



MEAT MATTERS. WE ALL HAVE A STEAK IN THIS!

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1.0 EXECUTIVE SUMMARY

This Report provides an overview of the *Meat Matters. We All Have a Steak in this!* Project, and summarises the Project's objectives, outcomes, evaluation findings, insights and recommendations.

The purpose of this Project was to develop primary and secondary school educational resources in hardcopy and online formats to introduce young people to the Australian red meat processing industry and the diverse careers within it.

The Project content includes a series of primary and secondary school education resources including a digital interactive, four Project-Based Learning Units of Inquiry and their associated Assessment Rubrics, ten Videos, three Podcasts, over 50 Images and Information Galleries for each Unit of Inquiry.

Additionally the Project delivered an Engagement and Communications Strategy and Report, a Launch, Banners, USB's, Fliers and a Promotional Video.

The objective of this Project is to provide AMPC with a suite of educational resources for schools that 'Support AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community'.

The approach adopted in this Project included an interrogation of the Australian Curriculum to ensure the educational resources are aligned to content descriptions and achievement standards for the upper primary and secondary years of schooling in subjects where 'food production' is typically taught in schools.

The Project also held Key Stakeholder Workshops in three regional towns where red meat is processed to bring together relevant stakeholders, to provide strategic direction and advice in relation to achieving the Project objectives, with the aim of ensuring that the development of the educational resources responded to their needs. The preliminary stakeholder engagement also aimed to attract involvement in the Industry and Teacher Reference Groups.

The Project adopted a mixed method approach to engage schools in trialing or reviewing the educational resources. Schools known to the Research Organisation were contacted directly and invited to participate in the Project. Additionally educators from each state and territory and professional subject-based teacher associations were invited to review or trial the draft educational resources.

The draft educational resources were trialed /reviewed by 57 teachers from 51 schools across Australia and 23 members of the Industry Reference Group.

The Project included an evaluation of the educational materials.

An independent evaluator developed a series of survey questions that were used to determine the degree to which the educational resources met the over-arching objective of ‘Supporting AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.’

The Final Report’s Executive Summary highlights that:

‘The purpose of this evaluation was to determine the degree to which the educational resources met the over-arching objective of ‘Supporting AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.’

The qualitative and quantitative data show there were few criticisms overall of the materials. The suggestions for improvements relate to reasonable refinements and adjustments. The materials have been very positively and enthusiastically received by almost all reviewers. Teachers have reported significant positive change professionally and in relation to their students’ understanding and appreciation of red meat processing in Australia. The pedagogical approaches of the Inquiry Process and Project Based Learning have enabled teachers to successfully motivate and engage their students. Using these approaches has been novel for a number of the teachers and has expanded the capability of most. Teachers have indicated they are very much intending to continue using the materials and planning for the 2017 school year already begun. These are significant findings as they have been achieved in a very short timeframe in the school education sector which generally requires a twelve month lead time before meaningful implementation occurs.

AMPC can be confident that teacher and industry stakeholder feedback indicates the ‘Meat Matters’ resources are educationally sound, of high quality, and able to successfully engage and challenge students. This has been a significant initiative in bringing together education and industry sectors to collaborate on building knowledge for all participants in red meat processing and associated careers.’

Source: Final Report Evaluation of AMPC ‘Meat Matters. We All Have a Steak in this!’ page 3.

The Evaluator’s Report made the following recommendations for AMPC’s consideration.

1. The ‘Meat Matters’ resources can be revised to include teachers’ suggestions for improvements and advice to others in approaches to implementation. The addition of professional development opportunities and student work samples would further enhance the materials.
2. Teacher and key stakeholder feedback indicates that AMPC can be confident that the Meat Matters resources will be used by teachers and should continue in further implementation.
3. That AMPC consider continuing to work collaboratively with industry supply chain representatives to inform development of high quality educational resources that engage teachers and their students in contemporary developments in red meat processing and futures thinking towards a capable and innovative future workforce.

Source: Final Report Evaluation of AMPC ‘Meat Matters. We All Have a Steak in this!’ page 4.

The Project has delivered a number of results that can benefit Members and the wider industry. It has:

- Enabled teachers and students to understand the role the red meat processing industry plays in the Australian economy.
- Promoted opportunities for students to appreciate the red meat processing and production chains, from pre-farm gate to post-farm gate, marketing and consumption, and the rewarding career pathways that are available in regional Australia.
- Demonstrated the state-of-the-art processing facilities and the commitment to innovation and environmental sustainability.
- Expanded awareness of the spectrum of career opportunities that are available in the industry and broader supply chain.
- Provided a cost effective industry education hub to help teachers deliver 'food production' learning in their classrooms.
- Created greater consumer awareness amongst students, their families and community about red meat processing and production; and
- Provided positive media opportunities for AMPC members to demonstrate their contribution and connections to their local communities.

The AMPC School Education Resources were officially launched by the Honorable Luke Hartsuyker MP, Assistant Minister to the Deputy Prime Minister on 6th April, 2017 at the Royal Easter Show.

2.0 INTRODUCTION

The purpose of this Project was to develop primary and secondary school educational resources in hardcopy and online formats to introduce young people to the Australian red meat processing industry and the diverse careers within it.

The Australian Curriculum includes 169 content descriptions about ‘food and fibre production’ and prior to the commencement of this Project red meat processing and careers in the industry had not been articulated in any educational resource development aligned with the Australian Curriculum.

This Project recognised that there needed to be a greater understanding about red meat processing industry and associated careers within schools and the wider community, as a lack of consumer understanding could impact on the industry’s ongoing social license to operate, as well as affect its ability to attract people to work in it.

The Project scope includes a series of primary and secondary school education resources including a digital interactive, four Project-Based Learning units of inquiry and their associated assessment rubrics, ten videos, three podcasts, over 50 images and information galleries for each unit of inquiry. Additionally, an Engagement and Communication Strategy and Report were produced to enable the implementation of a range of communication and engagement activities to ensure the broader adoption of the AMPC School Education Resources, and to maximise the investment AMPC has made in developing them.

A promotional video and an official launch of the educational materials resulted in industry and teacher testimonials, students’ work samples and a Ministerial acknowledgement of their value.

Australian and International research informed the Project. In 2011, there was a national benchmarking survey of students and teacher knowledge as related to food and fibre production and education which was conducted by Hillman and Buckley from the Australian Council of Educational Research (ACER).

This study asked very simple questions of school teachers and students across Australia regarding the source of a variety of agricultural products and received astounding results. For example, only one quarter of the students surveyed from Year 6 recognised that cotton socks were a plant-based product more than one quarter of students at that same age level identified yoghurt as a plant-based product.

This lack of knowledge is not a problem that is isolated in Australia. In research conducted by Hess and Trexler in 2011, they identified that within a small sample of American children there were similar issues, with the respondents to their surveying only identifying correctly in 28% of cases that a hamburger bun was a plant-based product.

The education of the younger generations of Australians regarding the production of their food and importantly in this Project, their red meat products, is of vital importance for the long term sustainability of the industry within Australia.

With not enough people entering the meat processing workforce or university level studies relevant to the industry and the current workforce aging and declining in, this Project aims to enable students in schools and their teachers and career advisors to be better informed about the industry and diverse career pathways within it.

These factors combined with the fact that food and agribusiness is held up as one of the five pillars of the Australian economy (Liberal Party of Australia, 2013), indicates that meat processing and careers within it, is a subject worthy of studying.

The approach adopted in this Project included scoping the Project within the Australian Curriculum and research undertaken by ACER. Additionally, Key Stakeholder Workshops were held in three regional towns where red meat is processed to bring together relevant stakeholders to provide strategic direction and advice in relation to achieving the Project objectives, with the aim of ensuring that the development of the educational resources responded to their needs. The preliminary stakeholder engagement also aimed to attract involvement in the Industry and Teacher reference Groups.

The Project adopted a mixed method approach to engage schools in trialing or reviewing the educational resources. Schools known to the Research Organisation were contacted directly and invited to participate in the Project.

Additionally, relevant teacher professional associations were contacted, for example the NSW Association of Agriculture Teachers (NSWAAT), Agriculture Teachers Association of South Australia (ATASA), Queensland Agriculture Teachers' Association (QATA), Victorian Association of Agricultural and Horticultural Educators (VAAHE), and the National Association of Agricultural Educators (NAEE).

Planning also included an interrogation of the Australian Curriculum (AC) to ensure all intended educational resources are aligned to content descriptions and achievement standards for the upper primary and secondary years of schooling in subjects where 'food production' is typically taught in schools.

Our approach also included engaging key stakeholders in the red meat processing industry to feature in the videos for the Project, and to gain background information and existing resources for the Project. Stakeholders included beef, sheep and goat Producers, Butchers, an Animal Transporter, Meat Processors, a Chief Executive Officer of a Processing Plant, Owner-Operators of Meat Processing Plants, a Human Resource Officer, Supervisors, Engineers, Project Managers, Food Handler and a Meat Scientist.

The draft educational resources were trialed /reviewed by 57 teachers from 51 schools across Australia and 23 members of the Industry Reference Group.

A further methodology used in this stage of the Project included the evaluator, reading the draft educational materials and Key Stakeholder Report, and consulting with AMPC to develop the survey questions that were used to determine the degree to which the educational resources met the overarching objective of 'Supporting AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.'

3.0 PROJECT OBJECTIVES

The objective of this Project is to provide AMPC with a suite of educational resources for schools that:

- Support AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.
- Engage and inform teachers and students regarding state-of-the-art processing facilities and best practice red meat production.
- Provide resources which help build leadership skills among teachers and students so they can communicate about red meat production and the industry in Australia.
- Increase knowledge and understanding about the complexity and innovative nature of Australia's red meat processing industry.
- Provide encouragement, information and practical teaching advice that support teachers to educate their students about red meat production processes and the red meat processing industry.
- Educate school students about innovation and environmentally sustainable practices implemented in the red meat processing industry.
- Expand awareness of the broad range of career pathways available through the red meat processing industry and broader supply chain.
- Develop engaging learning programs using an inquiry process and the Project Based Learning (PBL) approach aligned with the Australian Curriculum.

3.1 Units of work

The four units of work below were launched at the MINTRAC 'Paddock to Plate' Training Conference on Wednesday 29th March and at the Royal Easter Show at the Butcher's Breakfast on Thursday 6th April, 2017. Five hundred copies have been printed for distribution to AMPC Members, Australian Schools and other Stakeholders.

- From Paddock to Plate <http://www.ampc.com.au/education-training/school-resources/paddock-to-plate>
- Meat Matters. We All Have a Steak in this <http://www.ampc.com.au/education-training/school-resources/meat-matters>
- Australian Meat Processing. Networked, Ethical, Sustainable and Intelligent <http://www.ampc.com.au/education-training/school-resources/aust-meat-processing>
- Where Might a Career in red Meat Processing Take You? <http://www.ampc.com.au/education-training/school-resources/careers>

3.1.1 Digital Interactive

The interactive whiteboard resource was delivered to the AMPC in September 2016 and is located on the AMPC website <http://www.ampc.com.au/uploads/Reports/AMPC%20Interactive/>

3.1.2 Videos

The Project Team has produced ten original videos and three original podcasts, in addition to featuring eight AMPC videos, and four SCOTT Automation and Robotics videos. These are located in Video Galleries on the AMPC website and also embedded into the units of work.

3.1.3 Metadata Records

Five Meta Data Records were completed and shared with AMPC on 28th February 2017. These Meta Data records need to be emailed to Stacey Hattensen at Education Services Australia (ESA) Stacey.Hattensen@esa.edu.au for inclusion on Scootle <https://www.scootle.edu.au/ec/p/home>

3.1.4 Launch Materials

The Project delivered the following materials that have been incorporated into the launch of the AMPC School Education Resources on 6th April by the Honorable Luke Hartsuyker MP.

- An Invitation
- Two Banners
- Fifty USBs
- Name Tags
- A Snapshot
- An Information Flier
- A Promotional Video

Additionally, the Research Organisation has delivered two sets of Briefing Notes.

3.1.5 Engagement and Communications Strategy and Report

The Project delivered a Communication and Engagement Report outlining the Communication and Promotional opportunities available during November 2016 through to June 2017 making 17 strategic recommendations for AMPC's consideration.

Additionally, a Communication Strategy was delivered, detailing aims, background information, internal and external stakeholders, key messages, strategies, desired outcomes and evaluation recommendations.

4.0 METHODOLOGY

The Project was conducted in eight stages.

The first stage scoped the Project within the Australian Curriculum in the upper and junior secondary years of schooling and research undertaken by ACER. This resulted in the educational materials being aligned to the following Australian Curriculum content descriptions, cross-curriculum priorities and general capabilities.

4.1 Australian Curriculum

The following information identifies each unit of work's links to the Australian Curriculum.

Unit 1: From Paddock to Plate. The Essential Ingredient

Technologies

Design and Technologies knowledge and understanding

Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy [ACTDEK021](#)

Investigate how people in design and technology occupations (packaging engineers and graphic designers) address competing considerations, including sustainability in the design of products, services and environments for current and future use [ACTDEK019](#)

Design and Technologies Processes and Production Skills

Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions [ACTDEP024](#)

Generate, develop, and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques [ACTDEP025](#)

Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions [ACTDEP026](#)

Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions [ACTDEP027](#)

Develop project plans that include consideration of resources when making designed solutions individually and collaboratively [ACTDEP028](#)

Science

Science as a human endeavour: Use and influence of science

Scientific knowledge is used to solve problems and inform personal and community decisions [ACSHE217](#)

Cross Curriculum Priorities: Sustainability

OI.2: All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

OI.3: Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

OI.7: Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

OI.8: Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.

General Capabilities**Literacy**

This unit's learning experiences enable students to develop literacy capabilities that relate to everyday living contexts that students face throughout their lives. For example:

- Comprehending texts through listening, reading and viewing;
- Composing texts through speaking, writing and creating;
- Developing skills in reading, interpreting and analysing information; and
- Developing oral language skills as students ask questions, seek advice, present viewpoints and discuss their practical tasks.

Numeracy

This unit's learning experiences enable students to develop numeracy capabilities that relate to everyday living contexts as they make recipes. For example:

- Calculating and estimating; and
- Using a range of measurement techniques when producing labels for a cut of red meat.

ICT Capability

This unit's learning experiences enable students to develop the capacity to both manage and use information technology safely and responsibly, including the capacity to evaluate sources and their reliability, accuracy and validity of information and use digital technologies in academic, practical, collaborative and creative pursuits. For example:

- Applying social and ethical protocols and practices when using ICT;
- Investigating with ICT;
- Creating with ICT;
- Communicating with ICT;
- Managing and operating ICT; and
- Developing skills to undertake effective searches online and locate appropriate information in a timely manner.

Critical and Creative Thinking

This unit's learning experiences enable students to develop the capacity to solve problems, think critically and creatively, or generate new ideas. Students will also identify alternative explanations, see links and find new ways to apply ideas in the context of everyday living as they engage in designing a red meat label to showcase the point of origin and way an Australian red meat product has been processed and can be cooked. For example:

- Inquiring – identifying, exploring and clarifying information;
- Generating innovative ideas and possibilities;
- Reflecting on thinking, actions and processes;
- Analysing, synthesising and evaluating information; and
- Developing creative solutions when they apply divergent thinking to resolving design challenges—for example, designing and creating a label for a type and cut of red meat.

Personal and Social Capability

This unit's learning experiences enable students to develop the capacity to take responsibility for their own work and learning, manage their learning, monitor, reflect on and evaluate learning. They also identify personal characteristics that contribute to or limit effectiveness, plan and undertake work independently, take responsibility for their behaviour and performance, and learn from successes and failures. For example:

- Managing their own and others' safety when working in food preparation and presentation areas and in an online environment; and
- Interacting with others in social and communal activities in practical food preparation classes.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in August 2016.

4.1.1 Unit 2: Meat Matters. We All have a Steak in this.

Technologies

Design and Technologies knowledge and understanding

Year 7 & 8

Analyse how food and fibre are produced when designing managed environments and how these can become more sustainable [ACTDEK032](#)

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures [ACTDEK029](#)

Design and Technologies Processes and Production Skills

Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas [ACTDEP035](#)

Generate, develop, test and communicate design ideas, plans and processes for various audiences using appropriate technical terms and technologies including graphical representation techniques [ACTDEP036](#)

Select and justify choices of materials, components, tools, equipment and techniques to effectively and safely make designed solutions [ACTDEP037](#)

Independently develop criteria for success to evaluate design ideas, processes and solutions and their sustainability [ACTDEP038](#)

Use project management processes when working individually and collaboratively to coordinate production of designed solutions [ACTDEP039](#)

Science

Science as a human endeavour: Use and influence of science

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations [ACSHE120](#) [ACSHE135](#)

People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity [ACSHE121](#) [ACSHE136](#)

Cross Curriculum Priorities: Sustainability

OI.2: All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

OI.3: Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

OI.7: Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

OI.8: Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.

General Capabilities

Literacy

This unit's learning experiences enable students to develop literacy capabilities that relate to everyday living contexts that students face throughout their lives. For example:

- Comprehending texts through listening, reading and viewing;
- Composing texts through speaking, writing and creating;
- Developing skills in reading, interpreting and analysing information; and

- Developing oral language skills as students ask questions, seek advice, present viewpoints and discuss their practical tasks.

Numeracy

This unit's learning experiences enable students to develop numeracy capabilities that relate to everyday living contexts as they make recipes. For example:

- Calculating and estimating; and
- Using a range of measurement techniques when producing designs.

ICT Capability

This unit's learning experiences enable students to develop the capacity to both manage and use information technology safely and responsibly, including the capacity to evaluate sources and their reliability, accuracy and validity of information and use digital technologies in academic, practical, collaborative and creative pursuits. For example:

- Applying social and ethical protocols and practices when using ICT;
- Investigating with ICT;
- Creating with ICT;
- Communicating with ICT;
- Managing and operating ICT; and
- Developing skills to undertake effective searches online and locate appropriate information in a timely manner.

Critical and Creative Thinking

This unit's learning experiences enable students to develop the capacity to solve problems, think critically and creatively, or generate new ideas. Students will also identify alternative explanations, see links and find new ways to apply ideas in the context of everyday living as they engage in analysing and designing systems to manage water, energy and waste productively and in a way that reduces impacts on the environment. For example:

- Inquiring – identifying, exploring and clarifying information;
- Generating innovative ideas and possibilities;
- Reflecting on thinking, actions and processes;
- Analysing, synthesising and evaluating information; and
- Developing creative solutions when they apply divergent thinking to resolving design challenges—for example, designing and creating a poster and brochure to guide visitors through the identification system, and provide more details about the practical, positive and achievable actions the plant and its staff are making on their journey towards sustainability.

Personal and Social Capability

This unit's learning experiences enable students to develop the capacity to take responsibility for their own work and learning, manage their learning, monitor, reflect on and evaluate learning.

They also identify personal characteristics that contribute to or limit effectiveness, plan and undertake work independently, take responsibility for their behaviour and performance, and learn from successes and failures. For example:

- Managing their own and others' safety when working in food preparation and presentation areas and in an online environment; and
- Interacting with others in social and communal activities in research activities classes.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in September 2016.

4.1.2 Unit 3: Australian Meat Processing

Technologies

Design and Technologies knowledge and understanding

Year 9 & 10

Investigate and make judgments on the ethical and sustainable production and marketing of food and fibre [ACTDEK044](#)

Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved [ACTDEK040](#)

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions [ACTDEK041](#)

Design and Technologies Processes and Production Skills

Apply design thinking, creativity, innovation and enterprise skills to develop, modify and communicate design ideas of increasing sophistication [ACTDEP049](#)

Science

Science as a Human Endeavour: Use and influence of science

People use scientific knowledge to evaluate whether they should accept claims, explanations or predictions, and advances in science can significantly affect people's lives, including generating new career opportunities [\(ACSHE160\)](#)

The values and needs of contemporary society can influence the focus of scientific research [\(ACSHE228\)](#)

Cross Curriculum Priorities: Sustainability

01.2: All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

01.3: Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

O1.4: World views that recognise the dependence of living things on healthy ecosystems, and value diversity and social justice are essential for achieving sustainability.

O1.5: World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.

O1.6: The sustainability of ecological, social and economic systems is achieved through informed individual and community action that values local and global equity and fairness across generations into the future.

O1.7: Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

O1.8: Designing action for sustainability requires an evaluation of past practices, the assessment of scientific and technological developments, and balanced judgments based on projected future economic, social and environmental impacts.

O1.9: Sustainable futures result from actions designed to preserve and/or restore the quality and uniqueness of environments.

General Capabilities

Literacy

This unit's learning experiences enable students to develop literacy capabilities that relate to everyday living contexts that students face throughout their lives. For example:

- Comprehending texts through listening, reading and viewing;
- Composing texts through speaking, writing and creating;
- Developing skills in reading, interpreting and analysing information; and
- Developing oral language skills as students ask questions, seek advice, present viewpoints and discuss their practical tasks.

Numeracy

This unit's learning experiences enable students to develop numeracy capabilities that relate to everyday living contexts as they make recipes. For example:

- Calculating and estimating; and
- Using a range of measurement techniques when producing designs.

ICT Capability

This unit's learning experiences enable students to develop the capacity to both manage and use information technology safely and responsibly, including the capacity to evaluate sources and their reliability, accuracy and validity of information and use digital technologies in academic, practical, collaborative and creative pursuits. For example:

- Applying social and ethical protocols and practices when using ICT;
- Investigating with ICT;
- Creating with ICT;
- Communicating with ICT;

- Managing and operating ICT; and
- Developing skills to undertake effective searches online and locate appropriate information in a timely manner.

Critical and Creative Thinking

This unit's learning experiences enable students to develop the capacity to solve problems, think critically and creatively, or generate new ideas. Students will also identify alternative explanations, see links and find new ways to apply ideas in the context of meat processing as they engage in analysing and designing a meat processing plant for the next century. For example:

- Inquiring – identifying, exploring and clarifying information;
- Generating innovative ideas and possibilities;
- Reflecting on thinking, actions and processes;
- Analysing, synthesising and evaluating information; and

Developing creative solutions when they apply divergent thinking to resolving design challenges, for example, designing and creating commercial advertising their new meat processing plant, and what it processes and produces.

Personal and Social Capability

This unit's learning experiences enable students to develop the capacity to take responsibility for their own work and learning, manage their learning, monitor, reflect on and evaluate learning. They also identify personal characteristics that contribute to or limit effectiveness, plan and undertake work independently, take responsibility for their behaviour and performance, and learn from successes and failures.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in September 2016.

4.1.3 Unit 4: Where Might a Career in Red Meat Processing Take You?

Work Studies

Year 9

Career and life design / career development and management

Source career information and resources [ACWSCL014](#)

Elaborations include:

- researching and filtering a range of career information and services designed to help with career and decision-making
- creating a portfolio of possible career profiles
- identifying diverse learning pathways into preferred career destinations

Describe the nature of work in Australia and the implications for current and future work opportunities [ACWSCL015](#)

Elaborations include:

- collecting and interpreting data about how people work
- exploring initiatives to build employment and enterprise opportunities in their community/region
- researching the types of work available, the changes occurring at a local level and the implications for future employment

Year 10

Career and life design / career development and management

Apply knowledge of self to career decision-making processes [ACWSCL032](#)

Use career decision-making processes to filter career scenarios [ACWSCL033](#)

Work skills

Explain the range of skills and attributes necessary to work effectively in the 21st century [ACWSCL025](#)

General Capabilities

Literacy

This unit's learning experiences enable students to develop literacy capabilities that relate to everyday living contexts that students face throughout their lives. For example:

- Comprehending texts through listening, reading and viewing;
- Composing texts through speaking, writing and creating;
- Developing skills in reading, interpreting and analysing information; and
- Developing oral language skills as students ask questions, seek advice, present viewpoints and discuss their practical tasks.

ICT Capability

This unit's learning experiences enable students to develop the capacity to both manage and use information technology safely and responsibly, including the capacity to evaluate sources and their reliability, accuracy and validity of information and use digital technologies in academic, practical, collaborative and creative pursuits. For example:

- Applying social and ethical protocols and practices when using ICT;
- Investigating with ICT;
- Creating with ICT;
- Communicating with ICT;
- Managing and operating ICT; and
- Developing skills to undertake effective searches online and locate appropriate information in a timely manner.

Critical and Creative Thinking

This unit's learning experiences enable students to develop the capacity to solve problems, think critically and creatively, or generate new ideas. Students will also identify alternative explanations, see links and find new ways to apply ideas in the context of meat processing as they engage in analysing and designing a portfolio of career profiles. For example:

- Inquiring – identifying, exploring and clarifying information;
- Generating innovative ideas and possibilities;
- Reflecting on thinking, actions and processes; and
- Analysing, synthesising and evaluating information.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), downloaded from the Australian Curriculum website in September 2016.

4.2 Key Stakeholder Workshops

The second stage of the Project involved coordinating and hosting Key Stakeholder in three regional towns where red meat is processed to bring together relevant stakeholders to provide strategic direction and advice in relation to achieving the Project objectives, with the aim of ensuring that the development of the educational resources responded to their needs. The preliminary stakeholder engagement also aimed to attract involvement in the Industry and Teacher reference Groups.

Workshops were held in Murray Bridge, South Australia; Rockhampton, Queensland; and Dubbo, New South Wales.

4.2.1 Meeting One: Urbrbrae Agricultural High School

The Project was introduced and outlined to the Executive of ATASA on the morning of 19th August, 2016. Executive Members of ATASA were very positive about the Project and nominated Phil Roberts from ATASA to join the Teacher Reference Group and keep the Executive informed about the Project's progress.

4.2.2 Meeting Two: Murray Bridge High School

The Project was outlined and introduced to representatives from Thomas Foods International, Careers Advisors and Teachers on the afternoon of the 19th August. Key Stakeholders were asked what they would like to know about the AMPC Project that is developing primary and secondary school educational resources, how the Project can respond to their needs, how they could be involved in their development, and how would they use them. The Research Organisation identified the following of questions that were asked of the Stakeholders in attendance:

- As a key stakeholder, what do you feel is your specific "stake" in the AMPC Educational Resources for Primary and Secondary Schools?
- What are your expectations of the Educational Resources?
- How does the extension program to produce them align with your expectations?
- Who would you list yourself as other key stakeholders or key interest groups and why?

- From your perspective of involvement with the development of and later use of the AMPC Educational Resources for Primary and Secondary Schools, what does success in the Project look like?
- What do you see as the key strategies to achieve success in this Project?
- What would you like to learn personally from this year's development and evaluation of the AMPC Educational Resources for Primary and Secondary Schools?
- How will you use the information about the development of the AMPC Educational Resources for Primary and Secondary Schools?
- What do you see as the main challenges for this extension program?
- What local factors do you see influencing the successful implementation of this Project?
- What support/resources will be required to ensure the long term successful implementation of this Project?
- Is there anything else you would like to add that you think we should consider?

The Research Organisation used question and answer polling to gather real time feedback during the workshops.

4.2.3 Meeting Three: Rockhampton Girls Grammar School

On the afternoon of 25th August 2016, the Project was outlined to representatives of Teys Australia, JBS Australia and teachers from local non-government and high schools, and colleges. The Research Organisation engaged them in an identical process using the questions outlined above.

4.2.4 Meeting Four: Fletchers International, Dubbo

The Project was outlined and introduced on the afternoon of 26th August 2016 to representatives of Fletchers International Exports and teachers and career advisors from regional colleges, high schools and distance education centres. The Research Organisation engaged them in an identical process using the questions outlined in Meeting Two.

Our approach also included engaging key stakeholders in the red meat processing industry to feature in the videos for the Project, and to gain background information and existing resources for the Project. Stakeholders included beef, sheep and goat Producers, Butchers, an Animal Transporter, Meat Processors, and a Chief Executive Officer of a Processing Plant, Owner-Operators of Meat Processing Plants, a Human Resource Officer, Supervisors, Engineers, Project Managers, Food Handler and a Meat Scientist.

4.3 Trial Schools, Teacher and Industry Reference Groups

The Project adopted a mixed method approach to engage schools in trialing or reviewing the educational resources. Schools known to the Research Organisation were contacted directly and invited to participate in the Project.

Additionally, relevant teacher professional associations were contacted, for example the NSW Association of Agriculture Teachers (NSWAAT), Agriculture Teachers Association of South Australia (ATASA), Queensland Agriculture Teachers' Association (QATA), Victorian Association of Agricultural and Horticultural Educators (VAAHE), and the National Association of Agricultural Educators (NAEE).

The draft educational resources were trialed /reviewed by 57 teachers from 51 schools (Table 1) across Australia and 23 members of the Industry Reference Group.

The following characteristics were considered by the Research Organisation:

- Education sectors (i.e. Government, Non-Government);
- Locations (i.e. NSW, ACT, Victoria, Tasmania, SA, WA, NT, QLD also metropolitan and non-metropolitan);
- School sizes (i.e. from small to large); and
- School levels (i.e. Primary Schools, Combined Primary and Secondary Schools such as Area Schools and Distance Education Schools, and High Schools).

Table 1: Trial and Review Schools

State / Territory	Levels of Schools and Education Sector
	Primary Government
NT	Girraween Primary School Milner Primary School
QLD	Jones Hill State School
NSW	Narrabeen Lakes Primary School
TAS	Hagley Farm School
SA	Woodville Primary School
ACT	Kingsford Smith School
VIC	Eco Linc Science Centre
	Primary Non-Government
WA	St Anne's School
NSW	Knox Preparatory Grammar School
Total Primary	10
	Combined Primary and Secondary Schools Government
SA	Coomandook Area School Mount Compass Area School Lameroo Regional Community School Meningie Area School Burra Community School
VIC	Eco Linc Science Centre
Total	6
	Combined Primary and Secondary Schools Non-Government
QLD	Rockhampton Girls Grammar School

State / Territory	Levels of Schools and Education Sector
	Capricornia School of Distance Education Rockhampton Grammar School
VIC	Woodleigh School Tintern Grammar
NSW	Dubbo School of Distance Education (x 5)
Total	10
	Secondary Government
NT	Katherine High School
QLD	Dakabin State High School Urangan Senior High School Rockhampton State High School (x2) Emerald Agricultural College
NSW	Dubbo College (x 3) The Henry Lawson High School Glen Innes High School Mulwaree High School (x 2) Gulargambone Central School All Saints College Bathurst
TAS	Yolla District High School Lilydale District High School
WA	Newton Moore Senior High School Kiara College
ACT	Melrose High School
SA	Kapunda High School Murray Bridge High School (x3) Waikerie High School Unity College Loxton High School Mount Barker High School Riverton & District High School Kadina Memorial High School Kapunda High School Birdwood High School Lower Murray Trade Training Centre Trade Schools For The Future, Murray Bridge University of SA

State / Territory	Levels of Schools and Education Sector
Total	31

Twenty-three participants from the Red Meat Processing Sector, Meat Industry, Agriculture and Education sectors (listed in Table 2) were recruited into the Industry Reference Group.

The Research Organisation found the red meat processing industry representatives to be very supportive of the Project. The contribution of the red meat processing industry to the Project included access to staff and facilities for research purposes and, in addition, the development of the Project's Processor-Teacher-Videos and footage has been captured for the Career Videos.

Additionally, red meat processors the Research Organisation has met, have made every effort to share company video footage, journals, reference materials, images, presentations they have made to schools and branding labels with the Research Organisation for the purposes of the Project.

Table 2: Members of the Industry Reference Group

Sector	Representative Organisation
Red Meat Processors	D & S Afflick Domestic Abattoir Fletchers International Exports (x 2) Gundagai Meat Processors (x 2) JBS Australia (x 2) TEYS Australia Thomas Foods International (x3) Wingham Beef Exports
Red Meat Industry	Meat and Livestock Australia Australian Pork Limited Bungendore Butcher Scott Automation and Robotics (x 5)
Agriculture	Art 4 Agriculture
Education	SA Department of Education and Child Development Response Learning and Training
Total	23

4.4 Project Evaluation

A further methodology used in the Project included the evaluator, reading the draft educational materials and Key Stakeholder Report, and consulting with AMPC to develop the survey questions that were used to determine the degree to which the educational resources met the over-arching objective of 'Supporting AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community.'

The Final Report's Executive Summary highlights that:

'The purpose of this evaluation was to determine the degree to which the educational resources met the over-arching objective of 'Supporting AMPC and its members in expanding awareness about the red meat processing industry in Australia by engaging and informing teachers and students about the role and importance of the industry in the Australian economy, environment and wider community'.

The qualitative and quantitative data show there are few criticisms overall of the materials. The suggestions for improvements relate to reasonable refinements and adjustments. The materials have been very positively and enthusiastically received by almost all reviewers. Teachers have reported significant positive change professionally and in relation to their students' understanding and appreciation of red meat processing in Australia. The pedagogical approaches of the Inquiry Process and Project Based Learning have enabled teachers to successfully motivate and engage their students. Using these approaches has been novel for a number of the teachers and has expanded the capability of most. Teachers have indicated they are very much intending to continue using the materials and planning for the 2017 school year has already begun. These are significant findings as they have been achieved in a very short timeframe in the school education which generally requires a twelve month lead time before meaningful implementation occurs.

AMPC can be confident that teacher and industry stakeholder feedback indicates the 'Meat Matters' resources are educationally sound, of high quality, and able to successfully engage and challenge students. This has been a significant initiative in bringing together education and industry sectors to collaborate on building knowledge for all participants in red meat processing and careers.'

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' page 3.

Key comments for AMPC's consideration about teachers who participated in the evaluation include:

'By participating in the trial of 'Meat Matters', teachers expected their students would become more motivated and engaged in learning as well as gaining valuable knowledge of red meat processing and careers in the red meat industry. This expectation was met to a high degree.

There was strong agreement amongst the review teachers that the Meat Matters resources are educational sound and should be expanded into a fuller program in regions.

Teachers encouraged AMPC to continue to produce educational resources; careers information; and provide professional development.'

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' page 3.

Industry stakeholders also shared a number of informative insights.

Listed below are insights in understanding that key stakeholders had of the needs of teachers in being able to integrate the content into their programs.

Shows great initiative within the industry as there is a serious lack of education in the meat and farming industry. We now understand the lack of resources to honestly and professionally promote and explain the industry therefore you are commended on the program. (Butcher)

I had not realised that schools were/would be using units such as these to educate students on agriculture and particularly the meat industry - I think it is a great idea and highly commendable, both for the industry bodies and the schools who take the initiative and use these units as a teaching tool. (Research Scientist)

There is a need to ensure quality sustainability, futures and systems thinking is included in Agriculture to create future workers and leaders for the industry. (Curriculum Expert)

As my understanding of the curriculum itself was limited, I am pleased to read that the core units cover sustainable practices implemented in the industry and its intent to the expand awareness of the broad range of career pathways available through the red meat processing industry and broader supply chain. This encourages those students interested in the agriculture (who may not be directly linked to a farm) to have a clear understanding of the many opportunities which may be available to them. (Rural and Regional Marketing specialist)

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' page 4.

It is interesting to note that Key Industry Stakeholders were attracted to participating in this project because they could see how their area of expertise could contribute to making the project a success.

The Evaluator's Report made the following recommendations for AMPC's consideration.

1. The 'Meat Matters' resources can be revised to include teachers' suggestions for improvements and advice to others in approaches to implementation. The addition of professional development opportunities and student work samples would further enhance the materials.
2. Teacher and key stakeholder feedback indicates that AMPC can be confident that the Meat Matters will be used by teachers and should continue in further implementation.
3. That AMPC consider continuing to work collaboratively with industry supply chain representatives to inform development of high quality educational resources that engage teachers and their students in contemporary developments in red meat processing and futures thinking towards a capable and innovative future workforce.

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' page 4.

5.0 PROJECT OUTCOMES

The outcomes from the Project include a series of primary and secondary school education resources including a digital interactive, four Project-Based Learning Units of Inquiry and their associated Assessment Rubrics, ten Videos, three Podcasts, over 50 Images and Information Galleries for each Unit of Inquiry.

Additionally the Project delivered an Engagement and Communications Strategy and Report, a Launch, Banners, USB's, Fliers and a Promotional Video.

The Final Evaluation Report indicated the following project outcomes for teachers, their students and the industry.

5.1 Teacher Outcomes - Changes in Teacher Capability

The use of the *Meat Matters* resources enabled significant shifts in capability for most of the teachers across the range of 11 indicators. Chart 3 focuses on the development of teachers' knowledge of red meat processing and careers in this industry. The majority of teachers considered they had increased their knowledge and were more confident in communicating about the industry.

Here are examples of their most significant insights or changes in teaching and learning about red meat processing.

Meat processing

I learnt a great deal about ethical meat processing. I was amazed at the students' designs and debriefing. They added a QR code to their meat labels to link to a favourite recipe! This was something we all learnt to do. I've led several project based learning activities and learn from each one. This one really challenged me. The concepts were less concrete than those I've previously led so expectations were high and my students accepted the challenge. (I adapted the unit for my year 3 class)

I was unaware of just how much water was used in meat processing and how important it is to manage this for the future. Good to see the alternatives to coal - fired power that are being introduced and this allowed a revision of the concepts of global warming. The availability of the resources allowed the students to watch the videos and discover the range of alternatives for themselves. SWOT and de Bono's hats resources could be used to help analyse the information they found

That the "by products" of meat processing is used for makeup products and fertilizer and could be worth more than the actual meat...being processed. Didn't know that! My in-law works at an abattoir in NZ, and I used to work at a school near one in Bakers Creek in Qld where children used to go for a tour and parents were factory workers, where workers would line up daily to see if they would work for the day.

Insight: All the things Australian meat processors do to bring us cuts of clean, and healthy meat. Labelling: How poor the standards are when you look at the supermarket shelves. Consumers' lack of understanding about labelling and what they buy...they don't think about where it comes from and the hard work that goes into processing it

Well I had always just talked about 'paddock to plate' as being from the farm to the supermarket/butcher to us...I had never included the processing side of things..it was like it was invisible. Now I talk about it much more and realise that many of us teachers don't think this whole thing through...and it's essential we do so we are true and accurate about things.

I learned so much and so did my students. So much isn't talked about and it's vital that it is as hard working people contribute so much to make great quality meat available to us. Nowhere in the curriculum is this really covered and now we have these resources . . . hope we get more like this.

Careers in red meat processing:

Students were surprised about the number of different jobs that were involved in the red meat industry and what types of technologies are being used. I changed my teaching with this unit by showing them the different YouTube clips and podcasts, giving them the task and they had to go and research everything themselves.

I think that these units clarified for me the vast array of careers available that I hadn't considered. I was also made aware of some of the sustainability issues involved that I hadn't previously considered.

I didn't realise the exciting opportunities. I had always only suggested career pathways in butchery and processing work. Robotics, engineering and mechanical pathways let alone HR and marketing, never crossed my mind.

There are so many and varied careers available for student's considerations. The manual work may be where they can start but I can see there progression and the opportunities in other areas in ICT's, data management and analysis, robotics, mechanics etc.

Chart 3: Changes in teacher knowledge of red meat processing due to trialling the AMPC Meat Matters resources. 2016

■ No increase – already knew a lot ■ No increase – didn't know much and still don't ■ Increased ■ N/A

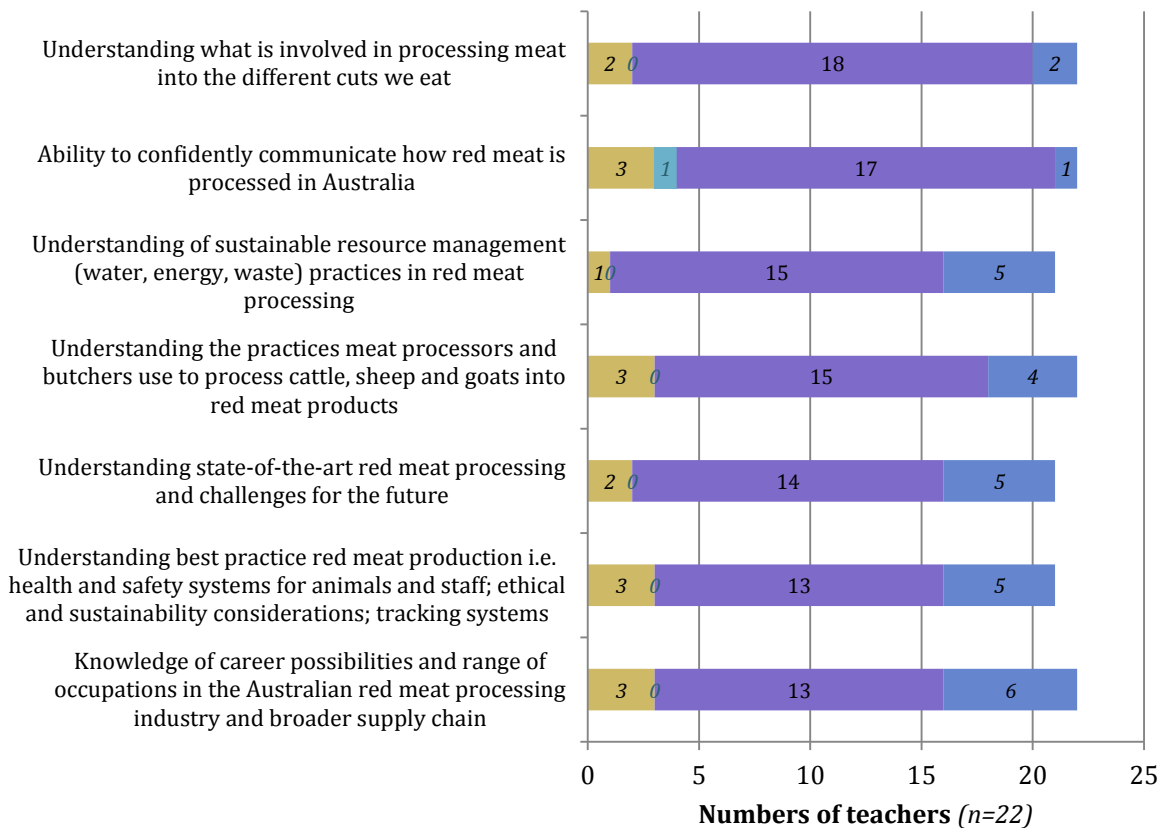
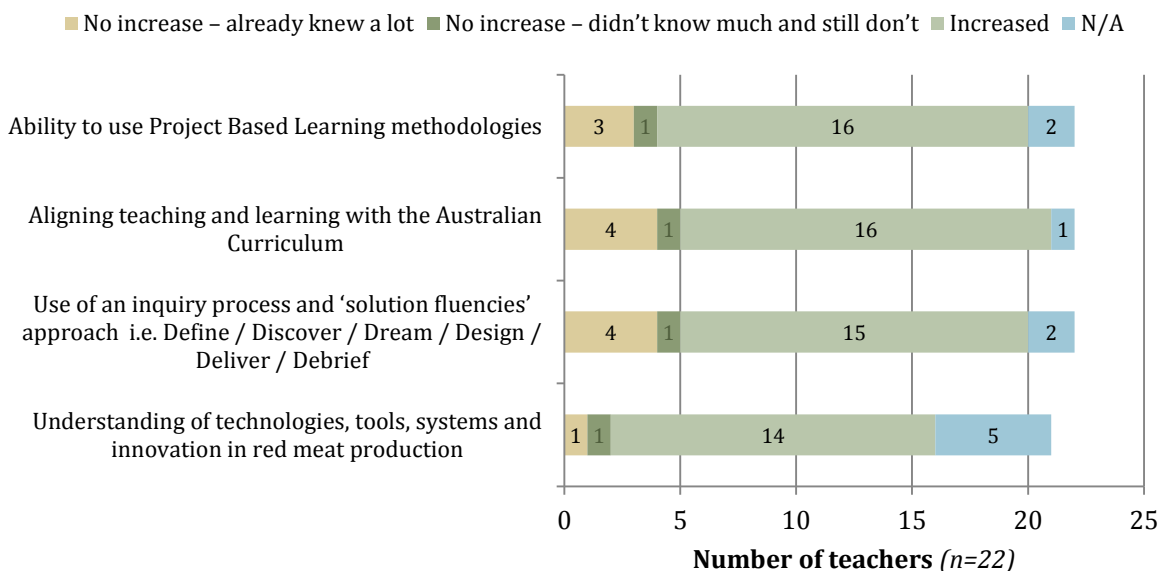


Chart 4 shows the pedagogical aspects of professional capability had also increased for most teachers.

Chart 4: Changes in teacher professional capability due to trialling the AMPC Meat Matters resources, 2016



The following comments about project based learning and use of the inquiry process support this finding,

I believe that the resources that I reviewed provided the learning tools for students to regulate and independently manage aspects of their learning environment to match their own learning style. For those who prefer project based learning the resources supported that style. Similarly, regardless of whether the students were visual, auditory or kinaesthetic learners the resources were flexible enough to facilitate their learning needs.

It's an interesting sector of the community and industry and economy, and what they do is vital...without them we would have to process the meat ourselves. Loved the PBL tasks. It set the kids up to manage their own investigations and discover information and design their solutions. Assessment rubrics were excellent too.

Like the inquiry process and student based learning. Also the involvement of the students and the self-evaluation.

This is evidence that the expectations of teachers in relation to their professional development had been met.

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' pages 10-14.

5.2 Student Outcomes - Changes in Student Knowledge about Meat Processing

A majority of the teachers indicated that they observed significant changes in their students' knowledge of red meat processing (see Chart 5). They also observed significant gains in students' approaches to learning (i.e. their use of a project based inquiry process) and skills such as literacy, numeracy, ICT, personal, social relational, and critical thinking (see Chart 6).

Chart 5: Teacher ratings of changes in their students' knowledge of red meat processing due to trialling AMPC Meat Matters resources, 2016

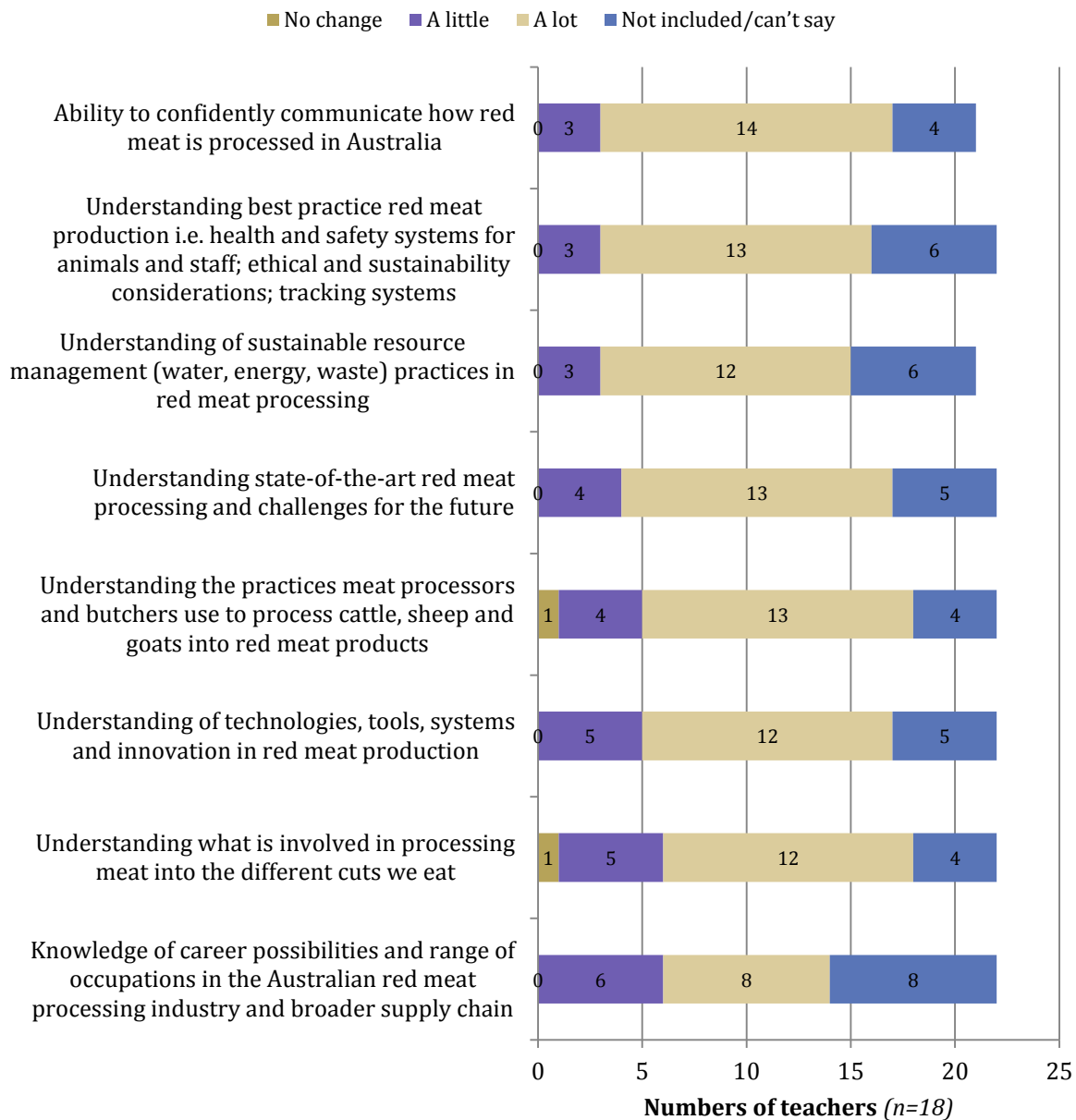
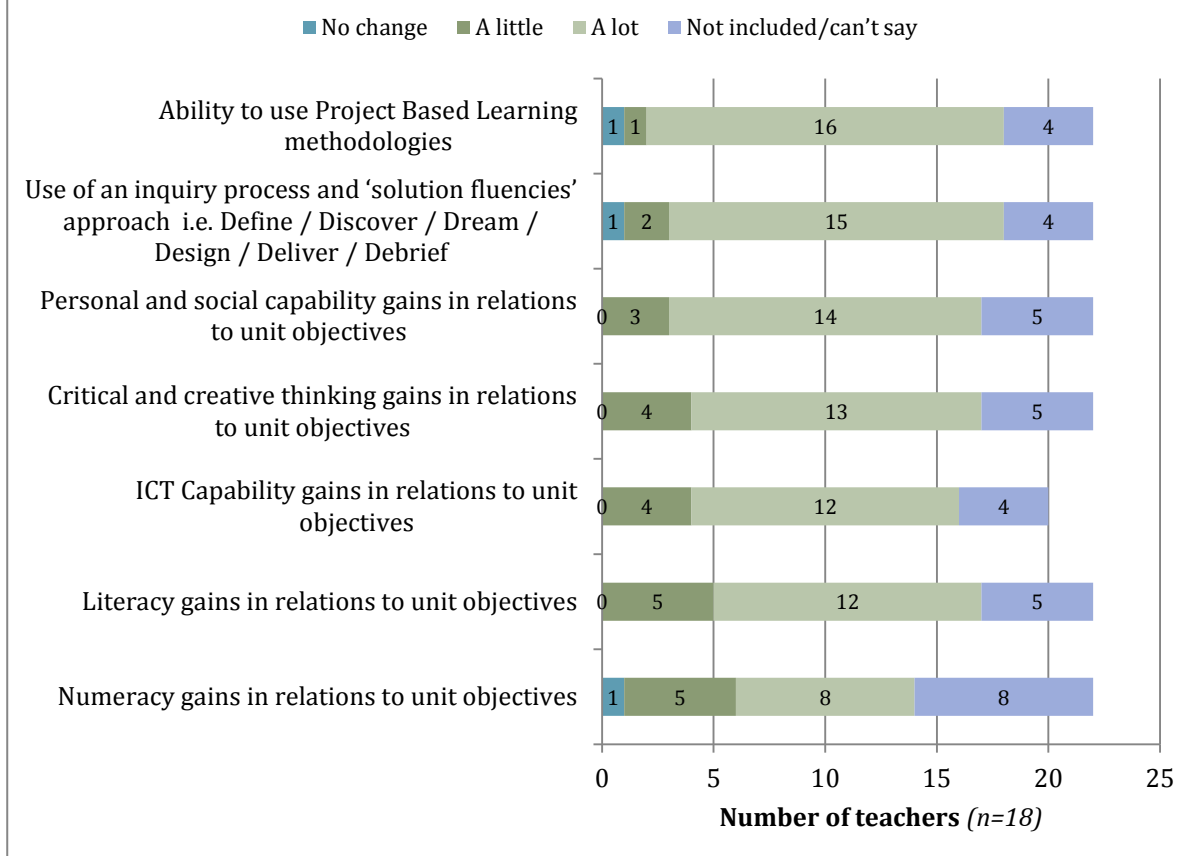


Chart 6: Teacher ratings of their students' gains in learning strategies and skill areas due to trialling AMPC Meat Matters resources, 2016



Teachers were surprised at the level of engagement they observed in their students and the ways in which they rose to the challenges of the activities. Student gains in knowledge are a result of the degree to which they are engaged in learning. There are three generally accepted facets of engagement in learning i.e. cognitive (or intellectual), behavioural, and emotional (or affective)¹. Words such as 'excited', 'motivated', 'loved', 'discovered' are examples of emotional engagement which is often the way learning begins. Here are examples of teacher insights that show emotional engagement was high.

Students had to make a portfolio using one of four different programs that were recommended. Some students found using a new program quite difficult and they reverted back to using the good faithfuls of PowerPoint and Word. Some students that tried the new programs produced some fantastic work and they liked using the program. I was surprised by what they didn't know and now do know.

¹ In their *Handbook of Research on Student Engagement*, editors Christenson, Reschly and Wylie (2012) conclude that despite the lack of consensus between researchers as to how to define and measure them, it is generally agreed that motivation is a precursor to engagement i.e. "motivation is intent and engagement is action". Most engagement scholars "view student engagement as multidimensional, comprised of observable behaviour, internal cognition, and emotion," (p. 814). The purpose of studying student engagement is to improve outcomes for youth as a result of linking schooling with other important contexts – home, peers, community.

(Students surprised me by) creating QR codes. Managing research especially with our often crashing Wi-Fi. Taking it home/ to the supermarket and butcher. Finding interesting facts.

Boys loved the interactive. Some suggested it would be good to gamify elements of it. They got into the mapping and labelling tasks. Loved designing.

They were engaged from the moment I brought the interactive to their attention and then when I shared the challenge and threw up all the Project Files onto the e-learning system at the school...they just formed their teams and drove their own learning. There was little face-to-face teaching...they discovered, then went through the 'dream' phase...then started designing using the meat tray resource...and it went from there!! They all were choosing fonts and colours, deciding where the closest processing plant is, thought about read meat meals they liked and/or cooked and continued designing...then were focused on completing the design as end of term is approaching so fast.

They were excited and motivated by the task the unit set and loved discovering career options for the profiles they created. Having resources that gave them virtual tours of the plants were very useful and the videos and podcast were exceptional.

They got stuck into the tasks and were really engaged. They managed their time frames. Loved the Project planning tool in the Student Project Files.

They loved the digital links to the podcast, videos, real stories from TAFE students, butchers and those in the trade. Being a researcher in the meat industry really surprised them. It was so easy for them to create a variety of career profiles.

They were so motivated to use the interactive and research meat labelling. Then learning about the different cuts of meat...finally now they know how to cook and prepare them. Home Economics teachers and classes could so benefit from this unit and interactive.

Can relate and describe the processes involved, the sustainable practices used and the application of recycling water, using sustainable energy sources and waste management.

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' pages 14-16.

5.3 Teacher Outcomes - Future Use of the Educational Resources

Teachers have indicated that they will be using the educational resources again 2017 and future years. The majority of 73% (16) were 'highly likely' to continue using the materials, and the remaining 27% (6) were anticipating using the resources during planning for next year. This is an indication of potentially strong demand for the resources.

The reasons teachers gave for being likely to use the resources related to four themes:

- **Student responsiveness:**
Students responded that they had enjoyed the unit and it was a different way to discuss the issues of sustainability and ethics in agriculture.
Well... why not use a resource that was so engaging to the students?
- **Career education value:**
I think this unit is very beneficial for ag. It looks at different career pathways in the red meat industry and is very valuable for students so that they can explore what jobs are in the industry. This unit also gives them the opportunity to investigate what school/skills are needed to be able to apply for these types of jobs.
Well, Career pathways is what I do and these new resources are terrific and very much what I and others need ... so I'll use them. Hope there will be more of them.
- **Tells the full story of paddock plate; links well with school curriculum; and more detailed planning will be done to integrate the resources:**
When one realises that you have been remiss in telling a whole story, I feel obliged to say it how it is and make it true and authentic ... so when the "Paddock to Plate" unit comes up again, I'll teach this and use the resources.
Food to Plate units are embedded in our school's curriculum framework, so I'll use this.

I am aiming at covering this topic in my year 12 course next year and will adapt some of the material to suit that level.

I will recommend it and link it to agricultural and sustainable resources I develop when it is relevant.

I will offer this on a 2-year basis to match our 6/7 rotations. I will also take parts from each of the resources and create an assessment task for the Year 12 class to fit into the Beef Cattle topic. And take the opportunity for a visit to TFI and TF Farms.

I would adapt it to our curriculum timeframe, but a very useful resource to show another element of Agriculture.

I'll reuse the resources and look at how I can integrate the others into the school's program.

If I were to have a class of students next year I would definitely use the resources.

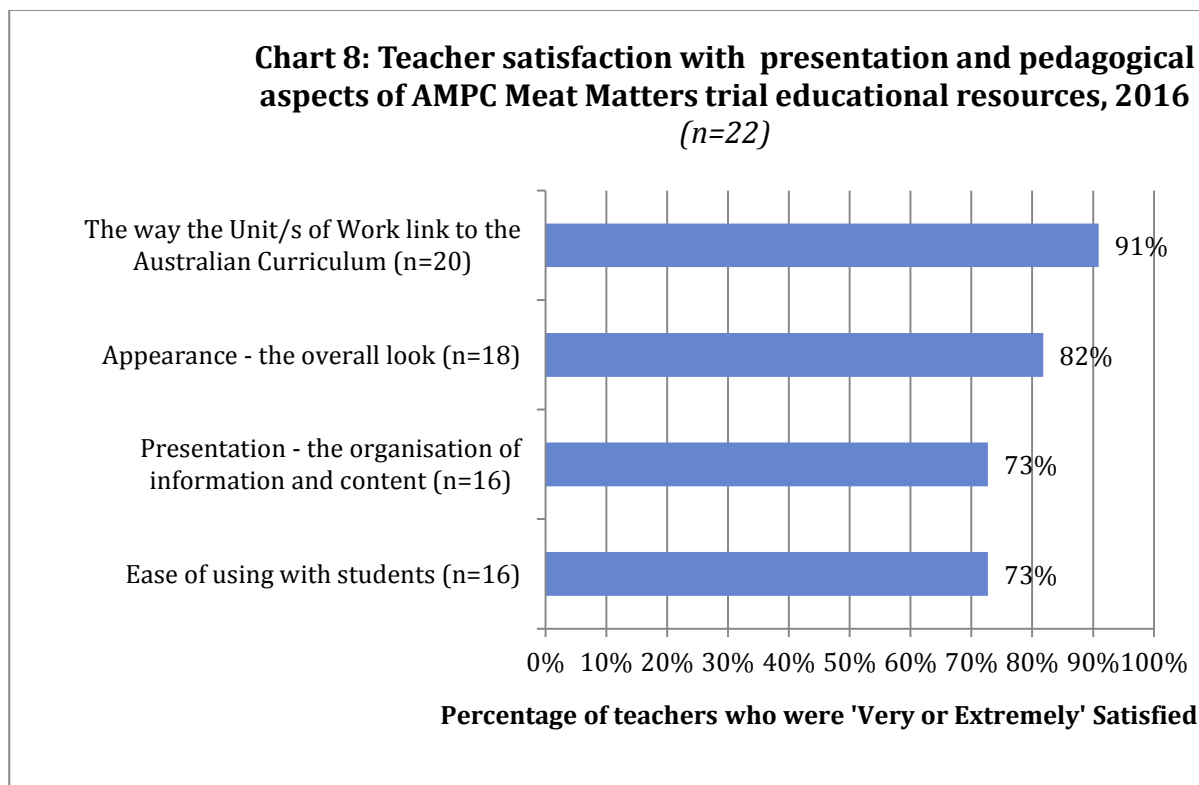
- Useful because as a way of integrating learning across multiple literacies:

The curriculum is overcrowded. Integrated units of work enables us to do multiple literacies and numeracy also in an engaging way. Access to the computer lab is the problem at a smallish school with only one lab and no computers in the classroom.

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' pages 17-18.

5.4 Teacher Outcomes - Satisfaction

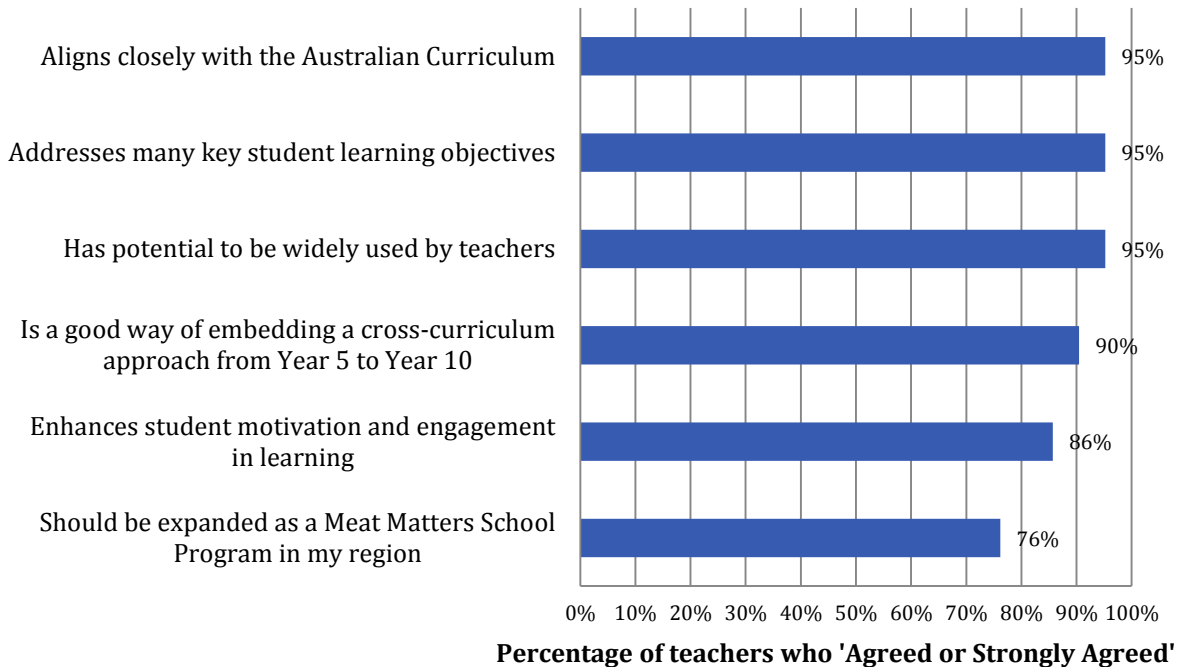
Teachers rated their satisfaction with the materials extremely highly overall, in a range of 73% to 91% very or extremely satisfied. Teachers were most satisfied with the way the resources were linked to the Australian Curriculum (91%, 20); and the appearance (82%, 18). See Chart 8.



There was strong agreement amongst the review teachers that the *Meat Matters* resources are educational sound and should be expanded into a fuller program in regions. See Chart 9.

Chart 9: Teachers' overall ratings of the Meat Matters resources

(n=21)



Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' pages 21-22.

5.5 Industry Outcomes – Promotion of the Industry

A majority (75%, 9) of the key stakeholders from the Industry Reference Group who reviewed the Meat Matters materials considered that the resources positively promote careers in the meat processing industry 'a lot'.

Here are the key stakeholders' comments from the 'a lot' group that explain their ranking:

The unit, its ideas, great videos and the task itself of compiling career profiles actively promotes a wide array of careers in the sector and wider value chain...traditionally there are only brochures and information available.

The units promote the diversity of careers in the meat processing industry.

Yes, this unit is comprehensive and provides a vast scope of opportunities within this industry. It's practical and provides a concrete understanding of career requirements, as well as providing scope to be a future innovator.

There are a lot of exciting and detailed areas that are starting to rely more on increasing levels of technology. Presenting these opportunities will excite and encourage students to become involved.

Great exposure to the meat industry and what opportunities there are from different angles.

There are a number of skilled careers identified in the resources and students are asked to investigate these. Particularly the futures focussed unit of work where technology and systems will increasingly play a role in the production cycle.

In rural areas this could be very beneficial. In terms of livestock transport there is little exposure / training. Rather it is usually a family/generational thing.

Industry stakeholders indicated a willingness and enthusiasm to promote the materials and encourage teachers to use them. Here are the comments:

The units are comprehensive in a theoretical and practical way. These units ensure the student has a sound understanding of the opportunities which exist in the industry from processing to supply chain. It is promising that the students are learning about the environmentally sustainable practices implemented in the red meat processing industry, as the media tend to highlight the 'one off' cases which have potential negative implications across the supply chain.

They are high quality, easy to use and adapt, a real world and up to date resource for the industry. Resources like Interactive component, link to video clips, program structure encouraging student participation very positive. Great unit of work, in particular highlighting the career links, importance of meat industry to the economy and sustainability.

I will say that these are valuable and very informative, easy to understand units about careers and opportunities in the meat processing industry.

They're an excellent tool.

They are well put together and presented teaching resources.

We belong to the LBCRA and I'd tell others about my involvement & encourage them to do the same if asked.

That this is a good start and must be encouraged and supported.

These will be communicated as having sustainability learning integrated into the programs. I will provide these to colleagues in the NSW Department of Education as resources for Agriculture.

I will tell them that they are available and that they should have a look for themselves. I believe that the correct information should be presented to teachers, but it is up to them to decide to use it or not which is a decision that they need to make for themselves to get the most out of the resource.

Source: Final Report Evaluation of AMPC 'Meat Matters. We All Have a Steak in this!' pages 24-25.

5.6 Industry Outcomes – Promotion of the School Education Resources

The Research Organisation concludes there are positive signs that Professional Associations for the Industry and Teachers see value in the resources with many requesting paper presentations and workshops for conferences in 2017.

AgForce Queensland accepted a conference workshop abstract and agreed for the AMPC Education Resources to be showcased at the AgForce Qld 'Food, Fibre and Agricultural educators' Conference in January 2017. The presentation was made on Monday 9th January.

MINTRAC requested a plenary presentation at their 'Paddock to Plate' National training Conference on 30th March.

The Royal Agricultural Society NSW have requested two teacher professional development sessions introducing the Educational Resources to primary and secondary teachers on 11th and 12th April as part of the Royal Easter Show. This will be provided by the Research Organisation on a gratis basis.

The Agricultural Teachers Association of South Australia has requested a presentation of the new Educational resources on the 25th May at their Biennial Conference.

The Australian Science Teachers Association has requested a presentation of the new Educational resources at their Biennial Conference in July 2017.

One article about the Educational resources has already been published in the Australian Association for Environmental Education ozEENews Newsletter Issue 38, March 2017

http://www.aeee.org.au/wp-content/uploads2/2013/11/ozEENews-Issue-138-Mar-2017_final.pdf

6.0 DISCUSSION

The Research Organisation concludes that this Project has provided benefit for the red meat processing industry.

This Project has:

- Enabled teachers and students to understand the role the red meat industry plays in the Australian economy.
- Promoted opportunities for students to appreciate red meat processing and production chains, from pre-farm gate to post-farm gate processing, marketing and consumption, and the rewarding career pathways that are available particularly in regional Australia.
- Demonstrated the state-of-the-art processing facilities and the commitment to innovation and environmental sustainability.
- Expanded awareness of the spectrum of career opportunities that are available in the industry and broader supply chain.
- Provided a cost effective industry education – hub to help teachers deliver ‘meat processing’ learning in their classrooms.
- Created greater consumer awareness amongst students, their families and community about red meat processing and production; and
- Provided positive media opportunities for AMPC members to demonstrate their contribution and connections to their local communities.

The Research Organisation supports the conclusions made by the independent evaluator, Lorraine Larri and Industry Stakeholders as quoted in the Final Evaluation Report.

“AMPC can be confident that teacher and industry stakeholder feedback indicates the *Meat Matters* resources are educationally sound, of high quality, and able to successfully engage and challenge students. This has been a significant initiative in bringing together education and industry sectors to collaborate on building knowledge for all participants in red meat processing and careers.”

Lorraine Larri, Renshaw-Hitchen & Associates (Independent Evaluator of the Project)

“The units are comprehensive in a theoretical and practical way. These units ensure the student has a sound understanding of the opportunities which exist in the industry from processing to supply chain.” *Industry Stakeholder*

“These are high quality, easy to use and adapt, real world and up to date resources for the industry.” *Industry Stakeholder*

7.0 CONCLUSIONS/RECOMMENDATIONS

The Research Organisation suggests that the value of this Project requires the implementation of communication and engagement activities to ensure the broader adoption of the AMPC School Education Resources and to maximise the investment AMPC has made in developing them. The Communication and Engagement Strategy delivered to AMPC in October 2016 identified a range of strategies including:

- Writing a letter to AMPC Members about the AMPC Education Resources, communicating the opportunity to share education resources with local schools and at local events planned for 2017-18 and invite them to advise of local career days/events in their regions;
- Writing to the CEO of the Australian Curriculum Assessment Reporting Authority (ACARA) about the new AMPC Education Resources and negotiating the inclusion of meat processing as a NAPLAN writing topic for schools;
- Writing to the CEO of the Australian Curriculum Studies Association (ACSA) about the new Education Resources;
- Writing and providing a newsletter article to relevant curriculum officers in state and territory Departments of Education, Catholic Education Offices and Independent Schools Boards;
- Writing and providing a newsletter article to Distance Education Offices and the Home Schooling Association;
- Writing to Education Services Australia requesting the Education Resources be promoted through the online portal 'Scootle', the Scootle Community e-newsletter and a session of Scootle Live in 2017-18;
- Writing articles for Subject Associations' Newsletters;
- Initiating an 'Adopt-a- Colleague' email campaign to build up more teacher contacts for AMPC's database;
- Initiating blog conversations in a range of edublogs;
- Presenting a workshop at the Australian Science Teachers Association Conference , 9th – 12th July, in Hobart;
- Promote the AMPC Education Resources via National Science Week channels;
- Write an article for World Food Day promotions;
- Invite teachers on the current AMPC school database to host a staff meeting or network meeting to introduce the AMPOC Education Resources to other teachers;
- Submitting abstracts for relevant conference presentations for example PIEFA Conference 29th April-1st May 2018, and
- Writing articles to publicise the resources through other channels.

The policy aims of the AMPC are to ‘promote an understanding of the meat processing industry and careers within it and the broader supply chain’ and to ‘increase the capability and capacity within the industry to maximize career pathways in regional processing plants’.

The AMPC School Education Resources are worthwhile educational responses to the AMPC’s policy objectives and with sufficient promotion through the right channels, the AMPC’s educational resources can help teachers engage students in thinking about where their meat comes from; understand and investigate red meat processing in Australia; understand all the things Australian red meat processors do to bring us quality red meat products, whilst using and managing water, energy and waste sustainably; understand the processing technologies and systems used by Australian meat processors to bring us quality cuts of meat; broaden their understandings about the broad range of career pathways available through the red meat processing industry and broader supply chain; and appreciate that a lack of consumer understanding can impact on the ongoing social license for red meat processing to operate, as well as the ability of the industry to attract people to work in it.

8.0 BIBLIOGRAPHY

Australian Curriculum Assessment Reporting Authority (2016) Australian Curriculum. Retrieved from <http://www.australiancurriculum.edu.au/>

Colliver, A. (2017) Meat Matters! We All Have a Steak in this. New Teaching Resources Integrating the Sustainability CCP soon to be launched. ozEEnews, Issue 138, March 2017. Page 15.

Hillman, K., & Buckley, S. (2011). Food, Fibre and the Future – Report on surveys of students’ and teachers’ knowledge and understanding of Primary Industries. Retrieved from: <http://www.primaryindustrieseducation.com.au/resources/reports/foodfibrefuture.pdf>

Hess, A. J., & Trexler, C. J. (2011). A Qualitative Study of Agricultural Literacy in Urban Youth: What Do Elementary Students Understand about the Agri-food System?. *Journal of Agricultural Education*, 52(4), 1-12. DOI: 10.5032/jae.2011.04001.

Larri, L. (2016) *AMPC Meat Matters-We All Have a Steak in this. Review of Draft Education Resources-Interim Report*. Renshaw-Hitchen & Associates, NSW, Australia.

Larri, L. (2016) *AMPC Meat Matters-We All Have a Steak in this. Review of Draft Education Resources-Final Report*. Renshaw-Hitchen & Associates, NSW, Australia.

Liberal Party of Australia. (2013). *5-Pillar Economy*. Retrieved 17 March 2017, from <https://www.liberal.org.au/our-plan/5-pillar-economy>