



Cotton Catchment Communities CRC

FINAL REPORT

Part 1 - Summary Details

Cotton CRC Project Number: 3.04.10 CRC1107

Project Title: Career Pathways into the Cotton Industry

Project Commencement Date: 1 July 2010 Project Completion Date: 30 June 2012

Cotton CRC Program: Career Pathways into the Cotton Industry

Part 2 – Contact Details

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Signature of Research Provider Representative:

Part 3 – Final Report Guide (due at 31st May 2012)

(The points below are to be used as a guideline when completing your final report.)

Background

1. Outline the background to the project.

Agribusinesses are being confronted with the challenge of labour supply and how to effectively attract and retain people into their business. *Why are our youth not attracted to the great variety of jobs available across the supply chain of Agricultural industries?* A question frequently asked that was also the main focus and challenge identified by the Gateway Schools to Agribusiness Project in Queensland.

What do Agricultural industries mean to our youth and if one particular industry such as the cotton industry is identified, what are the understandings of this industry to our youth? Are our youth, or specifically our school students, aware of the range and variety of jobs across the whole supply chain of the cotton industry? Are they aware of how they may gain entry through multiple pathways into this industry whether it is through training options or through university entrance? These are just some of the questions and issues raised that must have tangible answers available.

The main aim of the Gateway Schools to Agribusiness project is to engage school communities, industry and government in providing relevant and innovative learning experiences that enable student's access to relevant career pathways in Agribusiness. In order for this to occur however, successful collaboration between all parties, particularly industry and schools is imperative. This particular project looks at building on the present links between these groups, evaluating these and looking at how they can be improved.

How do students make up their minds on what career pathway to follow? Who influences their decision and what perceptions do they already have on what they are going to do when they leave school? Schools, parents, guidance officers, other peers all can play an important role in advising and influencing students perceptions of an industry or career pathway. However, the people advising our youth on careers in agribusiness (eg. cotton) need to be well informed and appreciate the industries themselves.

There are already many programs and resources developed that strive to achieve this awareness and understanding of an industry within schools. Schools need to understand whether these are effective in allowing students to appreciate such an industry. These programs and strategies need to be reviewed and evaluated to see what works and why they work, as well as developing new innovative learning strategies to build on what is already there. Questions need to be asked including *Is there industry involvement? If not how do we develop an effective engagement strategy that could lead to better attraction and retention of young people wishing to enter into the cotton industry?*

Specifically, a target research priority for this project was to investigate the present training delivery of technical on farm skills for students whilst still at school and its value to industry. This would again emphasise looking at a greater involvement by industry, establishing not only what they might want (specific skills) but also how to increase their commitment to the training of our younger generation.

Outcomes implemented from this research would hopefully allow students at gateway schools to initially become more aware, informed and appreciative of the exciting pathways into careers within the agribusiness sector eg. cotton industry, at all levels. They then are in a better position to be able to make informed decisions on whether this career pathway is for them. This project attempts to answer and find solutions to many of the questions and issues proposed.

Objectives

2. List the project objectives and the extent to which these have been achieved.

The primary objective is to look at effective ways of attracting, and to a lesser extent retaining, young people into the cotton industry at all levels across its supply chain. The following objectives focus on students becoming more aware, informed and appreciative of the career pathways into the industry and the exciting careers possible in the cotton industry. The intention is for students to then make an informed decision on the suitability of career

pathways into this industry for them. Encompassing all of these objectives are the strategies used to engage industry at all levels with schools.

- To link Queensland school teachers (initially those involved in the Gateway Schools to Agribusiness program) with the cotton industry and its associated stakeholders across its supply chain, and assist them to develop a better awareness of the industry, career opportunities and pathways that exist. This would then enable them to advise their student population effectively.
- From this interactive school - industry partnership, teachers would have the capacity to review and evaluate current resources and programs available to schools, and develop new teaching learning activities and awareness programs for students that portray the relevant research, technology and careers available across the cotton industry. This would then be evaluated across curriculum levels as well as through specific agricultural type subjects. Cotton industry resources would then be linked to the new Australian Curriculum.
- Develop specific industry visits, use existing programs such as the interactive workshop "Cotton Field to Fabric" and involve a range of guest speakers from across the industry as core Professional Development activities for teachers and as learning programs for students. Key industry stakeholders would be used as advisers and/or mentors in the development of awareness type programs and in curriculum development by schools.
- Appraise the benefits of "training" for students while still at school, exploring alternative models that build a training culture that can meet the needs of workers and the cotton industry into the future. The need to assess what is happening now, does it work and what are the alternatives is essential. The main aim being to establish the most effective way industry can be involved.

Achievement of Objectives – See Results section

Methods

3. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related research.

In achieving these objectives the principles used in the Gateway Schools to Agribusiness program were adopted. These include:

Awareness programs for teachers and students.

Teachers and students evaluated various activities to ascertain the relevant merits:

- Students
 - A range of guest speakers and interactive activities related to their career role, including younger industry members telling their story on how they got to where they are now works well.
 - Alternatively students visiting industry sites, research facilities, universities etc can have the same impact. Students can see demonstrations of job roles and the range of careers available across a business / organisation. Career roles and aspirations descriptions are given by staff working in these businesses.
- Teachers
 - Professional Development allows direct visits and interaction with industry. Teachers who visit industry come away with a greater appreciation of industry pathways and how they operate. These visits can assist teachers in linking the relevance of real life agribusiness applications into the curriculum. It also allows them to become more informed of the careers in agricultural sector as well as broadening their understanding and perceptions of the industry.
 - Discussions between key industry personnel and the education sector (whole of staff meetings, Principals, Guidance officers, Education Queensland Regional Directors) gains the commitment and understanding of the project from an Education Queensland point of view.
- Marketing including newspapers, school newsletters, websites, radio works towards changing perceptions of the industry, inform the community, and strengthen industry support.

As part of this project, awareness days for teachers and students were held and were well received. A focus for teachers was the "Career Pathways in the Cotton Industry" professional development workshops that resulted in

the formation of a schools - industry reference group. These workshops allowed for all parties to interact and discuss the major focus of the project which includes:

- awareness of the cotton industry for teachers eg. *"Cotton Field to Fabric"* program
- how to use the cotton industry as a context for learning across school curriculum and the development of new curriculum resources
- current cotton industry resources that are available eg. *"Pushing the Boundaries"* and evaluating their merit
- the present training agenda in regards to students in schools and the cotton industry

Training needs (VET in schools) - Skill set training model

Assessing the present training structure of technical skill sets within a school environment

A delivery "skill set" model as an introduction to the workforce was trialled across schools and various grade levels. The model looked at the relevance of training from a school setting in conjunction with the needs of local industries and producers, particularly those associated with cotton and grain industries. In this case industry identified local needs not only in short term labour workforce requirements through specialised machinery operation, but also the future needs of Agribusinesses in relation to managers, supervisors, technical and professional employees was looked at.

This model will hopefully be the aim of future training delivery in engaging students into industry whilst still at school.

Curriculum

Curriculum has been identified as a priority as a method to expose students to agricultural industries not only through an agricultural subject in school, but incorporated into cross curriculum areas such as science.

A process of producing suitable resources, in this case cotton specific, could then be used as examples in the new Australian Curriculum. Students would then gain some exposure to this vibrant industry through a cotton industry resource example.

Lesson plan development

Lesson Plans, contextualised to the cotton industry, have been developed for use in schools based in cotton growing regions. The pilot schools were Goondiwindi State School and Goondiwindi State High School in Queensland. Goondiwindi State High School is part of Gateway Schools to Agribusiness program.

The science curriculum was selected for lesson development based on:

1. Alignment of science with the nature of agriculture
2. Discussion of the needs within the schools
3. Dialogue with an industry reference group in the local area

Following the choice of curriculum area, each school chose the most appropriate year levels for lesson delivery. The following year levels and curriculum topics were determined to provide the best possible approach to including as much information on the cotton context as possible.

Year level	Student age (years)	Topic	Content
2	7	Good to grow	Students explore the way things grow, change and have offspring similar to themselves. Understand the life stages of living things through investigating the growth of a <i>Heliothis</i> (invertebrate animal) under different temperature conditions.
5	10	Survival in the Australian environment	Students explore how cotton survives in the Australian environment. How the structures of a cotton plant help it to survive in its environment and how other plants & animals which have adapted for survival.
7	12	Water — waste not, want not	Students explore what they think they know about water, where it comes from and how it is used to explore the relationship between water and cotton. To provide hands- on, shared experience of the lay-out and function of an Irrigated Cotton Farm in regards to its water

			use. To explore the movement of water across the landscape. To support students to describe a cotton farms sources of water, and how it is collected, transported, accessed, used, saved and recycled. To support students to research sustainable water use and management on cotton farms.
8	13	Building blocks of life - cells, and their specialised structures and functions	Students explore how organisms reproduce, starting at a cellular level. They focus on cell structure, function and reproduction. (Plant section only)

Lesson plans were developed to meet the requirements of the newly introduced Australian Curriculum. The Australian Curriculum includes a focus on seven general capabilities (literacy, numeracy, information and communication technology competence, critical and creative thinking, ethical behaviour, personal and social competence and intercultural understanding) and three cross-curriculum priorities (Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia and Sustainability).

Currently, the Australian Curriculum is available for Foundation (before Year 1) to Year 10 in the subject areas of English, Science, Mathematics and History. It sets out what all young people should be taught through the specification of curriculum content and the learning expected at points in their schooling through the specification of achievement standards.

Lesson Plans that are developed in one region are transferable to other similar regions, based on the transferability of a national standard of curriculum. Thus, these lesson plans may be used in other cotton growing areas or could be used by other schools who may wish to introduce a rural flavour to their lessons.

Results

4. Detail and discuss the results for each objective including the statistical analysis of results.

Following initial meetings with teachers from St George and Goondiwindi State High School to discuss the cotton industry and the project, a two day workshop was held at Goondiwindi to allow teachers (Prep-12), industry, government and other community representatives to discuss how schools and the industry could most effectively engage with each other. The delivery of the Field to Fabric workshop, supported by industry visits also provided the 15 teachers from both schools with detailed industry information across its supply chain for a deeper understanding of the industry and career opportunities, with the intention that teachers could then develop new resources that are linked to present and future curriculum.

The workshops also provided a forum for teachers to review and evaluate current resources and programs available to schools and develop new teaching learning activities and resources that portray relevant research, technology and career pathways into the cotton industry. The present VET (vocational education and training) in schools delivery for students was also a matter for review, which enabled discussion around alternative models of effective career pathways into the industry.

The workshop program overview, outcomes and feedback is at **Appendix 1**.

A reference group was formed in the July 2011 workshop to develop strategies on how to progress the key findings, which include the following:

Awareness

- One day / year *Showcasing event* (Expo). Aligns to present awareness days for students in Years 8 & 9 at Goondiwindi and St George State High Schools.
- Pushing the Boundaries II - Expanding on present program to show students the various pathways into the Cotton Industry. It could also act or complement awareness/ exposure to teachers of Agribusinesses.

Pathways

- Industry database established to help schools in a range of mentoring Industry engagement projects.
- Establishing well defined student pathways into industries at a local level. A project titled '**Pushing the Boundaries 2**' was submitted to Cotton CRDC (this builds on the already established program)
- For schools to investigate block training opportunities to align to training and pre employment strategies.

Curriculum

- Develop industry focus units of work aligned to the National Curriculum eg. Cotton Industry.
- Collaboration between Primary and Secondary as well as both Goondiwindi and St George SHS

Further detail about the Reference Group can be found at **Appendix 2**.

Lesson Plan / Curriculum Development

Pilot trial

Interaction with the pilot schools was an important part of the integration of the cotton curriculum into the schools' programs. Teachers are very busy in their classrooms and are time-poor in creating their own resources. For this reason it has been important to gain the trust and involvement of the school administration and staff to ensure that the resources are used in the classroom.

A key contact has been the Gateway Schools to Agribusiness Project coordinator in each school to create pathways to the other staff and to create a willingness of classroom teachers to use the lesson plans.

The development of the resources has been a collaborative effort with drafts of lesson plans reviewed by experienced teachers in each school. Feedback from the reviews was incorporated into the final lesson plans to receive a final sign-off in the schools.

Following completion of the lesson plans for each level, a professional development workshop was held in each school to provide background and context on the cotton industry for classroom teachers. This is particularly important for teachers who may not be from a rural background. The teachers need to feel comfortable in their knowledge of the rural industry, although it may be considered that the delivery of cotton information is at a basic level.

Results of Pilot Trial

Sets of lesson plans for Year Levels 2, 5, 7, & 8 have been developed. An example of a Lesson Plan is available at **Appendix 3**.

It is anticipated that the lesson plan resources will be made available to other Gateway Schools to Agribusiness in cotton growing regions in Queensland. Following this next stage, the resources should be reviewed to incorporate feedback from a wider audience.

It is expected that the resources could be available for distribution to other cotton growing regions (outside Queensland) in early 2013.

Outcomes

5. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.

Throughout the life of the project, the cotton industry has been committed to working with the teachers and school communities to develop strategies for learning delivery and industry focused curriculum development. Industry and Registered Training Providers provided assistance through school awareness days at both Goondiwindi State High School and St George State School. Industry speakers as well as interactive activities such as harvest simulators improved general understanding, as well as assisted training activities for groups of students.

An operational plan will be populated to look at further involvement from industry to engage in future strategies.

Industry is much more informed in relation to how they can assist schools in the provision of career information, career opportunities, curriculum development and industry visits and experiences for teachers. The Field to Fabric program was highly successful for teachers and industry to work together. This program was highlighted through many local media outlets including Queensland Country Life at **Appendix 4**.

Schools, specifically the teachers involved in the program, have gained a deeper understanding of the cotton industry through the workshops and industry visits, working closely with the industry partners on the development of the curriculum and through the delivery of the Field to Fabric course.

It is anticipated these partnerships will continue beyond the life of the project through the implementation of the curriculum and ongoing professional development for teachers.

6. Please describe any:-

- a) technical advances achieved (eg commercially significant developments, patents applied for or granted licenses, etc.);
- b) other information developed from research (eg discoveries in methodology, equipment design, etc.); and
- c) required changes to the Intellectual Property register.

N/A

Conclusion

7. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?

The Gateway Schools to Agribusiness model for creating school - industry partnerships to contextualise curriculum in schools has proved successful in engaging both teachers and the agricultural industry.

As classroom teachers are time-poor and will not engage easily when further calls are made on their time, it was important that this project provided a solution to making their ownership of the outcomes as smooth as possible. Without teacher ownership, resources that are imposed onto them will not be well utilised.

The reference group is critical in ensuring the outcomes meet the needs of both the agricultural industry and the teaching community. The industry must be involved in the early stages of the project to ensure that resources are compliant with industry expectations. Teachers have to be involved in a review process but only after resources have been drafted.

This convergence of interests in this project has been successful in creating a lasting legacy that can be extended beyond the pilot program and will boost interest in the cotton industry as a career path and a part of the rural framework.

To conclude, if we are to attract young people into industry awareness education at a school level is crucial. Teachers, career advisers and parents within a rural community should be aware of the importance of this industry, its breadth of opportunities across its supply chain, its innovative practices and its committed response to environmental changes. Once a better awareness and understanding occurs here, this awareness will then effectively transition through to our youth through curriculum and other avenues, ultimately working to attracting more into this vibrant agribusiness.

Extension Opportunities

8. Detail a plan for the activities or other steps that may be taken:

(a) to further develop or to exploit the project technology.

The lesson plans will be reviewed by the project reference group at the completion of the pilot at the end of 2012. Following any adaptations, the lesson plans will be available for other schools in cotton growing regions including New South Wales schools. Due to the introduction of the Australian Curriculum, there is uniformity across all Australian schools in the timing and format of curriculum in Science, English, Mathematics and History (to date).

The outcome is that class resources developed for one agricultural theme may be utilised in a number of growing regions for the one commodity. Thus, cotton contextualised resources have transferability from Goondiwindi to regions such as Narromine.

It is also expected that other Gateway schools will utilise the resources. Loganlea State High School, an inner city school has expressed interest in the completed program as they view the resources as a way of informing their students about opportunities in an industry outside their usual scope.

The resources are also important in providing background to students who may never choose to work in the cotton industry or indeed agriculture. These students will gain a broader understanding of the context of a rural industry as part of their knowledge base of science.

(b) for the future presentation and dissemination of the project outcomes.

It is important that all phases of the model are utilised as they are co-dependent and successful embedding of curriculum will not occur without each step being implemented. Future curriculum development should involve establishment of a reference group comprising curriculum writers, educators and industry representatives; resources created by an external curriculum writer with experience in education and rural industries and a professional development session for classroom teachers to give them knowledge of both the resources and industry context.

It is planned that schools will not be able to implement the resources into their program until they have completed a professional development session for their classroom staff that will provide background on the cotton industry provided by industry members eg extension staff or growers.

(c) for future research.

As a result of the pilot project, another industry has committed to funding and supporting curricula development for their industry. It is likely that this industry will work in another subject area to provide proofing of the model developed in this project.

Publications

9. A. Publications relevant to this project.

Peer reviewed articles / books

Non-peered reviewed articles

Presentations (conference, field days, workshops etc)

B. All other publications by project team during this period.

Peer reviewed articles / books

Non-peered reviewed articles

(NB: Where possible, please provide a copy of any publication/s)

C. Have you developed any online resources and what is the website address?

Part 4 – Final Report Executive Summary

Provide a one page Summary of your research that is not commercial in confidence, and that can be published on the World Wide Web. Explain the main outcomes of the research and provide contact details for more information. It is important that the Executive Summary highlights concisely the key outputs from the project and, when they are adopted, what this will mean to the cotton industry.

The *Gateway Schools to Agribusiness project* aims to help young people make a successful transition from school into further education or employment, through a number of initiatives including embedding an agricultural context in a broad range of curriculum in schools in Queensland. It encourages meaningful collaboration between schools, vocational education and training, universities and industry to provide career opportunities in rural industries for students.

The *Career Pathway into the Cotton Industry project* adopted the principles used in the Gateway Schools to Agribusiness program to create links to agricultural industries in the school regional areas and develop a strong program of vocational education for students.

The project's focus was two-fold namely:

- Develop contextualised curriculum examples that are developed from cotton industry RDE investments
- Provision of professional development to teachers that creates industry to education relationships.

The project created a model to engage schools in developing curriculum resources contextualised to their specific local agricultural industry i.e. cotton. The process was driven through a reference group comprised of school teachers, agricultural industry experts and a curriculum writer.

The outcomes have been industry-based learning in a subject other than traditional agricultural subjects to engage with students who may not have considered an agricultural career until that time. The cotton industry has been very receptive of this approach to raising the profile of careers opportunities and the opportunity for direct engagement with schools.

Learnings from the process of engaging with rural industry and linking regional businesses to local schools can be applied to other contexts to enable students to have a broader understanding of their regional career opportunities.

Finally, if the industry aims to attract young people, industry focussed education and career awareness experiences at a school level is crucial. Teachers, career advisers and parents within a cotton growing region should be aware of the importance of the cotton industry, its breadth of opportunities across its supply chain, its innovative practices and its committed response to environmental changes. Once a better awareness and understanding occurs here, this awareness will then effectively transition through to our youth through curriculum and other avenues, ultimately working to attracting more into this vibrant agribusiness.

~ Career Pathways in the Cotton Industry ~

Teacher Professional Development Event

29th and 30th March 2011

Venue – Goondiwindi Training and Technology (GTT) Centre

Aims:

- To link school teachers (prep – 12) with the Cotton Industry and its associated stakeholders across its supply chain and assisting them to develop a better awareness of career opportunities and pathways for students in this industry, thus enabling them to advise their student population effectively.
- To enable teachers to review and evaluate current resources and programs available to schools and develop new teaching learning activities/resources that portray the relevant research, technology and career pathways into the Cotton industry.
- To give teachers an opportunity to better appreciate the Cotton Industry across its supply chain by the delivery of an overview of the 'Cotton Field to Fabric Course' with the aim to develop new resources that are linked to present and future curriculum initiatives eg. National Curriculum.
- Review the present training (VET in schools) delivery for students in schools and look at alternative models that build a training culture that can meet the needs of establishing career pathways into the cotton industry.
- To develop a local framework solution for engaging schools with industry.

Participants

Target group – Teachers (across curriculum areas) from gateway schools to Agribusiness focusing namely on the Cotton districts of Goondiwindi and St George. Teachers (both Secondary and feeder Primary schools) would be committed to developing curriculum and better career pathways into the Cotton Industry for students through their school community.

Other

- John Martin – Manager Agribusiness Gateway Schools
- René van der Sluijs - Textile Technologist and Project leader, CSIRO Materials Science and Engineering (CMSE)
- Mark Hickman - Principal Development Extension Officer - DEEDI
- Trudy Staines - Cotton Catchment Communities CRC & Primary Industry Centre for Science Education
- Matt Strahorn – Training Manager, Ag Training (Private RTO)
- Other interested Industry, Government and school representatives

PROGRAM: 29th March 2011

Welcome and Aims of the workshop

"Cotton Field to Fabric Training Course" - Presenter: – John Martin (Gateway Schools Agribusiness)

- *Global Perspectives*
- *Fibre Properties*

"Cotton Field to Fabric Training Course" - Presenter: René van der Sluijs (CMSE)

- Agronomy
- Defoliation

"Cotton Field to Fabric Training Course" - Presenter: Dr Mike Bange (CPI)

- Harvesting (visit to Chesterfields to view Cotton Picker)

"Cotton Field to Fabric Training Course" - Presenter: Ernie Silcock (Namoi Macintyre Gin)

- Ginning (Industry visit)

"Cotton Field to Fabric Training Course" - presenter: René van der Sluijs (CMSE)

- Classing

"Cotton Field to Fabric Training Course" - Presenter: René van der Sluijs (CMSE) and consultant

- Yarn Manufacture
- Fabric Formation
- Dyeing & Finishing

PROGRAM: 30th March 2011

Welcome and Review of previous day.

Aims of today's forum

What *is happening now in schools?* Resources, curriculum, programs etc

Presenters:

- Trudy Staines - Cotton Catchment Communities CRC & Primary Industry Centre for Science Education (approx 45min)
- Nigel Corish – President, MacIntyre Growers Association **'Pushing the Boundaries'** (approx 5 mins)
- Mark Hickman - Principal Development Extension Officer (DEEDI) **Cotton Basics** (approx 10mins)

Training in schools or VET in schools

- *What is happening now in schools? What is available?*
- **Relevance** to local Industry – What are Industries needs?

Presenters:

- John Martin (Charlie) – Gateway Schools (possible models and learning's so far)
 - Matthew Strahorn – Ag Training. -pilots for machinery training, an RTO's perspective
- Discussion Forum – Industry / Schools engagement.

- *What do schools need*
- *What works in schools now*
- *How do schools make effective use of present resources*
- *Is there a need to develop resources relevant to industry (yesterdays workshop) – mapping to National Curriculum*
- *Why present resources / program are not be used. If they are how effective have they been - outcomes?*

- *What does industry want – curriculum / training?*
- *How can industry work with their local school*
- *Regional – local solutions. What are they?*

Feedback and Discussion Items from Workshop participants

Schools

- Need for professional development for all teachers across curriculum areas – NOT just Ag only
- New teachers – need to be exposed to their local industries (small group interaction). Need assistance with community integration
- Industry to sit with teachers to identify curriculum activities / plans for Program development
- VET in schools – assessments need Industry endorsement
- Staff turnover is a major issue. Therefore program structured approach to engage both school/ Industry
- Ag teacher shortage – skill set issue. Not all Industry people are educators – thus planning required
- Primary Industry awareness is not just an Ag subject, its Science, Maths etc
- Key Industry and teacher drivers needed
- Paperwork – issue for producers to implement (SAT's, work experience, insurance etc)
- Education needs to be relevant and Industry specific
- Connect the passion of the student through alternative methodologies
- Relevance of training resources
- OH&S and transport issues to consider
- Training – clustering units to make learning more relevant and interesting – possible audit issues to overcome
- Administration
 - traineeships – external to school
 - Awareness activities such as *'Pushing the Boundaries'* (not curriculum)
 - Directly influence curriculum – look at various ways to increase Agribusiness aspects here. Need to plan now on integration into curriculum for 2012. Match production cycle to units
- Risk management lowered by bringing industry into the classroom
- Career pathway presentations

Industry

- Cotton Australia and / or local growers association are key ***contacts***
- Industry rep to work with educators via Cotton Australia and growers to inform them of process
- Matching Industry and Education needs – What needs to be covered
- Food is important – need to inform students
- Workforce development is NOT only Labour Pool but also need professionals, higher level Science etc
- Issues raised – hours on farm excessive - \$ not reflecting profession. Industry need to package it better. Impacts of weather, weekend work hours etc. There needs to be flexibility / respect
- Some key skills for Agribusiness sector (Cotton)
 - communications
 - grounded in Cotton
 - Maths / Numeracy
 - Work ethic / attitude

Action Plan 2011 – Careers in Cotton Industry

Item	Action	Who / Lead Person/s	When – timeframe
<p>Pre 2011 – 2012</p> <p>Cross Curricula discussions</p> <ul style="list-style-type: none"> • Linkage to RDE • Linkage to industry requirements • Contextualization – yes • Senior units of work eg. Biology • Link Junior school examples across curricula to National Curriculum • Not just an Ag subject • Sustainability and relevance of resources used or produced <p>VET in schools</p> <ul style="list-style-type: none"> • Relevance to industry needs • Multiple pathways established and promoted 	<p>Working Group established</p> <ul style="list-style-type: none"> - Primary schools - Secondary schools - RD community - Local industry eg. Agribusiness reps and local producers <p>Combined schools approach across Primary/ Secondary in St George and Goondiwindi</p> <p>Identify opportunities – now and in future</p>	<p>MacIntyre Grower Association and Human capacity project with CRDC.</p> <p>lead – Nigel Corish</p> <p>Assisted by Mark Hickman</p> <p>Brett Hallett – Principal Goondiwindi SHS</p> <p>Anna Power – Evolution Farming</p>	<p>Date to be discussed between key representatives and advertised – Post Cotton Harvest.</p> <p>Early Term 2 – school calendar</p>

<ul style="list-style-type: none"> • Connection between schools and industry – how to improve 	How to progress?	<i>Sheryl Rigg</i> – St George SHS rep.	
Communication Strategy	Online forum – social media connections	Charlie Martin – CRC support	May 2011
Alignment of VET in schools with mainstream - school issue	Internal school discussion	Terry Gleeson	

~ Career Pathways in the Cotton Industry ~

Reference Group Meeting

18th July 2011

Venue – Goondiwindi Training and Technology (GTT) Centre

General Aims:

- To link school teachers (prep – 12) with the Cotton Industry and its associated stakeholders across its supply chain and assisting them to develop a better awareness of career opportunities and pathways for students in this industry, thus enabling them to advise their student population effectively.
- To enable teachers to review and evaluate current resources and programs available to schools and develop new teaching learning activities/resources that portray the relevant research, technology and career pathways into the Cotton industry.
- To give teachers an opportunity to better appreciate the Cotton Industry across its supply chain by the delivery of an overview of the 'Cotton Field to Fabric Course' with the aim to develop new resources that are linked to present and future curriculum initiatives eg. National Curriculum.
- Review the present training (VET in schools) delivery for students in schools and look at alternative models that build a training culture that can meet the needs of establishing career pathways into the cotton industry.
- Formation of a schools – Industry reference group
- To develop a local framework solution for engaging schools with industry.

Participants

- John Martin – Manager Agribusiness Gateway Schools
- René van der Sluijs
Textile Technologist and Project leader, CSIRO Materials Science and Engineering (CMSE)
- Mark Hickman - Principal Development Extension Officer - DEEDI
- Trudy Staines - Cotton Catchment Communities CRC & Primary Industry Centre for Science Education
- Matt Strahorn – Training Manager, Ag Training (Private RTO)
- Alecia Sutton – Teacher and Ag Training
- Nigel Corish – MacIntyre Grower Association President
- Jodie Jackson – Goondiwindi SHS
- 1 teacher from Goondiwindi SHS
- Robyn Pearcey – Goondiwindi Primary School
- Anne Brimblecombe – St George SHS
- Janelle Codrington – St George SHS
- Esme Cairns - Executive Officer, Goondiwindi Training and Technology
- Helen Dugdale
- Jodie Eglington- Specialised Farm Machinery
- Rick Cronin – AACC
- Michael Murray - Queensland Policy Manager/National Water Policy
- Anna Power – Evolution Farming

CONTINUED

~ Career Pathways in the Cotton Industry ~

St George and Goondiwindi Schools, Industry Reference Group

18th July 2011

Venue – Goondiwindi Training and Technology (GTT) Centre

Overview

Below are comments that came from the discussions between teachers and Cotton Industry representatives at an initial reference group meeting to look at the initial actions from the Careers in the Cotton Industry Workshop on 29th and 30th March.

There was a general discussion on what areas the group could concentrate on for the future based on revisiting the Action plan from the initial workshop.

What is the main purpose of this group?

- Need to have a strategy that gets children engaged both in the school and within the industry
- Need to have all parties understanding each other's needs and issues
- Collaboration projects must occur between St George X Goondiwindi X Industry. There needs to be a regional strategy
- School curriculum must be engaged, Industry (eg. cotton) can be promoted by the use of contextualized industry examples to demonstrate the principles being taught
- Need for a local solution first – then look at regions, State.
- To highlight that Career Pathways must be clearly identified, acknowledged and promoted by everyone.
- All parties as parents, students and Industry must value and understand the Agribusiness pathways that are available. Achieving this shows the vision of what is possible.

Issues / Concerns – *Schools* (similar to initial workshop concerns)

- Hard to promote Ag career pathways given the \$/Hr compared to other options
- Need to market the career better – establish a career pathway
- Need to sell the job compared to Mining
- Attitudes of the parents is critical for the change – market to parents/ community
- Need to engage the new workforce very early in the school system (Primary)
- A key is the level of interaction and understanding of Agricultural Industry (eg. Cotton) by key drivers. This applies to teachers, parents, students and industry.

Industry comments – What does Industry need? - How can we achieve these?

- We need labour for the day to day operations (Vocational roles)
- We need Farm Managers – operation level (Tertiary and vocational levels)
- We need Professionals in the areas of science and agronomy (Academia)
- Want students that have a good work ethic, show initiative , willingness to self improve

General Discussion comments

- "Industry MUST value what people are trained in and the training must have relevance to them to ensure the take-up by students. Otherwise it is a waste of everyone's time"
- Training can be valued. The new pastoral award has 8 internal levels
- People are now starting to value accredited training, especially when it is linked to income
- Regional industries are now looking past the region- overseas options. Need to compare the positive and negative of this approach.
- National School Curriculum: Agriculture examples should be incorporated into the key learning areas of the National Curriculum eg. science. It appears that agriculture is likely to be included in the Technology strand in the extension of the National Curriculum in the future. It is also being looked at as a cross curriculum priority under the sustainability banner.
- Teacher view (school specific): There is a significant gap in the Yr 8 units. As there is no exposure of Agriculture to students before they select their Yr 9-10 subjects, how can these students make an informed decision on their choices? In addition there is a lack of experienced Agricultural trained teachers. Professional Development training is critical and lacking in the area of agriculture.

Way forward:-

Two main areas were highlighted from these initial discussions and two sub groups were formed to continue further discussions and to produce future actions in these areas. These areas were in curriculum integration /delivery and in awareness and establishing possible pathways into the Industry.

Outcomes from sub group meetings/discussions.

Topic Area - Curriculum

- Discussion centred on integration of a Cotton Industry context into the new National Curriculum plans. The focus was on how and when this could be achieved. There was also scope to producing specific Cotton focused units in specific Agricultural Science type subjects.
- There was discussion on what could be done now and what is specifically mandated that schools must do. A short brief on these issues documented by Charlie is attached after his discussions with EQ Teaching and Learning Branch. This branch of EQ is responsible for developing the unit plans for Qld schools Curriculum in the Classroom program (C2C).
- A commitment from schools to collaboratively develop with the local representatives of the cotton industry a transitional set (two) of units with in the science curriculum (C2C - National Curriculum) for Years 7 – 8, that is contextualised around the cotton industry. These units will be developed with consultation the newly formed Industry partnership group after the units for science are released in October.
- Trudi Staines to establish links with Goondiwindi Primary to contextualise primary connections unit.

Topic Area - Agribusiness Pathway

Topic Action areas

1. Integration Program between Stakeholders	<ul style="list-style-type: none"> ▪ Work experience Event Plus exposure of opportunity (May—August) ▪ Block training around skill sets
2. Training linked to industry placements	<ul style="list-style-type: none"> ▪ To occur during non school periods – eg Training for Bug checkers
3. Supply chain strategies Tertiary Bound	<ul style="list-style-type: none"> ▪ Investigate the cadetship concept ▪ Cross industry skills

Vocational Bound	<p>Issues:</p> <ul style="list-style-type: none"> ▪ Seasonal labour will always be an issue. ▪ A big gap is the middle management as many are about to retire , Experts required
4. Industry Buy-in	<ul style="list-style-type: none"> ▪ Maximise the opportunity for and off work experience – meaningful experience ▪ Promotion of the local opportunity – range of industry positions ▪ Business size has influence – Corporates are suited to the structured training model. Need to alter the approach for the Small to Medium Enterprises ▪ Need my BMP / Employer of Choice programs for the Y, Z and Alpha generations ▪ Need mentoring programs where industry bys in. Mentoring between industry and the school teachers. This will increase the understanding. ▪ mentoring of the staff in the business.
5, Workforce Flows	<ul style="list-style-type: none"> ▪ Need promotion of regional immigration. Need to understand this labour and skilling pool.
6. Employee Motivation	<ul style="list-style-type: none"> ▪ Dollars, ??, what are the factors that influence – Package deals ▪ No one issue or product drives the motivation of everyone.

Overall: the group ranked the mentoring relationship between the school staff and the producers as **Priority 1**

Topic - Area Awareness of Agricultural Industries in a coordinated manner

Topic	Action areas
1. Address the stigma of Agriculture being for lower class students	<ul style="list-style-type: none">▪ Role for Industry peak bodies, associations and PR in the community
2. Education of the parents	<ul style="list-style-type: none">▪ Regional data on industries within the region to show the viability and contribution these industries make to the local employment▪ Data on long term secure employment associated with these regional industries▪ Field to fabric course in the schools
3. Showcasing Industry Opportunities	<ul style="list-style-type: none">▪ Forums/ Career Expo/ Range of activities and opportunities / Exposure is required from P-Yr 12. This forum could take the shape of a 1 day / year show case event of what industries in the local area have to offer▪ Increase the profile of existing activities locally and promote what can be done locally : Pushing the boundaries Rural Skills Day
4. Promotion of industry to the school staff to increase the value of Agricultural engagement. Need a culture that see value in the Ag industries	<ul style="list-style-type: none">▪ Field to fabric course within the school
5. Create programs that are "hands on" and "Career Focused"	<ul style="list-style-type: none">▪ Vocational courses linked to industry outcomes and that are able to be linked into the school system- skill set focused

Overall

Priority 1: One (1) day / year Showcasing event (Expo). This event would address in some way all the issues outlined in the table

Priority 2: Pushing the boundaries II- This would focus on an Agricultural immersion from Yr 8-9

Main aspects Priority 2 would address: would be to highlight the opportunities that exist, Connect the industry and create the linkages and would

provide the teacher Professional Development around the industry

Outcomes – Future Actions

Overall

- A commitment from the newly formed Industry partnership Group to provide input and direction to promote and highlight priorities which align with the Gateway Schools goals and that of the local schools.
- Ideally need a Project Officer (or Partnership broker style position) to drive this and help coordinate this on behalf of the industry and school.

- Need to look for funding- potentially QRITC may have dollars to fund such a position
- Esme from the GTT will drive the process locally over the next 6 months and then re-assess
- CRDC application being lodged by growers association (Nigel Corish) for enhancement of the Pushing the boundary project of the past

Key Priorities

Awareness

- One (1) day / year Showcasing event (Expo). Aligns to present awareness days for students in Yr 8/ 9 at Goondiwindi and St George
- Pushing the boundaries II- Expanding on present program to show students the various pathways into the Cotton Industry. It could also act or complement awareness/ exposure to teachers of Agribusinesses.

Pathways

- Industry data base established to help schools in a range of mentoring Industry engagement projects.
- Establishing well defined student pathways into industries at a local level.
- For schools to investigate block training opportunities to align to training and pre employment strategies.

Curriculum

- Develop industry focus units of work aligned to the National Curriculum eg. Cotton Industry.
- Collaboration between Primary and Secondary as well as both Goondiwindi and St George SHS

Lesson Plans (*Draft*)

Unit At a Glance- Water- Waste Not, Want Not- Year 7

PHASE	LESSON	AT A GLANCE
ENGAGE	LESSON 1 Water- Where Does It Come From	To capture students' interest and find out what they think they know about the water, where it comes from and how it is used.
EXPLORE	LESSON 2 Understanding the cotton/ water cycle.	To have a greater understanding of local weather averages. To explore the relationship between water and cotton.
	Lesson 3 Session 1 Farm Walk Session 2 Ground Water	To provide hands- on, shared experience of the lay- out and function of an Irrigated Cotton Farm in regards to its water use.
	Lesson 4 Overland Flow	To explore the movement of water across the landscape which further expands the students' knowledge of water harvesting on cotton farms.
	Lesson 5 Water Story Of A Cotton Farm	To support students to describe a cotton farms sources of water, and how it is collected, transported, accessed, used, saved and recycled.
ELABORATE	Lesson 6 Sustainable Water Use Session 1 Interview Planning Session 2	To support students to research sustainable water use and management on cotton farms.

	Guest Speaker	
EVALUATE	Lesson 7	Students reflect on their learning to develop an opinion concerning the use of water in the cotton industry.
Embedding Aboriginal & Torres Strait Islander Perspectives (EATSIPs)	Ideas from Primary Connections Water Works	Ideas for EATSIPs for Lessons 1,2,3,5.

Lesson Plan Format

Lesson 1 Water- Where Does It Come From

At A Glance

To capture students' interest and find out what they think they know about the water, where it comes from and how it is used.

To elicit students' questions about water.

Students

- Record and share their ideas about water.

Assessment Focus

Diagnostic assessment is an important aspect of the Engage phase. In this lesson you find out what students already know about water, where it comes from and how it is used in the local community. This allows you to take account of students' existing ideas when planning future learning experiences.

Key Lesson Outcomes

Science

Students will be able to

- observe & describe the water cycle
- understand basic concepts involving water
- identify various water storages
- describe ways to use water in the local area.

Literacy

Students will be able to

- reflect on observations & experiences

Teacher Background Information

The aim of Lesson 1 is to gain an insight into the student's prior knowledge of water through reflection on the

water cycle in particular concepts of Evaporation, Condensation, Precipitation, Collection and Runoff. This knowledge can then be used to begin discussing water collection and use in the local area.

The following resources are useful for this lesson:

- www.apps.southeastwater.com.au have an excellent education program, including a water cycle game.
- <http://www.text2mindmap.com/> - website to allow students to construct mindmaps from information. May be used if Inspiration is not available.
- www.derm.gov.au/waterwise/councils_program/water_cycle_poster.html (Water cycle poster)

Equipment

For The Class	For Each Student
<ul style="list-style-type: none">- Class Science Journal- Word Wall- Computer access- Electric kettle/ jug- Softdrink bottle	<ul style="list-style-type: none">- Science Journal

Preparation

- Read Glossary of Terms for basic explanation of terms (Appendix 1)
- Read 'How to use a science journal' (Appendix 2).
- Read 'How to use a word wall' (Appendix 3).
- Investigate to see if your school has Inspiration (or other similar software) so that students can create their own water cycle diagram/ flowchart. Familiarise yourself with the functions if have not already.
- Contact local council to find out storage capacities of local dams, weirs etc.

Lesson Steps

1. Begin the unit with a class discussion about water. Discussion points might include
 - Why is water so important?
 - Where does water come from?
 - How do clouds form?
 - How do we catch water?
 - How does the water cycle restart?
2. Guide the discussion and illustrate on the board, aiming for the students to demonstrate the water cycle key points of Evaporation, Condensation, Precipitation, Collection and Runoff.
3. Using Inspiration, if available, ask students to complete their own diagram/ flowchart to show their knowledge of the water cycle.

Optional Science Activities

- Boil an electric kettle/ jug to demonstrate how evaporation and condensation takes place. Use a plate held above the steam for students to see how the moisture forms.
 - Make your own cloud- In a clean, empty softdrink bottle add a small amount of warm water, replace lid. Squeeze and release bottle a number of times to see a cloud form in bottle i.e. warm water under pressure produces a cloud.
4. Continue discussion on water by asking, "Where is water stored?" Firstly worldwide- Ask the students to guess how much water is stored in our lakes and rivers, oceans and underground
 - 0.6% Lakes & Rivers
 - 1.6% Underground (groundwater)
 - 97% Oceans
 - 2.4% Frozen Stores (Polar caps, snow & glaciers)
 Students consider where is water stored locally? i.e. Dams, Ring Tanks, Weirs, Tanks.
 5. Activity- Ask the students to organize the water storages from smallest to largest i.e. try to find out how much water the local dam, weir, the average ringtank and tank hold. May need to contact the local council to find out how much the local dam and weir hold. Contact a local farm to ask about their ringtank capacities.
 6. Finally, as an introduction into the next Lesson, ask students, "How do local people catch their water and what do they use it for?" i.e. pumped from bore/ river/ creek, stored in ringtank, used on cotton.
 7. Add new vocabulary to the word wall.

Cross Curricular Links

Mathematics:

- Graphing activity using the statistical data given about global water storage.

Science

Experiments

- Evaporation and Condensation practical opportunity
- Cloud Making practical opportunity

ICT

- Use of Inspiration (or similar) to create flowchart.

Queensland Government

Department of Employment, Economic Development and Innovation

Media Release

29 March 2011

Teachers cotton on to career opportunities

Teachers from the cotton districts of Goondiwindi and St George are participating in an initiative that will see better career pathways open up for students in Queensland's iconic cotton industry.

Starting today, the teachers will meet with producers, scientists and training providers as part of a two-day event being run by the Queensland Government and the Cotton Research and Development Corporation.

Director of Agribusiness Skills and Extension at the Department of Employment, Economic Development and Innovation (DEEDI) Geoff Johnston said the event would raise awareness of an important national industry with real career prospects for young people.

"Queensland's cotton industry currently employs around 4500 people, and is currently estimated at \$735 million when the value of cotton ginning is included," Mr Johnston said.

"While the industry was hit significantly by recent floods, which caused prolonged water logging in the Darling Downs and Theodore regions, overall we still expect to see an 86 per cent jump in production value from last year.

"It's an exciting time to be part of Australia's cotton industry, which is regarded as the most efficient in the world.

"Since the 1970s, producers have improved efficiency by 200% and can now produce enough cotton to provide a t-shirt to every person in China, India, the United States, Indonesia, Brazil, Pakistan and Bangladesh.

"The industry's current goal is to double water use efficiency over the next ten years.

"There are a range of occupations currently in demand in the cotton industry, including farm managers, gin yard operators and tradespeople.

"The Queensland Government and industry are working together to develop a skilled workforce to meet this demand and continue their current successes, which is what today's event is all about."

The event is an initiative of the DEEDI and Skills Queensland Gateway Schools to Agribusiness program, being managed by Charlie Martin.

"We have 12 teachers participating in the event, and they are all keen to see how they can incorporate career opportunities in the cotton industry into the schools curriculum," Mr Martin said.

"Over the two days the teachers will participate in the 'Field to Fabric' training course to gain an appreciation of the cotton industry across its supply chain, and then look at how the industry can be incorporated across their school's curriculum.

"They will also evaluate current training pathways into the industry, and how to improve the opportunities for students by strengthening their partnerships with local industry contacts.

"Our goal is to evaluate and develop new teaching resources and learning activities that portray the research, technology and career pathways into the cotton industry for easy implementation into school programs."

Photo caption: Teachers get up close look at cotton harvesting careers at Chesterfield Australia, Goondiwindi.

