the literacy capacities of teacher education students. In Louden et al.’s (2010) study, those individuals who entered a teaching program on the basis of a completed degree were more likely to demonstrate a better knowledge of teaching literacy than other students. The study found that students enrolled in Master of Teaching programs have a greater knowledge of literacy teaching than students in other kinds of programs, and there was “a notable difference in knowledge of literacy between those who entered the course on the basis of a completed degree, rather than through alternative entry, TAFE, on the basis of year 12 performance or an incomplete degree” (Louden et al. 2010, 53).

It has been argued that teacher education courses need to better prepare their students to teach literacy. The Teaching Reading report noted that there is minimal time spent teaching reading and literacy in many primary teacher preparation courses. Preservice teachers and their senior colleagues also feel that beginning teachers could be better prepared to teach literacy by tertiary institutions (Louden 2010). The Teaching Reading report recommended that teacher education courses should focus on ensuring that beginning teachers learn and possess the literacy skills required for the complex and demanding task of teaching by increasing the time spent on reading instruction, improving course content, and making a demonstrated command of personal literacy skills a condition of registration to teach. This latter recommendation was also made in the Top of the Class report (House of Representative Standing Committee 2007). It recommended that a literacy and numeracy diagnostics test be applied to those entering teacher education courses, and where deficiencies are identified, teacher education courses address these to ensure exiting student possess a high level of literacy. The report suggested teacher accreditation authorities develop rigorous mechanisms to ensure this is the case. Based upon their evidence that those who come to education with a completed degree have a better knowledge of teaching literacy, Louden et al. argued for the “importance of recruiting well-qualified entrants to the teaching profession” (Louden et al. 2010, 54).

II

The concerns expressed above about literacy are not exclusive to Australia. This issue and responses to it abroad mirror the reasoning that has captured the Australian discourse on this matter.

In England for over a decade preservice teachers have been expected to pass tests in the three areas of literacy, numeracy and information and communication technology before being recommended by their teacher education institution for award of Qualified Teacher Status. This requirement is to change in 2013, when admission candidates, who also must achieve a grade C or above in GCSE maths and English, will be required to pass basic skills tests prior to admission to a teacher education course. The rationale here is to improve the academic achievement of students by raising the quality of new entrants to the teaching profession (Department of Education 2010a, 2010b).
The Department of Education points to countries such as South Korea and Finland which draw their recruits to teaching from the top 5-10% of graduates from their school system. The Department also points to the positive impact on student results in schools in challenging circumstances made by individuals enrolled in their Teach First program, where high achieving graduates (as a measure of their academic achievement, literacy and numeracy and interpersonal skills) are selected for teaching careers (Ofsted 2008). To shore up this new emphasis on recruiting high achieving candidates, the Schools White Paper (Department of Education 2010a) sets out to: cease to provide Department of Education funding for initial teacher training for those graduates who do not have at least a 2:2 degree; reduce the scope for retaking the basic QTS tests to three times; strengthen the rigour of the tests to ensure they set a high enough standard; and trial the assessment of aptitude, personality and resilience as part of the candidate selection process.

The Irish government recently set out its strategy for improving Ireland’s literacy and numeracy skills level over the next decade (DES 2011). Part of this strategy focuses on initial teacher education courses. There is no suggestion that preservice teachers are under-skilled in terms of literacy. In fact the report states that Ireland is “fortunate in the high ability levels of students entering teacher education courses” (DES 2011, 32). Nevertheless, the report claims “the development of their skills in the teaching of literacy and numeracy can be improved” (DES 2011, 32). The report states as a goal the implementation of new and higher standards for entry into teacher education courses by the teacher registration body, the Teaching Council. The report suggests that entry requirements into teacher education courses should be underpinned by a “renewed emphasis” on literacy and numeracy, which may also include raising the minimum grades required in English, Irish and mathematics for primary teaching applicants. It also sets out to “re-configure the content and duration of initial teacher education (ITE) courses for primary teachers to ensure the development of teachers’ skills in literacy and numeracy teaching” (DES 2011, 34).

In Scotland, Teaching Scotland’s Future (Donaldson 2010) report of a review of teacher education in Scotland, indicated that literacy levels of teacher education candidates is a concern only for a minority of students, but concludes that this concern needs to be addressed. This report recommended that there be rigorous entry requirements into teacher education courses, which include literacy and numeracy diagnostic testing, although the report fell short of providing any detail about what is an acceptable level of performance for students to enter teacher education courses. It did recommend that students be allowed to address literacy and numeracy weaknesses during their course. This test for entry to teacher education is putatively separate from a test for measuring competence to teach at the end of students’ studies, which the report suggests should be set at a more demanding level of competence in literacy and numeracy.

In the United States, a range of tests has been purportedly employed to improve the quality of teachers and to maintain the accountability of teacher education
courses in the United States. Admission to university and teacher education courses usually depends upon a student’s Grade Point Average (GPA), SAT result, and in some states admission tests, such as Praxis I, that typically contain items that measure basic foundational skills in subject areas such as mathematics and the language arts. Moreover, in the majority of US states, the suitability for preservice teachers to teach involves certification tests near the completion of students’ studies. These typically measure basic literacy and mathematics skills, and content area, professional and pedagogical knowledge. The majority of states test for basic literacy, numeracy and communication skills.

In Australia, there is no accepted view about what English (or level of literacy) is needed for entry into teacher education courses. Across Australian states, a range of practices and requirements seek to ensure that teacher education candidates have a sufficient level of literacy needed for teaching. Moreover, requirements often vary between universities. These requirements and practices include: pre-requisites for admission based on subjects studied at school; independent testing of literacy undertaken by some tertiary institutions; Australian Tertiary Admission Rank (ATAR); Special Tertiary Admissions Test (STAT); and certification processes for those who complete a teacher education course (Queensland). Arguably because of the different curriculum and institutional histories of the states, there is no consistent view across jurisdictions of what level of literacy is, or kinds of literacies are, required of teachers and preservice teachers. For example, where candidates entering teacher education courses from high school are required to have studied and passed English units in Year 12 (in New South Wales, the ACT, Victoria, Western Australia and Queensland), the literacy demands of these high school English units vary from state to state.

III

Tests to measure students’ literacy skills either at the point of admission to teacher education courses or for certification to teach are usually used with a range of other tests. In England, for example, teachers undergo a test of numeracy and ICT in addition to the literacy tests. In the United States individuals are screened for admission to teacher education courses according to GPA and SAT results in addition to basic skills tests, and then tested for teacher certification using basics skills test, tests of content area, professional and pedagogical knowledge, which may also include performance assessment of teaching and portfolios. It is the validity, effectiveness and predictive value of these other mechanisms that appear to have generated much research attention. Research has been predominantly focused on the relationship between teacher effectiveness and such things as the characteristics of teachers, teacher education programs and admission and certification mechanisms.

When it comes to the usefulness of literacy testing, there is a dearth of research on the association between competency testing (such as literacy tests) of preservice teachers and their eventual performance in their teacher education course or teacher effectiveness (Pohan and Ward 2011). Nevertheless, there are a number of studies worth canvassing. There are studies of teacher verbal ability.
Verbal ability, conventionally a part of traditional constructs of intelligence, refers to a person’s facility at putting ideas into words, to organize words in coherent ways, to choose the right words to convey meaning. The positive association of teacher effectiveness, student success and teacher verbal ability has been argued to varying degrees in Coleman (1966), Hanushek (1971), Walsh (2001) and Ferguson (1991). This issue has more recently come to prominence in the United States because of former US Secretary of Education, Rod Paige’s, criticism of teacher education programs and that “the only measurable teacher attributes that relate directly to improved student achievement are high verbal ability and solid content knowledge” (US Department of Education 2002).

Recent reviews of the research on the relationship between verbal ability and teacher effectiveness have sought to highlight their limitations (Aloe and Becker 2009; Andrew et al. 2005). Criticism has been made of recent advocates for often using old data sets and using unsophisticated measures of verbal ability, such as vocabulary tests (Coleman 1966; Hanushek 1991). It is argued that not only do these measure only limited aspects of literacy and verbal ability, these tests are usually composites of general mental or academic ability, rather than strictly measuring verbal ability. Aloe and Becker’s (2009) rigorous review identified only 12 studies of the predictive power of verbal ability. They pointed out that the main evidence of the relationship between verbal ability and school outcomes is derived from data that is 40 years old and a data set that come from African American samples. Aloe and Becker conclude that the relationship between teachers’ verbal ability and school and student outcomes is extremely weak. High verbal ability alone, in other words, will not likely make a meaningful difference in the classroom.

Andrew et al. (2005) support the conclusion of Aloe and Becker. They argue that there is no conclusive evidence of a relationship between verbal ability and teaching ability. In conducting their research, Andrew et al. use the GRE (Graduate Record Examinations) test, which they claim is far more rigorous that other tests of literacy commonly used to assess teachers. Andrew et al. (2005) conclude that results of their own research indicate that for acceptable, good, very good and outstanding teachers there is no significant correlation between verbal scores and the expert assessment of their effectiveness as teachers. The study demonstrates that there is a wide range of verbal ability within those sample groups considered good to outstanding, and consequently there must be other criteria beyond verbal ability to consider in predicting teacher ability and performance.

Pohan and Ward (2011) also argue that there just isn’t much evidence to conclude that competency exams that test basic skills are strong predictors of candidates’ success in teacher education courses or as teachers. While their study points to reading scores at entrance explaining 30% of variance of exiting licensure exams, they suggest that there are probably better predictors of success in a teacher preparation programs than reading tests. Importantly, while Andrew et al.’s (2005) findings concur with those sceptical of what verbal ability can predict, they do suggest that low verbal scores are associated with low teacher performance and therefore verbal ability must be carefully considered.
when selecting prospective teachers. To the extent that these tests can identify individuals with low literacy levels, the basic skills tests may act as a gatekeeper to the profession by preventing those without basic skills and knowledge from becoming teachers, thereby elevating the academic ability of teachers as a profession (Lanthan et al. 1999).

These studies should not be taken to mean that verbal or literacy ability does not matter. In Australia, it is acknowledged that the literacy capacity of teachers can limit or delimit the repertoire of literacy strategies they can employ or model to teach their students (DEST 2005; QCT 2009). Teachers with high levels of personal literacy are able to support students to learn to read, write and communicate, as well as promote higher academic standards of their students (DEST 2005). The importance of prospective teachers possessing high levels of personal literacy has been argued for or noted by a range of education related organizations (AATE 1999; ACDE 1998). However, the point needs to be emphasised that there has been little systematic research on the association between the literacy of preservice teachers or qualified teachers and the effectiveness of these teachers to improve student learning.

**Tentative conclusion**

This review found that there was an increasing use of literacy tests to select students for entry into teacher education courses and the teaching profession. This trend has been occurring despite limited research being available that evaluates the validity or reliability of employing literacy testing for teacher education candidates. Based on the limited evidence available, there are no conclusive findings about the value of literacy testing for predicting the success or otherwise of individuals in teacher education programs or their effectiveness as teachers. Moreover, there is no research available that indicates the optimum level of literacy that should be expected of teacher education candidates, preservice teachers, or qualified teachers.

In relation to testing more broadly, there is much dispute about the effectiveness of using tests for regulating entry to teacher education and the profession. Concerns exist about the reliability and predictive value of certification tests (Giglio 2010), and whether these are capable of distinguishing between individuals who are minimally competent to teacher and those who are not (Committee on Assessment and Teacher Quality 2000). It has been argued that a better predictor of teacher competence than certification tests is the academic performance of students in teacher education courses (D’Agostina and Powers 2009). However, in their review of the literature, Darling-Hammond and Youngs (2002) argue that certification measures (which include competency tests) and teacher education have a positive and significant relationship to teacher expertise and student achievement.

**References**

Australian Association for the teaching of English.
ACDE REPORT AITSL: Program Standards 3.1 & 3.2


Numeracy Literature Review

Personal Numeracy Standards for Entrants to Teacher Education Courses
A Discussion of Options to meet AITSL Requirements

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Teaching is a demanding, rigorous, exciting and rewarding profession, and initial teacher education is the foundation on which quality teaching is built...Learning to teach well is intellectually demanding, it takes time, and it needs Australia’s most able and well-prepared people. (Mackay, 2011, p. 1).

Mackay’s comments fit within a body of research that has suggested that the single greatest in-school influence or factor on students’ engagement, learning, and achievement is the quality of the teacher (Hattie, 2009). From this perspective it is thus logical to argue that those individuals wishing to become teachers must be perceived by that profession, the public, and the school community to be people who are able, intelligent and worthy (Rienstra, 2010). Because teaching is such an important profession for the long term benefit of society it needs to attract and hold the “best and brightest” into the teaching profession (Lovat, 2006). This issue is not unique to Australia. The Organisation for Economic Co-operation and Development (OECD) also argued that teachers matter and attracting, developing, and retaining effective teachers was an important priority across 25 OCED countries (OECD, 2005).

There is also a broad literature base that indicates that teachers’ content knowledge is often limited (da Ponte & Chapman, 2008; Lowrie, Logan & Scriven, 2012). Nearly 35 years ago, Brown (1977) was commenting at the very first conference of the Mathematics Education Research Group of Australasia that entrants to primary teacher training had low levels of mathematics skill. One reason that he gave for this was the increasing number of women entering the profession. Such an explanation would not be accepted today. There is, however, concern about prospective and existing teachers’ knowledge and understanding of mathematics in an increasingly technological world. For example, many elementary teachers in the USA had difficulty relating and separating concepts of length, area and volume within the measurement and geometry content strand, and hence incorrectly assumed that when the perimeter of a figure increases, so too does the area of the figure (Ma, 1999). Mewborn (2001) however pointed out that measures such as the number and level of mathematics courses taken during teacher training were not related to school students’ learning outcomes. Further, studies that focussed on how teachers’ knowledge of mathematics influenced their teaching showed that the outcomes were far from straightforward. Effective teachers of primary mathematics demonstrate a deep connected understanding of the mathematical principles and concepts involved.
in the curriculum (Askew, Rhodes, Brown, Wiliam & Johnson, 1997; Ma, 1999). Such understanding goes beyond mathematical content knowledge alone.

Although this paper is focussed on issues related to standards of preservice teacher’s mathematics on entry to the initial teacher education course, it needs to be stated upfront that teachers’ content knowledge is only one of three teacher influences that impact on students’ achievement in mathematics. The other two factors are teachers’ attitudes to mathematics and their understanding of mathematics pedagogy (Darling Hammond, Holtzman, Gatlin & Vasquez Heili, 2005; Menter, Hulme, Elliott & Lewin, 2010). Effective mathematics teaching depends on the expertise of teachers; consequently their knowledge of the subject content—mathematical principles and processes—and their professional training are crucial. Good teaching is reliant not only on teachers’ mathematical subject knowledge and skills, but also on their understanding of how to teach their subject and of how students learn, both of which are essential if teachers are to reflect on and respond to the needs of their students (Hill, Schilling & Ball, 2004; Ball, Thames & Phelps, 2008). Mathematics teachers also need to engage and motivate their students and need to have high levels of self-efficacy as a teacher of mathematics (Pajares & Miller, 1994; Richardson, 1996). Teachers of mathematics therefore need to develop and apply sound knowledge and understanding of appropriate pedagogy as well as mathematics as a subject. There is a large body of research from all over the world about the nature and effectiveness of mathematics teachers, and growing evidence that mathematics content knowledge alone—being able to “do the maths”—is insufficient for effective teaching (Baumert et al, 2010; Blömeke, Suhl, Kaiser, & Döhrmann, 2012; Hill, Rowan, & Ball, 2005). It is acknowledged, however, that mathematics content knowledge is closely associated with mathematics pedagogy.

**POLICY BACKGROUND IN AUSTRALIA**

One of the most influential recent pieces of public policy in education has been the MCEETYA (2008) Melbourne Declaration on Educational Goals for Young Australians. This has been a framing document for the new Australian curriculum. One of the key goals emanating from the Melbourne Declaration was that “all young Australians become successful learners” (MCEETYA, 2008, p. 7). For students to become successful learners they will need to possess the essential skills in literacy and numeracy as a foundation for success in all learning areas. To achieve this goal all Australian governments need to be committed to working with all school sectors to attract, develop, support and retain a high-quality teaching and school leadership workforce in Australian schools (MCEETYA, 2008). This focus on high levels of teacher competency, including competency in numeracy and literacy, was also articulated in the Top of the Class (TOTC) report from the House of Representatives Standing Committee on Education and Vocational Training (SCEVT, 2007). This report made recommendations for setting directions aimed at strengthening teacher education in Australia, and argued that: “Ensuring high quality teacher education is a first and critical step in delivering high quality teaching in schools, particularly at a time when the role of teachers is becoming increasingly complex and demanding” (SCEVT, 2007, p.xxxi.).
The TOTC report made two significant recommendations. First, a national system of teacher education should be developed that included two processes: the registration of teachers and the accreditation of teacher education courses, based upon a set of professional standards for teaching. The national system would allow for diversity and innovation in teacher education courses and aimed to ensure that the quality of teaching throughout Australia is consistently high. Second, a minimum academic score for literacy and numeracy for entry into teacher education courses was recommended (SCEVT, 2007). It is this recommendation that is at the core of this review. It was also suggested by the SCEVT report that students entering teacher education courses should undergo diagnostic testing of their literacy and numeracy skills (as these are imperative to teaching) to determine whether teacher education courses were attracting the most suitable people to become teachers. This concern about selecting future teachers into the profession with competency in literacy and numeracy was articulated into the Australian Institute for Teaching and School Leadership (AITSL) professional standards along with the notion of enhancing these competencies if the student teacher had not achieved criteria benchmark in literacy and numeracy (AITSL, 2011).

A call for higher levels of literacy and numeracy skills across the Australian workforce is not unique to the teaching profession. For example, the Council of Australian Governments (COAG) noted concerns across Australia in regards to the levels of literacy and numeracy in both the university student population and the overall Australian community (COAG, 2009). A plethora of reports and calls for action in recent years have emphasised that quality teachers are needed, especially in mathematics and science in order to address Australia’s future needs for well trained people with high levels of mathematical knowledge (e.g., Brown, 2009; Human Capital Working Group, 2008; Thomas, 2000).

On entry to university, many students still have difficulties with mathematical ideas and have uneven profiles in literacy and numeracy skills. (Brown, 2009). These difficulties are the result of varied prior experiences, both in and out of school. Associated with this concern about the profiles and competency of individuals entering university programs of study, is the possible impact of the Review of Australian Higher Education (Bradley, Noonan, Nugent, & Scales, 2008). This report argued for greater participation of individuals from disadvantaged communities, especially individuals from the low SES demographic and those from non-traditional entrance pathways into universities. Such cohorts are more likely to have gaps in their education profiles associated with literacy and numeracy (Department of Education, Employment and Workplace Relations (DEEWR), 2011). There is likely to be increased pressure on universities to provide support and programs to address shortcomings in numeracy and literacy across all programs, not just teacher education.

**AITSL STANDARDS FOR NUMERACY**

In response to the SCVET report (2007), AITSL has set minimum standards in literacy and numeracy for those wishing to enter into teacher preparation courses, in clauses 3.1 and 3.2 of the National Program Standards in AITSL (2011).
Clause 3.1 states that:
All entrants to initial teacher education will successfully demonstrate their capacity to engage effectively with a rigorous higher education program and to carry out the intellectual demands of teaching itself. To achieve this, it is expected that applicants’ levels of personal literacy and numeracy should be broadly equivalent to those of the top 30 percent of the population. (AITSL, 2011, p. 13)

Clause 3.2 states that:
If students are admitted with scores below these requirements the provider (university) will need to establish satisfactory additional arrangements to ensure that all students are supported to achieve the required standard before graduation (AITSL, 2011, p. 13).

In reviewing Clauses 3.1 and 3.2 there are two definitional issues that need to be considered. One of the first questions to consider is what is “personal numeracy?” The second is to define the population.

**Personal Numeracy**

Numeracy was first defined in Australia by the Australian Association of Mathematics Teachers in 1998 and all subsequent definitions have links to this statement. This document explicitly included all aspects of mathematical knowledge including statistics, geometry and algebra and is not restricted to number, as might be inferred from the word’s stem. In the Australian Curriculum (Australian Curriculum Assessment and Reporting Authority (ACARA), 2011), numeracy is one of seven general capabilities that occur in all subject areas and for which all teachers are responsible. The curriculum document states

Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful (ACARA, 2011, p. 8).

This notion of numeracy goes beyond procedural and conceptual knowledge of mathematics and includes dispositions towards using mathematics. It should be noted, however, that elsewhere the word numeracy has different meanings. In the UK, for example, it refers to a limited set of mathematics skills based on number. The USA rarely uses the term, instead referring to quantitative literacy, and one of the more influential commentators, Steen, claims that “Every teacher is a teacher of mathematics” (Steen, 2007).

It is not simply being pedantic to attempt to identify a suitable definition of numeracy because the notion adopted impacts on the nature of any assessment of “personal numeracy”. Given that recent Australian documents have adopted a broad vision of numeracy encompassing all content areas of mathematics as well as dispositions towards applying mathematics to “real world” problems, it would seem sensible to adopt this definition. Such a definition implies that any assessment of numeracy must go beyond basic mathematics skills (as is the
situation in the UK) and is broader than a mathematics qualification, having a more applied focus.

Which population?

The second definitional issue is that of “which population”? One assumption is that it is the top 30 percent of students entering university. If this is the intended population, it is unlikely that any teacher education course will attract sufficient numbers, since the top students tend to choose high prestige courses such as medicine and law. In addition, as the Review of Australian Higher Education (Bradley, Noonan, Nugent, & Scales, 2008) recommendations are implemented, the standards of the top 30 percent are likely to change as the general pool from which this is drawn is increased.

If the population is the Australian population, then at present, by definition students entering into university already meet this criterion since only 24 percent of the Australian population goes to university (Australian Bureau of Statistics (ABS), 2011). It could be defined as the top 30 percent of students leaving Year 12, but as school leaving ages are increased, this becomes in essence identical to the Australian population because all students will stay in education until Year 12. In addition, although Clause 3.1 is widely interpreted as initial university entrance, a significant group of preservice teachers, including most potential secondary teachers, are in graduate entry courses. Given that Clause 3.1 clearly states “All entrants to initial teacher education ...” this cohort cannot be totally ignored. This group, however, is a different cohort to school leaver entrants. Nevertheless, given the place of numeracy in the Australian Curriculum, and the fact that a majority of graduate entry preservice teachers have little or no mathematics in their previous degrees, they should be included in any assessment of personal numeracy. Again, this issue of defining the target population is not simply being pedantic because it directly affects the nature of any assessment of numeracy on entry to a teacher education course.

APPROACHES TO ASSESSMENT OF PERSONAL NUMERACY

This section will include a review of possible approaches to identifying the “top 30 percent” of a given population, in relation to the previous discussion.

Tertiary Entrance Scores

One approach to the issue is to use tertiary entrance score such as the Australian Tertiary Admission Ranking (ATAR). The ATAR is a rank rather than a score which compares one student’s achievement with that of all other students. It has been adopted as the standard to use for selection to university across Australia. It is calculated from:

1. ATAR subject score in English, English Language, Literature or ESL
2. The next best three ATAR subject scores permissible; and
3. 10% of the fifth and sixth permissible ATAR subject scores that are available.

By having a cut off of 70 on the ATAR, students entering tertiary teacher preparation courses would be in the top 30 percent of Year 12 students in a particular year.
There are difficulties in relation to the use of this indicator with respect to personal numeracy. The most obvious is that no mathematics is included in the calculation of the score. This reduces its validity with respect to numeracy. In addition, this indicator may not be appropriate for graduate entry since it would be at least 3 years since it was gained. Finally, many students entering from alternative pathways would not have an ATAR, and would automatically become subject to Clause 3.2. It does have the advantage of being able to compare students coming into Australian education courses with those coming into other professions and courses across the Australian university sector. It would also provide an initial indicator of the students' ability to cope with university study. Given the lack of any mathematical requirement, however, without revision it would be difficult to accept this as a proxy for personal numeracy.

**Special Tertiary Admission Test**

Another approach could be the Special Tertiary Admission Test (STAT). This test is developed and administered by the Australian Council for Educational Research (ACER) for students who do not have a recent Year 12 certificate. Within Australia this test is administered by state tertiary admissions centres. It should be noted that Tasmania and Northern Territory do not have a local tertiary admissions centre, and Canberra falls under New South Wales. Potential candidates pay a fee to take the test, which consists of “verbal” and “quantitative” questions. The STAT is designed to assess a range of competencies considered important for success in tertiary study. The purpose of STAT is to assess your ability to understand and analyse material you will be given, and to think critically about issues. It is not a test of your knowledge of specific academic subjects. (ACER, 2011, p. 1)

The most frequently taken test is a 70-item multiple choice test that includes half verbal reasoning and half quantitative reasoning. A sample quantitative reasoning item is shown below in Figure 1 (ACER, 2011, p. 14).

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Knitting needles of different thicknesses (diameters) are used to produce materials of different types. The table gives the sizes of knitting needles and their diameters (in millimetres).

<table>
<thead>
<tr>
<th>Size</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>8.00 mm</td>
<td>7.5 mm</td>
<td>7.0 mm</td>
<td>6.5 mm</td>
<td>6.0 mm</td>
<td>5.5 mm</td>
<td>5.0 mm</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>4.0 mm</td>
<td>3.75 mm</td>
<td>3.25 mm</td>
<td>3.0 mm</td>
<td>2.75 mm</td>
<td>2.25 mm</td>
<td>2.0 mm</td>
<td>1.75 mm</td>
</tr>
</tbody>
</table>

i When the knitting needles shown in the table differ in size by one, their diameters:
A always differ by 0.5 mm.
B sometimes differ by 0.5 mm and sometimes by 0.25 mm.
C sometimes differ by 0.75 mm and sometimes by 0.5 mm.
D sometimes differ by 0.75 mm and sometimes by 0.25 mm.

ii Which of the following best represents the relationship between the diameter and the size of knitting needles for sizes 0 to 8?
Figure 1. Sample STAT test question for quantitative reasoning.

STAT scores are scaled scores with a mean of 150. There is no pass mark and scores are consistent from year to year. In other words a score of 175 in 2011 has the same meaning as a score of 175 in 2012. Percentile ranks are provided for each year, so that a student with a score of 160 has a percentile rank of 72.5 meaning that he/she has received a score higher than 72.5 percent of the test takers in that year (ACER, 2011, p. 8).

The test might be appropriate for selection to teacher preparation courses in terms of the nature of the quantitative reasoning questions, which are closer to numeracy than abstract mathematics. It could also provide an option for potential students entering through non-traditional pathways. It has the drawback that the population is defined as the group of test takers in a particular year, which could vary from year to year and is an unknown quantity. There are also issues around the cost of the test and who should bear this, as well as administration in the smaller states and territories.

**NAPLAN**

The National Assessment Program – Literacy and Numeracy (NAPLAN) has been suggested as another possibility for selecting potential teacher education students. This is a well known test that is taken at Years 3, 5, 7, and 9 by all school students across Australia. The Year 9 test would appear to be the most suitable. A sample item is shown in Figure 2.

![Figure 2. NAPLAN item from Year 9, 2008.](image)
NAPLAN has fidelity to the Australian Curriculum and is a well constructed test that is psychometrically sound for its purpose of evaluating state and territory education systems. It is reported in bands and a benchmark score could probably be developed that works in a similar way to the STAT score. It could not reasonably be used with its current reporting format for identifying individuals in the top 30 percent. Although it might be possible for individuals to obtain their NAPLAN results some years after the event in order to apply for a teacher education course, it would not be straightforward and would require administrative infrastructure that is not currently in place. An alternative could be to arrange a “special” NAPLAN for potential preservice teachers but the complexity of this task would seem to be not cost beneficial. There is again the issue of who pays the costs.

Progressive Achievement Tests in Mathematics

The Progressive Achievement Tests in Mathematics (PAT-Maths) is published by ACER. It has a number of levels ad can be used up to Year 10 or Year 11, depending on the state. PAT-maths is “designed to provide objective, norm-referenced information to teachers about the level of achievement attained by their students in the skills and understandings of mathematics” (ACER, 2012). It can provide information against Australian norms up to Year 10/11 as percentiles or stanines and it has an online version. The test has predictive validity in that it shows a high association with Year 10 Advanced mathematics with a correlation of 0.667 but a somewhat lower correlation with Year 10 Ordinary Mathematics at 0.430 when used with a cohort of boys (Fogarty, 2007).

Given this, the Australian PAT-Maths tests could provide a basic estimation of preservice teachers’ numeracy knowledge and, because of the norming data, information on the students’ rating on the test could also be obtained. The downside is that the norm group is only at Year 10 or Year 11 at best, and preservice teachers may enter at any age after Year 12. There is also the issue of costs associated with the administration, and where these costs should be located.

International comparisons

The tests discussed in the previous section all potentially identified the top 30 percent of a school aged population, or applicants to university. There are several international tests that could also provide information against an Australian cohort, benchmarked to world standards. Mathematics proficiency is probably the most widely assessed competency at both national and international levels (Thompson et al., 2009). Several studies, including the Third International Mathematics and Science Study (TIMMS) and the Program for International Student Assessment (PISA), have been conducted to gain comparative international data on mathematics competence. Some of these tests are discussed in this section.

Trends in International Mathematics and Science Study (TIMMS)
TIMSS is administered in Australia by ACER and provides measures of mathematics ability in Year 4 and Year 8. It is designed to inform educational policy and is conducted every 4 years with a sample of students in the appropriate grade. The test addresses mathematics curriculum rather than personal numeracy but does provide some interesting insights into performance in common mathematical domains that could inform curriculum development. It is doubtful whether a TIMSS test could be used in its entirety to assess potential teacher education candidates because of its nature and the ownership of the test itself.

Program of International Student Assessment (PISA)

PISA addresses Mathematics Literacy, which is closer to numeracy than the TIMSS construct, as well as science literacy and reading literacy. It is administered to 15-year-olds and is overseen by the OECD. PISA assessments occur in a 3-year cycle with a different focus each time on a rotating basis, although all three focus areas are reported each time. PISA, like TIMSS, is designed for policy-makers to provide a measure of educational outcomes at the end of schooling (see www.pisa.oecd.org.)

Internationally, Australian PISA scores are very sound (Thompson, De Bortoli, Nicholas, Hillman & Buckley, 2010) with mean score in mathematics literacy significantly above the OECD average. Australia was ranked 9th in reading literacy and 15th in numeracy out of 65 countries who took part in the 2009 PISA testing. Of concern, however, is that over the period from 2000 to 2009, there was a statistically significant drop in Australia’s achievement in mathematics literacy. These findings are summarised in Table 1.

Table 1. Australia’s Rankings and Mean Scores on PISA Tests from 2000-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>PISA ranking-reading</th>
<th>Mean score-reading</th>
<th>PISA ranking-maths literacy</th>
<th>Mean score-maths literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>4th</td>
<td>528</td>
<td>5th</td>
<td>533</td>
</tr>
<tr>
<td>2003</td>
<td>4th</td>
<td>525</td>
<td>8th</td>
<td>524</td>
</tr>
<tr>
<td>2006</td>
<td>7th</td>
<td>513</td>
<td>13th</td>
<td>520</td>
</tr>
<tr>
<td>2009</td>
<td>9th</td>
<td>515</td>
<td>15th</td>
<td>514</td>
</tr>
</tbody>
</table>

Although the nature of the PISA items is appealing as being closer to numeracy than some other approaches, as with TIMSS it is not a feasible option for the purposes of identifying potential preservice teachers for similar reasons to TIMSS.

Adult Literacy and Life Skills Survey (ALLSS)
The ALLSS study is undertaken at 10-yearly intervals. It is administered by the Australian Bureau of Statistics in Australia and considers adult literacy and numeracy in several domains:

- **Prose literacy** – the knowledge and skills needed to understand and use information from texts including editorials, news stories, brochures and instruction manuals.
- **Document literacy** – the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.
- **Numeracy** – the knowledge and skills required to effectively manage the mathematical demands of diverse situations.
- **Problem solving** – Problem solving involves goal-directed thinking and action in situations for which no routine solution procedure is available. The problem solver has a more or less well defined goal, but does not immediately know how to reach it. The incongruence of goals and admissible operators constitutes a problem. The understanding of the problem situation and its step-by-step transformation based on planning and reasoning, constitute the process of problem solving. (OECD, Statistics Canada, 2011, p. 14)

As defined in the framework paper for the ALLSS study, numeracy is very close to the Australian conception. A difficult numeracy item is shown in Figure 3. Respondents could take any approach to solving this problem and could make use of the “handy hint” if they wished.
Is it possible to double your money in 7 years?
Provide reasoning to support your argument.

Figure 3. Sample item from ALLSS Numeracy section (ABS, 2006, p. 38)

Of interest is the fact that a level of functional literacy and numeracy was deemed to be Level 3 on the ALLSS scale. This was achieved by only 47 percent of Australian adults aged 15-74 years in 2006 (OECD Statistics Canada, 2011). Work on this test is being undertaken by The National Centre for Vocational Education Research, together with Victoria University and Educational Measurement Solutions to link this survey with the Australian Core Skills Framework (ACSF) (Commonwealth of Australia, 2004) in order to map levels of performance in a comparable way.

The Australian Core Skills Framework

The Australian Core Skills Framework itself may hold promise in providing an assessment of numeracy skills for entrants to teacher education programs, particularly if levels can be mapped to an outside standard such as ALLSS. The ACSF is intended as a workplace tool and is being used to measure adult literacy and numeracy in a number of contexts. Rather than a test, this framework requires evidence to be provided that meets the identified standards using a range of indicators and examples as a basis. Level 4 of the ACSF appears to be about an appropriate standard for primary into middle years teachers. Some examples of the indicators suggested for aspects of numeracy in the ACSF at Level 4 are shown in Table 2, and the full document is included at Appendix A.

Examples of numeracy statements included in the ASCF (Commonwealth of Australia, 2004, p. 130/131)

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Performance Features Include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical knowledge and skills: number and algebra</td>
<td>Uses and applies relevant ratio, rates and proportions, e.g. scales on maps and plans, in the mixing of chemicals or ingredients, or calculating magnification factors</td>
</tr>
<tr>
<td></td>
<td>Calculates with fractions, decimals and percentages and flexibly uses equivalent forms; calculates with relevant positive and negative numbers; and uses numbers expressed as roots and powers, e.g. 2³ = 8, √4 = 2 or 3.6 x 10³ = 3,600</td>
</tr>
<tr>
<td></td>
<td>Develops, interprets and uses routine formulae and algebraic representations and conventions that describe relationships between variables in relevant contexts, e.g. in sport, when considering the cost of repairs, in calculating routine area and volume, using Pythagoras’s theorem or in using workplace formulae</td>
</tr>
<tr>
<td>Complexity of mathematical symbolism, representation and conventions</td>
<td>Uses a combination of informal but mostly formal mathematical symbolism, diagrams, graphs, algebraic representation and conventions relevant to the mathematical knowledge of the level, e.g.</td>
</tr>
<tr>
<td></td>
<td>• A = 2πr; √2, -5°C</td>
</tr>
<tr>
<td></td>
<td>• 2:3=4:?</td>
</tr>
<tr>
<td></td>
<td>• 23, 3.6 x 10³</td>
</tr>
</tbody>
</table>
Evidence could take a portfolio approach and might include skills tests, observed behaviour in the workplace, student prepared artefacts and so on. This approach would have the advantage of making the individual responsible for developing personal numeracy and could also be used to demonstrate Clause 3.2 achievement. Using the ACSF would not have the problems associated with tests but would require a change in mind set with tertiary institutions and government agencies. Authenticity and consistency is a major issue but there is experience within the vocational education sector in addressing these kinds of concerns.

**International Approaches to Tertiary Entrance and Teacher Education Programs**

The international trend is for teacher education to be a postgraduate award in alignment with the Bologna Process, where European countries are working to synchronise their higher education systems and offer two year Master of Teaching awards after a foundation undergraduate degree (Westerheijden, 2008). This approach, however, does not negate the issue of potential teachers’ mathematical knowledge because many, arguably most, do not take any mathematics as part of their undergraduate degree.

In the United States, the National Council for Accreditation of Teacher Education is focussed more on graduate standards, with entrance to university programs of study is typically via the ACT (American College Testing) or SAT (Scholastic Aptitude Test), which is part of the national university and college entrance exam system. The Mathematics section of the SAT is widely known as the Quantitative Section or Calculation Section. This section investigates: number and operations; algebra and functions; geometry; statistics, probability, and data analysis. The mathematics section consists of three scored sections. There are two 25-minute sections and one 20-minute section, consisting of:

- A 25-minute section of 20 multiple choice questions.
- A 25-minute section containing 8 multiple choice questions and 10 grid-in questions which require candidates to colour in bubbles to indicate the value of numbers; and
- A 20-minute section with 16 multiple choice questions.

A test of this form can be relatively cheaply scored automatically either using an online mechanism or optical scanning, but also assess a relatively narrow range of skills and knowledge. It is much more difficult to construct a test that addresses the idea of personal numeracy as understood in Australia using an approach of this kind.

In the United Kingdom (UK), A-level examination is the main entrance point for university education. In terms of preservice teacher accreditation into the profession in the UK, teachers who have completed their course in teacher preparation still have to complete compulsory standardised tests in literacy and numeracy (Gove, 2011). The conception of numeracy is much narrower than the Australian definition.

This section has reviewed issues around meeting the benchmark requirements on entry to a teacher education course, and some approaches to an appropriate
The following section considers Clause 3.2, attainment of the standard set in Clause 3.1 by the end of a teacher preparation course.

**APPROACHES TO IMPROVING STANDARDS OF PERSONAL NUMERACY**

Clause 3.2 states:

> If students are admitted with scores below these requirements the provider (university) will need to “establish satisfactory additional arrangements to ensure that all students are supported to achieve the required standard before graduation” (AITSL, 2011, p. 13).

There are two issues associated with Clause 3.2: the first is similar to Clause 3.1, identifying students who meet the requirement to be in the top 30% of some population, as yet undefined. The second issue is demonstrating the processes and practices for students to demonstrate adequate personal numeracy by graduation.

Around the nation, as universities revise their preservice teacher provision, there is a general increase in the number of mathematics units (subjects, courses, or topics) that is included in order to meet AITSL accreditation requirements. Additionally, many universities are including at least one unit (subject, course, or topic) that has a focus on personal numeracy. At the University of Tasmania, for example, all students entering a preservice teacher education course undertake a unit called Personal and Professional Numeracy (Watson, 2011).

It could be argued that this would meet the requirement for providers to “establish satisfactory additional arrangements to ensure that all students are supported to achieve the required standard before graduation”, since the clause as written does not require further demonstration of the standard, but simply asks for providers to ensure that students are provided with opportunities and support to meet the standard. Nevertheless, if a satisfactory assessment of Clause 3.1 is established, it would be appropriate to monitor the progress of students who enter under Clause 3.2 in the same way.

Several universities already operate internal tests or assessments of preservice teachers’ mathematical competency early in the first semester of training. In some places this test is linked to a unit (subject, course or topic) of study and students cannot pass that unit until they meet a specified standard in the test. The content is idiosyncratic but typically includes questions addressing number skills with an emphasis on place value, decimals, fractions, proportional reasoning and some limited statistics, probability, measurement, and geometry. An account of one of these tests and the findings from the evaluation is provided here.

**Test of Numeracy Competency at the University of Tasmania**

A Test of Numeracy Competency was designed for preservice teachers in their first year of study at the university of Tasmania in 2010. The test consisted of 40 multiple choice questions, and covered mathematics content from all areas of the Australian mathematics curriculum. The breakdown of mathematics content areas was:

- Number and Algebra, 18 items;
• Measurement and Geometry, 12 items;
• Statistics and Probability, 10 items.

The test was delivered online using Qualtrics (www.qualtrics.com) software to all students entering a BEd or MTeach course in 2010, including potential secondary teachers who were studying to teach all subjects, not just mathematics. Students had one hour to complete the questions, automatically timed by Qualtrics. The ratio of 40 questions in 60 minutes (approximately 1½ minutes per question) is a standard used in most multiple choice tests. The conditions were un-standardised, and students were able to log on to Qualtrics at any time that suited them within a defined “window” of opportunity. The test was scored automatically and results were available to the lecturer as soon as the last test was completed. No detailed feedback to students was provided although they did receive an email giving them an indication of whether they had met the required standard (80% correct) or which score band they fell into (less than 50%, 50 – 59%, 60 – 69%, 70-79%). The test also comprised 10 percent of the assessment for the Personal and Professional Numeracy unit.

Of the students coming in to the MTeach program, 84.5 percent achieved mastery standard, and 55.0 percent of the BEd students achieved the required 80 percent. If the standard is considered equivalent to meeting the standard for Clause 3.1 (and this would depend on how that was defined), the results indicate that about 15 percent of graduate entry students, and 45 percent of first degree students did not meet the necessary standard for Clause 3.1. Just because a student has completed an undergraduate degree, even in say Science or Economics, it cannot be assumed that that student has competency across the new Australian mathematics curriculum. The finding that a significant percentage of the students entering a teacher education program have gaps in their mathematical knowledge is not that unexpected. An analysis of the items suggested basic computation was generally sound, but questions related to estimation, ratio, geometry and statistics and probability were less well handled.

The test was embedded in the first year mathematics unit taken by all students. This fact provided an opportunity to consider the relationships among the assessment tasks for the unit: the test itself, Assignment 1 which involved teaching some basic mathematics to another person, and Assignment 2, which addressed an analysis of numeracy in the media. Correlations were computed between the three tasks in mathematics. The correlation matrix is shown in Table 2, and indicates that all correlations were statistically significant, that is better than chance alone, but that the test score correlated much less highly with the two written assessments. This finding indicates that the three tasks were tapping the same domain but that students responded differently to the range of tasks, suggesting that the three assessments provided associated but varied information about students’ numeracy. These results indicate that something different from a broad understanding of personal numeracy appeared to influence the preservice teachers’ success in this unit of study; that is, a strong basic numeracy competence may facilitate success with mathematics but it is not sufficient in itself to achieve success.

Table 3.
Correlation matrix for three tasks

<table>
<thead>
<tr>
<th></th>
<th>Ass 1 mark</th>
<th>Ass 2 mark</th>
<th>Test score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ass 1 mark</td>
<td>1</td>
<td>.436**</td>
<td>.228**</td>
</tr>
<tr>
<td>Ass 2 mark</td>
<td>.436**</td>
<td>1</td>
<td>.235**</td>
</tr>
<tr>
<td>Test score</td>
<td>.228**</td>
<td>.235**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: ** indicates significance at the .01 level (two tailed)

It is worth noting the history of the test since 2010. After the first administration, the test was decoupled from the unit in response to the lecturer’s concerns about administration. It has become a stand-alone test, supported by an administrative assistant. It no longer has “teeth” because it does not contribute to a unit assessment, although successful students do receive a certificate. The number of students attempting the test has fallen, and enrolment in the follow up elective unit designed for those who had done poorly dropped from 120 in 2011 to 35 in 2012. No one “owns” the test, and there is serious consideration being given to re-embedding it in the first year mathematics unit, *Personal and Professional Numeracy*. This history suggests that preservice teachers will not undertake monitoring or improvement of their personal numeracy unless there is some incentive. Such an incentive will need to be external to the university, such as not entering the teaching profession unless personal numeracy competence is shown, or internal, such as not graduating without a demonstration of personal numeracy competence.

Outcomes from the ALTC project, “Building a Culture of Evidence-based Practice in Teacher Preparation for Mathematics Teaching”

A current ALTC project led by the University of Tasmania is focussed on improvement of mathematics education for preservice teachers. It involves six other universities from every state and territory except ACT. As part of a data-driven approach, online instruments have been developed to address preservice teachers’ mathematical competency across three domains: beliefs about mathematics and its teaching (BLF); mathematics content knowledge (MCK); and mathematics pedagogical content knowledge (PCK) (Beswick & Callingham, 2011; Callingham & Beswick, 2011).

Table 4.
Examples of items used in the ALTC project test

<table>
<thead>
<tr>
<th>Item category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs</td>
<td>Mathematics is a beautiful and creative human endeavour</td>
</tr>
<tr>
<td>Beliefs</td>
<td>Students learn by practicing methods and procedures for performing</td>
</tr>
<tr>
<td></td>
<td>mathematical tasks</td>
</tr>
<tr>
<td>Content knowledge</td>
<td>Which one of the following contains a set of three fractions that are</td>
</tr>
<tr>
<td></td>
<td>evenly spaced on a number line?</td>
</tr>
<tr>
<td></td>
<td>A) (\frac{3}{6}, \frac{3}{5}, \frac{3}{4})</td>
</tr>
<tr>
<td></td>
<td>B) (\frac{3}{4}, \frac{19}{24}, \frac{5}{6})</td>
</tr>
<tr>
<td></td>
<td>C) (\frac{3}{4}, \frac{19}{24}, \frac{7}{8})</td>
</tr>
<tr>
<td></td>
<td>D) (\frac{4}{5}, \frac{7}{6}, \frac{7}{8})</td>
</tr>
</tbody>
</table>
A Year 5 teacher asked her pupils to determine the value of the following calculation on their calculators:

\[ 2 + 3 \times 4 = \]

The class was surprised to find that some student calculators gave a result of 14, while others gave a result of 20. Which of the following best matches your likely response to this situation?

A. Use the difference as a motivation to teach the students how to use the correct order of operations, highlighting an acronym such as BODMAS.

B. Show the students how to use parentheses or brackets when entering expressions into their calculators.

C. Check school booklists and supplies to make sure that only one kind of calculator was available to students in the class.

D. Ask the pupils to explain the different results, and use their explanations to discuss the order of operations as an arbitrary convention.

Although intended initially to target final year preservice teachers, several universities used the instrument with all students, which has allowed some consideration of the ways in which preservice teachers’ mathematical competence changes across the years of their degree. One potentially important finding is related to the change in MCK. Figure 4 presents the performance, measured in logits which is the unit obtained from the analysis, by 217 primary preservice students at different stages in their teacher education course. Notably, the MCK, that is the knowledge of mathematics concepts and processes, rises considerably in the early years of the degree and then remains relatively steady. In contrast the BLF scale did not change much across the years and the PCK scale improved considerably but then dropped at the end of the teacher education course. The drop in PCK could be attributed to two possible factors: first, there were a number of students undertaking a one-year diploma of education course included in the data set. Second, the final year of a four-year teacher education course is often marked by a significant amount of practicum which may impact on the preservice teachers’ understanding of mathematics pedagogy. Without knowing when the students went on practicum, and also sorting them into longer and shorter course participation this finding cannot be unravelled further at this time. The findings do, however, have some implications for teacher education courses. Teachers need opportunities to learn both the mathematics and mathematics pedagogy. Indeed opportunity to learn has been shown to be an important factor in preservice teachers’ knowledge of mathematics and mathematical pedagogy (Blömeke, Suhl, Kaiser, & Döhrmann, 2012). Knowledge of mathematics is a necessary but not sufficient condition for effective teaching of mathematics (Hill, Rowan, & Ball, 2005) and teacher education courses need to provide opportunities to develop both MCK and PCK. In turn, this finding impacts on potential choices of what to teach and to measure to meet the requirements of Clause 3.2.
Figure 4. Changes in scores on different sub-scales of primary preservice teacher mathematics knowledge for teaching.

FINAL DISCUSSION

Menter, Hulme, Elliott, and Lewin, (2010) maintained that the research on the impact of testing as a means of regulating entry to the profession is inconclusive. Although focussing on end of teacher education programs, some of these findings have implications for the topic under investigation in this report. As noted by Gove (2010), prospective teachers in England are required to pass computer-based skills tests in literacy, numeracy and ICT. The USA Committee on Assessment and Teacher Quality, (2000) reported 41 US states require prospective teachers to pass licensure tests. There is considerable variation in what is tested (basic skills, pedagogical knowledge, content knowledge), how it is tested (multiple choice, open-ended questions, portfolios or performance based measures), and the required minimum performance (Committee on Assessment and Teacher Quality, 2000). A review of research evidence on the effectiveness of teacher testing policies by D’Agostino and Powers (2009) suggested that there is little evidence available about the extent to which tests distinguish between candidates who are minimally competent to teach and those who are not.

In a review of UK and US research literature on widening access to initial teacher education, Moran (2008) noted that many dimensions of teacher effectiveness, especially those associated with successful practice in high needs schools, are not reliably indicated by tests of academic ability. Similarly, there is literature that argues that in terms of teacher preparation, USA teacher entrance tests (Berliner, 2005; Nichols & Berliner, 2010) and Grade Point Average (D’Agostino & Powers, 2009) have limited value in predicting who is going to be an effective teacher which has more to do with the person’s ability to relate to others, deal
with multiple issues simultaneously, problem solve and adapt ones’ content knowledge to the learning needs of the students.

**Equity issues**

As Moran (2008) has also stated, where testing systems have operated in the USA they have been challenged on equity grounds. On this point, Menter et al. (2010) argued that records of US licensure tests show lower success rates for black and Hispanic candidates, impeding policies to widen access to the profession.

This is also an issue for Australia, especially in light of the MASITI (More Aboriginal and Torres Strait Islander Initiative) to encourage indigenous Australians to enter teacher education (see http://matsiti.edu.au/). Many, if not most, Aboriginal or Torres Strait Islander preservice teacher entrants come in through alternative pathways. Similar considerations would apply to refugees and other groups who speak English as a second language. This group would then have to meet requirements under Clause 3.2, potentially creating a division on racial or class grounds. The challenge for universities would be to ensure that groups of students coming in from different ethnic and class backgrounds are not inadvertently discriminated against by virtue of having greater numeracy deficits because of the social environment from which they come. There is a policy tension around this issue that is beyond the scope of this paper.

**Summary**

In terms of Clause 3.1 (AITSL, 2011), it is necessary to clarify the population that is the target and the nature of personal numeracy. Clause 3.2 requires clarification of what knowledge is to be developed and how this is to be monitored. ATAR scores have no validity in terms of numeracy since mathematics is not a core expectation. Simply devising or purchasing a test of mathematics knowledge is unlikely either to meet the demands of Clause 3.1 in a cost-effective way, nor to provide a suitable instrument to measure outcomes in order to meet Clause 3.2. That is not to say that attempts should not be made to use assessment as a process to improve teacher quality. The issue is what assessment, how this should be applied and when it should be undertaken. Associated with these issues are questions about where the locus of responsibility lies: with the preservice teacher, with universities, with AITSL or some other agency. These considerations affect the development of policies and processes within universities responsible for teacher education, as well as systems and government agencies. It is beyond the brief of this paper to canvass all the potential issues.

**Some possible ways forward**

*Use of the ASCF*

The ASCF (see Appendix A) provides a detailed framework for numeracy (and literacy) that has potential application for both Clause 3.1 and Clause 3.2. If the ASCF is successfully linked to the ALLSS framework it provides a means of defining and identifying the top 30 percent of the Australian adult population.
Alternatively, demonstrated achievement of Level 4 numeracy could be deemed an appropriate standard for teacher education entrants, or to be achieved by the end of the course in a criterion-referenced approach.

The key issue would be around the nature of acceptable evidence, and consistency of judgement. The experience of the VET sector and adult educators could be called upon to advise on the best ways to approach assessment and the collection of evidence. Moderation could be provided by a sub-group of the ACDE or by calling on the specific expertise of teacher educators and teachers through organisations such as Mathematics Education Research Group of Australasia and the Australian Association of Mathematics Teachers.

To go down this path would require a considerable shift in the ways in which universities recognise prior learning. Under the Australian Qualifications Framework, however, some of these shifts are already being made. The advantage of using the ASCF are that it already exists and is being used; it would not discriminate against particular groups because workplace learning could be appropriately acknowledged; it could be used with both graduate and initial entry candidates; and provides a basis for demonstrating achievement by the end of the course. From an educational perspective, the preservice teacher would own the evidence and be in control of developing processes to develop competence, which places the responsibility for the learning on the learner. Universities would be required to provide access to resources and courses which preservice teachers could take as part of carrying out their responsibility. Costs would be much lower than those associated with a test or providing access to previous records, and would be mainly associated with validating and moderating evidence of achievement. Additionally, from an AITSL perspective, the same mechanism could be used for people entering the teaching profession from other countries to demonstrate their numeracy competence.

**A “Points” System**

A second approach could be to adapt the system currently used by banks and other agencies to accept identification documents. Each document is associated with a given number of points and altogether 100 points of identification are needed. Adopting an approach like this would allow a range of evidence to be used. For example, a recent (say within 5 years) pre-tertiary mathematics subject would count more than a mathematics subject at Year 10, but the latter could still be part of the points accumulation. Discussions would be needed around categories of evidence, such as school-based versus non-school-based, recency, accepted standards (an “A” counting more than a “C”), and so on. These could occur through a committee reporting to AITSL or the ACDE, and once the accepted “points score” was established it could be published and revised periodically as needed.

This system has the advantage of being easily understood and similar to existing processes. Entrants to teacher education courses could present their points as part of the application process, and those not meeting a pre-determined
standard would be accepted under Clause 3.2. Alternatively, local teacher registration bodies, operating under AITSL auspices could undertake the validation when they issue provisional registration for practicum purposes.

This approach would also be relatively cheap to operate, and could be “bolted on” to existing procedures. The major costs would be involved in setting up the schedule of acceptable evidence and the points associated with each type.

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Callingham R. (2010). Evaluation report on the implementation of the *Test of Numeracy Competency for Preservice Teachers*. Faculty of Education, University of Tasmania.


APPENDIX 8: Other Standards informing the Framework

The current project is in response to the *Accreditation of Initial Teacher Education Programs in Australia, Standards and Procedures*, in particular Standards 3.1 and 3.2. These accreditation standards fit within the following broad best practice frameworks which regulate both tertiary education generally and teacher education more specifically.

At the most fundamental level, all teacher education courses must meet the requirements of the *Australian Qualifications Framework* (AQF). The AQF provides 'learning outcomes for each level and qualification type' offered by all Australian education providers. Of particular relevance to the current project is that the holder of a Bachelor Degree will have “communication skills to present a clear, coherent and independent exposition of knowledge and ideas”. This standard is above that required for completion of Year Twelve and it is also obviously the case that Communication is directly related to literacy. On this basis it is clear that the holder of a Bachelor Degree can be considered to have met the minimum requirements of Standards 3.1 and 3.2 on entry. However, as is repeatedly made clear in this report, such a linear improvement in literacy skills implied in the definition of the AQF for the holder of a bachelor degree is in no way guaranteed in relation to their numeracy skills if they hold a degree other than one specializing in mathematics or science.

Related to the AQF is the Tertiary Education Quality and Standards Agency’s (TEQSA) *Higher Education Threshold Standards* – a combination of provider standards and teaching and learning standards that ensure that both students in particular degree courses meet certain minimum standards and that likewise the tertiary institutions they attend provide their students with courses of a quality that will meet TEQSA’s registration requirements. Higher Education Providers are expected to report to TEQSA so as to confirm they meet these threshold standards.

Teacher Education is further informed by the *ALTC Threshold Learning Outcomes for the Discipline of Education* which provide standards with regard to knowledge and capability in the discipline to inform quality bachelor and master degrees in education.

The Australian Institute for Teaching and School Leadership (AITSL) is currently working with local accreditation bodies to ensure a nationally consistent approach to Teacher registration, of which the accreditation standards form a major part of this work. AITSL is also the responsible body for *National Professional Standards for Teachers* and is currently developing a *Performance and Development Framework* to enable teacher progression through four career phases: graduate, proficient, highly accomplished and lead.
All of these frameworks and standards interrelate to ensure teacher education in Australia is able to demonstrate compliance within these regulatory frameworks.

**English language standards for Higher Education (DEEWR, 2012)**

1. The provider ensures that its students are sufficiently proficient in English to participate effectively in their higher education studies on entry.

2. The provider ensures that prospective and current students are informed about their responsibilities for further developing their English language proficiency during their higher education studies.

3. The provider ensures that resourcing for English language development meets students’ needs throughout their studies.

4. The provider actively develops students’ English language proficiency during their studies.

5. The provider ensures that students are appropriately proficient in English when they graduate.

6. The provider uses evidence from a variety of sources to monitor and improve its support for the development of students’ English language proficiency.
APPENDIX 9: Other References


DEEWR 2008. Good Practice Principles for English Language Proficiency for International Students in Australia Universities.


