AgLTAS: A consensus approach to defining standards for learning outcomes and informing curricula design for agriculture

Final report 2015

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Acknowledgements

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Reference group

The implementation of the project was supported by the following members of the reference group.

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<table>
<thead>
<tr>
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<th>Description</th>
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<tr>
<td>ABARES</td>
<td>Australian Bureau of Agricultural and Resource Economics and Sciences</td>
</tr>
<tr>
<td>ACARA</td>
<td>Australian Curriculum, Assessment and Reporting Authority</td>
</tr>
<tr>
<td>ACDA</td>
<td>Australian Council of Deans of Agriculture</td>
</tr>
<tr>
<td>AgLTAS Statement</td>
<td>Learning and Teaching Academic Standards Statement for Agriculture</td>
</tr>
<tr>
<td>AQF</td>
<td>Australian Qualifications Framework</td>
</tr>
<tr>
<td>AQFC</td>
<td>Australian Qualifications Framework Council</td>
</tr>
<tr>
<td>CMT</td>
<td>Curriculum Mapping Tool</td>
</tr>
<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
</tr>
<tr>
<td>GRDC</td>
<td>Grains Research and Development Corporation</td>
</tr>
<tr>
<td>MLA</td>
<td>Meat and Livestock Australia</td>
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<td>Higher Education Standards Panel</td>
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<td>HREC</td>
<td>Human Research Ethics Committee</td>
</tr>
<tr>
<td>LTAS</td>
<td>Learning and Teaching Academic Standards</td>
</tr>
<tr>
<td>OLT</td>
<td>Office for Learning and Teaching</td>
</tr>
<tr>
<td>PICSE</td>
<td>The Primary Industry Centre for Science Education</td>
</tr>
<tr>
<td>QAA</td>
<td>Quality Assurance Agency for Higher Education, UK</td>
</tr>
<tr>
<td>RDC</td>
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</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td>TEQSA</td>
<td>Tertiary Education Quality and Standards Agency</td>
</tr>
<tr>
<td>TLOs</td>
<td>Threshold Learning Outcomes</td>
</tr>
<tr>
<td>VET</td>
<td>Vocational Education and Training</td>
</tr>
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</table>
Executive summary

Higher education providers aim to design and deliver programs that meet agreed standards, attract high numbers of students and produce skilled graduates.

The national Learning and Teaching Academic Standards Statement for Agriculture (AgLTAS Statement) was developed through an extensive consultation process involving academics, students and industry across Australia. It will facilitate the implementation of academic standards by the agriculture discipline community, inform curriculum design and assist in the identification of marketing opportunities.

The Statement includes five key Threshold Learning Outcomes (TLOs) for bachelor degrees in agriculture:

- Knowledge
- Understanding
- Inquiry and problem solving
- Communication
- Personal and professional responsibility

The agriculture TLOs describe what a pass-level graduate in agriculture or a related discipline will know, understand and be able to do upon graduation.

Higher education providers are encouraged to build on these TLOs as they design and deliver programs that reflect their particular strengths and priorities. They may do this by adding additional TLOs, or by requiring the five key learning outcomes to be met at a higher standard in their own organisation.

The AgLTAS Statement can be implemented to preserve each provider’s autonomy, diversity and reputation, whilst ensuring that future students can have confidence that their degree meets minimum, nationally agreed, standards.

Building on knowledge

The academic standards for agriculture closely reference the Learning and Teaching Academic Standards defined for the Science discipline.

In 2012, a pilot project undertaken by the University of Tasmania in collaboration with Charles Sturt University and The University of Adelaide demonstrated that the TLOs for science could be adapted successfully to the study of agricultural science.

The University of Tasmania, in collaboration with partners from Charles Sturt University, The University of Adelaide and the University of Western Sydney, subsequently secured funding from the Australian Government’s Office for Learning and Teaching (2013–2015) to develop a National Academic Standards Statement for Agriculture that was aligned with the Science Standards Statement.
Project outcomes

- A network of practice between universities and industry through shared engagement in the development of the AgLTAS Statement.
- A nationally agreed AgLTAS Statement (including the nature and extent of agriculture, agriculture TLOs, and associated notes to guide interpretation of the TLOs). National consensus was achieved through consultation with academics, students and industry stakeholders.
- A holistic appreciation amongst academics and industry of the agriculture curriculum taught at universities. This provides opportunities to improve: linkages between units; learning pathways through the degree levels; and provision of graduate training by industry.
- An established strong foundation providing students with confidence that their degree meets minimum standards, while allowing each university the freedom to clearly promote the unique aspects of their degree offering as delivered.

Endorsement

The Australian Council of Deans of Agriculture (ACDA) commended the project team on the consultative process used to develop the Learning and Teaching Academic Standards for Agriculture. The Council endorsed the standards as a high-level statement of bachelor-level Threshold Learning Outcomes for the discipline.

Future steps

The TLOs for agriculture will be trialled to benchmark the academic standards achieved in four universities teaching agriculture and related disciplines. An online curriculum-mapping tool has been developed for this purpose and produces a report that allows users to see where minimum TLOs are reached or are not achieved.

The results of curriculum mapping will be distributed as case studies that will form the basis for the development of future Good Practice Guides.
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Section 1   Why was the AgLTAS project needed?

Context

In 2011, the Australian government introduced the Tertiary Education Quality and Standards Agency (TEQSA) Act. It mandated that the delivery of courses by higher education institutions for Australian higher education awards be regulated using a standards-based quality framework (Australian Government, 2014). Learning outcome statements have been proposed by the national Higher Education Standards Panel (HESP) as an example of a reference point that higher education providers may use to demonstrate compliance with the Higher Education Standards Framework in relation to learning outcomes and assessment.

Several discipline groups in the tertiary sector have published Learning and Teaching Academic Standards (LTAS) Statements, which describe what pass-level graduates of each discipline will know, understand and be able to do upon graduation. These Statements were developed through wide consultation with the higher education sector and associated industry, and are now being implemented through the design and quality assurance of curricula. The Science discipline, for example, formulated statements defining key threshold learning outcomes (TLOs) for five domains: knowledge, understanding, inquiry and problem solving, communication, and personal and professional responsibility (Jones, Yates, & Kelder, 2011). Several sub-disciplines of science, such as chemistry (Mitchell Crow, O'Brian, & Schultz, 2012) and biological sciences (VIBEnet, 2013), have since interpreted the Science TLOs to suit their discipline contexts using the methodology established by the ALTC (2011a) for defining and disseminating LTAS Statements.

The aims of the AgLTAS project were to develop a National Academic Standards Statement for Agriculture and related disciplines, aligned with the Science Standards Statement, which encompassed:

1. The nature and extent of the Agriculture discipline
2. Threshold Learning Outcomes for Agriculture

Value of and need for the project

There is an urgent need to raise the profile and reputation of university education in agriculture to help address the skills shortage where there are almost six jobs for every agriculture graduate (Pratley, Copeland, & ACDA, 2008).

Agriculture and its related industries support 1.6 million Australian jobs (NFF, 2012). Federal and state government inquiries into higher education and skills training for agriculture and agribusiness have highlighted the importance of ongoing tertiary education in agriculture, both for Australia’s economic prosperity and to enable national objectives for food production and supply to be met (Australian Government, 2012; Cowan, 2010; Parliament of Victoria, 2012; Pratley, 2013). Agriculture graduates must have the skills and knowledge
needed by industry as it operates within the current environment of agricultural growth and innovation.

In developing the national standards, industry input was vital to ensure that agriculture graduates leave university with the skills and knowledge needed by industry. Given the dynamic nature and wide range of agricultural industries, graduates need to be life-long learners, capable of undertaking continued professional development to practice agriculture as professionals.

Agriculture and related disciplines are offered in 14 Australian universities (as a three- or four-year specialist degree or as a major in a science degree). Critical issues affecting the ability of universities to meet the skills shortage in agriculture are the design, content and delivery of the agriculture curriculum and the promotion of agriculture as a career to new students (Bellotti, 2012; Dunne, 2010). The development of a specific LTAS Statement for agriculture has addressed these issues through informing curriculum design.

Involving both industry and students during the consultation process ensured the relevance of the AgLTAS Statement for agriculture graduates. More generally, publication and implementation of the AgLTAS Statement will advance the development and interpretation of TLOs for other science disciplines.

Scope

For the purpose of developing the Statement, agriculture encompassed a range of degrees and sub-disciplines, including (but not limited to):

- Agribusiness
- Agricultural economics
- Agriculture and agricultural science
- Agricultural business management
- Agrifood systems
- Animal science
- Horticulture
- Viticulture and oenology
- Wine business
- Wine science

Project outcomes

The project was designed to achieve the following outcomes:

1. A network of practice between universities and industry through shared engagement in the development of the AgLTAS Statement
2. Nationally agreed AgLTAS Statement (including the nature and extent of Agriculture and Agriculture TLOs with explanatory notes) to enable alignment of academic standards across universities
3. Confidence among students that their degree reaches minimum standards, while each university can clearly promote what is unique about their degree offering as delivered
4. A holistic appreciation amongst academics and industry of the agriculture curriculum taught at university with opportunity to improve: linkages between units/courses;
learning pathways through the degree levels; and provision of graduate training by industry
Section 2  Project approach

Our project framework was based on the three key steps for successful dissemination outlined in the *D-Cubed Guide* (Hinton, Gannaway, Berry, & Moore, 2011), including: 1) assessing the climate for readiness; 2) consultation and engagement throughout the project; and 3) enabling transfer of project outcomes.

Rationale

The AgLTAS project extended the successful work of a pilot project at the University of Tasmania in 2012, which demonstrated that the nationally agreed TLOs for science could be adapted successfully to the study of agricultural science (Botwright Acuña, Kelder, Lane, Hannan, & Jones, 2013). That project used a process of peer-to-peer professional learning between academics in the School of Agricultural Science to develop draft TLOs for agricultural science and briefing notes on the nature and extent of the discipline. The project team then sought qualitative feedback from a survey of academics at the University of Tasmania, and from course coordinators at Charles Sturt University and The University of Adelaide.

The draft TLOs for agricultural science were presented to the ACDA in November 2012. There was consensus on a need for nationally agreed TLOs that would enable the broader discipline of agriculture to demonstrate compliance with TEQSA requirements for regulation and quality assurance of tertiary education against agreed learning standards.

The project broadly followed the approach developed by the national Learning and Teaching Academic Standards project (ALTC, 2011b), but with adaptations developed during the pilot project. The following description is extracted from Botwright Acuña, Kelder, et al. (2014).

Project planning

The AgLTAS Statement on the nature and extent of agriculture and a set of TLO statements were developed using mixed methods with both quantitative and qualitative data collection (Creswell, 2003). A coordinated series of online surveys and workshops were conducted over three phases of the AgLTAS project from October 2013 to September 2014.

The first step was a workshop for the project team members from each participating university, the reference group and the external evaluator. One major goal of the initial workshop was to plan the design of institution-specific workshops described in the consultation process below.

Outcomes were distributed as a newsletter (No. 1), available on the project website and through an email distribution list using MailChimp®. The newsletter was distributed to the Australian universities that teach Agriculture to facilitate these discussions and build project credibility and familiarity. The project team used their personal networks and academic staff meetings (or equivalent) to maintain the profile of the AgLTAS project and communicate the
goals, strategies and activities of the project. Project updates were provided to ACDA’s biannual meetings and their input sought from late 2013 to 2015.

**Ethics**

Ethics approval for data collection was gained from the University of Tasmania Social Sciences Human Research Ethics Committee before the start of the project (HREC 13526). Partner universities in the project (The University of Adelaide, Charles Sturt University and University of Western Sydney) gained ethics approval from their respective institutions.

**Participants**

For the purposes of the project, academics were defined as participants who identified as being employed in the tertiary sector. Industry stakeholders then by default encompassed other roles in agriculture exclusive of academics in higher education in both the public sector (e.g. state departments of agriculture, Australian government departments, and research organisations with an agricultural focus) and private sector (e.g. agribusiness, research, development and extension providers). Students were those enrolled (full-time, part-time or externally) at the time of the workshops/surveys in an agriculture degree. Recent graduates were not identified in the project as a discrete stakeholder group and these participants instead self-selected into either the academic or industry cohorts.

**Consultation and engagement process**

**Consultation activity**

The consultation activity stream was designed to allow participants to:

1. Articulate their knowledge and understanding of agriculture
2. Apply that knowledge to the task of drafting a consensus Standards Statement by evaluating the current draft

Project team members organised consultation workshops within their own and other universities and with members of their professional networks. These were undertaken from September 2013 to March 2014 (Table 1).

Participants, recruited from students, academics and industry stakeholder groups, were shown a draft AgLTAS Statement. Structured questions and activities were designed to gain feedback on the core elements of the Statement (nature and extent of the discipline, and TLOs) (Appendix A). The design of questions for the workshops was based on the different cognitive skills that stakeholders would use to answer questions about the Statement. A national online survey was also administered via the project website (Appendix B).
Table 1 Stakeholder groups and number of participants in the online survey and workshops

<table>
<thead>
<tr>
<th>Location</th>
<th>Stakeholder group</th>
<th>Activity</th>
<th>Number of participants</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Tasmania</td>
<td>A</td>
<td>W</td>
<td>11</td>
<td>7 May 12*</td>
</tr>
<tr>
<td>The University of Adelaide (BAgrSci)</td>
<td>S</td>
<td>W</td>
<td>21</td>
<td>20 Sep 13</td>
</tr>
<tr>
<td>The University of Adelaide (Viticulture)</td>
<td>A</td>
<td>W</td>
<td>10</td>
<td>23 Sep 13</td>
</tr>
<tr>
<td>The University of Adelaide (Agriculture)</td>
<td>A</td>
<td>W</td>
<td>10</td>
<td>30 Sep 13</td>
</tr>
<tr>
<td>SA Industry</td>
<td>I</td>
<td>W</td>
<td>7</td>
<td>30 Sep 13</td>
</tr>
<tr>
<td>SA Agricultural Consultants Group</td>
<td>I</td>
<td>W</td>
<td>15</td>
<td>30 Sep 13</td>
</tr>
<tr>
<td>University of Tasmania student forum</td>
<td>S</td>
<td>S</td>
<td>20</td>
<td>4 Oct 13</td>
</tr>
<tr>
<td>TAS Industry</td>
<td>I</td>
<td>W</td>
<td>7</td>
<td>15 Oct 13</td>
</tr>
<tr>
<td>University of Tasmania Alumni/Industry</td>
<td>I</td>
<td>W</td>
<td>21</td>
<td>25 Oct 13</td>
</tr>
<tr>
<td>University of Western Sydney 1</td>
<td>S</td>
<td>W</td>
<td>12</td>
<td>25 Oct 13</td>
</tr>
<tr>
<td>Online 1</td>
<td>V</td>
<td>S</td>
<td>27</td>
<td>7 Nov 13</td>
</tr>
<tr>
<td>The University of Queensland</td>
<td>A</td>
<td>W</td>
<td>7</td>
<td>11 Nov 13</td>
</tr>
<tr>
<td>CSIRO &amp; RDCs, ACT</td>
<td>I</td>
<td>W</td>
<td>14</td>
<td>18 Nov 13</td>
</tr>
<tr>
<td>Charles Sturt University, Wagga Wagga</td>
<td>A</td>
<td>W</td>
<td>7</td>
<td>21 Nov 13</td>
</tr>
<tr>
<td>Charles Sturt University, Orange</td>
<td>A</td>
<td>W</td>
<td>8</td>
<td>2 Dec 13</td>
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<td>University of New England</td>
<td>A</td>
<td>W</td>
<td>7</td>
<td>3 Dec 13</td>
</tr>
<tr>
<td>La Trobe University &amp; The University of Melbourne</td>
<td>A</td>
<td>W</td>
<td>7</td>
<td>10 Dec 13</td>
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<tr>
<td>Curtin University</td>
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<td>18</td>
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<tr>
<td>Murdoch University</td>
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<td>14 Mar 14</td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
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<td>290</td>
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</table>

Abbreviations: Stakeholder groups: A, Academics; I, Industry; S, Students; V, various. Activity: S, survey; Sub, submission; W, workshop. *Run as part of the pilot project

Workshops and surveys were undertaken in several stages. The first stage was designed to ensure that the understanding of the different parts of the AgLTAS Statement and relationships between them was clear and facilitated participants synthesising their own and others’ viewpoints. This ensured alignment of project purpose with project method, so that questions and tasks designed to facilitate collaborative discussion would result in data targeted towards informing the redrafting of the Statement. The second stage was directed towards eliciting participants’ analyses and their evaluations of those expectations. Finally, participants were asked to analyse the AgLTAS draft Statement.
Drafting the Agriculture Standards Statement

The intended outcomes of the drafting activity stream were for the project team to:

1. Analyse participant data to demonstrate knowledge and understanding of the different perspectives on the form and content of an AgLTAS Statement
2. Apply that knowledge to draft new versions of the Statement

The reference group and project team used Bloom’s taxonomy of cognition to provide a conceptual framework that guided the analysis of the aggregated participant responses to the pilot draft to structure the process of redrafting the AgLTAS Statement. This process began on 25 November 2013. Bloom’s taxonomy is widely used in education to classify learning objectives in terms of a progression from lower to higher orders of thinking. The taxonomy has six levels:

1. Knowledge
2. Comprehension (understanding)
3. Application
4. Analysis
5. Synthesis
6. Evaluation (judgement)

Embedding Bloom’s taxonomy provided a structure for collecting and analysing participant responses as data, and provided a transparent process that enabled the project team to explain and justify decisions on which TLOs would be included in the final version of the AgLTAS Statement (Table 2).

Each draft was also evaluated to determine how accurately it reflected the consensus view emerging from the consultation activity stream. The evaluation process was a necessary benchmark prior to the activity of synthesising the data into the statement on the nature and extent of the discipline and the agriculture TLOs, which were presented to the ACDA for their support on 9 April 2014.
### Table 2 Activity streams (consultation; drafting the AgLTAS Statement) aligned with Bloom’s taxonomy

<table>
<thead>
<tr>
<th>Cognitive skill</th>
<th>Consultation activity stream: academics, students, industry</th>
<th>Drafting AgLTAS Statement activity stream: project team, project leader, reference group</th>
</tr>
</thead>
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<tr>
<td>1. <strong>Knowledge</strong></td>
<td>Step C1: workshop part 1; survey:</td>
<td>Step D1: Appreciation of participants’ knowledge, understanding and application of what graduates of agriculture know, understand and can do from their perspective in a workshop setting, reserving judgement (project team)</td>
</tr>
<tr>
<td>2. <strong>Understanding</strong></td>
<td>What do participants know, understand and do with respect to their own expectations about what graduates of agriculture know, understand and can do</td>
<td></td>
</tr>
<tr>
<td>3. <strong>Application</strong></td>
<td>Step D2: Preparation of summaries from individual workshops (project team)</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Analysis</strong></td>
<td>Step C2: workshop part 2: Discussion by participants in workshops and free text survey comments</td>
<td>Step D3: Thematic analysis of collated feedback from participants (project leader)</td>
</tr>
<tr>
<td>5. <strong>Evaluation</strong></td>
<td>Step C3: workshop part 3: Shared judgements about what graduates of agriculture know, understand and can do in workshops by participants</td>
<td>Step D4: Judgement made without bias by the project team on the value of the project TLOs on what graduates of agriculture know, understand and can do, based on collated feedback (reference group)</td>
</tr>
<tr>
<td>6. <strong>Synthesis</strong></td>
<td>Step C4: presentation to stakeholders: Shared understanding across stakeholders: AgLTAS Statement that is representative of the majority of participants</td>
<td>Step D5: Synthesis of the AgLTAS Statement: A TLO for what graduates of agriculture know, understand and can do; explored further in explanatory notes (reference group, project leader, project team)</td>
</tr>
</tbody>
</table>
Final revision and support of the Agriculture Standards Statement

Explanatory notes for the Agriculture TLOs were developed by the project team and reference group in consultation with academics at the four partner universities.

Mapping was undertaken at two institutions to show how the agriculture TLOs aligned with the science TLOs, Australian Qualifications Framework (AQF) level 7 descriptors and the UK Quality Assurance Agency for Higher Education (QAA) subject benchmark for agriculture, horticulture, forestry, food and consumer sciences as an international benchmark.

The final version of the AgLTAS Statement was presented to the ACDA on 4 November 2014 and endorsed by them.

Case studies to demonstrate benchmarking of TLOs for Agriculture

The four participating universities benchmarked the TLOs for Agriculture using a discipline-specific version of an online curriculum mapping tool (CMT). The CMT was refined during the AgLTAS project from a pilot tool developed by the University of Tasmania to map the Science TLOs in the Bachelor of Science majors (Jones & Holmes, 2013). The CMT enables the mapping of a curriculum against a set of user-defined statements (designated ‘criterion statements’ in the tool), which represent the set of standards against which the curriculum is to be evaluated. The tool is designed so that users can set up an instance of the tool to map a grouping of units comprising a major or a degree against a set of criterion statements. Use of a single tool facilitated continuity and comparison of learning standards across participating universities.

In June 2014, workshops with academic staff were undertaken at two institutions to map curricula in two degrees against the TLOs for agriculture using the CMT. Details for each unit were entered into the tool (A CMT user guide [Acuña, Kelder, Bobbi, & Gray, 2014] and the tool can be downloaded from www.agltas.edu.au/resources). The unit coordinator self-assessed whether the assessment in their unit met the following criteria: Is it taught?, if assessed, to what standard is it taught? and How is it assessed? Standards included: introductory, intermediate, partially at graduate level, meets graduate level or exceeding graduate level. The report function of the CMT produced a traffic light report that provides a visual representation for each group of units, indicating the extent to which standards are reached or not achieved.

The process of curriculum mapping with academics raised several questions that were addressed through peer discussion in the workshops.

Workshop participants completed pre- and post-workshop questionnaires to evaluate the benefits of the curriculum-mapping workshop against the TLOs (Appendix C). Data was collected using a mix of quantitative and qualitative methods (Creswell, 2003). The pre-workshop questionnaire collected demographic data about the participants and their knowledge about the agriculture TLOs, the degree and the AQF. The post-workshop questionnaire established perceived changes in participants’ awareness, knowledge, connection with the teaching team and curriculum. It was also used to inform the
development of the explanatory notes section in the AgLTAS Statement. Collated data from the curriculum maps and responses to the questionnaire were used to determine how TLOs can be used to inform curriculum review. Random samples of units were also externally benchmarked for how well the assessment aligned with the TLOs.

A survey was distributed to tertiary providers in April 2015 to gather feedback on the uptake and value of the Statement at their institutions. The survey collected data on the agricultural offerings, whether their institutions were using the Statement or planned to in the future and how valuable the Statement was to them. (Appendix D)

Enabling transfer of project outcomes

AgLTAS project website – www.agltas.edu.au

The AgLTAS project website (Figure 1) was launched on 27 September 2013. The website provided stakeholders with timely updates on the project, including latest news, media coverage and workshop dates, as well as key background information, contacts and resources. The homepage featured a quick and simple function to sign up to the newsletters.

Key resources available for download on the site include the AgLTAS Statement, the curriculum mapping tool and its user guide.

Figure 1  AgLTAS project website – homepage
AgLTAS project newsletter

Five project newsletters were distributed using MailChimp®. Stakeholders wishing to receive the project newsletter could sign up through the project website, or by contacting the project officer. All workshop participants were invited to sign up. The newsletter had 222 subscribers. Archived editions are available to view on the website at www.agltas.edu.au/newsletters.

AgLTAS linkages with other projects

The approach used in the AgLTAS project has links with other ALTC and OLT funded projects: the framework for engagement used in the ALTC-funded project to develop the Learning and Teaching Academic Standards for Science (Jones et al., 2011); resources to assist discipline communities to define TLOs (ALTC, 2011b); the process, outlined by Dowling and Hadgraft (2012), used to develop practitioner-authenticated sets of graduate capabilities for Engineering via the Define Your Discipline project; the University of Tasmania project that has mapped the Bachelor of Science against the LTAS Science TLOs using an online tool; the Science and Mathematics network of Australian university educators (SaMnet) project that works cooperatively with discipline networks to develop educational leaders and foster best practice; and the benchmarking process outlined by Beck et al. (2007) for Archaeology in the By Degrees: Benchmarking Archaeology Degrees in Australian Universities project.

AgLTAS linkages with the OLT’s program objectives

The outcomes of the AgLTAS project address four of the five OLT program objectives (OLT, 2013, p.4):

1. Promote and support strategic change in higher education institutions for the enhancement of learning and teaching, and the benefit of the student experience:

   Through the national engagement with academics, students and industry in development of the AgLTAS Statement.

2. Raise the profile and encourage recognition of the fundamental importance of teaching in higher education institutions and in the general community:

   The development of the AgLTAS Statement has raised the profile and encouraged recognition of the fundamental importance of teaching in higher education institutions and in the general community; meets student and employer needs; and provides the basis for ongoing personal and professional development for students.
3. Develop effective mechanisms for the identification, development, dissemination and embedding of good individual and institutional practice in learning and teaching in higher education:

*The development of the AgLTAS Statement and curriculum mapping tool as evidence-based mechanisms to support the identification, development, dissemination and embedding of good individual and institutional practice in learning and teaching in higher education. The AgLTAS website provides additional resources.*

4. Develop and support reciprocal national and international arrangements for the purpose of sharing and benchmarking learning and teaching processes:

*The AgLTAS Statement has integrated content-focused discipline developments with learning and teaching innovations (e.g. the Academic Standard Statement for Science) to address key issues that have enabled universities to benchmark Academic Standards in Agriculture.*

**AgLTAS linkages with the OLT’s strategic priority areas**

The outcomes of the AgLTAS project address four of the OLT’s priority areas for curriculum design (OLT, 2013, p.6):

1. **Partnerships with employers and/or employer groups:**

   *The project engaged with academics, students and industry to develop the national Learning and Teaching Academic Standards for Agriculture.*

2. **Design and model contemporary curricula that meet student and employer needs and provide the basis for ongoing personal and professional development for students:**

   *The AgLTAS Statement has raised the profile and encouraged recognition of the fundamental importance of teaching in higher education institutions and in the general community to meet student and employer needs and provide the basis for ongoing personal and professional development for students.*

3. **Emphasis should be given to the creative application of existing innovations in learning and teaching in higher education and should be of value to the sector, or groups of institutions in the sector:**

   *The project has integrated content-focused discipline developments with learning and teaching innovations (e.g. the Academic Standard Statement for Science) to address key issues that have enabled universities to benchmark Academic Standards in Agriculture, and through the redevelopment of an online curriculum mapping tool, which is available through the project website.*
4. Curriculum design proposals should integrate content-focussed discipline developments with learning and teaching innovations and address key issues of: repositioning or reshaping of discipline based courses; the future direction and coverage of programs of study; use of information and communication technologies; and work integrated learning:

The nationally agreed AgLTAS Statement has supported reciprocal national arrangements for the purpose of sharing and benchmarking learning and teaching processes.

AgLTAS disciplinary and interdisciplinary linkages

The AgLTAS project has successfully developed a network of practice in the agriculture discipline, through engaging with academics, students and industry in the development of the statement. In total, 21 workshops were conducted that involved 290 participants.

Sustainability of the network of practice beyond the initial AgLTAS workshops has been facilitated through a communication strategy of regular AgLTAS project newsletters and provision of two updates per year to the ACDA. The AgLTAS Statement has been distributed widely and is available online (at the AgLTAS website at www.agltas.edu.au).

The AgLTAS Statement includes a comparison of the bachelor-level TLOs in agriculture with national and international comparators, including the Science LTAS, the AQF and the UK QAA subject benchmark for agriculture, horticulture, forestry, food and consumer sciences.

Interdisciplinary linkages with other areas of science were promoted through the official launch at the ABARES Conference in Canberra in 2015; presentations at conferences; providing links to the project website via the ACDS Teaching and Learning Centre and the Science and Mathematics Network of University Educators (SaMnet); and invitations to present at conferences e.g. the ACDS Learning and Teaching Conference in 2014; and Australian Society of Plant Scientists (ComBio) in 2014. Further details are provided in Appendix E.
Section 3 Learning and Teaching Academic Standards Statement for Agriculture

A significant outcome of the project was the publication of the national Learning and Teaching Academic Standards Statement for Agriculture (Botwright Acuña, Able, et al., 2014) (Figure 2) and an associated journal article (Botwright Acuña, Kelder, et al., 2014). The statement was developed through an extensive consultation process between academics, students and industry across Australia and endorsed by the ACDA. It consists of a statement on the nature and extent of the agriculture discipline (Figure 3), five threshold learning outcomes (TLOs, Figure 4) and explanatory notes.

The TLOs describe what a pass-level graduate in agriculture or a related discipline will know, understand and be able to do upon graduation. Higher education providers are encouraged to build on these TLOs as they design and deliver programs that reflect their particular strengths and priorities. They may do this by adding additional TLOs, or by requiring the five TLOs to be met at a higher standard in their own organisation.

The AgLTAS Statement will facilitate the implementation of academic standards by the agriculture discipline community, inform curriculum design and assist in identifying marketing opportunities for degrees. If implemented as a reference point, the AgLTAS Statement will support each provider’s autonomy, diversity and reputation, while enabling future students to have confidence that their degree meets minimum standards.

The explanatory notes are intended to guide the interpretation of the TLOs and are available in the Standards Statement (Botwright Acuña, Able, et al., 2014). The notes and the TLOs should be considered in the context of the statement on the nature and extent of agriculture (Figure 3). Some of the explanatory notes draw, with permission, upon the Science LTAS (Jones et al., 2011).

A comparison of the Agriculture TLOs with those for science (Jones et al., 2011), the AQF (Australian Qualifications Framework, 2013) and the UK QAA subject benchmark for agriculture, horticulture, forestry, food and consumer sciences (QAA, 2009) are provided in the AgLTAS Statement.

An electronic copy of this resource is available through the Office for Learning and Teaching and the AgLTAS website at www.agltas.edu.au
Agriculture is defined as the land-based production of food, fibre and fuel as quality products that may be used unchanged or be transformed into other products for the good of society. Agriculture applies technologies and knowledge gained from multiple disciplines to manage agro-ecosystems in a way that produces more from our natural resources than could be achieved without intervention. Agriculture adopts a stewardship role to foster environmental, economic and social sustainability.

Agriculture is undertaken in diverse and variable systems that span the entire value chain from production to consumption. Agriculture has its foundation in scientific method. Evidence gained from empirical investigations is applied in the development of new technology, processes and practices in the value chain to improve productivity. The process of extension, diffusion and adoption of new agricultural practices at local, national and global scales depends on effective communication and is underpinned by the application of rural sociology and education.

Degrees in agriculture provide a wide range of knowledge and skills across broad subject areas, allowing career flexibility for graduates. Graduates of agriculture and related sub-disciplines are employed in diverse roles that contribute to the successful practice of agriculture to meet the needs of society. Such roles include (but are not limited to):

- Research and the generation of new knowledge and technologies
- The development and application of knowledge and technologies to solve complex problems and create opportunities
- Primary production in the value chain
- Educators in secondary and tertiary institutions
- Extension and adoption of knowledge by society
- Provision of policy and regulatory advice
- Provision of advice by finance and marketing professionals
- Agriculture professionals who provide leadership and advocacy
- Media specialists who communicate about agriculture

Agricultural industries use a range of specialised disciplines to develop sustainable production systems. Graduates must therefore be life-long learners, capable of undertaking continued professional development that may include higher degrees or diplomas, or industry-sponsored certification to practice agriculture as professionals.

**Figure 3** Statement on the nature and extent of agriculture
Upon completion of a bachelor-level degree in agriculture or a related sub-discipline, graduates will, as a minimum, be able to demonstrate their knowledge and skills in the following areas:

Understanding agriculture

1. Demonstrate an integrative understanding of agriculture by:
   1.1. Explaining the role and relevance of agriculture and its related sciences, and agribusiness in society.
   1.2. Understanding the major biophysical, economic, social and policy drivers that underpin agricultural practice and how they contribute to practice change.
   1.3. Understanding how information is adopted and the context within which producers, processors and consumers, make decisions.

Knowledge of agriculture

2. Exhibit depth and breadth of knowledge of agriculture by:
   2.1. Demonstrating knowledge of the core sciences in the context of agriculture.
   2.2. Demonstrating broad generalist knowledge of relevant agricultural production systems and their value chains, with specialist knowledge in at least one area.
   2.3. Understanding how knowledge from different sub-disciplines within agriculture is integrated and applied into practice.
   2.4. Demonstrating a basic knowledge of economics, business and social science as they apply to agriculture.

Inquiry and problem solving

3. Critically analyse and address dynamic complex problems in agriculture by:
   3.1. Identifying contemporary issues and opportunities in agriculture.
   3.2. Gathering, critically evaluating and synthesising information from a range of relevant sources and disciplines.
   3.3. Selecting and applying appropriate and/or theoretical techniques or tools in order to conduct an investigation.
   3.4. Collecting, accurately recording, analysing, interpreting and reporting data.

Communication

4. Be effective communicators by:
   4.1. Understanding methods of effective two-way written and verbal communication with different audiences.
   4.2. Communicating with a range of audiences in an agricultural context using a variety of modes.

Personal and professional responsibility

5. Be accountable for their own learning and professional work by:
   5.1. Being independent and self-directed learners.
   5.2. Working effectively, responsibly and safely in an individual and team context.
   5.3. Demonstrating knowledge of the regulatory frameworks relevant to their specialist area in agriculture.
   5.4. Personally practising ethical conduct.

Figure 4 Threshold Learning Outcomes for agriculture
Perspectives on the inclusion of vocational knowledge in the AgLTAS Statement

The development of the AgLTAS Statement involved engagement with academics, industry and students. During this process there was discussion with stakeholders on whether to retain a TLO linked with vocational knowledge from the pilot project. The process and learnings are discussed in detail in the following paper.


Abstract

This paper reports on the perspective of industry stakeholders in a national project to develop a Learning and Teaching Academic Standards (LTAS) Statement for the Agriculture discipline. The AgLTAS Statement will be aligned with the Science LTAS Statement published in 2011 and comprise a discourse on the nature and extent of the Agriculture discipline and a set of Threshold Learning Outcome (TLO) statements specific to Agriculture. A 'Notes' section in the form of explanatory comments will provide information on the rationale for key decisions that underlie the final wording of the statement. Agricultural research and teaching relies on strong links with industry due to the applied nature of the discipline. Without these links, sustainable and profitable practice change in agricultural systems cannot be achieved. A pilot project, in 2011-2012, with academic staff from three Australian universities identified vocational knowledge as a potential focus for a TLO. The AgLTAS project provides the opportunity to validate or refute this TLO by seeking input from a wider group of stakeholders including industry. National consensus is being sought by a process of iterative consultation with academics, students and industry stakeholders and tested across four Australian universities. The team has collected qualitative and quantitative data from industry participants who attended a series of workshops across most Australian States and Territories. The team also conducted an online survey. Surprisingly, and contrary to the findings of the pilot project, industry representatives considered vocational knowledge of lesser importance to the need for students to attain highly developed problem solving and communication skills that can generate new opportunities and innovation in agriculture. Industry-specific (vocational) knowledge was generally regarded as attainable during on-the-job training after graduation. This finding prompts the question whether the AgLTAS Statement should be linked to professional accreditation that may be attained after graduation.
Section 4  Implementing the TLOs for agriculture

The nationally agreed AgLTAS Statement has supported reciprocal national arrangements for the purpose of sharing and benchmarking learning and teaching processes.

Benchmarking the TLOs for Agriculture

The CMT was developed to map TLOs against curriculum (Acuña et al., 2014). It produces a report that allows users to see where minimum standards are reached and where they are not achieved. The tool was developed by software development company Insight4 (www.insight4.com) to the functional specifications of the AgLTAS project. The CMT and user guide can be downloaded from the AgLTAS project website at www.agltas.edu.au

Most of the elements in the tool are editable in order to maximise its ability for use in mapping against different types of criterion statements.

The report function produces a traffic light report that provides a visual representation for each group of units, indicating the extent to which standards are reached or not achieved. Examples of traffic light reports from the CMT are shown in Appendix F. Curriculum mapping was used to evaluate the links between the curriculum and the target learning outcomes, and to identify gaps and areas for improvement. Results included the curriculum maps (Appendix G) and also a survey of academic staff and their reactions to the TLOs. A random sample of units was also evaluated blindly and confirmed the alignment of assessment with the TLOs. The response of academics to the pre- and post-workshop questionnaires suggested an improved understanding of the TLOs and their link with assessment, as well as an increased opportunity to improve student learning outcomes. This data will be presented in a paper currently in preparation for publication, which also provides a reflective commentary on what we believe are the next steps and implications of the AgLTAS for curriculum development, industry engagement and graduate employability in the agriculture discipline.
Section 5  Success and impact of the AgLTAS project

Impact of the project and value to the sector

The following examples provide evidence of project impact to the sector. An IMPEL analysis is also provided in Appendix H.

Endorsement

ACDA commended the project team on the consultative process used to develop the Learning and Teaching Academic Standards Statement for Agriculture. The Council endorsed the standards as a high-level statement of bachelor-level TLOs for the discipline.

Official launch

The standards were officially launched by Senator Richard Colbeck, Parliamentary Secretary to the Minister for Agriculture, in front of 700 delegates at the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) Outlook conference in Canberra on 4 March 2015.

Publications, presentations and media

In total, publications included the AgLTAS Statement, two peer-reviewed journal articles, two articles in a professional journal, 13 presentations, four updates to the ACDA and 42 items of media coverage. A further five AgLTAS newsletters were published using MailChimp®. There were in total 3,226 hits on the AgLTAS project website and of these 82 per cent were new visitors. See Appendix E for further details.

Uptake of curriculum mapping tool

The CMT was modified by the University of Tasmania for the purpose of mapping compliance with the AQF in the disciplines of Medicine and the Tasmanian School of Business and Economics. Other universities, including Monash University and The University of Newcastle, also expressed an interest in the CMT.

Uptake of AgLTAS by tertiary providers

Tertiary providers were surveyed on their uptake of the AgLTAS Statement between April and July in 2015 (Appendix D). Of the eight responses, six confirmed their institutions were using the Statement for curriculum development, to map curriculum to improve courses, for a whole of curriculum review and as a reference document to develop and review courses. Six of the respondents described the Statement as either valuable or extremely valuable to their school, with the other two selecting unsure/not applicable. Importantly, no institutions described the Statement as of little or no value, indicating that, when uptake has happened or is planned, the Statement is valuable.
Evaluation of project outcomes

Formal and informal evaluation of the AgLTAS project demonstrates that all four key outcomes of the project were achieved. The external evaluator’s report is available in Appendix I.

Output 1

A network of practice between universities and industry through shared engagement in the development of the AgLTAS Statement: Achieved

The project engaged with academics, students and industry to develop the national Learning and Teaching Academic Standards for Agriculture. For example, 21 consultation workshops were undertaken that included a total of 290 participants in the development of the AgLTAS Statement. In addition, 222 people subscribe to the AgLTAS newsletter.

Evaluation data collected during the consultation workshops in general demonstrated that the majority of respondents considered the project to be very important. Specific feedback included the following:

“Important to know what a range of institutions are doing – similarities and differences and on the whole, where possible, consistency is good, especially in identifying minimum standards”

“This project is very important because the people involved in Agricultural topics should have input on the LO that they think degrees are achieving. They have inside knowledge and can articulate outcomes best”

“Good to see universities are seeking feedback from industry”

Output 2

Nationally agreed AgLTAS Statement (including the nature and extent of Agriculture and Agriculture TLO statements) to enable alignment of academic standards across universities: Achieved

The AgLTAS Statement was endorsed by the ACDA as a high-level statement of bachelor-level TLOs for the discipline. The Statement meets student and employer needs and provides the basis for ongoing personal and professional development for students.

The development of the AgLTAS Statement has raised the profile and encouraged recognition of the fundamental importance of teaching in higher education institutions and in the general community. For example, the AgLTAS Statement was officially launched before 700 delegates at the ABARES conference in Canberra in March 2015, which led to national media coverage, including stories in print, online and radio.
Output 3

Confidence among students that their degree reaches minimum standards, while each university can clearly promote what is unique about their degree offering as delivered: **Achieved**

The AgLTAS Statement provides tertiary education providers a mechanism for integrating content-focused discipline developments with learning and teaching innovations to address key issues that have enabled universities to benchmark academic standards in agriculture. Evaluation data collected from participants during the consultation workshops noted that the standards would provide:

“... a clearer point to deliver message to students about what they will achieve at the end of the degree”

“Very important to have unified learning outcomes for all agriculture degrees. It will identify the specialties of different universities, give greater structure to courses and ensure all learning outcomes are covered rather than repeating information”

Benchmarking was facilitated by the redevelopment of an online curriculum mapping tool, which is available through the AgLTAS project website.

Output 4

*A holistic appreciation amongst academics and industry of the agriculture curriculum taught at university with opportunity to improve: linkages between units/courses; learning pathways through the degree levels; and provision of graduate training by industry:* **Achieved**

The nationally agreed AgLTAS Statement has supported reciprocal national arrangements for the purpose of sharing and benchmarking learning and teaching processes. Evaluation data collected from participants during the consultation workshops noted that the standards were:

“Very important as it is being used to improve Agricultural degrees and will improve graduate abilities making them more employable”

“Critically important to creating a long term and sustainable pathway for agricultural students”

“Agricultural education in Australia is struggling to understand the industry that it services and this is a vital step in understanding the industry’s needs and contribution to the Australian Agricultural Education”

“This will enable University/TAFE/Industry to be clear on the skills and attributes graduates should be getting from a degree. This will help potential employers and their expectations for graduates that eventuate from these degrees”
“This project will allow for an increased professionalism within the industry, the upskilling of workers and uniting of the agricultural sectors around common goals. It will also allow for student voice to be heard and a modernisation of university courses as a result. Through providing a variety of learning outcomes, it is hoped graduates will develop a deeper understanding of agricultural principles and therefore have the grounds to further progress the discipline in modern society as well as encouraging more people to become involved in agriculture”

“It will provide confidence to industry in regards to the standards achieved by all graduates, as well as help clarify difference between graduates from different levels of tertiary/vocational training”

Factors critical to success

The following factors are considered as having been critical to the success of the project:

1. Having a good plan – including engagement, dissemination and evaluation, and a clear timeline – and sticking to this plan
2. Regular communication with the project team to ensure the team was on track to complete tasks according to the timeline
3. Contacts ‘on the ground’ at the institutions and organisations we engaged with were extremely valuable in assisting with planning and promoting workshops interstate
4. Evidence was the key to success. If there is no evidence, there is no value. Presentations to key stakeholders were very successful because of the data and clear evidence that supported the development of resources
5. A crucial component of this project was the ability to leave out personal bias and to be impartial when making decisions. In the development of the Statement a number of decisions had to be made based purely on evidence
6. A shared desire to implement change in learning and teaching, and to have academics at the institutions engage in the workshops

Factors that impeded success

The following factors impeded the success of the project:

1. Ethics requirements differed among institutions. Approval of ethics at the lead institution was acceptable at some partner universities, but not at others, where the paperwork had to be submitted according to a specific form. This duplication of effort was not an efficient use of the project team’s time, but it was necessary for the project to commence.
2. Participation by industry was at times constrained by other priorities. We tried to combat this by holding events out of ‘work hours’, combining workshops with industry meetings and also holding workshops on site.
3. On some occasions it was difficult to identify a contact person at an institution to help organise the logistics for a workshop. This led to additional work and slight delays.

4. Conducting the curriculum mapping workshops at each of the partner institutions without explanatory notes to help inform and guide discussion. As these workshops served the dual purpose of both mapping the curriculum and also helping to inform the development of the explanatory notes, we faced the challenge of communicating to staff that they were part of the research.

5. Development of the curriculum mapping tool, which still lacks some functionality in its reporting. As a workaround to get the level of detail needed in the mapping, an additional Excel spreadsheet was created to accompany the report from the tool. The CMT was successfully developed at a cost of $10k from an initial version created at the University of Tasmania. It would have cost approximately $40k to develop a new tool with full reporting functionality.
References


QAA. (2009). *Subject benchmark statement: Agriculture, horticulture, forestry, food and consumer sciences.*

Certification

Certification by Deputy Vice-Chancellor, Students and Education, University of Tasmania

I certify that all parts of the final report for this OLT grant provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name: Professor David Sadler
DVC Students and Education
University of Tasmania

Date: 5/8/2015
Appendix A   AgLTAS consultation questionnaire

AgLTAS Project: Workshop to define standards for learning outcomes in Agriculture

Location:
Workshop leader(s): ................................

The purpose of this workshop is for you to contribute your insights to the development of a National Academic Standards Statement for Agriculture, aligned with the Science Standards Statement, which will encompass: 1) the nature and extent of the Agriculture discipline; 2) Threshold Learning Outcomes for Agriculture.

Questions for discussion:

1. What are the key attributes of Agriculture that should be reflected in a statement of the nature and extent of the discipline?
2. What threshold learning outcomes should a student of agriculture possess upon graduation?

Questions for feedback:

Thank you for contributing to today’s discussion, which will contribute to the development of draft threshold learning outcomes and a statement on the nature and extent of agriculture. We would appreciate your feedback on the following questions:

1. How important do you consider the project to be?
2. What impact do you think or hope the project will have in the agricultural sector?
Appendix B  AgLTAS online survey

The AgLTAS Project: Survey to define standards for learning outcomes for Agriculture

INFORMATION FOR PARTICIPANTS

The AgLTAS Project involves the definition of threshold (core, or minimum) learning outcomes for degrees in the Agriculture discipline in higher education. Learning outcomes are clear statements of what a graduate is expected to know, understand and be able to do as a result of learning (Australian Qualifications Framework). Threshold learning outcomes (TLOs) are those that all recent graduates of the Agriculture discipline are expected to demonstrate.

The aims of this survey are to:

1. Gather quantitative evidence on the extent of sectoral agreement on the TLOs for Agriculture and associated sub-disciplines
2. Gather qualitative feedback on individual TLOs
3. Establish general perceptions on whether current Australian Agriculture (and associated sub-discipline) degree programs allow ALL graduates to meet these ideal TLOs

All questions are optional and the survey takes 10-15 minutes to complete. By submitting this survey you are consenting to participate in the project and contribute anonymous data that may be published. All responses will be treated in confidence, and will be downloaded from the secure Survey Monkey server in the US to password protected network storage on the University of Tasmania network, where it will be retained securely for five years in line with relevant policy. The original Survey Monkey data will be deleted one week after close of the survey. If you would like to discuss any aspect of this survey, please contact Project Officer, Phoebe Bobbi on 03 6226 6385 (Phoebe.Bobbi@utas.edu.au) or Project Leader Dr Tina Acuña on 03 6226 7507 (Tina.Acuña@utas.edu.au).

Section 1 - Demographics

1. What is your highest level of education
   a. None
   b. Currently enrolled
   c. Bachelor degree
   d. Honours
   e. Masters
   f. PhD
2. Which of the following stakeholder groups do you most identify with?
   a. Undergraduate student
   b. Recent graduate
   c. Postgraduate student
   d. Academic in higher education
   e. Industry
      i. State Department of Agriculture
      ii. Commonwealth Department
      iii. Research Development Corporation
      iv. Agribusiness
      v. Grower
      vi. Other (please specify)

Section 2 – Your Opinion - The Nature and Extent of Agriculture

1. What are the key attributes of agriculture that should be reflected in a statement on the nature and extent of the discipline?

Section 3 – Your Opinion - Draft Threshold Learning Outcome (TLO) statements for Agriculture

Please rate the TLO statements, which are attributes that students of agriculture should have on graduation. Space is provided for comments.

1. Understanding agriculture
   a. Demonstrate a coherent understanding of agriculture and explain the role and relevance of agriculture and science in society.

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments

2. Scientific knowledge
   a. Exhibit depth and breadth of scientific knowledge of agriculture in several discipline areas, and well-developed knowledge in at least one discipline area.

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments
3. Vocational knowledge
   a. Exhibit technical skills in the application of agriculture by attaining professional standards or certification relevant to their discipline area (when possible) and demonstrating proficiency in technical skills relevant to their discipline area (in the workplace)

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments

4. Inquiry and problem solving
   a. Critically analyse and solve scientific problems by designing, planning and undertaking and investigation using practical techniques and tools.

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments

5. Communication
   a. Be effective communicators to a range of audiences, for a range of purposes, and using a variety of modes within an agricultural context.

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments

6. Personal and professional responsibility
   a. Be accountable for their own learning and scientific work by being independent and self-directed learners, and working responsibly in an individual or team context.

   Importance for ALL agriculture graduates [5 radio buttons, low through to high] + comments

TLO statements have been grouped into six categories (as outlined below). How relevant or important are each of these categories?

1. Understanding agriculture [not relevant, relevant, important, essential]
2. Scientific knowledge [not relevant, relevant, important, essential]
3. Vocational knowledge [not relevant, relevant, important, essential]
4. Inquiry and problem solving [not relevant, relevant, important, essential]
5. Communication [not relevant, relevant, important, essential]
6. Personal and professional responsibility [not relevant, relevant, important, essential]
7. What alternative categories can you suggest and why?
Appendix C  Curriculum mapping consultation questionnaire

Note

Terminology was adapted for units/programs/courses/degree to the usage by participants in each workshop.

Recruitment

Participants were recruited from attendees (normally teaching academics employed as lecturer, unit coordinators, course coordinator) at a curriculum mapping workshop.

Procedures

The invitation to participate in a curriculum mapping workshop will include the information that there is an evaluation component to the mapping exercise: a pre- and post-workshop questionnaire. An information sheet is provided.

The wording to be included in the invitation will be:

The AgLTAS project team wish to investigate and evaluate the benefits of the curriculum mapping workshop using the AgLTAS threshold learning outcome statements via a pre- and post-questionnaire. Participation is entirely voluntary and consent is indicated by completion of the questions and [handing in your answers/submitting the questionnaire online].

Participants will be invited to complete a pre-workshop questionnaire (online or hard copy version depending on the logistics). Following the workshop, participants will be invited to complete a post-workshop questionnaire (online or hard copy version depending on the logistics).

Pre-workshop questions

1. What is your role in the teaching team? (NB ‘unit’, ‘course’ terminology will be adjusted to fit a specific university’s terminology)
   a. Unit coordinator
   b. Course coordinator
   c. Lecturer
   d. Tutor
   e. Other
2. What is your employment status (optional)?
3. What do you know about the Agriculture Threshold Learning Outcome Statements (TLOs)?
4. How would you rate your knowledge of the course that is going to be mapped in this workshop?
   a. no knowledge of most units in the course;
   b. good knowledge of units I have taught; slight knowledge of some units in the course
   c. good knowledge of units I have taught; good knowledge of units related to units I teach
   d. good knowledge of all units
   e. integrated knowledge of all units and how they contribute to the course curriculum outcomes.

5. What does the unit you coordinate/teach into contribute to teaching and assessing the Course Learning Outcomes?

6. What do you know about the Australian Qualifications Framework (AQF)?

Post-workshop questions

Participants will be asked to complete a questionnaire (online or hard copy version) to establish perceived changes in awareness, knowledge, connection with the teaching team and curriculum.

1. What do you know now that you didn’t know before the workshop?
2. What do you think will be the benefits of this workshop mapping process for you in your teaching?
3. What do you think will be the benefits of this workshop mapping process for the teaching team?
4. What do you think will be the benefits of this workshop for student learning experience?
5. What changes do you expect will be made to the curriculum as a result of this workshop?
   a. None
   b. Unit learning outcomes
   c. Unit assessment
   d. Unit content
   e. Course learning outcomes
   f. Course standards (TLO)
   g. Course standards (AQF)
Appendix D  Survey on uptake of AgLTAS by tertiary providers

INFORMATION FOR PARTICIPANTS

Please download a copy of the AgLTAS Statement before you start

The AgLTAS Project defined threshold (core, or minimum) learning outcomes for degrees in the Agriculture discipline in higher education. Learning outcomes are clear statements of what a graduate is expected to know, understand and be able to do as a result of learning (Australian Qualifications Framework). Threshold learning outcomes (TLOs) are those that all recent graduates of the Agriculture discipline are expected to demonstrate.

The Learning and Teaching Academic Standards Statement for Agriculture was developed from the collated feedback from academic, industry and student stakeholders and an online survey. The statement has been endorsed by the Australian Council of Deans of Agriculture.

This survey is divided into two sections that aim to gather demographics and qualitative feedback on use of the AgLTAS Statement in your school.

All questions are optional and the survey takes 10-15 minutes to complete. By submitting this survey you are consenting to participate in the project and contribute anonymous data that may be published. All responses will be treated in confidence, and will be downloaded from the secure Survey Monkey server in the US to password protected network storage on the University of Tasmania network, where it will be retained securely for five years in line with relevant policy. The original Survey Monkey data will be deleted one week after close of the survey.

If you would like to discuss any aspect of this survey, please contact Project Officer, Phoebe Bobbi on 03 6226 6385 (Phoebe.Bobbi@utas.edu.au) or Project Leader Dr Tina Acuña on 03 6226 7507 (Tina.Acuña@utas.edu.au).

1. Please state your university and school
2. What undergraduate courses in agriculture or related disciplines are offered at your university?
3. The following questions relate to use of the AgLTAS Statement at your university
   a. Is your school using the AgLTAS Statement?
      i. If YES, please explain how the statement is being used.
      ii. If NO, please explain why the statement is not being used.
      iii. If NO, does your school intend to use the AgLTAS Statement in future?
Appendix E   Publications and workshop presentations

Book


Journal publications


Presentations


Other resources

Future presentations and papers

Botwright Acuña, T. L., McDonald, G., Kelder, J., & Able, A. J. *Implementing Threshold Learning Outcomes at University*. In submission to *Teaching and Higher Education*.


Newsletters

Newsletters are available through the AgLTAS website at [www.agltas.edu.au](http://www.agltas.edu.au)

1. September 2013
2. December 2013
3. April 2014
4. November 2014
5. March 2015
6. August 2015

Media coverage


Acuña, T.L. (2013). ‘AgLTAS project interview’, *ABC Country Hour*, Australian Broadcasting Corporation, Tasmania, Australia, 16 October


Acuña, T. L. (2013). ‘AgLTAS project interview’, ABC North and West SA (Port Pirie), SA Country Hour, Australian Broadcasting Corporation, Tasmania, Australia, 16 October

Acuña, T. L. (2013). ‘AgLTAS project interview’, ABC Alice Springs, NT Country Hour, Australian Broadcasting Corporation, Tasmania, Australia, 16 October

Acuña, T. L. (2013). ‘Have your say on ag courses’, Tasmania, Australia: News Corp Australia, 24 October


Acuña, T. L. (2014). National project aims to shape future tertiary studies, Peracto News, Devonport, Australia, April

Acuña, T. L. (2015). ABC interview Dr Tina Acuña, ABC Country Hour Tasmania, Australian Broadcast Corporation, March

Acuña, T. L. (2015). ABC interview Dr Tina Acuña, ABC Country Hour South Australia, Australian Broadcast Corporation, March


Acuña, T. L. (2015). ABC interview Dr Tina Acuña, Central Victoria Bendigo Breakfast, Australian Broadcast Corporation, March


General Coverage, (2013). ‘New Project Aims to Set a National Academic Standard for Agriculture’, *Ag Institute Newsletter*, South Australia, July

General Coverage, (2013). ‘Setting academic standards for agriculture’, University of Tasmania Alumni magazine, December


General Coverage, (2014). ‘Consultants respond to change at Clare Forum’, *Stock Journal*, Adelaide, 10 April


General Coverage, (2014), “A Big Step Forward for Australian Agricultural Education at University”, *Ag Institute Newsletter*, South Australia, May

General Coverage, (2015). ‘Standards Developed for Tertiary Ag Programs’, *Ag Institute Newsletter*, March

Appendix F  Curriculum mapping tool output

Examples of traffic light reports from University of Tasmania (Figure F1) and The University of Adelaide (Figure F2).

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Building an informed and reflexive societal scientist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Understanding quả phâr</td>
<td>Demystifying the teaching and learning of agriculture</td>
</tr>
<tr>
<td>2. Knowledge of agriculture</td>
<td>Enhancing our understanding of agricultural systems and practices</td>
</tr>
<tr>
<td>3. Effective communication</td>
<td>Enhancing communication skills in a global and diverse context</td>
</tr>
<tr>
<td>4. Creative and critical thinking</td>
<td>Enhancing creative and critical thinking skills in a global and diverse context</td>
</tr>
<tr>
<td>5. Professional practice</td>
<td>Enhancing professional practice skills in a global and diverse context</td>
</tr>
</tbody>
</table>

![Figure F1](image.png)

Figure F1. Degree report for the Bachelor of Agriculture at the University of Tasmania produced using the CMT.
## Degree Report: Bachelor of Agricultural Sciences

### Threshold Learning Outcomes

<table>
<thead>
<tr>
<th>Threshold Learning Outcomes</th>
<th>Students who complete this unit satisfactorily will</th>
<th>In Threshold Learning Outcome Taught</th>
<th>In Threshold Learning Outcome Assessed</th>
<th>If assessed, then the student demonstrates standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate an integrative understanding of agriculture by:</td>
<td>Exploring the role and relevance of agriculture and its related sciences, and agriculture in society.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Understanding the major empirical, economic, social and policy drivers that underpin agricultural practice and how they contribute to practice change.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Understanding how information is adapted and the context within which producers, processors and consumers, make decisions.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td>2. Exhibit depth and breadth of knowledge of agriculture by:</td>
<td>Demonstrating knowledge of the core sciences in the context of agriculture.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Demonstrating broad generalised knowledge of relevant agricultural production systems and their value chains, with specialised knowledge in at least one area.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Understanding how knowledge is integrated and applied from different disciplines to agriculture.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Demonstrating an appreciation of economics, business and social science as they apply to agriculture.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td>3. Critically analyse and address dynamic complex problems in agriculture by:</td>
<td>Identifying contemporary issues and opportunities in agriculture.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Gathering, synthesising and critically evaluating information from a range of relevant sources and disciplines.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Detecting and applying appropriate and/or theoretical techniques or tools in order to conduct an investigation.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Collecting, accurately recording, analysing, interpreting and reporting data.</td>
<td>yes</td>
<td>yes</td>
<td>Exceeds graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td>4. Be an effective communicator by:</td>
<td>Understanding methods of effective two-way written and verbal communication with different audiences.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Communicating with a range of audiences in an agricultural context using a variety of media.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td>5. Be accountable for their own learning and professional work by:</td>
<td>Being independent and self-directed learners.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Working effectively, responsibly and safely in an individual and team context.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Demonstrating knowledge of the regulatory frameworks relevant to their specialised area in agriculture.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
<tr>
<td></td>
<td>Personally practising ethical conduct.</td>
<td>yes</td>
<td>yes</td>
<td>Meets graduate Threshold Learning Outcome: yes</td>
</tr>
</tbody>
</table>
Appendix G  Curriculum mapping

Examples of curriculum maps from University of Tasmania (Figure G1) and The University of Adelaide (Figure G2).

Figure G1. Curriculum mapping of unit-level assessment against the AgLTAS TLOs for the Bachelor of Agriculture at UTAS.

Numbers correspond to the TLOs shown in Figure 4. Those units highlighted as grey are electives with these being the most common pathway for students (students choose 4). Units that are not highlighted are compulsory/core.
### Figure G2. Curriculum mapping of unit-level assessment against the AgLTAS TLOs for the Bachelor of Agricultural Sciences at The University of Adelaide.

Numbers correspond to the TLOs shown in Figure 4. Colour codes are the same as in Figure G1. Those units highlighted as grey are electives with these being the most common pathway for students (students choose 4 of 12). Units that are not highlighted are compulsory/core.

<table>
<thead>
<tr>
<th>Unit or course</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRIC 1510WT Agricultural Systems</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BIOLOGY 1101  Biology I: Molecules, Genes and Cells</td>
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</tr>
<tr>
<td>CHEM 1101 Foundations of Chemistry I</td>
<td></td>
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<tr>
<td>STATSS 1000 Statistical Practice</td>
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<tr>
<td>AGRIC 1520 WT Agricultural Systems II</td>
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<tr>
<td>BIOLOGY 1101 Biology I: Organisms</td>
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<tr>
<td>CHEM 1102 Foundations of Chemistry II</td>
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<tr>
<td>SOIL&amp;WAT 1000WT Soils and Landscapes</td>
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<tr>
<td>AGEBUS 2500WT Agribusiness</td>
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<tr>
<td>AGRIC 2500WT Animal and Plant Biochemistry</td>
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<tr>
<td>CHEM 1102 Foundations of Chemistry II</td>
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<tr>
<td>SOIL&amp;WAT 1000WT Soils and Landscapes</td>
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<tr>
<td>AGRIBUS 3500WT Agricultural Economics and Policy</td>
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<tr>
<td>AGRIC 3515WT Research Methodology in Agricultural Sciences</td>
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<tr>
<td>AGRIC 3510WT Agricultural and Resource Management</td>
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<tr>
<td>AGRIC3500WT Professional Skills in Agricultural Science</td>
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<td>AGRIC 3505WT Professional Skills in Agricultural Science</td>
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<td>AGRIC 3510WT Professional Skills in Agricultural Science</td>
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<td>AGRIC 3510WT Professional Skills in Agricultural Science</td>
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</tbody>
</table>
## Appendix H  IMPEL analysis of current project

| 1. Team members | a. Recognition of project participants’ contributions  
|                 | i. Tina Acuña was awarded a VC Citation for Outstanding Contribution to University Learning and Teaching by the University of Tasmania, October 2014  
|                 | ii. Contributed to the promotion of Amanda Able to Level E at the University of Adelaide  
|                 | b. Enhanced knowledge of curriculum mapping processes (refer to Section 4)  
|                 | c. Publications (refer to Appendix E)  
|                 | d. Invitation to present at University Education forums (refer to Appendix E)  
| 2. Immediate students | a. Changes to curricula implemented through case studies resulting in improved alignment of assessment and learning outcomes  
|                 | b. Student participation enhancing awareness of their needs for their career  
| 3. Spreading the word | a. Website – 3,226 hits, with 82 per cent of these being new visitors  
|                 | b. Workshops – 22 in total  
|                 | c. AgLTAS Statement published, available online as a resource for curricula design and improvement  
|                 | d. Publications (refer to Appendix E)  
|                 | e. Invitations to present at international/national conferences and to industry (refer to Appendix E)  
| 4. Narrow opportunistic adoption | a. Course coordinators making changes as a result of the workshop (refer to Section 4)  
| 5. Narrow systemic adoption | a. The TLOs adapted and CMT being used by other degree programs sharing similarity to Agriculture in the University of Adelaide (such as Viticulture and Oenology)  
|                 | b. TLOs now used in internal review processes at the partner universities  
| 6. Broad opportunistic adoption | a. Professional development through the workshops (and engagement, exchange of information)  
|                 | b. Industry engagement to inform curricula design  
| 7. Broad systemic adoption | a. Impetuous to develop an agriculture discipline network  
|                 | b. ACDA endorsement  
|                 | c. Implementation of AgLTAS at six universities  

The AgLTAS project
Appendix I  External evaluator’s report

Project evaluation report
AgLTAS: A consensus approach to defining standards for learning outcomes and informing curricula design for agriculture

Project Evaluator: Professor Liz Johnson, Deakin University

Summary

This has been a productive and successful project delivered by a committed and accomplished team.

The project has met its original objectives and extended trial activities beyond them. It has delivered a nationally agreed learning outcome statement for Agriculture that has been endorsed by the Australian Council of Deans of Agriculture. It has trialled curriculum mapping with the new Agriculture TLOs and tested moderation of assessment using standards based on the TLOs.

The project has been delivered with considerable reach into its stakeholder communities and in the process has generated productive interactions between universities’ agriculture academics, students and industry partners. This is to be applauded and provides a firm foundation for subsequent work. The communication and dissemination achievements of the project are particularly notable and are a good example for other projects.

This project raises the question again of ongoing support for networks developed by OLT-funded projects. The OLT could usefully consider development of practical advice and assistance for networks and communities to consolidate their work and to find appropriate forms for the longer term.

Project objectives and the evaluation plan

This project set out to construct a nationally agreed standards statements for bachelor degrees in agriculture in Australian Universities. It was built on foundation work of the ALTC Learning and Teaching Academic Standards project which produced the Threshold Learning Outcomes for multiple disciplines including Science, and guidance for further development of graduate outcomes statements in other disciplines. This project explored this territory with a complex disciplinary base spanning biosciences to economics and social sciences and a well-established industry sector, which has had a long history of engagement with universities and applied research. The project also tested application of its graduate outcome statements with trial benchmarking activities.
The stated objectives of the project were:

1. **Nationally agreed Ag-LTAS statement** *(including the nature and extent of Agriculture and Agriculture TLO statements)* to enable alignment of academic standards across universities

2. **Confidence among students that their degree reaches minimum standards**, while each university can clearly promote what is unique about their degree offering as delivered

3. **A holistic appreciation amongst academics and industry of the agriculture curriculum taught at university with opportunity to improve**: linkages between units/courses; **learning pathways through the degree levels**; provision of graduate training by industry

4. **A network of practice between universities and industry through shared engagement in the development of the Ag-LTAS statement**

The evaluation plan (Appendix J) for the project was developed from the outset of the project in close collaboration with the project team. The key evaluation questions were:

1. **Did the project achieve its objectives?**
   a. Does the project produce the planned resources/activities?
   b. What is the quality of the resources?
   c. Is there evidence that less tangible or unexpected outcomes have been achieved?

2. **What is the value of the outcomes?**
   a. What is the current and potential impact of the project resources?
   b. Who benefits from the outcomes of the project?

3. **Were the processes of the project effective?**
   a. Operation of the team
   b. Involvement of stakeholders
   c. Feedback on workshops

Summative evaluation steps with project participants were included in the project design. For this project, the evaluator also acted as a critical friend, attending reference group and team meetings and providing feedback during the course of the project when requested.

Final evaluation is based on:

1. feedback collected from workshop participants
2. reflections from team leaders on the project and its legacy
3. observations by the evaluator during the project
Significance and value of the project

The primary outcome of this project is the construction and dissemination of the Learning and Teaching Academic Standards Statement for Agriculture. This publication addresses two parallel agendas: quality assurance in higher education and the specific training of agriculture professionals.

The Federal TEQSA act specified a standards-based quality framework with revision of the national standards underway during this project (Australian Government, 2014). The revised standards identify external reference points as crucial for curriculum design and explicitly point to discipline learning outcomes statements as examples of nationally acceptable reference points. The Learning and Teaching Academic Standards Statement for Agriculture constructed by this project has been endorsed as the national standard for the discipline by the Australian Council of Deans of Agriculture (ACDA). It joins an expanding number of discipline learning outcomes statements and aligns to related statements in science.

In parallel, the agriculture industry has been closely examining workforce issues. Recent studies by government (Parliament of Victoria, 2012; Pratley, J. 2013) show serious capacity gaps in multiple levels of the agriculture workforce. This project has made considerable headway in bringing agriculture industries back into discussion of bachelor degrees in agriculture. Strong industry participation in the construction of the AgLTAS Standards Statement gives the standards credibility but, equally importantly, has regenerated discussion about the value and importance of agriculture degrees. This project has developed a very strong approach to industry engagement that is relevant to many disciplines.

A third significant outcome of the project is in building understanding of the discipline and exploration of curriculum design. Construction of learning outcomes statements for agriculture proved particularly interesting due to the diverse and complex nature of the industry. As described in project publications, agriculture disciplines range from biosciences through to economics and social sciences. Degree programs in Agriculture are correspondingly diverse with emphases on conventional applied scientific research, application to agriculture production and businesses and the rural social and economic environment. The project has encouraged agriculture academics to examine the balance of their curricula and to discuss benchmarking between degrees for quality assurance.

The project also began the process of building the new standards into curriculum design. It trialled mapping and benchmarking tools to review the current distribution of learning relevant to the standards across two agriculture degrees. Although these are preliminary steps, they do demonstrate that the Standards Statement can be directly related to existing curriculum. This is an interesting case study for other disciplines given the breadth of learning outcomes that are incorporated in the discipline.

Finally, the project has fostered interest in and productive investigation of learning and teaching in Agriculture more broadly. The project has generated substantial interest within universities, amongst industry and in the media. It has acted as a nucleus for Agriculture academics and students to share their teaching and learning experiences. Further work from
this now activated network could contribute to further development and evidence-based practice.

This project has meet its objectives and gone further in testing implementation of its primary product, the Learning and Teaching Academic Standards Statement for Agriculture. The project is also particularly notable for its successful interaction with industry and for its exemplary dissemination and communication strategy, which has delivered a large range of outputs and advanced awareness considerably. Further comments on the impact and quality of deliverables are listed in Appendix J.

**Evaluation data**

Two sets of evaluation data were collected as planned: feedback from workshop participants and feedback from team leaders.

*Workshop participant feedback*

Perceptions of the impact and importance of this project were sought from workshop participants at 18 out of the total 24 workshops held. Workshops inviting this feedback included 33 students (17 per cent of participants), 50 industry representatives (26 per cent), academics (48 per cent) with 9 per cent unspecified. Text comments were collected from approximately half the participants: importance (74 valid responses) and impact (81 valid responses).

Categorisation of the text responses is shown in Table I1. Workshop participants felt the two most important impacts were on building links with industry and on ensuring quality and confidence in the curriculum. The most important outcomes for the workshop participants were to ensure quality, but building capability was also notable. In general comments were strongly positive although some participants noted the outcomes would be dependent on subsequent implementation. This data supports the evaluation comments on the significance of the project.

**Table I1: Workshop participant response on the importance and impact of the project**

<table>
<thead>
<tr>
<th>Comment category</th>
<th>Impact (n= 81)</th>
<th>Importance (n = 74)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% responses</td>
<td>% responses</td>
</tr>
<tr>
<td>Build industry links and external visibility</td>
<td>37</td>
<td>7</td>
</tr>
<tr>
<td>Ensure quality and confidence in curriculum</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Implementation challenges will affect outcomes</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>This is an important project</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Build capability and forward thinking</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>
Team leader reflections

Evaluation interviews were held with two team leaders, Dr Tina Acuña and Dr Amanda Able and project co-ordinator, Phoebe Bobbi between April and July 2015. Team leaders were encouraged to reflect on the outcomes and conduct of the project. Comments are recorded in Table J2 of Appendix J.

The project leaders had a very positive view of the operation of the project that matched with the observation of the evaluator. The project was very well-planned and well-executed. Discussion, as observed, was thoughtful, analytical and productive across the project team and the reference group. Assumptions were challenged and explored and conclusions based on evidence. Project activities ran smoothly with careful planning from the project leads and co-ordinator.

Apart from the recorded outcomes, team leaders commented on the value of creating a space for discussion and sometimes affirmation of agriculture curricula. Their perception was that the project was relevant to its multiple audiences and had addressed current needs. This perception is supported by the feedback from workshop participants and endorsement by the ACDA. The project leaders also reflected on the value of the network built during the project and the need to actively support it for the longer term.

Implications for other projects

Project delivery

This project demonstrates the value of good project management and leadership which has not only effectively delivered the outcomes intended but has also created a positive environment for follow-on projects.

This project also demonstrates the value of professional communications planning. The AgLTAS project has achieved excellent publicity and dissemination to its stakeholder communities. This arises from the combination of effective communications and willing and active project leadership and good use of senior advisors including the reference group.

Project legacy

Many OLT-funded learning and teaching projects create communities of practice or networks. Subsequent build on these foundations can be precarious. During the project interaction is facilitated by funding and fostered by a shared activity. Once these conditions are lost, the nascent network or community must find other mechanisms to share and develop ideas and action.

The future of the AgLTAS network will be dependent on:

1. The commitment of current leaders
2. Finding alternative mechanisms for interaction: e.g. existing conferences, sponsoring organisations
3. Establishing new foci for action: new projects or products that are of value to network members.

As noted by the project leads in evaluation interviews, the endorsement of the Agriculture TLOs by the Australian Council of Deans of Agriculture should give impetus to their adoption. Project leads should be encouraged to maintain and grow their personal leadership in teaching and learning and also to mentor other colleagues to continue and expand their work.

References


APPENDIX J

Agreed evaluation plan (August 2013)

Project Evaluator: Associate Professor Liz Johnson, La Trobe University

Scope

Program stakeholders: This is a dynamic list of stakeholders and will be updated during the project. In many cases it will be appropriate to aim for interaction with key individuals in organisations rather than an exhaustive survey of members.

1. Stakeholders who will be invited to participate directly in the project through workshops and/or online surveys
   a. Universities, teaching and research academics
   b. Students including postgraduates
   c. Graduates
   d. Australian Council of Deans of Agriculture (ACDA)
   e. Companies working in agriculture and related industries
   f. Peak industry bodies
   g. Research providers (State Department of Agriculture, CSIRO, MLA, GRDC, other RDCs),
   h. Professional associations,
   i. Federal Government Department of Agriculture and Fisheries
   j. State Government Departments of Agriculture (or equivalents)

2. Stakeholders who may have an interest in the outcomes
   a. Office for Learning and Teaching
   b. Science discipline education networks and groups
   c. Higher Education regulators (HESP, TEQSA, AQFC)
   d. Government reviews of Agriculture
   e. State and Federal Ministers of Agriculture
   f. Vocational sector (VET/TAFE)
   g. Schools and ACARA (Australian Curriculum), PICSE
   h. Peak farmer groups – eg National Farmers Federation
Agreed evaluation questions

1. Did the project achieve its objectives?
   a. Does the project produce the planned resources/activities?
      i. Note: objectives may be modified from the original proposal as the project develops. Outcomes will be reviewed and updated following discussion with the reference group and the evaluator as needed.
   b. What is the quality of the resources?
      i. Measures: endorsement by peak bodies, uptake by non-participating universities or feedback from them, utility as reported by stakeholders
   c. Is there evidence that less tangible or unexpected outcomes have been achieved?
      i. Measures: Project members are encouraged to record interactions and new ideas as the project proceeds e.g. from third party institutions or stakeholders.

2. What is the value of the outcomes?
   a. The project resources comprise:
      i. Threshold Learning Outcomes for Agriculture and accompanying notes
      ii. Case studies in using the AgTLOs
      iii. Academic journal articles describing the process for construction of the AgTLOs and case studies
      iv. TLO curriculum mapping tool
   b. What is the current and potential impact of the resources?
      i. Measures: Include question in online survey and workshops such as...
         1. What are the potential benefits of the products of the project?
         2. What issues/problems could be addressed by these products?
   c. Who benefits from the outcomes of the project?
      i. Measures: Record feedback from participants and stakeholders (see preceding list).

3. Were the processes of the project effective?
   a. Operation of the team
      i. Measures: meeting timelines, communication strategy within the team, team perceptions of function (group and individual exit interviews)
   b. Involvement of stakeholders
      i. Measures: Response rates to activities, (participant survey on project delivery - to be decided during the project)
c. Workshops feedback forms
   i. Pro forma to be constructed by project leader, project officer and
evaluator Workshop leaders administer feedback surveys, summarise
data.
   ii. Data summary is included in feedback to participants (thank you
letter)
   iii. Data summary recorded in project office
## Impact and quality of deliverables

### Table J1: Project deliverables achieved

<table>
<thead>
<tr>
<th>Project objective</th>
<th>Associated Deliverable(s)</th>
<th>Evaluation Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationally agreed Ag-LTAS statement (including the nature and extent of Agriculture and Agriculture TLO statements) to enable alignment of academic standards across universities.</td>
<td>Standards Statement</td>
<td>The Standards Statement follows the successful format of other discipline learning outcomes. It explains the context of the discipline, presents the consensus standards with explanatory notes, and explains the consensus process, which gives the statement validity.</td>
</tr>
<tr>
<td>Confidence among students that their degree reaches minimum standards, while each university can clearly promote what is unique about their degree offering as delivered.</td>
<td>Consensus with and endorsement of Standards Statement</td>
<td>Endorsement by the Australian Council of Deans of Agriculture and the consensus process used for construction places the Statement as the primary external reference point for agriculture degrees in Australia. Further development should include TAFE and private providers.</td>
</tr>
<tr>
<td>A holistic appreciation amongst academics and industry of the agriculture curriculum taught at university with opportunity to improve: linkages between units/courses; learning pathways through the degree levels; provision of graduate training by industry.</td>
<td>Workshops with agriculture academics, industry, and students</td>
<td>Twelve out of a potential 14 universities offering agriculture contributed to project workshops. A total of 290 participants (industry, academics and students) worked collaboratively building the basis for further discussion. This is a very good level of interaction.</td>
</tr>
</tbody>
</table>
Reflection from team leaders

The following table summarises reflections on the outcomes and conduct of the project by three team leaders. The collated comments were reviewed by interviewees to ensure the notes captured the intent of their comments. Comments from the evaluator are included to include wider implications and some evaluation.

Table J2: Comments from team leaders on the outcomes and conduct of the project.

<table>
<thead>
<tr>
<th>Comments from project leaders</th>
<th>Comments from evaluator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To what extent did the project achieve objectives/intended outcomes?</strong></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>Outcomes were achieved</td>
</tr>
<tr>
<td>Extra outputs</td>
<td>Trial of external benchmarking/moderation was included</td>
</tr>
<tr>
<td><strong>What factors helped and hindered in the achievement of the outcomes? Factors that helped...</strong></td>
<td></td>
</tr>
<tr>
<td>Project team</td>
<td>Harmonious team with good reach into agriculture programs in Australian universities. The whole team is passionate about agriculture and personally motivated.</td>
</tr>
<tr>
<td>Project planning and delivery</td>
<td>Excellent project management and strong leadership. The preceding pilot project ensured the project could start quickly.</td>
</tr>
<tr>
<td>Right time and right audience</td>
<td>Project tapped into a desire to bring industry and academics closer together.</td>
</tr>
<tr>
<td>Immediate value for participants</td>
<td>Participants valued opportunities to discuss curriculum and to affirm current good practice. Early publication provided motivation for team members.</td>
</tr>
</tbody>
</table>
### Table J2 (cont.)

<table>
<thead>
<tr>
<th>What factors helped and hindered in the achievement of the outcomes? Factors that hindered...</th>
<th>Comments from project leaders</th>
<th>Comments from evaluator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution of workload</strong></td>
<td>Workload was not evenly distributed across the team or across project timeline. Teaching relief proved difficult to use in practice due to timelines and lack of alternatives.</td>
<td>This is a perennial problem. Multi-institutional projects balance reach across the sector with the agility and drive of a smaller team. Buy-out of academic time (particularly for senior staff) is often not flexible.</td>
</tr>
<tr>
<td><strong>Operating across multiple institutions</strong></td>
<td>Alignment of ethics approval processes was difficult and time-consuming</td>
<td>A sector approach to this for issue education research is needed. These projects are typically low-risk but must comply with often rigid institutional systems. The national approach for genetically modified organisms with standard exemptions is instructive (see Office of the Gene Technology Regulator).</td>
</tr>
<tr>
<td><strong>Developing shared ideas</strong></td>
<td>Some team members were less engaged or starting from a different background and this slowed down discussion of core ideas.</td>
<td></td>
</tr>
<tr>
<td><strong>Managing competing opinions</strong></td>
<td>Strong personalities amongst advisory groups required management although the outcomes were very good.</td>
<td>Although listed as a hindering factor, the relevant project lead acknowledged that this produced valuable outcomes including learning for the team.</td>
</tr>
</tbody>
</table>
Table J2 (cont.)

<table>
<thead>
<tr>
<th>What is the legacy of the project?</th>
<th>Comments from project leaders</th>
<th>Comments from evaluator</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Standards Statement for Agriculture</td>
<td>Agriculture National Standards Statement</td>
<td>The AgLTAS statement is a national reference point for Agriculture curricula</td>
</tr>
<tr>
<td>Network of Agriculture educators</td>
<td>The project created a new network in agriculture education.</td>
<td>The nascent education network in agriculture joins a group of emerging discipline education networks. It would also be valuable to extend this to tertiary education institutions and specialist colleges</td>
</tr>
<tr>
<td>Visibility for Agriculture learning and teaching</td>
<td>Voice for the importance of teaching to agriculture</td>
<td></td>
</tr>
<tr>
<td>Follow-on projects</td>
<td>Exploring options for future extension of the project with some team members</td>
<td>The project has initiated implementation and benchmarking studies which could be developed in partnership with industry</td>
</tr>
<tr>
<td>Legacy depends on implementation</td>
<td>The value of the Agriculture TLOs and the connections made in the new network are dependent on sustained interaction.</td>
<td>The new network will need more impetus to grow as noted under sustainability.</td>
</tr>
</tbody>
</table>

What measures, if any, have been put in place to promote sustainability of the project's focus and outcomes?

<table>
<thead>
<tr>
<th>Wide stakeholder engagement</th>
<th>ACDA endorsement gives coverage/buy-in across all universities</th>
<th>This project achieved excellent participation and endorsement from industry, the ACDA and Agriculture faculties/departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative approach created ownership and investment from participants</td>
<td>An active network for in agriculture education will foster further work. Project leaders are concerned that the network will need support and forward planning to continue.</td>
<td>The longevity of discipline networks in an interesting and complex question. In this case, the support of peak bodies may support future activity.</td>
</tr>
<tr>
<td>Network of Agriculture educators</td>
<td>Academic publication</td>
<td>Team members will follow up on the project with peer-reviewed publication and other dissemination</td>
</tr>
</tbody>
</table>
Table J2 (cont.)

<table>
<thead>
<tr>
<th>What lessons have been learned from this project and how might these be of assistance to other institutions?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conduct of project</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Comments from project leaders</strong></td>
</tr>
<tr>
<td>This project was managed very well and demonstrates the value of good planning. The reference group was particularly valuable to emphasise the voice of industry</td>
</tr>
<tr>
<td><strong>External expertise</strong></td>
</tr>
<tr>
<td><strong>Stretching the budget</strong></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>