

Student and teacher perceptions and knowledge

Understanding parents, student and teacher perceptions of the red meat processing: Current state of knowledge

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1.0 Executive Summary

Primary and secondary school students are the next generation workforce, however for them to choose the red meat processing sector as an employer, they must have a positive perception of the sector, and knowledge of the diverse and attractive career opportunities available. This is vitally important to ensure AMPC's aspiration of the sector being seen as a diverse, safe and attractive industry of choice for employment by 2030 is achieved. Teachers and parents are known key influencers of student career pathways with teachers also determining the content/industries they include in teaching and learning programs to meet curriculum outcomes.

Project activities targeted primary and secondary school students, parents and teachers including:

- Incursions and excursions with primary and secondary students followed by a focus group discussion
- Semi-structured interviews with teachers and parents
- A survey for teachers developed from findings of interviews and disseminated nationally

The research found that a connection with either people working in the sector or the presence and involvement of an abattoir in their local community, increased knowledge, and perception of the importance of the red meat processing sector. Teachers and parents who were familiar with the red meat processing sector thought of the presence of an abattoir in their local area. There was a significant relationship between teachers perceptions of the red meat processing sector and how they feel about careers in the red meat processing sector. Secondary teachers who possessed an agricultural qualification and taught agriculture or STEM subjects more broadly had more positive perceptions of the careers associated with the red meat processing sector. Having a friend or family member work in the industry or having visited an abattoir before also significantly improved perceptions compared to having no industry connection. However, there was a general lack of knowledge of careers in this sector, even by agriculture teachers. Incursions and excursions with primary and secondary school students were successful in raising knowledge and awareness of the different career opportunities available in the sector. However, more research is required to determine whether this knowledge and awareness translates into an aspiration for a career in the sector.

The project has led to an increased understanding of the knowledge and perception of primary and secondary school teachers, parents and students about the red meat processing sector including career pathways. The insights from this project provide an evidence-base to draw upon to develop a strategy to improve the perception, knowledge and awareness of the red meat processing sector to attract and retain a talented, diverse, and dedicated workforce.

2.0 Introduction

The purpose of the research project is to develop an increased understanding of the knowledge and perception of primary and secondary school teachers, parents and students about the red meat processing sector including career pathways. Primary and secondary school students are the next generation workforce, however for them to choose the red meat processing sector as an employer, they must have a positive perception of the sector, and knowledge of the diverse and attractive career opportunities available. This is vitally important to ensure AMPC's aspiration of the sector being seen as a diverse, safe and attractive industry of choice for employment by 2030 is achieved. Teachers and parents are known key influencers of student career pathways with teachers also determining the content/industries they include in teaching and learning programs to meet curriculum outcomes. If teachers do not have a positive perception, knowledge or awareness of what a job in the red meat processing sector entails, it is unlikely they will promote these pathways to their students. It is therefore important to engage with both teachers and students to address the sector's image and change current negative perceptions to attract a talented, diverse and dedicated workforce.

This five-phase program of research contributed to the AMPC aspiration of the processing sector being seen as a diverse, safe and attractive industry of choice for employment by 2030.

1. A meeting with key AMPC staff and the project team was held to establish the key issues the research needs to address to align with the strategic direction of the industry. This allowed the project team to obtain a greater understanding of the sector including technological advances, strengths, and limitations as perceived by the current workforce.
2. Teachers from rural and metropolitan schools in VIC, NSW and QLD were invited from the research project team's broad networks to participate in a semi-structured interview. The data collected from these interviews allowed a deeper understanding of teachers' knowledge, awareness and perception of the red meat processing sector, including of career opportunities available.
3. An online survey was developed using the information collected from interviews with teachers and disseminated nationally. This allowed the research team to determine whether the findings from the teacher interviews applied to a greater number of teachers across Australia.
4. Parents of primary and secondary aged children were interviewed to assess their perceptions, knowledge, and awareness of the red meat processing sector and the possible affect this may have on supporting their child to consider a job in the industry.
5. Incursions which involved short, hands-on activities related to careers in the red meat processing sector, and excursions to abattoirs were conducted with primary and secondary school classes in NSW and QLD. Following the activities or excursions, students participated in a focus group to allow the research team to ascertain their knowledge, perception and awareness of the careers in the red meat processing sector.

This document reports on the key findings of the research conducted with teachers, parents, and students.

3.0 Project Objectives

To understand primary and secondary school teacher, parent and student perceptions, knowledge and awareness of the red meat processing sector and associated career pathways. This information will be used to develop an evidence-based program of activities to attract the next generation talented, diverse, and dedicated workforce to the red meat processing sector.

4.0 Methodology

All research protocols and instruments were approved by the CQUniversity Human Research Ethics Committee (approval number 23414).

4.1 Teacher perceptions

Semi-structured interviews were conducted with primary and secondary teachers across regional and metro QLD, NSW, and VIC, including those who do and do not teach agriculture. Questions asked during semi-structured interviews can be found in *Appendix Semi-structured interview questions - Teachers*. Semi-structured interviews were transcribed via Otter ai, and a thematic analysis was then undertaken of qualitative transcription data using NVivo.

4.2 National Teacher Survey

A survey was conducted with primary and secondary teachers across Australia, including those who do and do not teach agriculture. The survey questions can be found in the Appendix. *Appendix National Teacher Survey*. A thematic analysis was undertaken of qualitative data using Excel. Quantitative analysis was then undertaken of the numerical survey data. Background demographics were calculated including participant gender, location, years as a teacher, level (i.e., primary, secondary or both) and subjects taught. Statistical analyses exploring the relationship between demographic factors, connection to the red meat processing sector, perceptions of the sector and associated careers were also completed.

4.3 Parent perceptions

Semi-structured interviews were conducted with parents of primary and/or secondary students. A copy of the questions asked during semi-structured interviews can be found in *Appendix Semi-structured interview questions - Parents*. Semi-structured interviews were transcribed via Otter ai, and a thematic analysis was then undertaken of qualitative transcription data using NVivo. Knowledge and perceptions of the sector were explored, along with goals for their child/ren career education.

4.4 Student perceptions

Primary school students participated in short hands-on activities where they were food scientists for a day, learning about what different careers in the red meat processing sector entail in particular why disease transmission, food preparation and hygiene are important. Secondary school students completed meat quality assurance activities including testing for salmonella, preparing food safely and testing for appropriate hygiene practices. Prior to participating in the activities, visit to a processing plant and/or focus group, students completed a survey. A copy of the survey and focus group questions asked can be found in *Appendix Student focus group survey and questions*. Student focus group data was audio recorded and transcribed using Otter ai, with a thematic analysis undertaken to understand student perceptions, knowledge and awareness of the red meat processing sector.

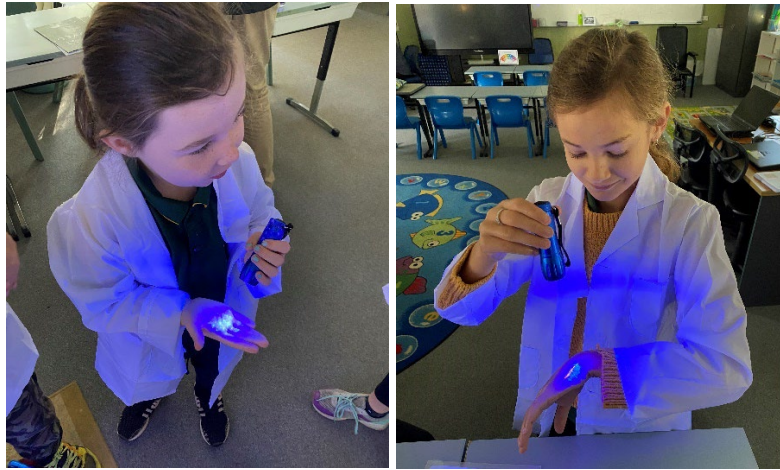


Figure 1 Primary school students investigating disease transmission



Figure 2 Secondary school students undertaking an incursion with meat quality assurance activities



Figure 3 Secondary school students visiting a local processing plant

5.0 Results and Discussion

5.1 Teacher perceptions

Background Demographics

A minimum of 3 teachers from rural and 3 from metropolitan schools in VIC, NSW and QLD (minimum 18 teachers) were required to be interviewed as part of Milestone 2: Teacher semi-structured interviews. More than the required teachers were interviewed (21 teachers), and included teachers from a range of demographics (primary and secondary school, and those that do and do not teach agriculture; Figure 4).

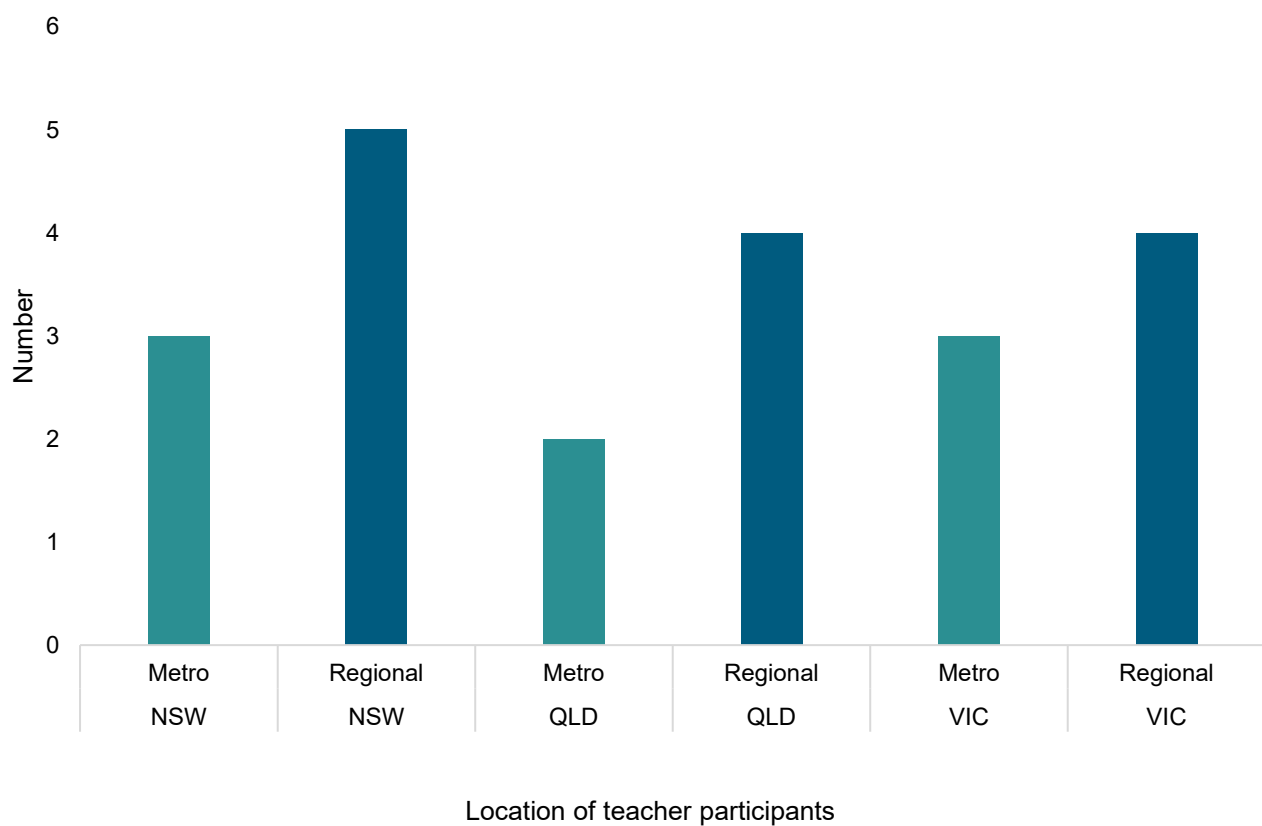
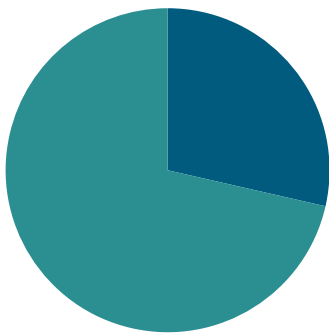
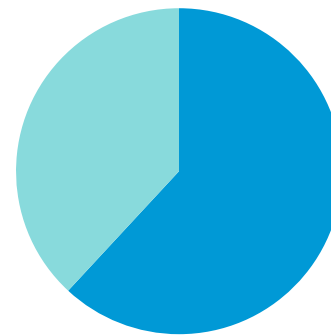


Figure 4 Overview of teacher participants in milestone 2 across NSW, QLD and VIC



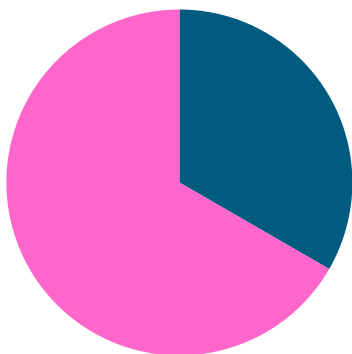
■ Primary ■ Secondary

a) What level do you currently teach: primary (blue) and secondary (teal)?



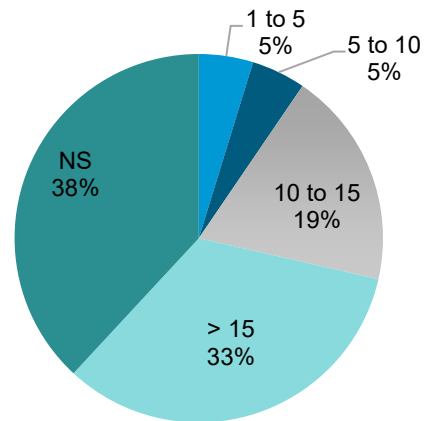
■ Yes ■ No

b) Do you currently teach agriculture: yes (blue) and no (teal)?



■ Male ■ Female

c) Are you male (blue) or female (pink)?



d) Number of years teaching. NS = Not Specified

Figure 5 Background information of teacher participants: a) what level do you currently teach? b) Do you currently teach agriculture? c) Gender and d) Number of years teaching.

Teacher Red Meat Processing Sector Knowledge

Participants associated abattoirs, butchers, pre-farm gate practices, and the entire supply chain from paddock to plate more generally with the red meat processing sector. Whilst a large proportion of teachers were able to identify an abattoir as part of the red meat processing sector, 61% of responses incorrectly referred to areas that were not the red meat processing sector such as butchers, pre-farm gate practices or the entire supply chain from paddock to plate (Figure 6). Additionally, responses varied based on whether the teacher taught primary or secondary (Figure 7), or if they taught agriculture or not (Figure 8). In general, some agriculture and secondary school teachers were able describe the red meat processing sector correctly. Teachers were able to provide multiple answers, but overall highlights a general lack of knowledge of what constitutes the red meat processing sector.

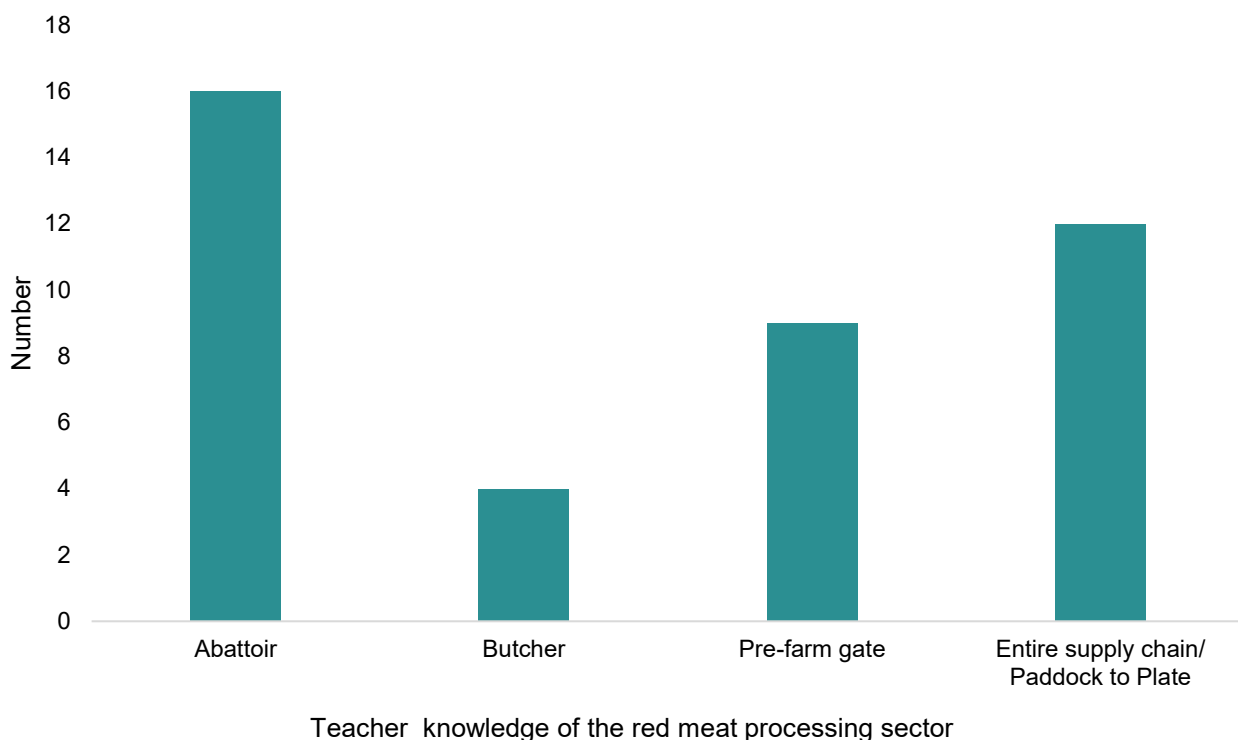


Figure 6 Overall teacher knowledge of the red meat processing sector in terms of: abattoir/red meat processing sector, butchers, pre-farm gate practices, and the entire supply chain from paddock to plate.

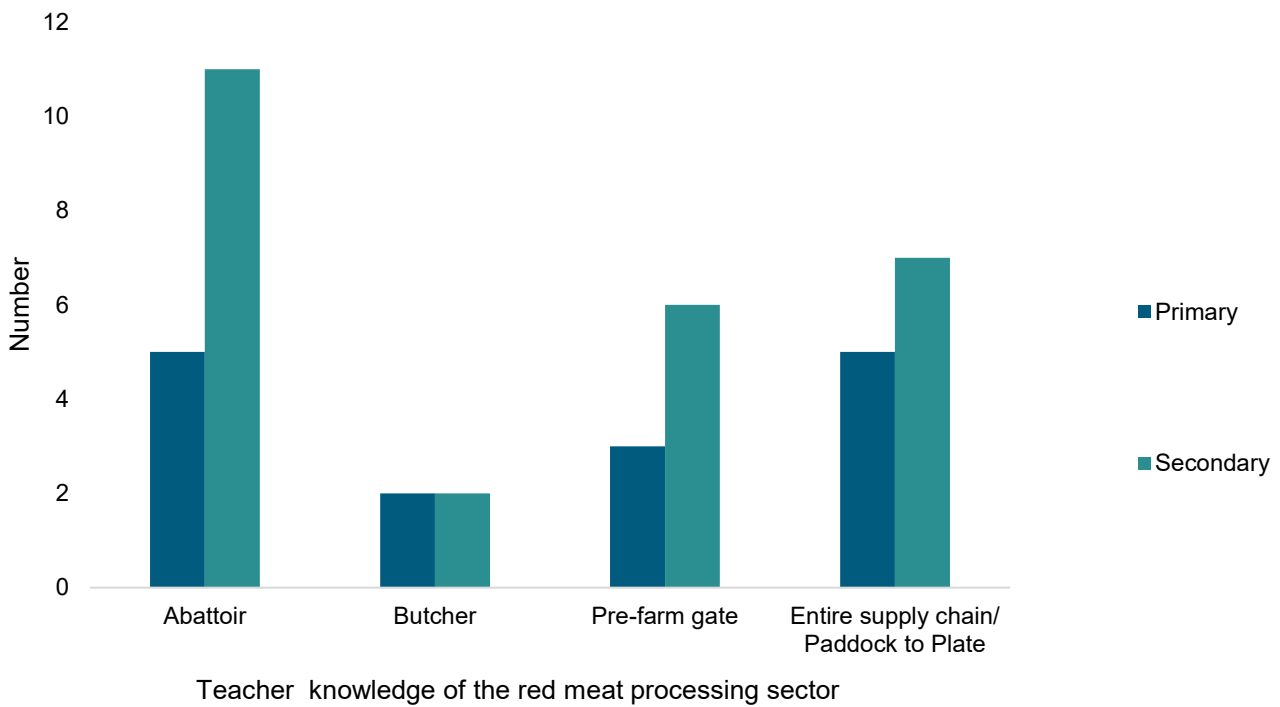


Figure 7 Primary and Secondary teacher knowledge of the red meat processing sector in terms of: abattoir/red meat processing sector, butchers, pre-farm gate practices, and the entire supply chain from paddock to plate.

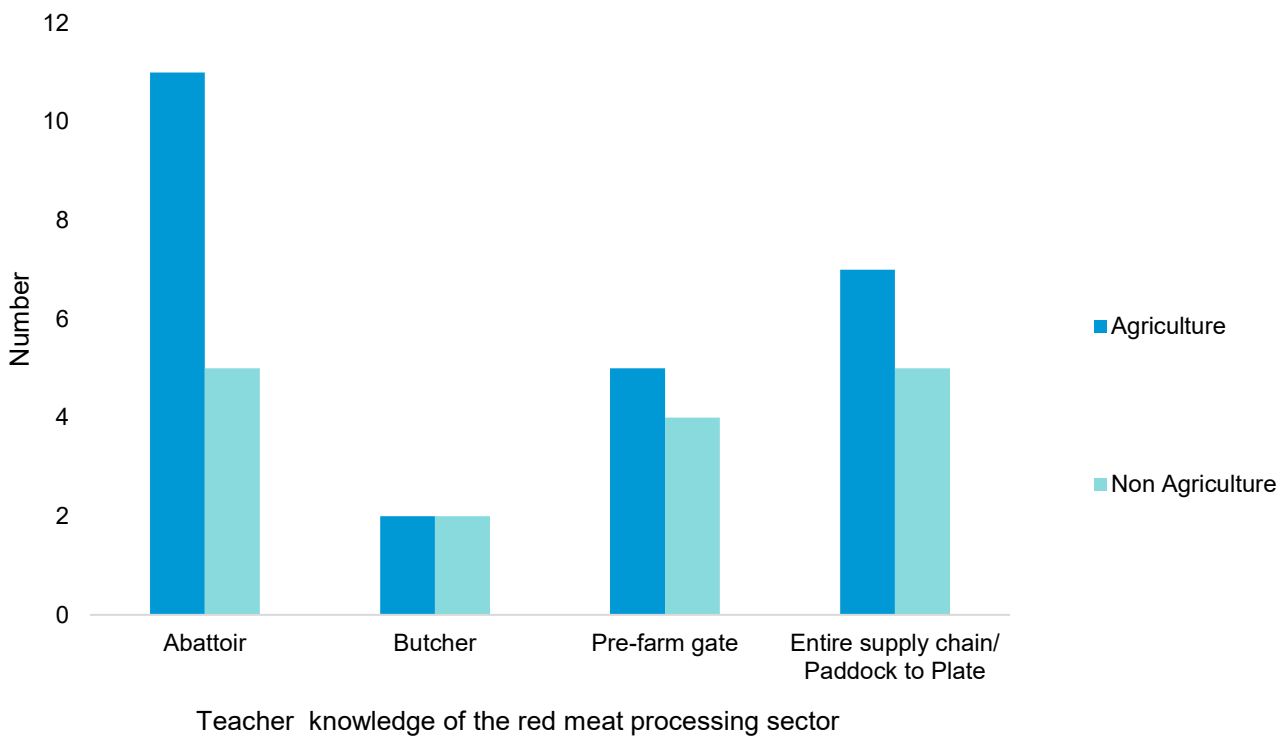


Figure 8 Agriculture and Non Agriculture teacher knowledge of the red meat processing sector in terms of: abattoir/red meat processing sector, butchers, pre-farm gate practices, and the entire supply chain from paddock to plate.

While several participants specifically linked *“the process by which a live animal can be processed into a food commodity”* (Participant D) carried out at an abattoir with the red meat processing sector, many predominantly non-agricultural primary school teachers tended to focus on the butcher shop. This was reinforced by the following quote, *“What would I say to them? That’s me from an adult’s perspective. But from a child’s perspective, I don’t know. Maybe like a type of butcher ... for the younger kids”* (Participant B).

Pre-farm gate associations with ‘farming’ were also made by teachers regardless of the grades or subjects they taught and a high proportion of primary teachers said that they would explain, *“the circle from paddock to plate ... and then to supermarkets and butchers”* when describing the sector to their students (Participant H). Careers that teachers were able to correctly describe included:

<i>manager</i>	<i>meat and livestock officer</i>	<i>exporter</i>	<i>distributor</i>
<i>boner</i>	<i>slicer</i>	<i>packer</i>	<i>slaughterer</i>
<i>marketing, procurement</i>	<i>stock and station agent</i>	<i>processer</i>	<i>office worker</i>

Careers that were incorrectly associated with the red meat processing sector included:

<i>agronomist</i>	<i>nutritionist</i>	<i>butcher</i>	<i>salesman</i>	<i>farmer</i>
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Confidence Teaching Red Meat Processing Content

Varying levels of confidence were described by the participants in their knowledge of the red meat processing sector ranging from not confident at all to highly confident. Overall, a marginally greater proportion of agricultural and secondary teachers indicated that they were confident to educate students about related content. Participant E stated, *“I think I’m not too bad ... I don’t think everyone would be though, like we’ve got four Ag[riculture] teachers two of us are Ag-trained and the others are either just new to it or maths or different things so they wouldn’t be as familiar. So, you’re going to get different perspectives depending on the teacher”*. Yet, some teachers expressed their lack of confidence as described as *“I don’t know that I’d be very confident because I don’t know much about that industry”* or *“No. Probably not confident”*. This indicates that all teachers would benefit from additional support in this area.

Teacher Red Meat Processing Knowledge Sources

Participants reported drawing their knowledge from and basing their confidence levels on a combination of direct and indirect experiences. A higher proportion of agriculture teachers had direct experiences having either been to an abattoir or processed meat themselves. Agriculture teachers also had more indirect experience with the sector through friends. This is indicated via the following excerpt, *“growing up on the farm, we also had pigs... so I always knew about taking the pigs to the to the abattoir ... I had a friend who was basically just packaging the meat. That was her job at that stage. And she would tell me about it”* (Participant R). Or the presence of an abattoir in their community by non-agriculture teachers as indicated by *“I automatically think of our big abattoir just outside Warragul.”*

Career Education Priorities and Goals

Teachers possessed different goals for integrating careers education into the classroom. Some career education goals were purely curriculum based however, others were more proactive in either intentionally facilitating additional careers exploration or supporting it through incidental conversations. There was disagreement as to what extent careers education is part of the curriculum though, some teachers suggested it is incorporated more than others and

particularly with the older grades/years. While most teachers thought careers education was important (Figure 9), it was predominantly secondary teachers that described proactively integrating information about careers that was outside of the curriculum either intentionally or incidentally. Participant L explained, *“I think it happens more organically in Ag[riculture] classes in general but then I also focus on it as well myself. I love seeing the kids engaged in possible careers so it’s, it’s just part of my agenda, probably more so than normal teachers but it’s definitely part of the curriculum overall.”* For primary school teachers, it was not a priority, as indicated by *“[It’s] not”* when questioned about career education priorities. This was reiterated by *“I would say it’s a low priority in Junior. You might be made aware of different careers like in different people ... and we do a few little excursions with the younger children, you might go to the post office ... or the fire brigade, but no, we don’t go to the abattoirs as such, or it’s not something that would get mentioned”*.

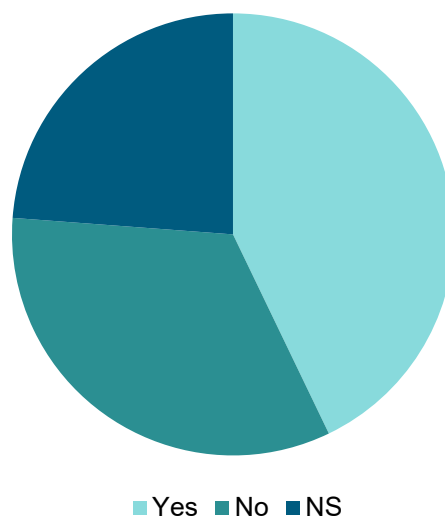


Figure 9 Was career education a priority for your teaching program? NS = Not Specified.

Red Meat Processing Sector Career Supports

Participants indicated that relevant background experience, exposure to family and industry role models, and positive perceptions about the sector were all potential facilitators of increasing students interests in the sector. Several teachers indicated that role model exposure is especially influential in students career exploration, such as direct experience with the sector as participant C stated, *“I think the most effective thing that’s going to get kids into the industry is talking to people in the industry.”* Teachers also said that students needed to be exposed to positive aspects of the profession such as its necessity in food production as shown in the following quote, *“I suppose understanding the process of growing meat for the purpose of feeding you ... so I suppose it’s just correlating that ... it’s all bred for that purpose and how it’s humane”* (Participant H). Participant M also highlighted the need to draw students attention to the career opportunities offered, *“if they don’t know things exist, how can they pick them? So just kind of just getting the exposure out there and showing them these not necessarily the things I need to do to go to uni because that’s like the traditional path, but a lot more kids are choosing not to do that these days. So yeah, there’s a lot more options as well.”*

Participants also indicated that several other resources would be beneficial for better integrating education about careers in the red meat processing sector into the classroom. These included censored videos, excursions and hands on activities, small modules, career guidance, work sheets and books among other visual tools. Videos were the most commonly requested resource, yet there was conflicting preference for censored and uncensored videos. Participant O requested, *“video clips that aren’t too confronting but still come up with, hey this is what happens ... You can show a carcass hanging and then you kind of have like a labelled carcass. So, for year 11 and 12 that actually is handy but*

actually showing the animal getting killed, yeah no that doesn't work. Kids don't like that." Conversely, another participant was happy to show students the entire process, *"...the kids are fascinated when I show some of those abattoirs in, say, Germany that are processing pigs and ... I talk to the kids about animal welfare and how to handle livestock, and then you see these pigs quietly and calmly walking around, and being automated, pushed through by robotic barriers, and all those sorts of things"*. This was reiterated by *"... something that showed like the whole process with videos just really detailed and really transparent ..."* While videos were the most requested, excursions and hands on activities were considered the most impactful. Participant D specifically said, *"I like the opportunity of also being able to take them into butcher shops, and abattoirs. I think, for me, if we're talking about processing, I like to be able to show them how carcasses are cut down, the kids love that."*

Small modules complete with work sheets and careers guides that teachers could pull out on an as needs basis were also commonly requested. This is illustrated by the following excerpt, *"If there were some guidelines, some fact sheets, some, like lesson type plan ... you could focus on different careers ... it would only be a short unit, to expose them"* (Participant B). While not as regularly reported, other visual tools were also considered useful such as tables, graphs and posters. Participant E said, *"Like graphing and tabling things, activity-based type tasks where kids can see here's the stats on wages, how does that compare to other industries, or here's the number of abattoirs, how many animals are slaughtering in a graphical table form where they can the teacher can and get him to interpret that data ... It makes it easier to look at I think visually, text is not as easy as a kid's not going to read a page."*

Red Meat Processing Sector Resource Barriers

Several barriers were noted in implementing potential educational supports including, not in any particular order:

- a general lack of knowledge
- curriculum alignment requirements
- content appropriateness including language use
- poor accessibility
- time
- expense
- student emotional reactions
- negative perceptions more generally surrounding the unpleasant, physical, violent nature of the work, poor animal and employee welfare.

Teachers often indicated that they didn't possess enough knowledge about the red meat processing sector and would benefit from further information to know what specifically to educate students about. This point is captured in the following quote, *"I probably know enough to start them off to perhaps go and have a look a bit more...but I mean, I wouldn't know all the specifics, that's for sure and I don't think any ag[riculture] teacher probably would"* (Participant K). While knowledge was important, participants also said that alignment of specific content with the curriculum such as sustainability or animal production units would be required. Participant H said, *"I think that, yes, that connectivity to the syllabus or a part of the syllabus ... Yeah, so just making sure it's actually related to the content."*

Regarding the appropriateness of the content, teachers indicated that it would need to be culturally and developmentally appropriate for the target students. This is illustrated in the following quote, *"I don't think I'd do it with my Year 7/8's Technology students, I would definitely do it with my 9s, 10s, 11's or 12's because they're picking the subject of Ag[riculture], and usually they're more interested in it"* (Participant R). Appropriateness in terms of language used in delivering educational content was specifically a concern. While some agriculture teachers said nothing should be off limits, other teachers did indicate that some words and phrases had more positive connotations than others. Participant J stated, *"I've found that it's a bit less confronting for students, if you just say processed, rather than like slaughtered and abattoir. Obviously, the kids that study Ag[riculture], you would talk about it because they have a bit more of an understanding of it. But the kids that ... don't study Ag[riculture] and that have no real connection to it might find it a bit confronting."*

In terms of accessibility, the ability to take students on excursions was the most common issue. Participant P stated, *“It’s too hard for a number of reasons to take them to an abattoir. I mean, first of all ... are we allowed to take them there? ... The next thing is around like Q fever shots and ... the regulatory stuff around whether abattoirs are willing to have us.”* Furthermore, teachers all indicated that they were time poor and needed any supports provided to be quick and easy for them to implement. The following quote captures this concern, *“Every teacher is gonna say they’re time poor ... so they’re all going to say that ... it needs to be something that is easy and not super complex because we just don’t have the time to teach a whole unit”* (Participant E).

The expense of implementing careers education about the red meat processing sector was another consideration teachers said would need to be made. Participant N said, for example, *“Some of these parents won’t even pay \$5 for their kids to go to weekly sport. ... and we’ve got a lot of single parents as well ... I think supporting schools around that, you know, taking them places and offering, you know, that real life experience ... is going to be very valuable.”* Therefore, the cost of career education supports needs to be carefully considered for teachers and schools to participate.

Many of the teachers said that students emotional reactions to red meat processing content was a concern due to the confrontational nature of the work performed. Therefore, it would be important to overcome this as illustrated by the following excerpt, *“You’re always going to have a couple that wouldn’t feel comfortable, and you respect that but I think the majority of kids would be open. You know, they’d be tentative, because they wouldn’t want to sort of have it in their face, but I think the process and, and if you can desensitize them a little bit first with a few videos, I think that students really enjoy that aspect”* (Participant L). This appeared to be in part due to the negative perceptions about the sector which pose a barrier to students appreciation of opportunities in red meat processing. Participant L suggested, *“Removing the stigma of ... slaughtering animals.... Things like live export isn’t helping in terms of public perception... you know, within a class if a kid put up his hand and said, “oh I’m really interested in working in an abattoir” the other kids are going to look at him or her straightaway and think, geez, what’s wrong with you? So there is a stigma attached. So it’s breaking that down. And I guess showing people real people within the industry to kids and saying, you know, these are the type of people that you’ll come across in this industry, they’re great people, they’re doing great things, they’ve got great careers.”*

Teacher Job Expectations

Teachers suggested that a good job provides a combination of physical and psychological outcomes. Physical factors involve material aspects such as financial remuneration, work conditions and career prospects. Psychological factors included values congruence, job satisfaction, enjoyment, happiness and a sense of well-being.

While many teachers pointed out the importance of pay, Participant C indicated that work prospects and job satisfaction were more important, *“I’m starting to realize job satisfaction is more important than pay. I think younger kids think pay’s probably the big thing. Job satisfaction, the ability to move forward in your career and the ability to diversify in your career ... I think it’s really, really important.”* In addition, many teachers agreed that working in a field that you are passionate about, aligns with your interests and contributes to your well-being is crucial. This is illustrated in the following quote, *“Obviously something they’re passionate about, something they’ve got an interest in, and they spend a long time there so they’ve got to enjoy what they do”* (Participant Q).

Red Meat Processing Career Interests

A number of student attributes and interests were associated with considering red meat processing careers. These included interests in agriculture and practical tasks, *“I think Ag kids are Ag kids and they want to get hands on in the paddock I reckon more so than anything”* (Participant U). Participant B added interests in science and animals may also be applicable, *“A science-y sort ... animal parts and that type of thing, that type of curiosity ... kids that want to be vets and stuff and just have an interest in animals.”*

In addition, process-oriented people with interests in sustainability and technology were referred to, *“kids that are more like process driven or environmentally aware ... we have a lot of those kids that are really interested in that technology who'd be interested in, oh how does that thing work? And how does that laser do that?”* (Participant S). Finally, students with an interest in hunting were also highlighted as people who may benefit from learning more about careers in the red meat processing sector as stated by Participant Q, *“This young guy that wants to be the butcher is quite happy, he goes out hunting with his cousin and they kill animals and they skin them and gut them and all that sort of stuff. So, you know, he obviously isn't concerned about that part of the process.”*

“I think the most effective thing that's going to get kids into the industry is talking to people in the industry.”

5.2 National Teacher Survey

Background Demographics

A total of 167 people participated in the National Teacher Survey, 24 of which were removed prior to analysis due to not being a teacher along with a further 18 who only provided responses to the questions included on the first survey webpage. The remaining 125 participants were predominately located across Queensland (54.8%) and New South Wales (29.4%), with a comparatively smaller proportion residing in Victoria (6.3%), South Australia (5.6%), Tasmania (2.4%), Western Australia (<1%), and the Northern Territory (<1%). The mean reported age was 43.7 years and the majority of the participants identified as female (84.1%), with one participant opting not to provide this information (<1%).

The highest level of education reported varied from Year 12 (<1%), Certificate/Diploma (3.2%), Bachelor Degree (54.8%) to Postgraduate Degree (41.3%). Around a third (35.7%) had qualifications in agriculture. Most of the sample were secondary teachers (75.4%), followed by primary teachers (16.7%) and then a smaller percentage taught across both levels (7.9%). Participating teachers taught across an array of subject areas mainly in Agriculture (51.6%), STEM (44.4%), Primary Industries (14.3%) and Home Economics (13.5%) but also English (8.7%), VET (8.7%), SOSE and Humanities (6.3%), Health and Physical Education (5.6%), Performing Arts (2.4%), Religion (2.4%), Business (1.6%) and Manual Arts (1.6%) among other subjects (10.3%). Participants of all levels of experience participated in the survey including those with less than a year experience (4.8%), 1 – 5 years (9.5%), 5 – 10 years (13.5%), 10 – 15 years (19.8%), 15 – 20 years (23%) and more than 20 years of teaching experience (29.4%). Figures 10 and 11 visually depict these results.

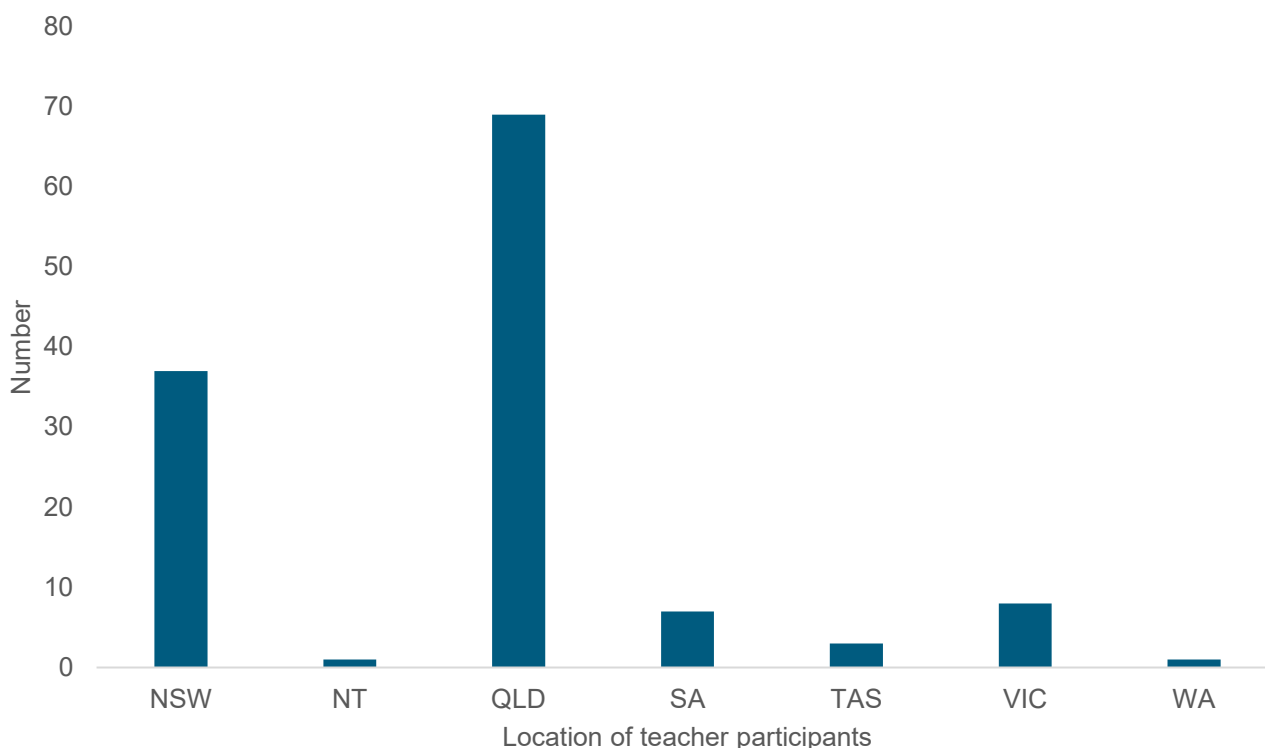
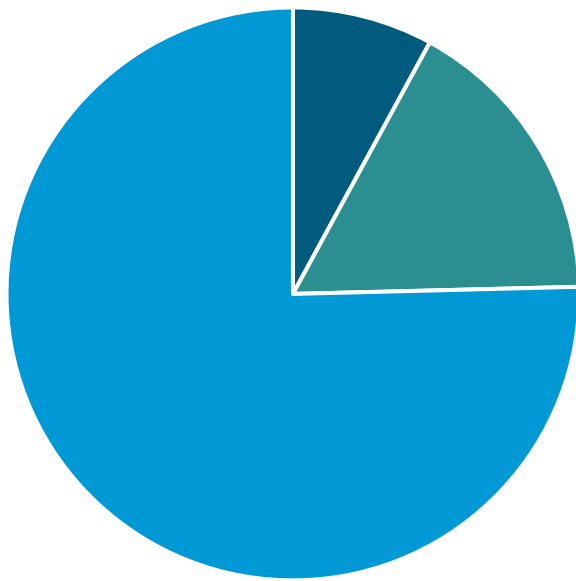
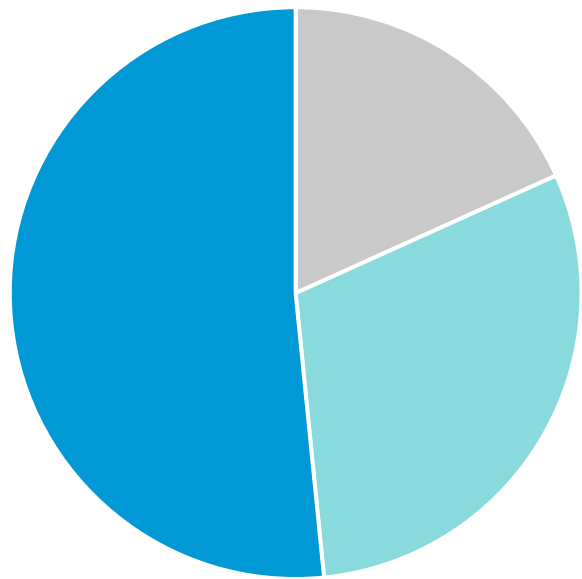


Figure 10 Overview of teacher participants in the National Teacher Survey across NSW, NT, QLD, SA, TAS, VIC and WA



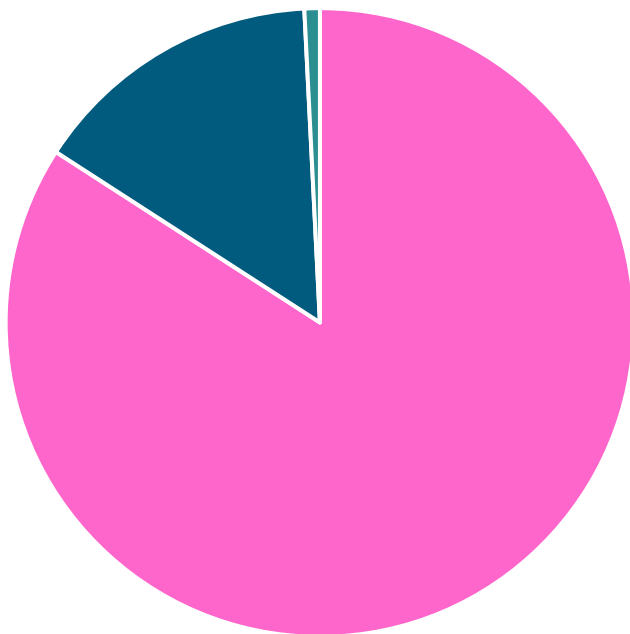
- Primary and secondary teacher
- Primary teacher
- Secondary teacher



- NS
- No
- Yes

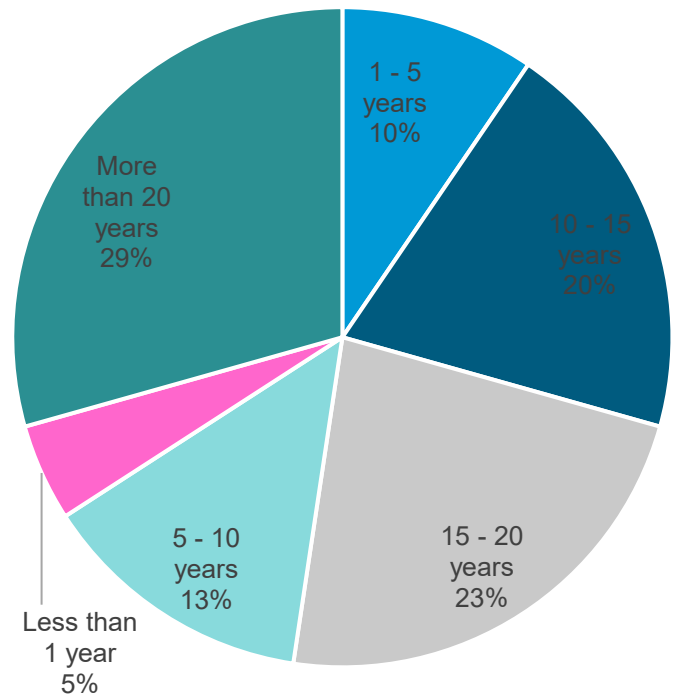
a) Are you a ... ?

b) Do you teach agriculture? NS = Not Specified



- Female
- Male
- Prefer not to say

c) What is your gender?



d) How many years have you been a teacher?

Figure 11 Background information of teacher participants

School background type data

There was a spread in the participant's school location from rural towns (28.6%), major cities (20.6%) and small towns (17.5%) to capital cities (16.7%) and larger towns (13.5%). Four participants were not sure (3.2%). Of these schools, 61.1 percent offered agriculture as a subject.

Connection to the red meat processing sector

There was a significant relationship between teachers' perceptions of the red meat processing sector and their connection to the red meat processing sector. Positive perceptions of the red meat processing sector (e.g., My overall perception of the red meat processing sector is positive) were related to stronger connections to the industry (e.g., I'm strongly connected to the industry, with a friend or family member working in that sector) with effect sizes ranging from moderate to large. There was a significant effect of connectedness on perceptions of the red meat processing sector and associated careers, indicating that as connectedness increased, perceptions improved. Having a friend or family member work in the industry or having visited an abattoir before significantly improved perceptions compared to having no industry connection. However, knowing people working in the industry did not significantly increase perceptions compared to those who had visited an abattoir and visitation did not improve perceptions when compared to participants who had basic knowledge of abattoirs in their local area.

Perceptions of the red meat processing sector

There was a significant relationship between teachers' perceptions of the red meat processing sector and how they feel about careers in this sector. Positive perceptions of the red meat processing sector were related to more positive feelings and the effect was moderate in size. Positively phrased statements about the red meat processing sector were all positively related, meaning higher ratings on one statement were associated with higher ratings on other statements. The effect of these was moderate to large. On average, secondary teachers who taught agriculture or STEM related subjects had significantly more positive perceptions of the red meat processing sector than their counterparts. Teacher perceptions for four of these statements can be found in Figure 12.

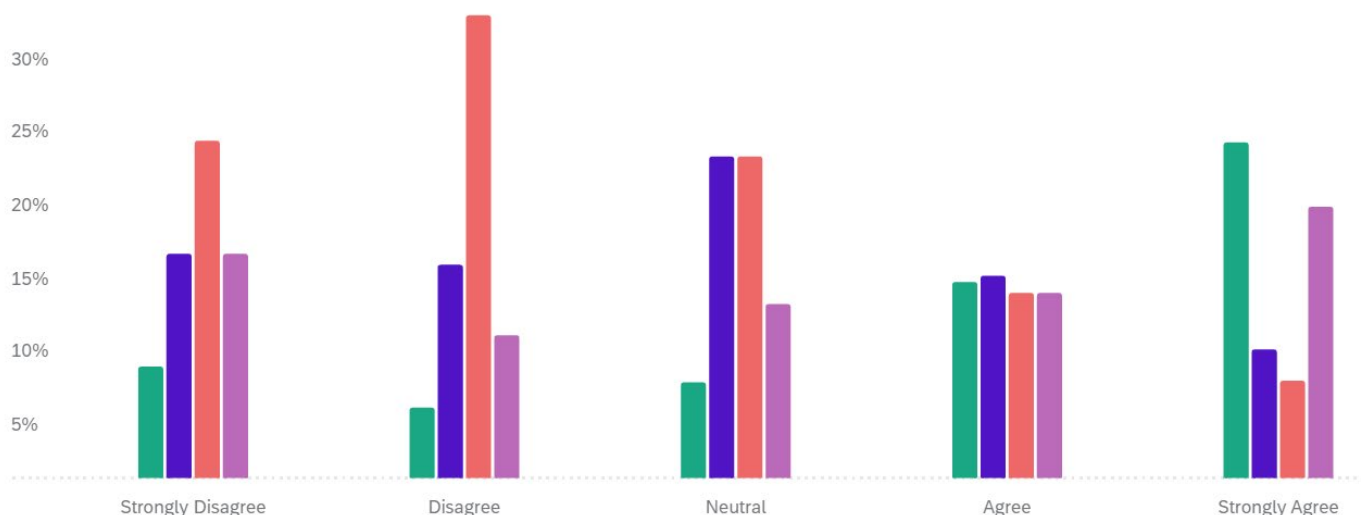


Figure 12 Teacher perceptions around i) the red meat processing sector is an important contributor to the social, economic, and environmental sustainability of local communities (green), ii) The red meat processing sector is a leader in manufacturing innovations and technological advancements (blue), iii) I believe the red meat processing sector is proactive about environmental issues (orange) and iv) Animal welfare is a high priority in the red meat processing sector (purple).

Careers associated with the red meat processing sector

There was a significant relationship between teachers' perceptions of careers associated with the red meat processing sector. Positively phrased statements (e.g., I am confident to deliver content related to careers in the red meat processing sector) about careers associated with the red meat processing sector were all positively related. Negatively phrased statements (i.e., Jobs in the red meat processing sector are not relevant for academically inclined students) were negatively related to positively phrased statements. The effect size ranged from small to large. These results reveal higher ratings on positively phrased statements were associated with higher ratings on other positively phrased statements. And consequently, lower ratings on negatively phrased statements. Again, secondary teachers who possessed an agricultural qualification and taught agriculture or STEM related subjects had more positive perceptions of careers associated with the red meat processing sector. Additionally, participants were asked about the careers they associate with the red meat processing sector and reported a wide range of jobs (n = 91). These included farming, entry level physical processing/ labour type positions, technical staff who require formal STEM qualifications and training, office and manager/supervisor positions, logistics, butchery as well as other post-processing plant and supermarket careers (Figure 13).

Abattoir worker	Biosecurity officer	Distributor	Food technologist/ technician	Labourer	Procurer	Slicer
Accountant	Biotechnologist	Electrician	Grazier	Livestock handler	Producer	Small goods worker
Administration	Boner	Engineer	Groundsman	Logistics	Puller	Stock hand
Agent	Breeder	Environmental advisor	HACCP	Machine worker	Quality assurance officer	Stockman/ woman
Agribusiness people	Butcher	Evaluator/ Assessor	Health and safety officer	Maintenance officer	Researcher	Technician
Agronomist	Buyer	Exporter	HR Officer	Manager	Retail worker	Trainee
Animal nutritionist	Chemist/ Pharmacist	Farm worker	Importer	Manufacturer	Safety	Transport and logistics workers
Animal welfare officer	Chiller/ refrigeration worker	Farmer	Inspector	Marketing	Salesperson	Truckdriver
Apprentice	Cleaner	Feed miller	IT staff	Offal and skin worker	Saleyard staff	Value adding
Artificial insemination/ Breeding	Consumer	Feedlot	Jackaroo	Packer	Scientist	Vet
Auctioneer	Cryovac worker	Foetal blood collector	Kill floor staff	Pathologist	Secretary	Warehouse/ Factory worker
Banker	Data analyst	Finance	Knife hand	Pen rider	Security	Welder
Biochemist	Delivery staff	First aid officer	Laboratory worker	Processor	Slaughterer	Yard hand

Figure 13 Jobs teachers associated with the red meat processing sector

Implementation of red meat processing sector into the curriculum

When asked whether teachers incorporate concepts about the red meat processing sector into their current teaching program, 48.4 percent of participants reported that they do, 34.1 percent said that they don't, and the remainder did not provide a response. Teachers that do incorporate red meat processing concepts in their teaching stated that they do so in a number of ways including in discussion (18.3%), through integration with curriculum content (17.5%), excursions (8.7%), Paddock to Plate (7.9%), practical 'hands-on' activities (7.9%), other clubs and activities (4.8%), research studies (4.8%), videos (4%), other visual tools (3.2%), Hoof and Hook type competitions (3.2%), work experience programs (2.4%), and guest speakers (1.6%) among other (2.4%) less commonly cited methods. One participant illustrated the use of several of these methods;

“As required by the QCAA curriculum for senior agriculture subjects. Using examples, calculations, research tasks, practicals e.g comparing fat, meat and bone %'s of different cuts, videos, data tables and graphs.”

Resources/barriers

There were several barriers to teaching concepts about the red meat processing sector. Barriers to incorporating concepts about the red meat processing sector into teaching practice involved:

- the topic not being clearly aligned with the curriculum in the subjects taught (22.2%)
- irrelevance to the curriculum topic being taught or local area (7.1%)
- lack of time (3.2%)
- perceived inappropriateness of the content (2.4%)
- not having ever been required (2.4%)
- the sector not being among teaching and learning priorities (2.4%)
- the topic not having been covered yet (1.6%)
- other other reasons (1.6%).
- they did not have a reason why (<1%).

“Because it is not really part of the curriculum I am teaching at the moment. My year 9 elective is about regenerative agriculture with a focus on healthy soils - in this context I would talk about direct to consumer meat processing and new micro-abattoirs.... I would emphasise the need for growers to have more control over the processing of their stock. In VCE Ag Horticulture the details of red meat processing is not part of the curriculum.”

Additional concerns mentioned by participants included a lack of industry engagement and careers education. With one participant speaking to the perceived need for more proactive engagement;

“Our processing plant does not actively engage schools which I see as an issue for the industry. A more proactive role would be beneficial. That would include involvement in VET programs - Primary Industries.”

When asked what they needed to support their students to aspire to careers in the red meat processing sector, teachers indicated that a variety of resources or opportunities would be useful. These included a full unit of work (31.7%), small Modules (57.9%), uncensored videos (42.1%), censored videos (54%), worksheets and comprehensive resources (56.3%), resources that showcase different careers (56.3%), hands on activities (50.8%), excursions (42.9%), incursions (42.1%), online/virtual professional development (37.3%) and face-to-face professional development (30.2%). Figure 14 presents the number of selections for each response option.

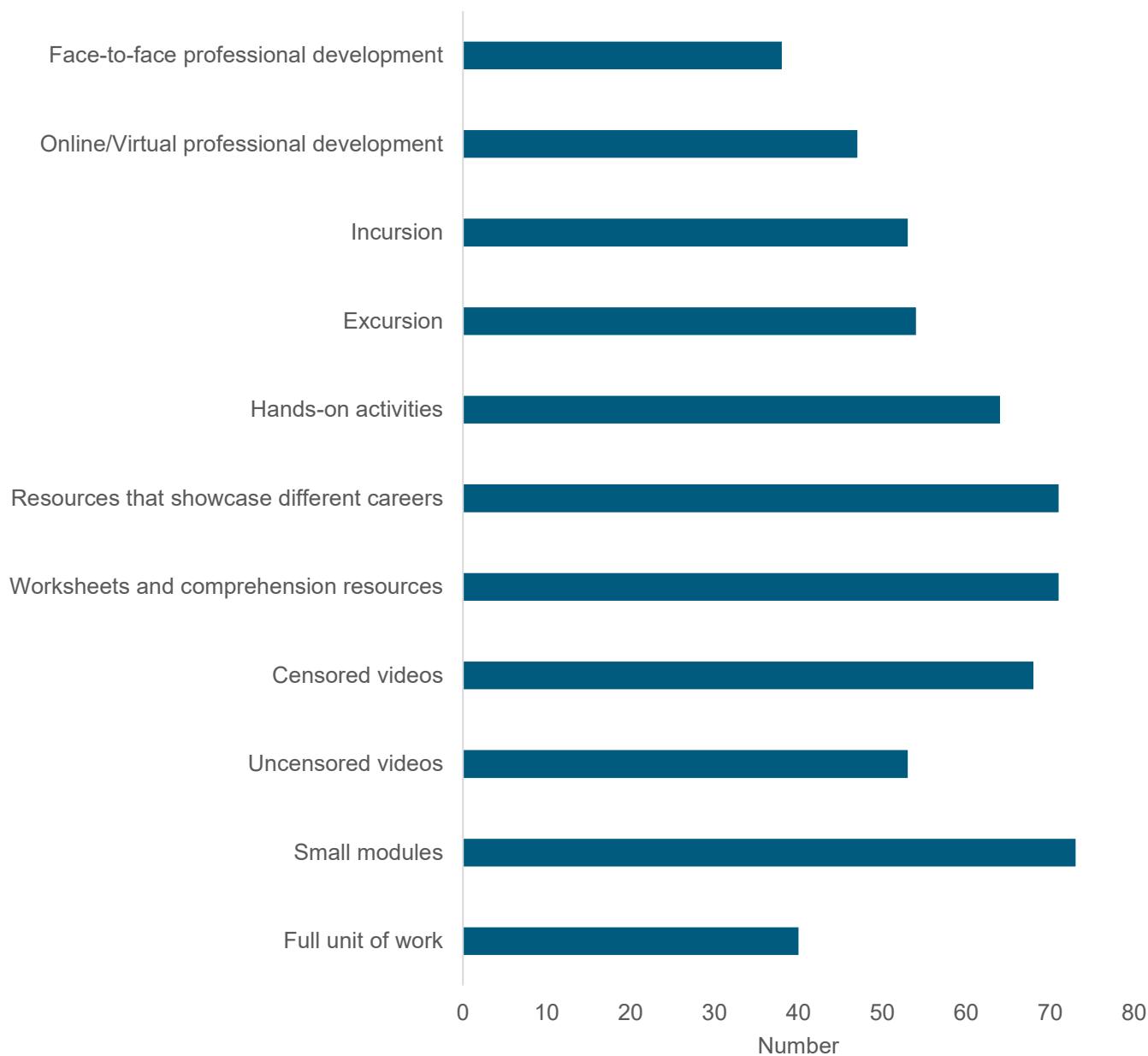
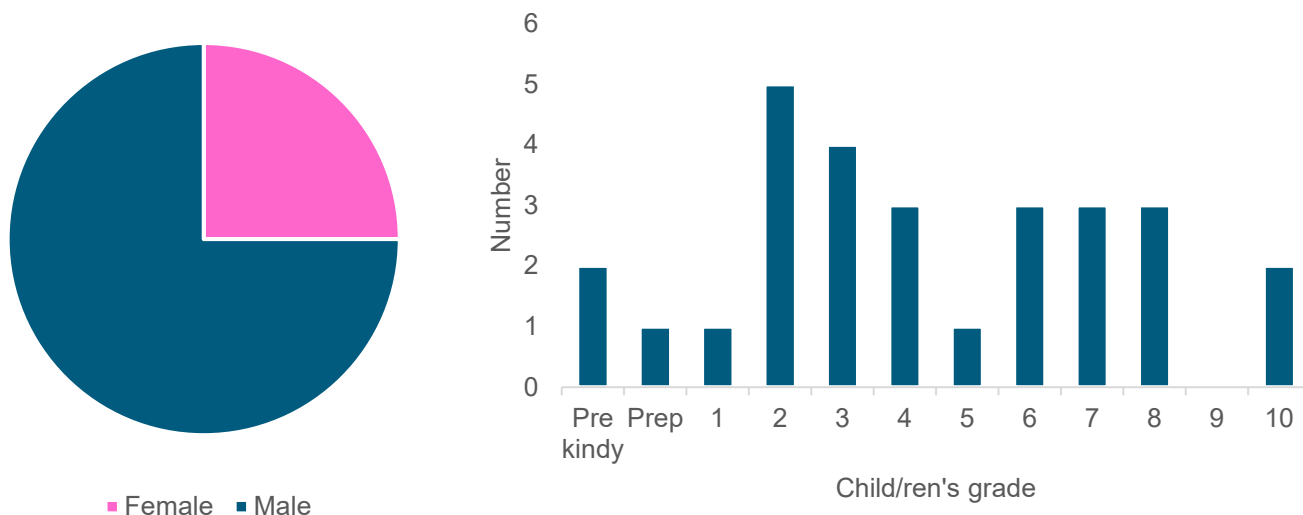


Figure 14 Resources or opportunities surveyed teachers indicated are needed to support your students to aspire to careers in the red meat processing sector

5.3 Parent perceptions

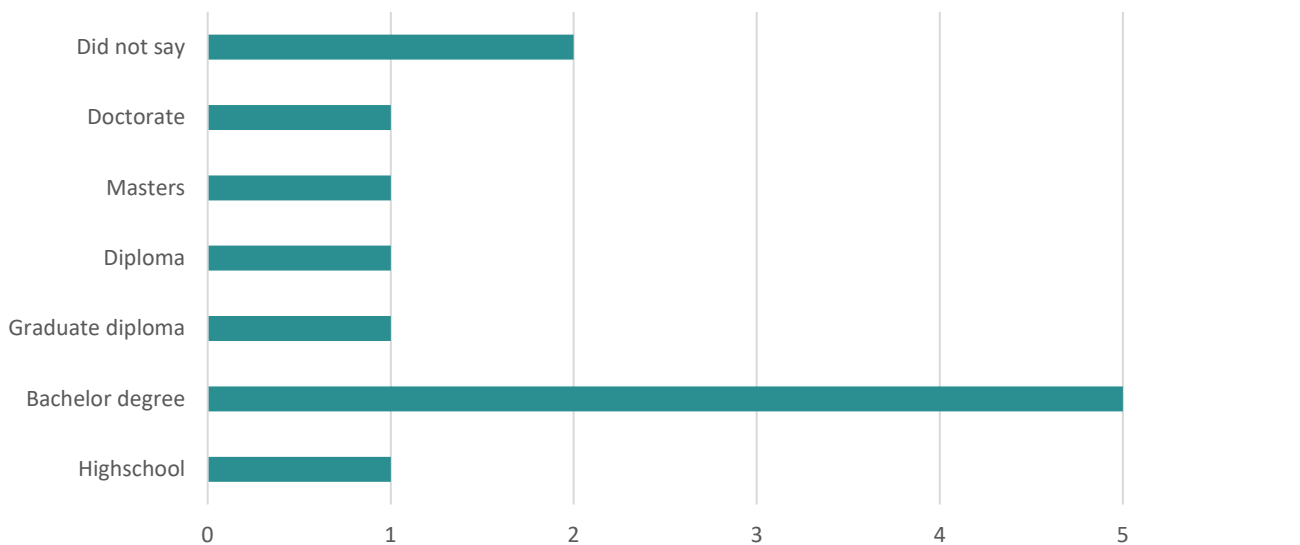
Background demographics

A total of 12 parents aged 35 to 62 years (Mean = 42.8) participated in a semi-structured interview (75% Male). Parents highest level of education ranged from high school (8.3%), diploma (8.3%), bachelor’s degree (41.7%), graduate diploma (8.3%) and masters (8.3%) to doctorate (8.3%). Two parents did not say (16.7%). Participating parents children were pre kindy age through to high school students studying up to grade 10. Figure 15 visually depicts the background demographics.



a) What is your gender?

b) What is your child/rens grade?



c) What is your highest level of education?

Figure 15 Parent participants background demographics: a) What is your gender? b) What is your child/rens grade? c) What is your highest level of education?

Knowledge of the red meat processing sector

When asked how parents would describe the red meat processing sector to their children, parents indicated that they would typically explain the process from paddock to plate including the farming, abattoir, logistics and supermarket stages in getting the animal from the farm to the consumer. An example is, *“when I think of red meat processing, I immediately think of farming and the processes that are involved. I mean, I was raised on a [farm] ... I realize that's different to red meat processing but I guess the thing that I probably would just always go back to is the fact that there is a process that is involved, and it just doesn't arrive on our table.”* One parent demonstrated a clear understanding of the sector specifically though, *“So I'd probably describe it as where the animals go to get killed, and then they get packaged, like cut up and packaged into meat and then goes to the supermarkets. There's not really any words I would avoid, I don't think”*. At least one parent said that they hadn't explained much about the sector to their children until recently, lacking the knowledge necessary to accurately describe the work involved, *“We don't talk about the nitty gritty. Until recently, I solely believed that's what happened there, they just chopped up the cows and that was it but I've recently been working with an apprentice who is a boilermaker [for an abattoir]. So now all of a sudden, I'm going, oh, yeah, of course, they have to do other things because they'll have machinery. So, I was very stereotypical in my ideas of what happened.”*

Perceptions of careers associated with the red meat processing sector

There were an equal number of parents who felt positively (n = 5) about careers in the red meat processing sector, as did negatively (n = 5). One participant who at one time aspired to work in the sector themselves stated, *“Yeah, I do [feel positively] I was watching the train obviously from getting the cattle in, to put him on a truck, driving them to the to the processing plants and then there's the jobs in the processing plants. I used to dream of being, a boner in processing plants”*. This contrasts with the views of another parent who said the following when asked whether they felt positively or negatively about red meat processing careers, *“I'd say negatively. It sounds like there's a lot of a lot of blood ... So yeah, for me, it doesn't sound like a very nice environment.”* Two parents indicated that they were still undecided regarding how they felt about careers in the sector, *“I don't really feel either way to be honest ... positive or negative yeah.”*

Parents indicated that they want their children to aspire to jobs they will enjoy, which offer fair financial remuneration and working conditions, *“You must enjoy what you're doing. You have to like your work. Whatever it is you choose, it's got to be something you like.”* While red meat processing careers were generally perceived as offering good financial remuneration, *“I think you can earn pretty good money at the meat works, which is great. It depends on I guess, the role that they were to choose.”* However, the working conditions were often described as poor, *“I think it would be hard and messy work, and I don't know that it would be something that my girls would find enjoyable. They're sensitive and so seeing lots of animals die, I don't think that would be great for them.”* Consequently, this resulted in comments such as, *“Yeah, I think they certainly respect what those people are doing but I'd hope that their aspirations might be a bit higher than just being a boner.”* One parent suggested that such negative perceptions were in part based on misconceptions regarding the breadth of careers available within the sector though, *“It's probably always considered a lower socio economic job ... like, you know, being a cleaner ... whereas I just know from my friends that went there 20 years ago ... one of them was a fully qualified butcher at one point when he left, you know. So, you know, like it, there's more to it than that.”*

Goals for and current progress with careers education

While not all parents had specific goals for their children's education and development more generally, those that did aspired for their children to complete their high schooling and possibly undertake vocational or tertiary education, *“Yes, I am a teacher by trade. So my children, my goal for them is for them to have a qualification of some kind. It doesn't have to be tertiary level, but either an apprenticeship or certificate three or higher, but a pathway at least.”* Another parent added, *“Not any sort of end product of a career I guess, not necessarily. Certainly want them to see out their*

full education. Most certainly, like high school and ideally, tertiary qualifications but yeah, ... I don't really have any sort of pre-planned plan for them. Sort of wherever they're heart takes them, I guess." Consequently, careers education was perceived as a valued part of their children's school education, *"Oh, yeah, I would definitely take up any opportunity for exposure to careers because I don't think there's enough of it in schools and I think kids are very lost. You know, even in grade 12 I think they're still pretty lost about because I just don't have enough exposure to what, you know, anything other than what their parents do I suppose."*

While parents tended to think their children's school did teach them about careers, the careers education received was often incidental, occurring through curriculum alignment. Formal careers education did not generally appear to occur until high school and was predominantly perceived to be focused solely on senior students. When asked about whether their children's school provided careers education on parent said, *"Yes, I do. Yeah, not directly but indirectly at this point ... So, for example, my daughter has had a lot to do with the council because they're doing recycling. So, they've had people come into the school who been discussing their different roles. So rather than saying this is what this person does, it's all embedded in their curriculum."* For a different parent, their school was fortunate enough to have *"... a careers guidance officer who organizes quite a lot of careers based activities. My son in particular in grade 10, we get a lot of information for him on things like school-based apprenticeships, and they do a lot of careers days at the local university ... So there's a lot of careers guidance that seems to really kick in at grade 10."*

Parents thought more careers education could occur both at school and at home, particularly among students in their first years of high school, as suggested by *"I think [careers education is] a bit on everyone. Yeah, I think I mean, school is, school is great because they have so many people who have so many different skills across a really wide range of areas. You know, one parent can't know everything they can't be across everything is not possible. But at the same time, the parent is the one that can respond to that one child, whereas a teacher can't really, they respond to a group and so I think the teachers offer a really wide range of experiences that will suit the whole group and the parents job is to say, and now I see that, you know, this is an opportunity that I can show you something further."* In regards to the year when careers education should start, one parent noted, *"Probably at this early stage, like grade two to grade six is a little bit early. But I think there's value in actually just having the kids realize what sort of, what sort of [careers] there are, not just the red meat processing industry but right across the careers ... I'd reckon probably middle school, so years 7, 8, 9."*

Similar attitudes were held about careers education in the home environment. While some parents placed a strong emphasis on careers-related discussions, for others these types of conversations tended to occur more incidentally, especially among primary school aged students. One parent explained how they approach progressing their children's careers education at home, *"Yeah, my dad was a careers like a guidance officer when I was growing up. So, from a very young age I was, you know, we had a lot of discussion about that. So, it's kind of, so I do that too. Like, and probably what I like to do is rather than talk about, like, you could do this, we could do that sort of like really get, try to get a handle on, you know, who they are, what they enjoy doing, what their interests are, and then sort of, you know, being a bit open to what careers might be available for them."* However, careers education was not a strong priority with their primary school aged children, *"Um not at the moment. I think like, [one of my children is] eight and [another is] 10. So, they're sort of just still finding out what the world is all about."*

5.4 Student perceptions

5.4.1 Survey data

Students described the red meat processing sector in a number of ways, with a common theme of explaining the red meat processing sector was to use a flow chart and highlight all stages involved in getting an animal to the abattoir and then to the consumer (Figure 16). One student had a very clear understanding of the red meat processing sector, “the red meat processing industry is the process of processing cattle prior to slaughter all the way to wholesale or when the consumer consumes the meat. An example of a market is medium domestic supermarket C4 beef. Plus certain criteria and specifications.” Whilst others were not sure, “I do not know much about it but I think it’s the process of making sure red meat is safe for human consumption” or “there’s a farm with cows and they donate them to the abattoir where they kill the cow and then cut up the cow into different cuts then package and sell the meat.”

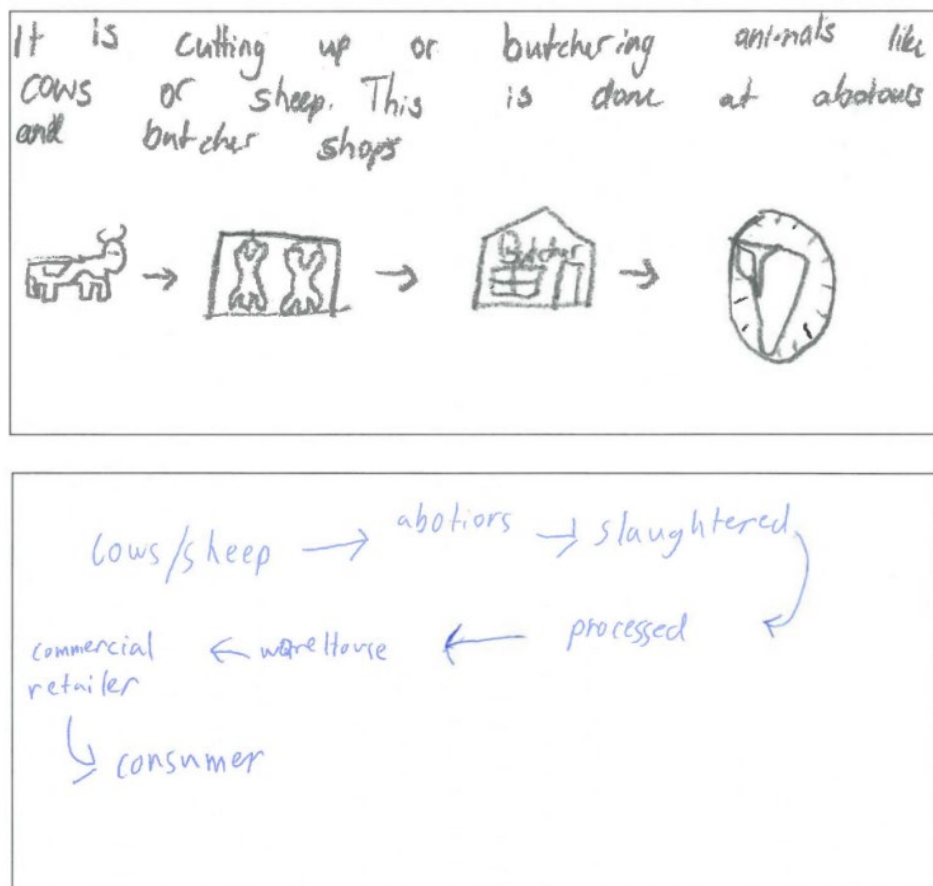


Figure 16 Student descriptions of the red meat processing sector

5.4.2 Focus group data

Primary school students (incursion)

Hands-on activities run with primary school students were well received, with student comments around *“I liked all of it.”* The process of dressing up helped to facilitate discussions around what different careers in this sector looked like, *“I liked dressing up and seeing how the whole processing works.”* Students were then able to identify different careers in the red meat processing sector, *“I learned how many jobs there are in agriculture and how many careers I might go into”* and *“I liked learning about the processing and it inspired me to be a butcher”*.



Figure 17 Primary school students as a variety of roles in the red meat processing sector

Secondary school students (incursion)

Short, interactive activities enabled students to work in small groups and develop some practical skills around quality assurance, with a focus on salmonella and food hygiene. Students were surprised by the practicality of some of these tests, noting that it is *“Pretty handy how quickly you can sort of test for it [salmonella]”*. The relevance of these activities to careers in the red meat processing sector was highlighted by one student, *“It’s good actually [to see] what sort of controls they use. People will say there’s quality assurance [in the abattoir and red meat processing sector], but what is it actually? To actually see firsthand what is done [was important].”* The activity undertaken also raised the awareness of new jobs in the red meat sector that students didn’t think of previous, as highlighted by *“I think like stereotypically people work in abattoirs aren’t ... like educat[ed]. But like, as we saw today, like there’s lots of like scientific roles... that ... when you first think of an abattoir worker, you don’t think of like you don’t think a scientist you just think of, you know, people that just kill animals and process meat. So I think there’s ... like stereotypically, not many people think of it because it’s just kind of like your average job”*.

Students were asked why they wanted to visit an abattoir and reasons included:

- “working conditions”
- “specifically what you can do there”
- “see the action”
- “viewing - just seeing how it is all set up”
- “to see how humane it actually is”
- “all of the different machines”
- “jobs”
- “to see the difference practices and how everything runs and works”

Do you think the red meat processing sector is an important employer for people here in [their location]?

Some students saw the importance in the presence of the red meat processing sector/abattoir in their local region as a means, *“To provide jobs to like essential jobs and it’s essential to the saleyards and in the location it is”*, *“because it supplies a lot of jobs”* or because *“It is one of our staple foods as well”* or *“Because everyone needs to eat meat”*.

One student highlighted the importance to Australia, not just their local region, *“And it just provides jobs around Australia. And if we, Australia, consume a lot of meat, and ... [don’t] have the abattoirs around the place, [we] ... wouldn’t ... meet access [demands]”*. Additionally, the economic importance, *“We wouldn’t get as much money because we’re one of the biggest exporters ... in the world.”* One student felt that this sector was a good way to enter the workforce, *“It is like a kickstart into the workforce. Like it’s good money for younger years, while you are still nimble. So if you go into a boning position, or you are still agile you can ... then move out more into ... production [type roles].”* Yet, some students were concerned that other regions didn’t feel the same about the red meat processing sector, *“Oh, yeah, a lot of everyday people in town, especially large cities think that their meat come from a supermarket”*. Additionally, education of students, *“I feel like you should catch them at a younger age. Like, probably a lot of us here have grown up killing animals to feed ourselves whereas other people just have gone to the supermarket their whole life to get their meat”* and the general public was needed, *“The meat protesters come to the facility because they don’t actually know the backstory, they just are going off what someone told them, which may not be true”*.

Examples of jobs that students thought of in this sector included; boners, slicers, laborers on the slaughter floor, packaging, exporting, transporting, truck drivers, builders who built the abattoirs, “people who work on the machines”. However, a number were unable to identify a job in their sector. To raise the awareness of the importance of the red meat processing sector and the career opportunities available, one suggestion was *“I guess if someone like yourself [researcher involved in the red meat processing sector] comes in and explains what the jobs are, is actually useful”*.

“The general population are alright, there’s a few people that just think that obviously it’s not humane how they have been killed and stuff like that, but really, it is and it’s improving all the time”

Do you think of the red meat processing sector as a leader in manufacturing innovations and technological advancements?

Only a handful of students could name innovations occurring in the red meat processing sector, such as *“I have seen the bandsaws and stuff like that”*, *“Machines for wrapping or sorting out different parts of the bodies from the cows so that they can separate it out”* or *“The robot scanners just got through, like they can scan the carcass quickly. And they can do the tests instead of having to have extra labourers.”* Whereas other students were unsure what constituted technology, *“Isn't there like a bolt gun that kills the animals?”*

The abundance of technology was acknowledged by one student, *“Technology is all around us so it is basically hard to get away from, because we're using it so often”*. Some students felt that technology was positive for the number of jobs available in this sector, *“More jobs with those robots. So you need someone to maintain those robots. So potentially could be three jobs for the robot compared to just the one labourer walking through.”* This was reinforced by technology having positive implications for a business *“a job with access to technology would make the job easier in some ways, which profits you and the business and makes things run smoothly most of the time.”* Additionally, one student felt that technology also opened up career opportunities in this sector as *“I think ... a lot of people like working with technology. So I guess it sort of opens up job opportunities. I guess if technologies in the red meat industry for example, more people are going to want to go into that industry [than] ... into other industries”*. And there were added benefits for product coming out of the abattoir, *“Yeah, eventually produce a more quality product. Yeah, obviously, there is human error, so if there's a robot or something [it would help to reduce that error.]”* Whilst others did not see technology as a positive, *“because it'd be like hard as I don't know much about technology ... [and] something could go wrong and ... the whole system breaks.”*

When considering environmental issues (such as becoming carbon neutral, climate change etc.), do you believe that the red meat processing sector is proactive to address these?

Government regulations were the reason some students felt that the red meat processing sector considered environmental issues, *“Regulations that are required by the government or ... certain types of restrictions that you can't just ... process all this meat and then just dump the waste... , there's gonna be some sort of consequence.”* Furthermore, if environmental issues are not addressed, *“... then they'll probably lose a job because according to scientists, cows are ruining the environment. That is, fire a lot of people in Australia that we need in our red meat industry”*. Others made direct comparison between sectors, *“Comparatively to 90% of other industries they [the red meat processing sector] are doing a lot more than you'd expect, like mining. And it's a pretty hard one to offset. But I think that ag[riculture] and mining has been pretty big enough [played an active role] compared to the other ones [sectors].”* A student was able to link environmental issues to methane and provide an example to reduce it *“Well, the main thing that people will talk about is with cattle at least is the methane. And there's a bunch of different feeds that can drastically reduce the methane”*. Students obtained information on environmental issues from guest speakers who *“talk on one of their program they are running ... using seaweed”*, and news/television, *“Yeah, I don't know if you'd call it media but ... nearly every farming household will sit down and watch landline. A lot of those up and coming technologies [to reduce methane emissions are] shown on landline”*. Conversely, one student felt that addressing environmental issues was dependant on the individual company, rather than sector *“I guess certain companies may have different ideas on that.”*

Do you agree that animal welfare is a high priority in the red meat processing sector?

There was an overwhelming agreement by students that animal welfare is a high priority in this sector, with one student highlighting that *“You wouldn't be able to sell it [meat] if you didn't look after your animals. The more you look after your animals the more productive it is”*. Students were also able to link animal welfare to economic and business outcomes, *“They [cattle] are part of our family, ... the cattle are the ones that are bringing in your income. They're the ones that you can go out and spend most of your time with. Yeah, so you gotta make sure they look alright, otherwise you won't get any benefit.”* Animal welfare was associated with killing, *“Either way, something has to die for us to get*

fed, like, whether it's ... clearing land to make a crop, whether you think killing an animal, or indirectly killing an animal by growing crops".

Education of the general public was a common theme identified. *"I think a lot of people ... once they are educated on how the abattoir process works and they find out that the animal is being killed and ... showing people that they're not just getting their heads cut off and stuff, it's actually a humane process and going through slaughter it's pretty crucial in ... getting more consumers".* This was reiterated by *"Just help to persuade them that it is humane, and ... nothing bad [is going] on with the animals".* One student stated that *"a definition on welfare"* was required, as if *"you said to people ... how they're treated [animals] over the process, because if someone who sees they die, they think all animals are not being treated correctly. So I guess maybe go in more depth with how prior to slaughter animal welfare has been implemented."* Student examples of animal welfare included *"quality along the animal production process", "healthy as possible"* and examples around the five freedoms of animal welfare such as access to feed, *"they have got as much feed as they want and they have got paddocks and paddocks worth of feed. They are happy as Larry and they [are] ... looked after right up until they are packed into boxes."*

Other students drew on the consequences of poor animal welfare such as *"If they don't have a good animal policy, they will probably get protests and all of that stuff", "Damaged meat doesn't sell well. If it has bruises, it is generally low as in quality in the meat" or market access consequences if we were like "... other countries ... were [animals are] slaughtered like in wet markets ... [we] probably wouldn't be as popular."*

"Looking after the animals are our priority in abattoirs"

Secondary school students (excursion and visit to a processing plant)

Before visiting the processing plant, students mainly felt "excited" (42%) and "curious" (38%) with none recording "scared" as a response. There was a desire to learn new things when visiting the processing plant with student feedback including *"I'm keen to learn about the butchering," "how everything is cut and stored"* as well as *"humane practices"* and *"how different cuts/bones etc are sorted"*. There were some concerns around visiting the abattoir with one student mentioning they were worried about *"not being able to process the procedure undergone on the kill floor"* and *"probably getting hit with meat offcuts"*. All students could name a new job and describe it after visiting the processing plant. Student responses to new jobs were varied, highlighting the different ways students absorbed information about the many roles and careers in the processing plant.

Students acknowledged that their perceptions changed after visiting the processing plant;

"Probably thought it was a lot more simple than it is. The rate of production is amazing"

"I didn't think it was as large as what it was. It's the amount of room they had for specific operations. It was mind blowing"

"It's very technical, especially with the whole biogas thing. So... I didn't know that much went into processing"

"I think a lot of people still have that opinion, that, like, that's still a bit more old fashioned. Like, I don't think they realize how.. upgraded everything is."

"I think it's good that... pretty much everything gets put to use, nothing gets wasted"

"It's probably more sustainable than people think, in the way they operate"

“I just don’t think people realise how different it is now, like the way they’re killed is the most humane way possible”

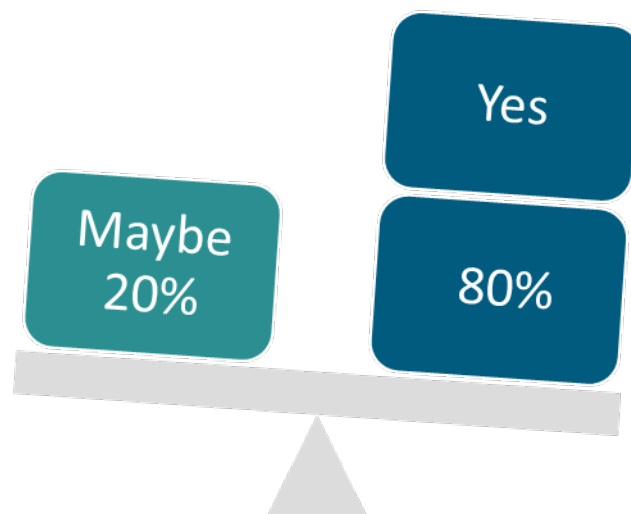
“It’s not just a job for like dumb, mindless people who just sit there all day. A lot of thought goes into what they do”

“I wasn’t expecting him to talk about carbon neutral stuff”

“I think it just opened your eyes a lot more to what you didn’t know”

“Since it’s not something that’s glamourized or anything that everyone would.. be sour... but everyone is just so happy with what they do, which is kind of surprising”

Student responses to their favourite part of the tour varied from “seeing the packaging and the way of operation where everyone has a specific job,” “watching how quick and efficient everything was” and “the skinning and how fast it was”. When asked what they didn’t like about the tour of the processing plant, the majority of students responded with nothing. However, for some students “the slaughter room ... was too confronting” and “the smell, but it wasn’t that bad,” reinforcing the need to target the tour to the group of students.



Would you recommend for a friend to visit a processing plant/abattoir?

6.0 Conclusions / Recommendations

The research found that teachers, parents, and students varied in their knowledge, perception and awareness of the red meat processing sector and associated careers. Agricultural teachers were more likely to have a positive perception, however knowledge of potential careers was variable. Primary and secondary teachers who do not teach agriculture were likely to have low levels of knowledge about the sector. However, a connection with people working in the sector or the presence and involvement of an abattoir in their local community, increased the knowledge and perception of teachers and parents of the industry. Students enjoyed the hands-on, interactive activities developed for incursions, and also visiting a processing plant. The research found these activities were successful in raising knowledge and awareness of the different career opportunities available in the sector. However, more research is required to determine whether this knowledge and awareness translates into an aspiration for a career in the sector.

To raise the perception, knowledge and awareness of the red meat processing sector and the diverse career opportunities available within, stronger partnerships between schools (teachers) and industry (processing plants) need to be developed. In addition, hands-on, curriculum aligned learning opportunities and experiences to see that there is a “ME” in the red MEat processing sector through tours or in-class visits are required to raise the profile, and attract the next generation talented, diverse, and dedicated workforce to the red meat processing sector.

Based on the findings of this research it is recommended that future projects:

1. Recruit and train willing processors to host and visit local secondary and primary schools.
2. Provide secondary school students with the opportunity to tour a local processing plant and primary school students to have an industry representative attend an in-class visit.
3. Develop hands-on learning activities aligned to curriculum with a focus on innovations and technological advances in the red meat processing sector and the associated career pathways are developed.
4. Deliver teacher professional development to build the capacity and capability of primary and secondary teachers to incorporate red meat processing concepts into the classroom to showcase the diverse career opportunities available.
5. Develop a business case to facilitate teacher, student and industry relationships for mutual benefit with a focus on paddock to plate: food edition (similar to “Hoof and Hook”). This will build sustainable relationships between local schools and processing plants, for lasting impact to attract the next generation workforce.

7.0 Appendices

7.1 Semi-structured interview questions - Teachers

Background Information:

What is your age?

What is your gender?

What is your highest level of education?

Can you describe a bit of your background in terms of your training?

How long have you been employed in your current job?

Tell me a bit about your role?

How would you describe the red meat processing sector when teaching? What words do you feel are appropriate?

Definition: The red meat processing sector is focused on the steps that need to be taken to convert an animal into a product suitable for sale at your local butcher or supermarket, or to export (which is to send goods to another country). The red meat processing sector doesn't include the farm, butcher or supermarket.

Sources of self-efficacy:

Have you had any direct experiences with the red meat processing sector? Do you know of any processing plants close to your school?

Do you feel positively or negatively about careers in the red meat processing sector? Why?

Outcome expectations:

What makes a job a good job for your students to aspire to?

What value do you think there is in facilitating student knowledge, awareness and exploration of related career pathways?

Interests:

What student attributes or interests do you think would benefit from learning about careers in the red meat processing sector?

Goals:

What are your current goals for integrating career education into the classroom?

How does this fit into your priorities for student learning?

Self-efficacy:

Are you confident to deliver content related to careers in the red meat processing sector?

Resources:

What resources do you need to support your students to aspire to careers in the red meat processing sector?

Barriers:

What challenges or barriers do we need to consider in developing and designing resources?

7.2 National Teacher Survey

Researchers at CQUniversity Australia have partnered with the Australian Meat Processing Corporation (AMPC) to explore primary and secondary school teacher and student perceptions, knowledge and awareness of the red meat processing sector and associated career pathways. This information will be used to develop an evidence-based program of activities to attract the next generation talented, diverse, and dedicated workforce to the red meat processing sector.

You are invited to participate in a survey which consists of questions about supports and barriers you have experienced in facilitating student knowledge, awareness, and exploration of the red meat processing sector and associated career pathways. Completion of the survey will take around 15-20 minutes.

Any identifying information disclosed in the survey such as names of people or places will be removed at the transcription stage. Data will be quantitatively analysed and overall trends reported. Your responses will be confidential.

Data will be securely stored for a minimum of fifteen years after the conclusion of the project, in accordance with the CQUniversity Code of Conduct for Research.

If you have any questions, please feel free to contact a member of the team

Dr Jaime Manning (j.k.manning@cqu.edu.au) or Dr Amy Cosby (a.cosby@cqu.edu.au)

Please contact Central Queensland University's Division of Research (Tel: 07 4923 2603; E-mail: ethics@cqu.edu.au; Mailing address: Building 32, CQUniversity, Rockhampton QLD 4702) should there be any concerns about the nature and/or conduct of this research project.

This project has been approved by the CQUniversity Human Research Ethics Committee, approval number 23414.

I agree to participate in this research.

Q2 Are you a ... ?

- Primary teacher
- Secondary teacher
- Primary and secondary teacher
- I am not a teacher

Display This Question:

If Are you a ... ? = I am not a teacher

Q3 Thanks, but unfortunately this survey is for teachers only. If you are a parent of a primary or secondary school student, we would love to hear your perspective for a different stage of this project - please just send an email ageducation@cqu.edu.au and we will send you further details.

Display This Question:

If Are you a ... ? = Primary teacher Or Are you a ... ? = Primary and secondary teacher

Q4 What grade/s?

- Prep/Kindergarten
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Grade 6

Display This Question:

If Are you a ... ? = Secondary teacher Or Are you a ... ? = Primary and secondary teacher

Q5 What year/s?

- Year 7
- Year 8
- Year 9
- Year 10
- Year 11
- Year 12
- VET

Display This Question:

If Are you a ... ? = Secondary teacher Or Are you a ... ? = Primary and secondary teacher

Q6 What subject/s?

Q7 What is your gender?

- Male
- Female
- Non-binary
- Prefer not to say

Q8 How old are you?

Q9 What is your highest level of education?

- Year 12
- Certificate/Diploma
- Bachelor Degree
- Postgraduate Degree

Q10 Were any of these qualifications in Agriculture?

- Yes
- No

Q11 What state are you in? ▼ QLD ... WA ...

Q12 Is your school in a:

- Rural Town – less than 5,000 people
- Town – 5,000 – 18,000 people
- Large Town – 19,000 – 49,000 people
- Major City – 50,000 – 250,000 people
- Capital City – 250,000+ people
- Not sure. Add the suburb below _____

Q13 How many years have you been a teacher? ▼ Less than 1 year ... More than 20 years

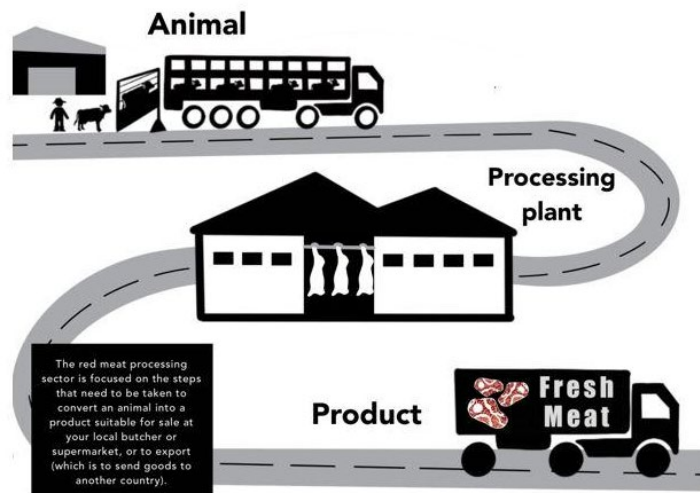
Q14 Does your school offer agriculture as a subject?

- Yes
- No
- Unsure

Q15 Does your school have a school farm or garden?

- School farm (with animals)
- School farm (no animals)
- School garden/vegie patch
- No
- Unsure

The red meat processing sector is focused on the steps that need to be taken to convert an animal into a product suitable for sale at your local butcher or supermarket, or to export (which is to send goods to another country).



Q16 How would you describe the red meat processing sector to your students when teaching?

Q17 Do you incorporate concepts about the **red meat processing sector** into your current teaching program?

- Yes
- No

Display This Question:

If Do you incorporate concepts about the red meat processing sector into your current teaching program? = Yes

Q18 Please describe how you incorporate concepts about the red meat processing sector into your current teaching program?

Display This Question:

If Do you incorporate concepts about the red meat processing sector into your current teaching program? = No

Q19 Why not? _____

Q20 Which of the below best describes your connection to the red meat processing sector?

- I'm strongly connected to the industry, with a friend or family member working in that sector
- I'm connected to the industry and have visited an abattoir before
- I have a distant connection and know of an abattoir in my local area
- I don't feel connected to the industry

Q21 The following statements relate to your perceptions of **the red meat processing sector**.

Please rate your level of agreement from (1) Strongly disagree to (5) Strongly agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My overall perception of the red meat processing sector is positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The red meat processing sector is an important contributor to the social, economic, and environmental sustainability of local communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The red meat processing sector is a leader in manufacturing innovations and technological advancements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe the red meat processing sector is proactive about environmental issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is valuable for all students to learn about the red meat processing sector at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The red meat processing sector can be used to compliment a variety of curriculum subject areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal welfare is a high priority in the red meat processing sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22 How do you feel about careers in the **red meat processing sector**?

- Positively
- Neutral
- Negatively
- I don't know enough about careers in this sector

Q23 What careers do you associate with the **red meat processing sector**? _____

Q24 The following statements relate to your perceptions of careers associated with the **red meat processing sector**. Please rate your agreement for each statement from (1) Strongly disagree to (5) Strongly agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am confident to deliver content related to careers in the red meat processing sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are many job opportunities available in the red meat processing sector for my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would encourage my students to consider a career in the red meat processing sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are many pathways to a career in the red meat processing sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jobs in the red meat processing sector are not relevant for academically inclined students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The red meat processing sector is an important employer for the future of work in my region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q25 What resources or opportunities do you need to support your students to aspire to careers in the red meat processing sector? (Please select all that apply)

- Full unit of work
- Small modules
- Uncensored videos (a behind the scenes view of the red meat processing sector)
- Censored videos (that focus more on technological innovations)
- Worksheets and comprehension resources
- Resources that showcase different careers in the red meat processing sector
- Hands-on activities
- Excursion (opportunity for a tour of an abattoir)
- Incursion (industry representative visiting your school)
- Online/Virtual professional development
- Face-to-face professional development

Q26 Any further comments or considerations?

7.3 Semi-structured interview questions - Parents

Background Information:

What is your age? What is your gender?
What is your current role or job?
What is your highest level of qualification?
What year are your child/ren in?

Careers and role models:

Do you think your school teaches your child about careers?
Do you have any goals for your child's career education and development?
Does your child have any role models?

Definition: The red meat processing sector is focused on the steps that need to be taken to convert an animal into a product suitable for sale at your local butcher or supermarket, or to export (which is to send goods to another country). The red meat processing sector doesn't include the farm, butcher or supermarket.

How would you describe the red meat processing sector when teaching? What words do you feel are appropriate?
Do you think the red meat processing sector offers people good jobs?
Do you feel positively or negatively about careers in the red meat processing sector? Why?

Sources of self-efficacy:

Do you know anyone that works in the red meat processing sector? If yes, what do they do?

Outcome expectations:

What value do you think there is in increasing your child's knowledge, awareness and exploration of related career pathways?

Interests:

Do you think your child's interests could translate to a career in the red meat processing industry? Why or why not?

Self-efficacy:

Are you confident to talk with your child about the industry and encourage your child's exploration of related careers?

Resources:

How do you think new experiences related to the red meat processing sector could be worked into your child's education?

Barriers:

What challenges do we need to consider when developing resources to consider a career in the red meat processing sector?

7.4 Student focus group survey and questions

QUESTION 1: Describe or draw what the red meat processing industry is?

QUESTION 2: Do you know of any jobs in the red meat processing sector?

QUESTION 3: When you leave school, TAFE or university, would you like to have a job in the red meat processing sector?

Class focus group questions

- Do you think the red meat processing sector is an important employer for people here in XXXX?
- Do you think of the red meat processing sector as a leader in manufacturing innovations and technological advancements?
- When considering environmental issues (such as becoming carbon neutral, climate change etc.), do you believe that the red meat processing sector is proactive to address these?
- Do you agree that animal welfare is a high priority in the red meat processing sector?

Additional questions for students visiting a processing plant

QUESTION 4: Circle the words that you are feeling before you visit the processing plant/abattoir. Circle all that apply

Happy Excited Nervous Curious Scared

QUESTION 5: What do you want to learn about when you visit the processing plant/abattoir?

QUESTION 6: Is there anything you are concerned about to visit the processing plant/abattoir?

QUESTION 7: Name a new job that you learnt about today

QUESTION 8: What do they do?

QUESTION 9: What was your favourite part?

QUESTION 10: What didn't you like?

QUESTION 11: Would you recommend for a friend to visit a processing plant/abattoir?

1 (No) 3 (Maybe) 5 (Yes) Don't know

QUESTION 11: I learnt about new jobs after visiting a processing plant/abattoir today

1 (No) 3 (Maybe) 5 (Yes) Don't know

7.5 Media coverage for the Project

CQU article:

<https://www.cqu.edu.au/cquinews/stories/research-category/2022-research/attracting-the-next-generation-workforce-for-the-red-meat-processing-sector>

Beef central article:

<https://www.beefcentral.com/news/recruitment-news/attracting-the-next-generation-workforce-for-the-red-meat-processing-sector/>

Sheep central article:

<https://www.sheepcentral.com/recruitment-attracting-the-next-gen-workforce-to-the-meat-processing-sector/>

ABC radio interview:

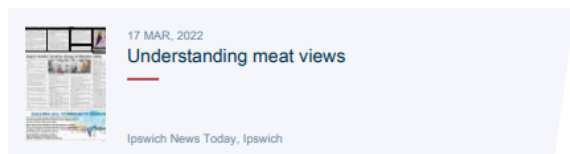
AM Radio



ABC Far North Adam Stephen - 10 Mar 2022, 3:41 pm

Interview ... just going to save them to become a YouTuber for the red meat industry yes, exactly. Dr Jamie Manning, Thank you so much for your time this afternoon. You're welcome thanks That's Dr Jami...

Ipswich news today (newspaper):



Page 1 of 1

Understanding meat views

CQUniversity agriculture researchers are working to create an innovative and skilled meat processing workforce for the future.

Led by Dr Jaime Manning in collaboration with the Australian Meat Processor Corporation (AMPC), the new project is designed to understand school teacher, student and parent perceptions, knowledge and awareness of the red meat processing sector and associated career pathways.

Dr Manning explained that understanding the current state of knowledge and perception of the red meat processing sector is crucial for the future development of an evidence-based strategy to attract the next generation to careers in the industry.

"Primary and secondary school students are the next generation workforce, however, for them to choose the red meat processing sector as an employer, they must have a positive perception and knowledge of the diverse and attractive career opportunities available.

"Teachers are key influencers of student career pathways and also determine the content and industries they include in teaching and learning programs to meet curriculum outcomes," she said.

"If teachers do not have a positive perception, knowledge, or awareness of what a job in the red meat processing sector entails, it is unlikely they will be confident to promote these pathways to their students.

"It is important to engage with teachers, students and their families to address the sector's image and change any negative perceptions to build a sustainable workforce."

She said teachers from rural and metropolitan schools across Queensland, NSW and Victoria were invited to participate in the study, with information obtained to be used to develop a national teacher red meat processing survey.

"To gain a comprehensive view of teacher

perceptions, participants from a range of demographics, including both primary and secondary school, and those that do and do not teach agriculture will be involved."

From there, the research team will expand its scope to include students and their parents.

"Parents are also key influencers of their children's career pathways and the information collected will provide valuable insight and the possible affect they may have on supporting their child to consider a job in the industry," Dr Manning said.

"This project is just the start of how the industry will work towards attracting a talented, diverse, and dedicated workforce to the red meat processing sector."

At the completion of the project, research will contribute to the AMPC aspiration of the processing sector to be seen as a diverse, safe and attractive industry of choice for employment by 2030.



Dr Jaime Manning's project will understand the perception students have about the meat processing industry.

Australian Country Media Feature: Ag Influencers (newspaper insert):



The Land article:

<https://www.theland.com.au/story/7725715/blazing-trails-to-share-beefs-story/?cs=4933>

Sheep Central Article:

<https://www.sheepcentral.com/meat-business-women-tackle-work-diversity-issues/>

Farm Online Article:

<https://www.farmonline.com.au/story/7725715/blazing-trails-to-share-beefs-story/>

Queensland Country Life Article:

<https://www.queenslandcountrylife.com.au/story/7725715/blazing-trails-to-share-beefs-story/>

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