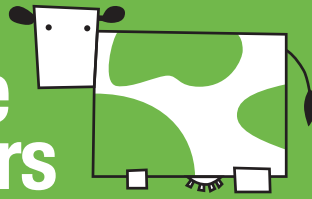


Cows
create
careers



Dairy
Australia

MANUFACTURING MODULE

Year 9 - 11 Student Handbook

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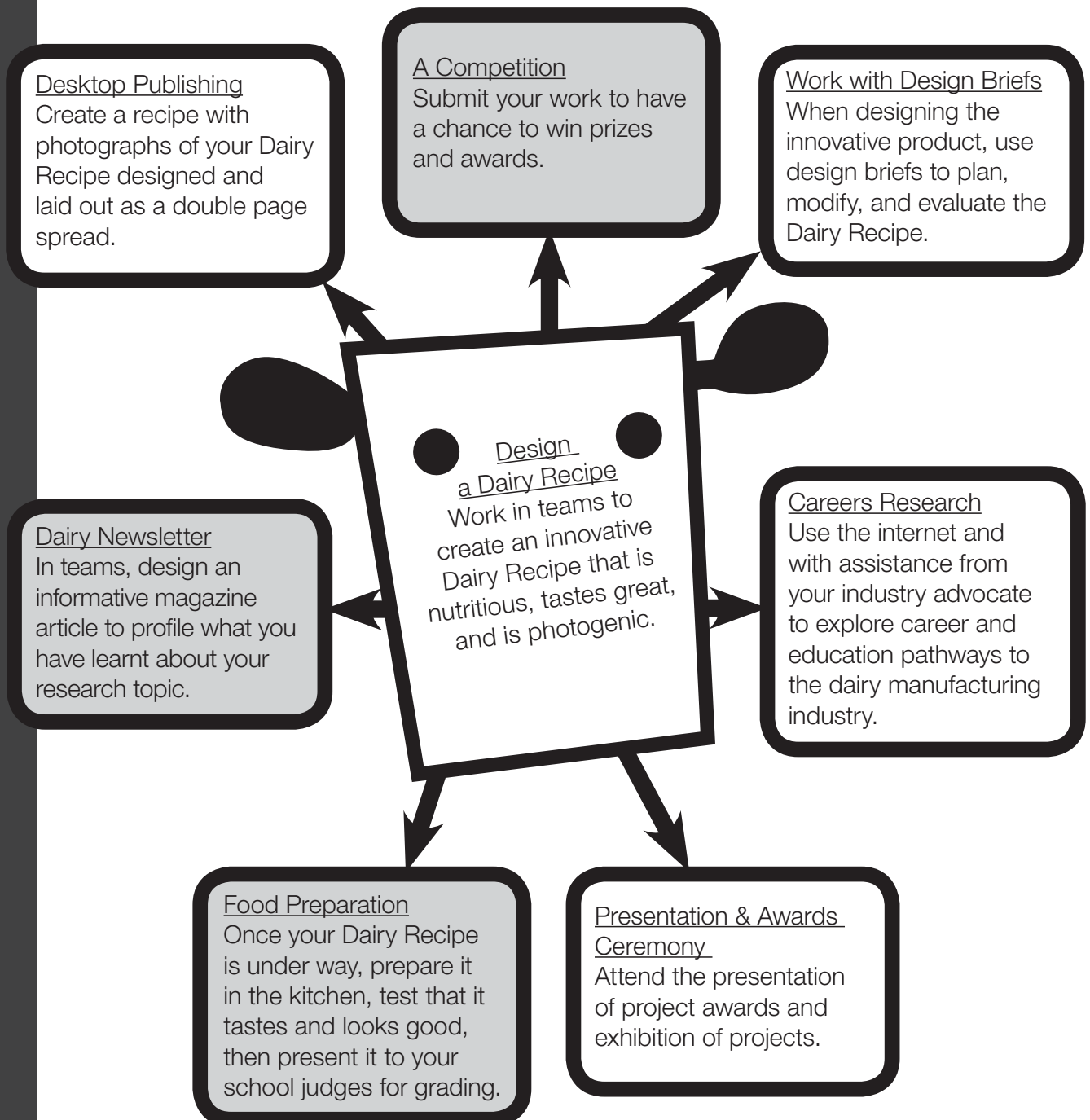
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Contact Details:

Overview

Over the next few weeks you will be significantly involved in the study of dairy manufacturing. Cows Create Careers - Manufacturing Module involves you in:



Assessment Summary



Immerse yourself in Cows Create Careers by submitting the following tasks. This will allow you to be in the running for school and / or team prizes and awards for your region. Don't forget to name your team and submit your checklist form!

HERE'S HOW IT WORKS

For easy identification please think of a name for your team and take a picture of your team with your Dairy Recipe. A CCC memory stick has been provided to your teacher to save your assessment work.

STUDENTS – Years 9 - 11

Students in Teams of 2 - 3 will submit the following work for assessment:

- 1. The Dairy Newsletter (pages 7 - 13)**
 - Submit your newsletter using Microsoft Word or Publisher as a doc or pub file.
- 2. Double Page Recipe with Photographs (include design briefs) (page 14)**
 - Submit your Snail Mail or E-mail and Scientific Report as a doc or pub file.
- 3. Take a Funny Photo of your Team with their Dairy Recipe (page 14)**
 - Submit a funny and creative photo of your Team with their Dairy Recipe as a jpg file.
- 4. Student Evaluation (Entry & Exit) Forms (pages 16 - 17)**
 - Submit your Student Evaluation Forms either as a hard copy or use the Survey Monkey link.
- 5. Final Team Checklist (page 18)**
 - What have you submitted? Please ensure that your team completes this form.

TEACHERS

Teachers are able to gain points towards the school prize by submitting the following:

- **Teacher evaluation and judging rubric (pages 7-8 in the Teacher's Handbook)**

NOTE: Teachers who submit both the teacher evaluation form and the judging rubrics will gain an additional 5 points for the school prize.

SCHOOL RECIPE BOOK

To be eligible for the school prize of \$500 your school must submit a school recipe book. The school recipe book will comprise of:

- **Front Cover** • **Double Page Recipes** • **Photographs** • **Back Cover**

The school recipe book will be judged on its presentation, content and creativity.

NOTE: Schools who submit a recipe book will gain a further 5 - 10 points towards the school prize.

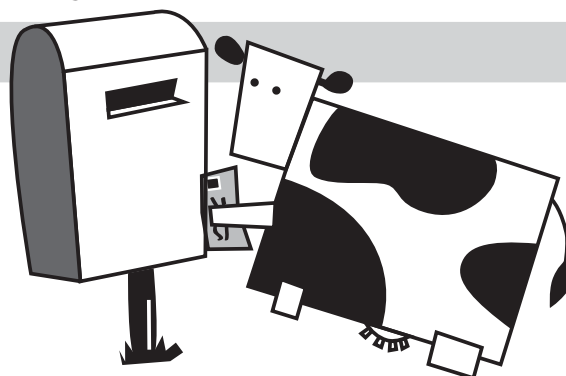
BONUS POINTS!

A bonus point will be awarded to any school that submits all their work before the due date for that region. This will be added to the school's average score for the school prize.

MAIL ASSESSMENT WORK TO:

Cows Create Careers
PO Box 18
LOCH VIC 3945

Refer to the School Resource Kit for due dates and timelines for the project.



Presentation & Awards Ceremony

All participants will receive a certificate of participation and an invitation to the Presentation & Awards Ceremony.

Please refer to the School Resource Kit for the date of this presentation. The day will start at 10.30am and conclude after lunch at 1.30pm. Lunch will be provided to all who attend.

The overall winning team prize and school prize will be announced at the Presentation & Awards Ceremony for each region.

Region's Winning Team

Region's winning team wins \$50 for each team member (max \$250).

The winning team prize is determined by adding together the score of each of the team assessment tasks along with the score from the teacher's judging rubric.

Don't forget by submitting your student evaluations you will gain 5 points towards your final team score!

The highest team score for the region will take out the team prize. (This prize is awarded in both junior and senior sections.)

Region's Winning School

Region's winning school will receive \$500.

To be eligible for this prize the school must submit a minimum of four Cows Create Careers teams. The winning school prize is determined by calculating the average of the score from each of the teams that have been submitted.

The highest average in the region will take out the school prize. The prize is awarded in both junior and senior sections if there are two or more schools meeting the assessment criteria.

Don't forget by teachers submitting their judging rubrics and teacher evaluation, your school will gain an additional 5 points towards the final school score.

If you get your work in before the due date, your school can gain an additional point towards the final school score!!!

Industry Advocate Visit

Your school has its own industry advocate who will visit to give a presentation to students about their role in the dairy industry.

Some Key Ideas/Questions

The industry advocate will give an interesting presentation about the dairy industry. You may wish to investigate in more depth aspects of the industry advocate's work such as:

- What path did they take to their current position?
- What are the real positives about working in the industry?
- What was the nature of study undertaken to qualify them to do this work?
- What 'duties' do they perform in this position?
- What do they think that they will be doing in five years time? What about ten years?
- What special talents and interests are needed to succeed in this kind of work?



*The Cows Create Careers
industry advocates are people who
work in the dairy industry. Our industry
advocates volunteer their time to let
you know what opportunities and
advantages are available for you in
your rural community.*



Tasks for Submission

All assessment tasks are to be sent to Cows Create Careers on the CCC memory stick provided to your teacher. You will need to post this CCC memory stick, final team checklists, teacher judging rubrics, teacher evaluation form and the student evaluation forms (if not using the Survey Monkey link) to Cows Create Careers at PO Box 18, LOCH VIC 3945.

For easy identification please ensure that you include your team name on all assessment tasks!

1. The Dairy Newsletter

In teams of 2 - 3, students will choose a research topic from the list below.

Topic 1: Dairy Nutrition

Topic 2: Dairy Processing

Topic 3: Dairy International Trade

Topic 4: Dairy Domestic Market

Topic 5: Dairy Technology (Innovation)



The Dairy Newsletter is an informative and entertaining 2-page newsletter. The main purpose of the newsletter is to provide your readers with an overview about what you have learnt about the dairy manufacturing industry and career pathways. Make sure you aim to make the newsletter an eye-catching mix of photos and short reports.

Further details about the Dairy Newsletter Task can be found on pages 7 - 13.

2. Double Page Recipe (with design briefs)

Each team will be asked to:

Produce a Dairy Recipe.

- Development of ideas must be recorded and presented as design briefs.
- The Dairy Recipe must be produced (in the kitchen) and a photograph taken to be included on the recipe.
- After completion the Dairy Recipes are to be assessed at school level by judges who will take into consideration the presentation (colour and movement), taste, marketability, innovation and creativity.
- Schools/teams are invited to bring samples of their Dairy Recipes to the Presentation & Awards Ceremony.

Create a two page recipe, working with design briefs.

- Development of ideas must be recorded and presented as design briefs.

Further details about the Double Page Recipe Task can be found on page 14.

Use the gift voucher that has been donated by Dairy Australia to purchase your dairy products.

3. A Funny Photo of your Team with their Dairy Recipe

Submit a funny photo of your team with their Dairy Recipe as a jpg file. Make sure you are creative with your photo! Perhaps create an international and dish and dress accordingly!

Further details about the Take a Photo of your Team with their Dairy Recipe Task can be found on page 14.

4. Student Evaluation Forms

The student evaluation forms can be submitted as a hard copy or by using our Survey Monkey link. An easy 5 points if these are all submitted!

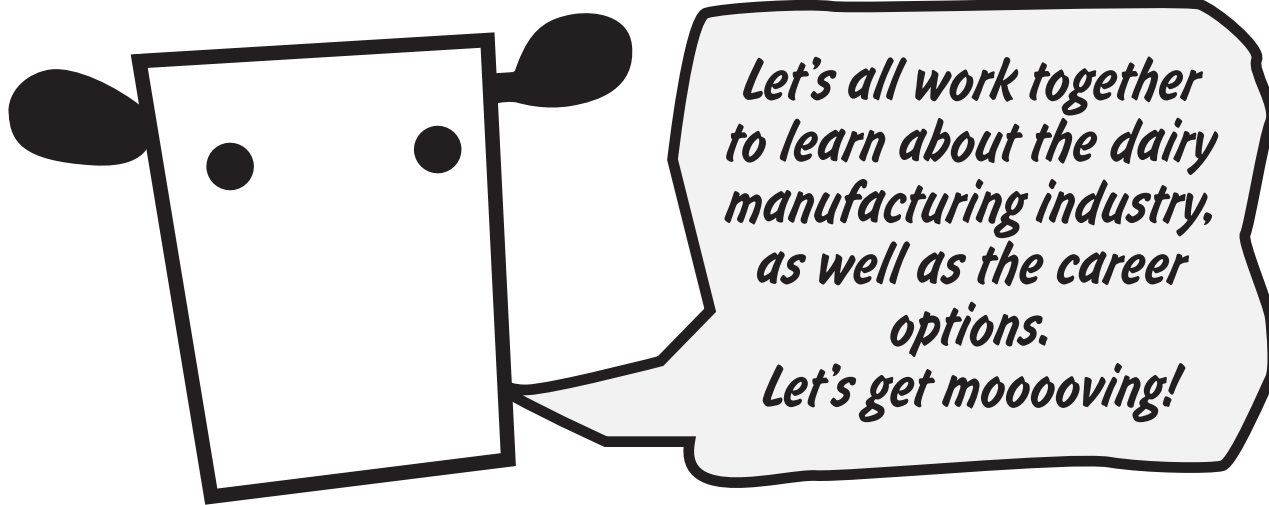
Further details about the Student Evaluation Forms can be found on page 16 - 17.

5. Final Team Checklist

Please tell us what you have submitted! Please ensure that your team completes this form to accompany the CCC memory stick. Print your names clearly for certificates.

Further details about the Final Team Checklist can be found on page 18.

1. The Dairy Newsletter



The Dairy Newsletter is an informative and entertaining 2-page newsletter. The main purpose of the newsletter is to provide your readers with an overview about what you have learnt about the dairy manufacturing industry and career pathways.

Choose one of the research topics listed on page 8 and then refer to further information about your chosen topic that can be found on pages 9 - 13.

Following is a sample of what your newsletter should cover. The layout is up to you, but don't forget that Microsoft Publisher has some great templates for Newsletters.

SAMPLE LAYOUT

- Think of a catchy heading for your Dairy Newsletter.
- Write up a report/story about the Research Topic that you have selected from page 8.
- Answer the questions listed on page 8 about your topic.
- Tell us what you are planning to make for your Double Page Recipe and why.
- Tell us about what you learnt about the dairy manufacturing industry that you didn't know before the project.
- Can you identify at least 2 careers that are available in the dairy manufacturing industry? Describe what they involve. Perhaps you could have a look at page 15 for more ideas.
- If your industry advocate has visited the school, share with us what you have learnt from his/her visit.
- Tell us something personal about your team. Are any of you interested in a career in Food Science? If so explain some more.
- Don't forget to make good use of the photos that you may have found when researching your topic or that you may have taken whilst in class.



The Dairy Newsletter - Research Topics

Activity 1: Dairy Nutrition

Sample core focus

1. Consider the place of dairy products in a balanced diet.
2. Consider how the balance of dairy might vary for an infant, a teenager, or an active sportsperson.
3. Find out if your school understands the importance of dairy by considering daily diets at school.

Activity 2: Dairy Processing

Sample core focus

1. Consider the journey from the farm, product manufacture and to the supermarket shelf.
2. Consider the importance of quality assurance of dairy processing in maintaining a healthy dairy industry.

Activity 3: Dairy International Trade

Sample core focus

1. Consider the importance of the Dairy Industry to the Australian economy.
2. Study statistics to understand the key markets for Australia and to make predictions about the future of the Australian Dairy Industry.

Activity 4: Dairy Domestic Market

Sample core focus

1. Research how much milk is consumed within Australia and some of the products it is made into.
2. Consider the main target areas for marketing dairy locally.


Activity 5: Dairy Technology (Innovation)

Sample core focus

1. Research innovative dairy products found on supermarket shelves, and the thinking behind their development and presentation.
2. Consider market research and marketing techniques used to ensure these products sell.



Research Topic



Dairy foods such as milk, cheese and yogurt contain carbohydrates, fat and protein, which your body needs to make energy. Not only this but the carbohydrate found in dairy foods is a Low GI (low glycemic index) carbohydrate. In sports and exercise, choosing carbohydrate foods based on their GI might help you to perform better!

Topic 1 - Dairy Nutrition

Key Ideas

Dairy foods provide a unique package of over 10 essential nutrients with a wide range of benefits. These nutrients are important for healthy blood, nervous and immune systems, eyesight, muscle and nerve function, healthy skin, energy levels and growth and repair in all parts of your body.

Research the place of dairy in 'a healthy eating pattern'. Where are dairy products in a 'balanced diet'? How frequently should we eat dairy products and in what quantities? Do these answers vary for different situations?

Research the importance of regular (three times a day) serves of dairy for teenagers, and for those who are active in sport (sports nutrition). What specific elements of dairy affect human growth and performance (such as calcium for bone density), and what are the dangers of a deficiency of dairy for these people?

Conduct a minor survey at class or school level to determine whether the importance of dairy nutrition is reflected in the eating habits at your school. Does your school need a strategy to improve its dietary habit – if so can you provide one?

NOTE: The Dairy Newsletter must link the topic to careers in the dairy manufacturing industry.

Core Web Resource:

<http://www.dairyaustralia.com.au>

Research Topic

Topic 2 - Dairy Processing

Key Ideas

The dairy supply chain is divided into the following sectors – dairy farming, dairy processing, warehousing and distribution.

Research the journey of milk from the cow (dairy) to the supermarket. What processes and technology must be in place to ensure quality assurance from the farm to the market?

Research the use of dairy manufacturing technology that turn milk into so many 'supermarket products' (such as packaged milks, yogurt, cream, butter, ice cream, and so on). Consider the three main processing sectors – Milk and Cream Processing, Ice Cream Manufacturing and Dairy Product Manufacturing.

Choose a specific supermarket product (such as flavoured yogurt), and track/describe its journey from the cow to the fridge. (Your Dairy Newsletter might show an illustrated flow diagram using photographs sourced from books or the internet).

Explain (in general terms) the importance of quality control and consumer satisfaction on the Australian economy.

NOTE: The Dairy Newsletter must link the topic to careers in the dairy manufacturing industry.

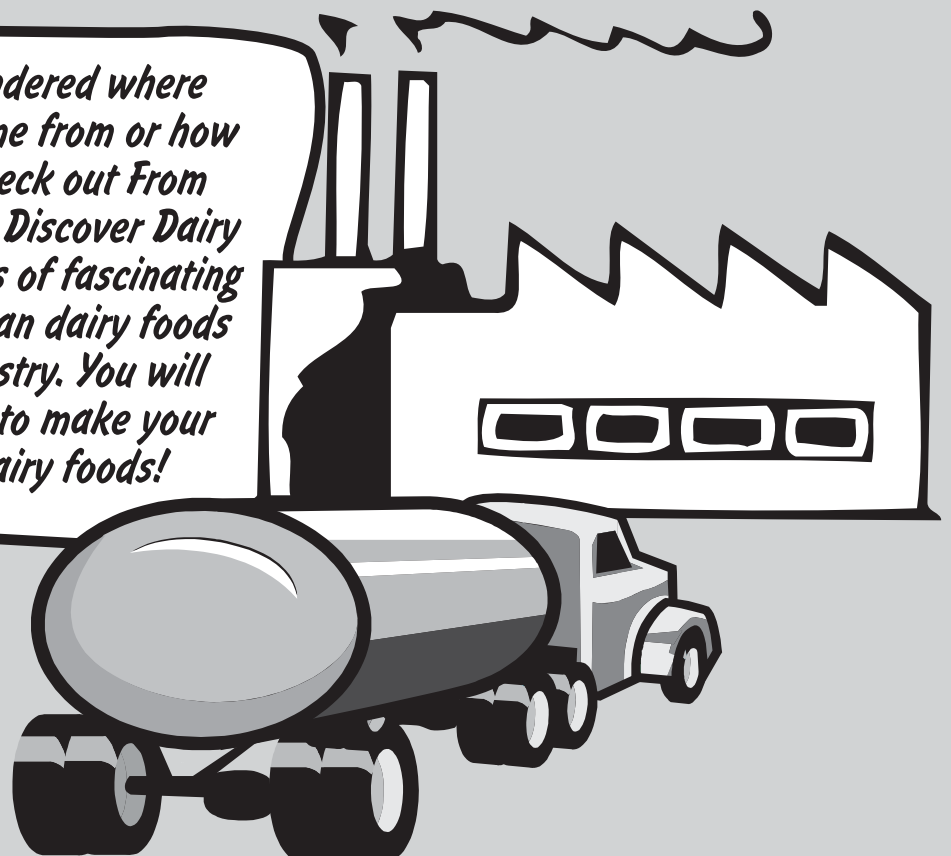
Core Web Resources:

<http://www.dairyaustralia.com.au>

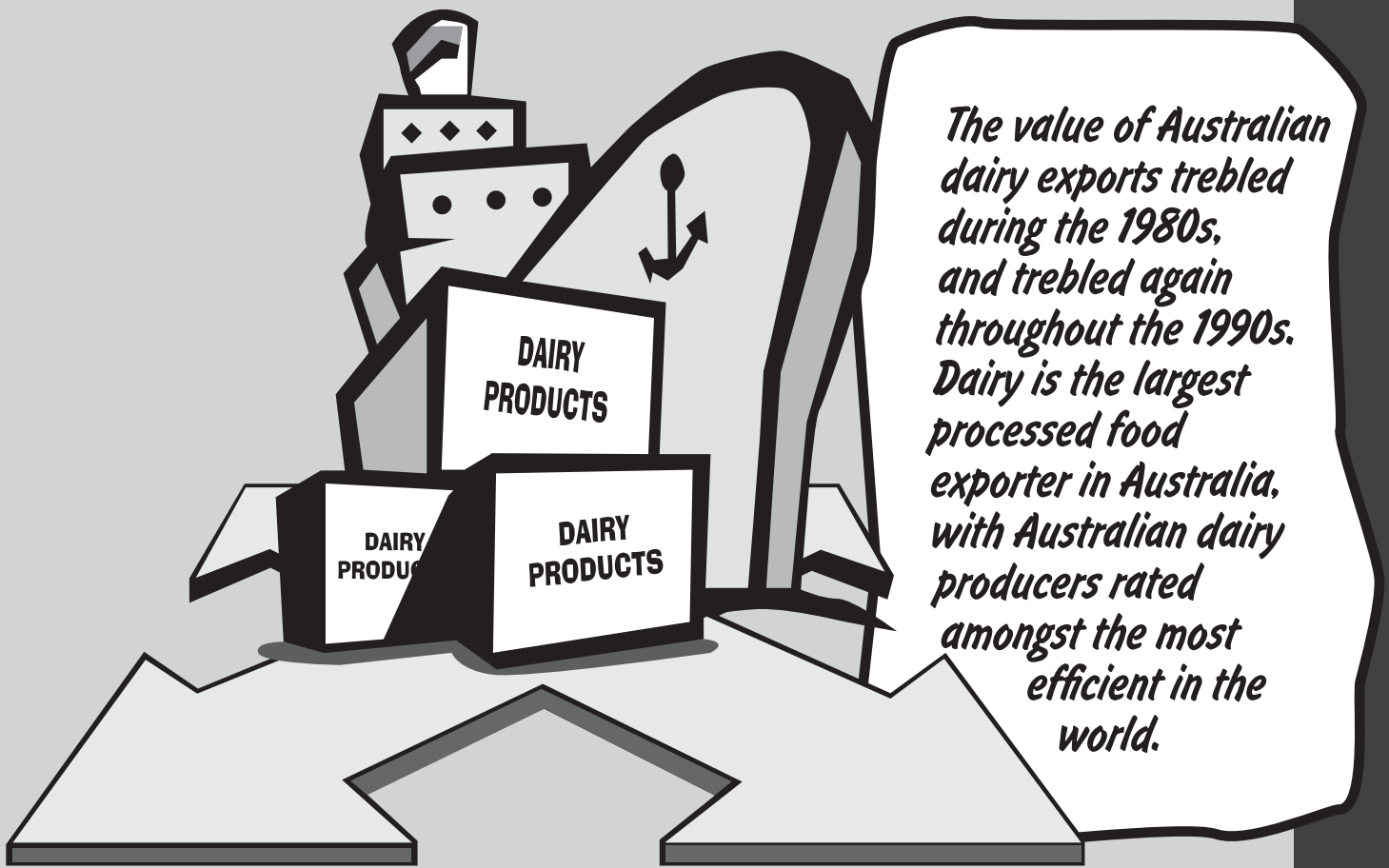
<http://www.ncdeagotafe.edu.au>

<http://www.dairy.edu.au/discoverdairy/Students/From-Farm-to-Plate.aspx>

Have you ever wondered where your dairy foods come from or how they are made? Check out From Farm to Plate on the Discover Dairy website to find heaps of fascinating facts about Australian dairy foods and the dairy industry. You will even discover how to make your own delicious dairy foods!



Research Topic



Topic 3 - Dairy International Trade

Key Ideas

Australia accounts for an estimated 2% of the world's milk production. It ranks fourth in terms of world dairy trade behind the European Union, New Zealand and the United States.

In the past two years 45% of Australian milk production was exported.

Research the importance of Dairy International Trade. How important is a healthy dairy industry to the Australian economy?

Research the factors that contribute to the success or failure of international trade. Who buys our milk, and in what quantities do they buy it? To what degree do the economies of these countries influence the health of the Australian Dairy Industry? (Consider for example the economies of Japan, Singapore, China, and the Philippines.)

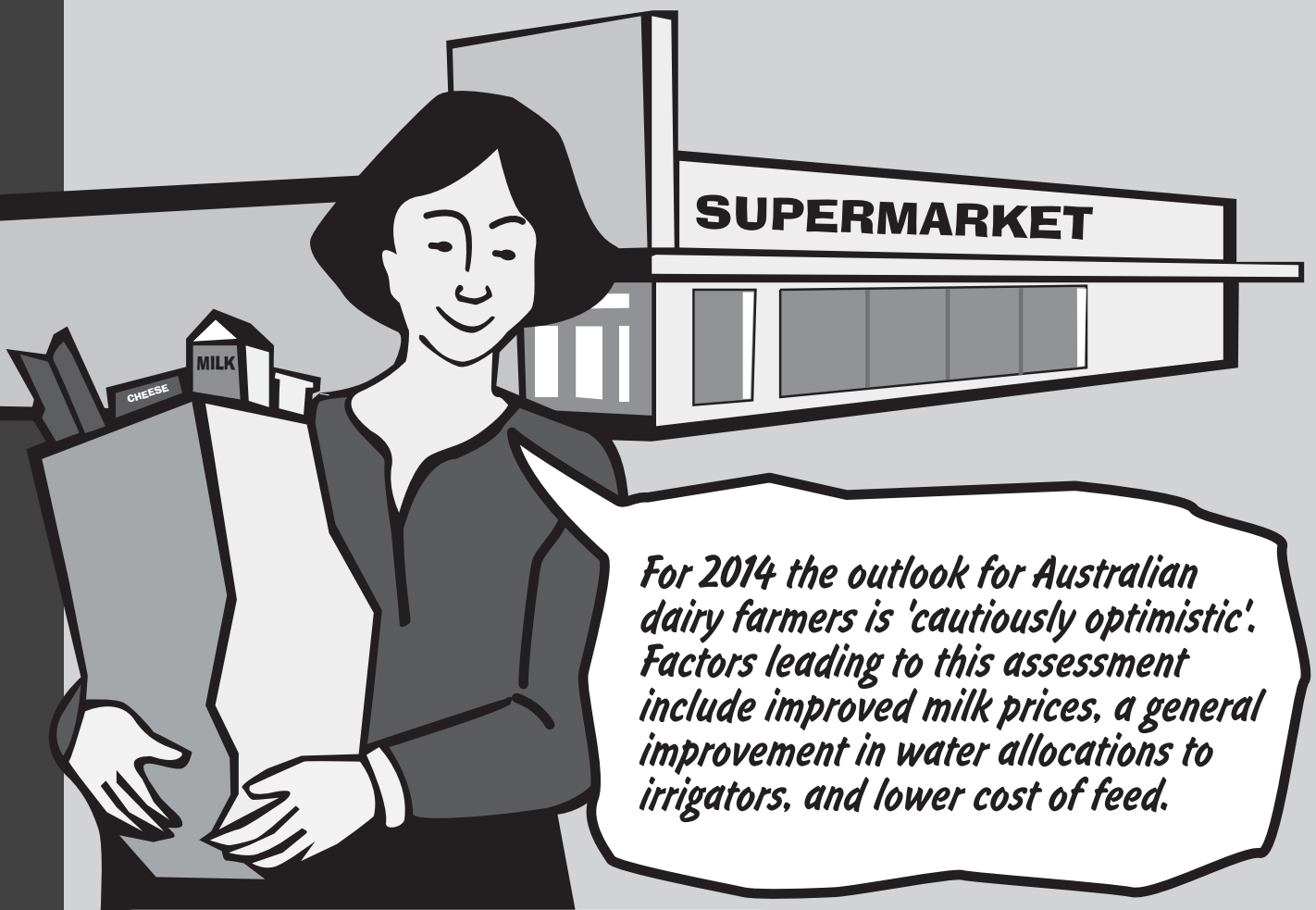
Study the statistics to report on the current health of Australian Dairy in the export market, and use them to make predictions about its immediate future.

NOTE: The Dairy Newsletter must link the topic to careers in the dairy manufacturing industry.

Core Web Resources:

<http://www.dairyaustralia.com.au>

Research Topic



Topic 4 - Dairy Domestic Market

Key Ideas

Just over half of the milk processed in Australia is consumed within the country.

Research the ways in which dairy is marketed to ensure a strong domestic economy.

The focus questions below should help shape your thinking:

Follow the links on the Dairy Australia website to make connections between the domestic market and such target areas as Health and Lifestyle, Products and Recipes, and Dairy Nutrition. Visit the Education and Careers area to see how Dairy Australia markets dairy in schools.

When presenting your Dairy Newsletter, link your research findings to conclusions about the health of the Australian domestic dairy economy.

NOTE: The Dairy Newsletter must link the topic to careers in the dairy manufacturing industry.

Core Web Resource:

<http://www.dairyaustralia.com.au>

Research Topic



Your innovative Dairy Recipe might become a national hit, and every day Australians might sit down to enjoy your cheesy creation, your nutritious drink, or maybe your refreshing summer dessert. But how will you know what the people want?

Topic 5 - Dairy Technology (Innovation)

Key Ideas

An important part in maintaining a strong dairy industry is consumer research.

Every day new products are being created, tested, and either put into production or sent back to the drawing board. These new products are needed to keep the market place active, and to keep dairy high on the list of items purchased daily.

Products might include items for infants, school lunches, sports nutrition, summer refreshment or winter warmth.

Research how the Dairy Industry finds out about community perceptions in relation to its products. For example, can you discover if nutrition is more important than taste, or is convenient packaging more important than what is in the package?

Explore/research magazines and television advertising, and visit local supermarkets to identify innovative dairy products. How are they packaged? Who is the intended consumer? Do these products 'walk off the shelves', or do they sit there beyond their use-by dates?

When presenting your Dairy Newsletter, link your research findings to conclusions about what is on the supermarket shelves and what were contributing factors in developing these products.

NOTE: The Dairy Newsletter must link the topic to careers in the dairy manufacturing industry.

Core Web Resources:

<http://www.dairyaustralia.com.au>

2. Double Page Recipe

Producing a Dairy Recipe

A major component of Cows Create Careers Manufacturing is for your team to design an exciting new recipe involving one or more dairy products. You must develop the idea and improve your original plans by creating and evaluating the product using a design brief. You will present your recipe as a double page spread for a recipe book. Included in the double page spread will be a photograph of your Dairy Recipe. Finally, you will prepare your Dairy Recipe for the school judges to assess using the teacher judging rubric on page 8 of the Teacher's Handbook.

It's very rare that your first attempt is your best attempt, or your first idea is your best idea. Design briefs can show the development of your idea and provide an opportunity to justify changes to your original plans.

Don't forget that by teachers submitting a school recipe book you can gain an additional 5 - 10 points towards the final school score.

You are invited to bring samples of your Dairy Recipe to the Cows Create Careers Dairy Presentation & Awards Ceremony.

Working with Design Briefs

A design brief must be included as part of your assessment. The following list should help guide you in what to include in your design brief, and alert you to how the design brief assists with the development of your Dairy Recipe.

Design briefs should include:

- Information related to who, what, when, where, why and how in the development of design brief(s)
- Relevant evaluation criteria
- A range of research (acknowledge sources) and show a development of ideas (ie. first idea is never the best idea) and justifications regarding decisions made by the group
- Reference to and appropriate knowledge of safe, hygienic food preparation and processing techniques
- Appropriate choice of tools and equipment
- Clear details of how the final recipe reflects the design brief
- Assessment of recipe including degree of creativity and degree of difficulty
- Assessment of recipe including perceived appeal in 'the market place'
- Assessment of effectiveness of the design brief as a plan.

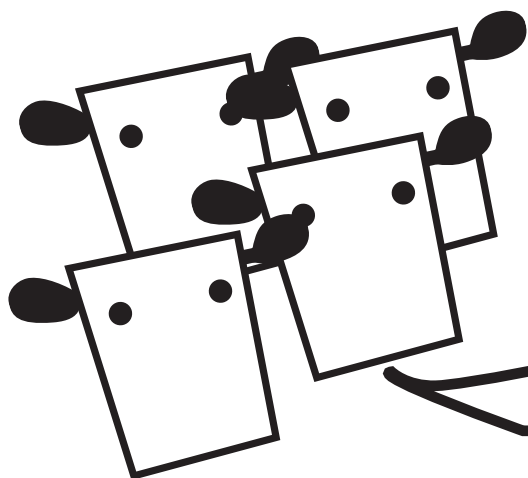
When developing and presenting your design brief be sure to refer to this list as a checklist. Remember to use the gift certificate that has been donated by Dairy Australia.

3. A Funny Photo of your Team and their Dairy Recipe

This task should be a lot of fun! Take a funny photo of your team with their Dairy Recipe, make sure you are creative with your photography. We want a snapshot that makes the reader of a magazine stop, look wonder and then read the article.



Brainstorming Careers



Now that the Cows Create Careers project is drawing to a close, it is a good time to discuss all the possible careers you can think of that relate to the dairy industry.

The brainstorming discussion could ask you to consider aspects of each occupation such as:

- What skills are needed to do this type of work?
- Would you like to do this type of work?
- What level of education is needed to do this work?

To help start you off a number of career areas are listed in the boxes below:

Personal Interest	Study Area – TAFE / University	Potential Job Opportunities
Nature	Food Science, Nutrition, Engineering	Dairy Scientist, Environmental Scientist, Dairy Engineer, Sustainability
Persuader	Food Science / Marketing, Agriculture	Purchase, Sales, Logistics
Adviser	Food Science, Education and Training	Training Officer, Lecturer, Consumer Scientist
Analytical	Food Technologist, Product Manufacture	Quality Assurance, Manufacturing Manager, Technical Manager
Creative	Food Science, Research	R&D, Product Development
Organiser	Food Science, Nutrition, Science	Quality Assurance, Inventory Management
Mechanical	Food Technology, Hospitality, Science, Engineering	Dairy Scientist, Dairy Processing, Quality Assurance

4. Student Evaluation Forms (Entry & Exit)

Don't forget to complete this evaluation form - an easy way to gain 5 points for your team. Each team member will need to submit this form with their other assessment tasks.

The surveys are designed for students to contemplate their learning, to guide the shaping of the project, and to give students an opportunity to assess the project after completion.

The Entry Survey is to be completed prior to the project commencement and Exit Survey on completion of the project. These surveys can be completed using our Survey Monkey link or by photocopying this survey form for all the members of your team. The Survey Monkey link will be emailed to your teacher for distribution.



Entry Survey (Please circle)

STUDENT NAME _____ BIRTH DATE _____

TEAM NAME _____ YEAR LEVEL _____

SCHOOL NAME _____

Do you live on a dairy farm? YES / NO

Please answer the following questions, along the scale of 1 to 5, where 1 is strongly disagree (SD) and 5 is strongly agree (SA).

	SD					SA				
	1	2	3	4	5	1	2	3	4	5
I know a lot about career pathways in the dairy manufacturing industry.	1	2	3	4	5					
Dairy foods like milk, cheese and yogurt are good for my health and nutrition.	1	2	3	4	5					
I know where to find information about dairy education pathways.	1	2	3	4	5					
The dairy manufacturing industry has lots of career options!	1	2	3	4	5					
The dairy manufacturing industry is a significant rural industry to regional communities.	1	2	3	4	5					
I believe that this project will increase the profile of the dairy manufacturing industry.	1	2	3	4	5					
I will tell my parents about the Cows Create Careers Manufacturing project	1	2	3	4	5					
I would be interested in a career in food technology or dairy manufacturing						YES / NO				

How many serves of dairy do you have per day?

1 serve 2 serves 3 serves 4 serves More

*The following represents **three** serves of dairy (40g cheese, 200g tub yogurt, 250ml glass of milk)*



Exit Survey (Please circle)

STUDENT NAME _____ BIRTH DATE _____

TEAM NAME _____ YEAR LEVEL _____

SCHOOL NAME _____

Please answer the following questions, along the scale of 1 to 5, where 1 is strongly disagree (SD) and 5 is strongly agree (SA).

	SD					SA
I know a lot about career pathways in the dairy manufacturing industry.	1	2	3	4	5	

Dairy foods like milk, cheese and yogurt are good for my health and nutrition.	1	2	3	4	5	
--	---	---	---	---	---	--

I know where to find information about dairy education pathways.	1	2	3	4	5	
--	---	---	---	---	---	--

The dairy manufacturing industry has lots of career options!	1	2	3	4	5	
--	---	---	---	---	---	--

The dairy manufacturing industry is a significant rural industry to regional communities.	1	2	3	4	5	
---	---	---	---	---	---	--

I believe that this project will increase the profile of the dairy manufacturing industry.	1	2	3	4	5	
--	---	---	---	---	---	--

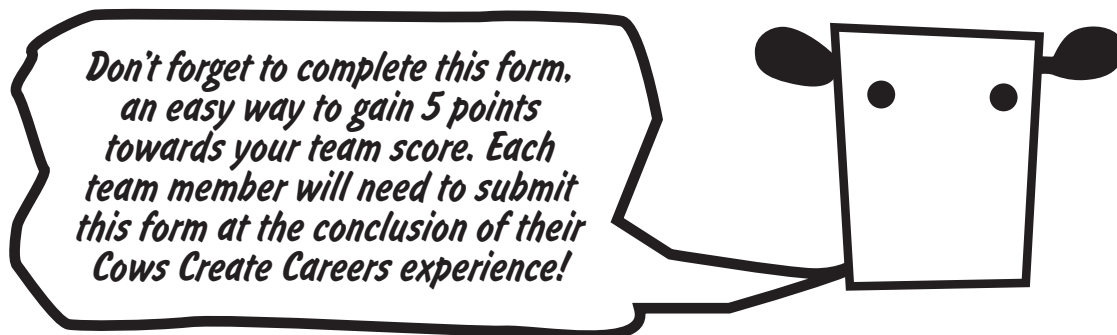
I will tell my parents about the Cows Create Careers Manufacturing project	1	2	3	4	5	
--	---	---	---	---	---	--

I would be interested in a career in food technology or dairy manufacturing	YES / NO
---	----------

I would be interested in a career in food technology or dairy manufacturing	YES / NO
---	----------

How many serves of dairy do you have per day?
 1 serve 2 serves 3 serves 4 serves More

The following represents **three** serves of dairy (40g cheese, 200g tub yogurt, 250ml glass of milk)



Would you be interested in Cows Create Careers organising some dairy work experience for you? YES / NO

Name your preferred job/career pathway i.e. vet science, dairy farming, etc.

5. The Final Team Checklist

Photocopy this as a checklist for your team and submit with your work to:

**Cows Create Careers,
PO Box 18, LOCH 3945**

Have you submitted everything?



TEAM NAME: _____ YEAR LEVEL _____

STUDENT NAMES: (for certificates, please write neatly!)

Has your team submitted the following work?

Please save your team's work on the CCC memory stick with your team name as the file name. This way we can separate your work from other class members' work.

Please circle what your team has submitted:

The Dairy Newsletter.

Double Page Recipe with Photographs and Design Briefs.

A Funny Photo of your Team with their Dairy Recipe.

Student Evaluation Forms (Hard Copy / Survey Monkey link).

Remind your teachers to submit the following:

School Recipe Book.

Teacher Evaluation Form.

Teacher Judging Rubrics.

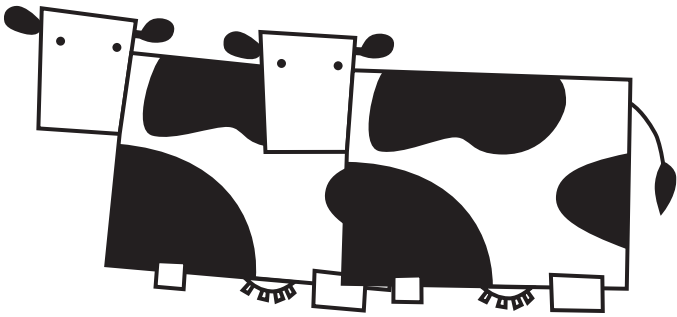
NOTE: Even if your team has not completed all the components of the work, it makes it easier if you circle the relevant response. Then the assessors know what has been submitted!

Contact Details:

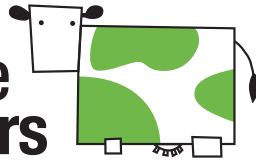
Cows Create Careers – Manufacturing Module
Dairy Australia - National Project Co-ordinators
John Hutchison & Deanne Kennedy
Jaydee Events Pty Ltd
A: PO Box 18, LOCH 3945 P: 03 5659 4219
M: 0412 368 739 (John) & 0419 878 055 (Deanne)
E: admin@jaydee.net.au



Notes...



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Dairy
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MANUFACTURING MODULE

Dairy Australia is the national services body for the Australian dairy industry. Our role is to build a sustainable and internationally competitive industry and to provide solutions that help farmers adapt to an ever-changing operating environment.

The industry-owned corporation acts as the collective investment arm of the dairy industry, investing in essential research, development, extension and industry services that individual farmers and dairy companies could not efficiently undertake themselves.

Find out more at www.dairyaustralia.com.au.

www.dairyaustralia.com.au

Dairy Australia, Level 5, IBM Centre,
60 City Road, Southbank, Victoria, 3006

Tel: 03 9694 3777

