

# **DELIVERING RESEARCHER'S OUTCOMES, KNOWLEDGE AND SKILLS INTO THE IRRIGATION INDUSTRY**

Deborah Atkins, Kelvin Montagu  
Cooperative Research Centre for Irrigation Futures

## **ABSTRACT**

The Cooperative Research Centre for Irrigation Futures (CRCIF) was formed in 2003 to deliver Research, Education and Training that gives confidence to growers, industry, governments and the communities to invest in better irrigation, a better environment and a better future. This paper will cover what CRCIF is doing within the training program by describing how research outcomes are being offered to the industry and the learning principles that are guiding the delivery.

The development of training products and services involves tapping into the experience of the researchers in CRCIF as well as the outputs of their research projects. CRCIF has developed training courses as well as "master classes" and is investigating on-line learning opportunities. Training courses are structured programs where content is delivered using a clear process and is repeatable by other presenters. Master classes bring together technical experts to offer their knowledge on a specific technical topic and are usually one-off events. On-line learning offers software and information that can be used from the CRCIF website.

Clients for CRCIF training are researchers, advisors, consultants, CRCIF postgraduate students, policy makers, managers and primary producers in the irrigation industry.

Adult learning and action learning are core elements that guide the development and delivery of training activities. By appreciating the various motivations and range of experience of participants, courses are tailored to best fit the needs of people attending. For example, a course on centre pivot and lateral move irrigators has been designed and delivered specifically for farmers who have these units and those that are considering buying them.

After the second course it quickly became clear that other reasons people attended were to do market research on current knowledge and skills of farmers, professional development for advisors and consultants, and improved ability to manage a local government irrigation project. The course presenters find out what people require from the course to ensure their learning goals are achieved and so everyone can contribute to the knowledge sharing during the course.

Through focusing on current and future knowledge needs of the irrigation industry and tapping into the skills and experience of researchers working in the CRCIF the aim is produce quality training products and services that are delivered using methods that suit the many and varied learning needs of participants.

## **INTRODUCTION**

Researchers love to research and trainers love to train yet the transition between research and training can be anything but lovely!

In the practical field of irrigation the challenge is to apply the theories and information on-ground to get tangible and measurable results for farmers, water suppliers, policy makers and managers. This challenge is doubled when that research and application needs to happen within a defined timeframe – seven years for the CRCIF.

CRCIF is working on this challenge by using action learning principles and techniques to design and deliver interesting and useful training packages for researchers, students, advisors and partners in the organisation. This challenge is important because otherwise the research may end up as interesting papers in journals and conference proceedings.

As well as developing training products from research outputs, CRCIF is developing master classes that draw on the skills, knowledge and experience of researchers. These classes take advantage of the collaboration created by researchers from different organisations working on common projects.

## **CRCIF TRAINING PROGRAM**

Successful businesses and organisations need to be continually learning and innovating. This is especially relevant to the irrigation industry as it aims to improving profitability, efficiency and environmental responsibility while dealing with pressure from competing water users.

The CRCIF vision for irrigation practice and water use in Australia is that by 2020, as a nation we will have:

- Defined and implemented the principles of sustainable irrigation practice in all environments
- Processes that resolve the water use compromises necessary for people's needs, the environment, production and amenity.

The mission is being achieved by facilitating cooperative research and training networks and programs which continuously improve irrigation policy, tools, practices and processes to:

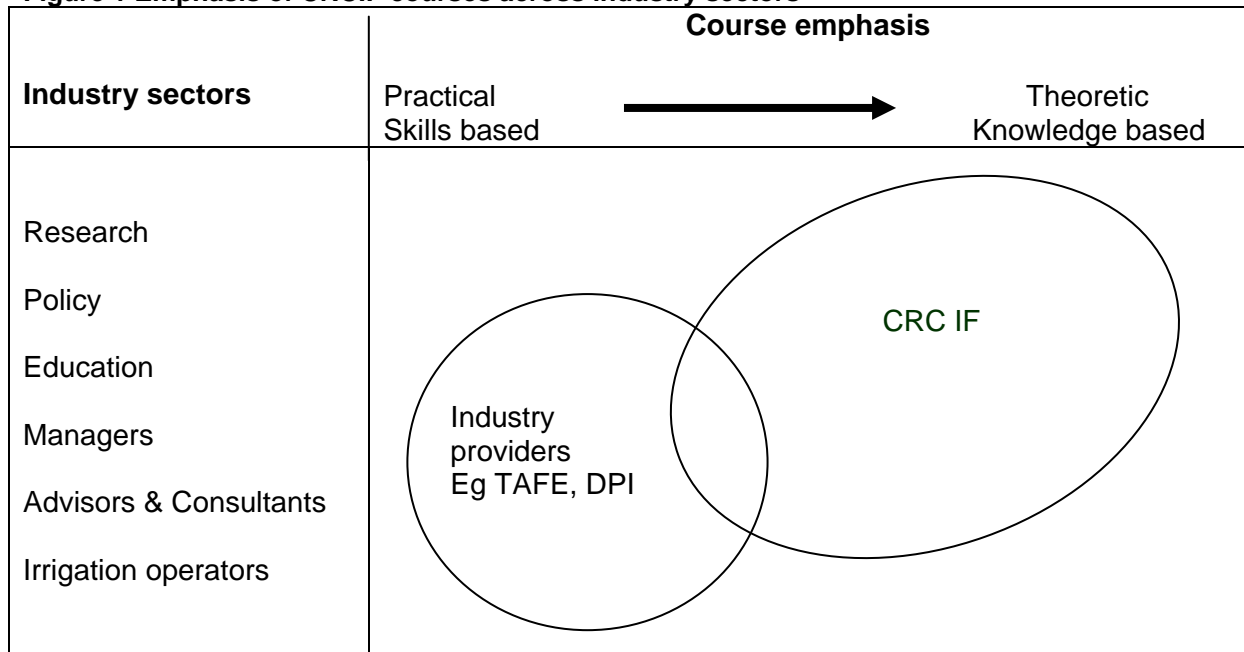
- Double irrigation water use efficiency
- Improve profitability for commercial irrigation enterprises and
- Protect and enhance landscapes and the environment

The Knowledge Management Team is working towards delivering researcher's knowledge and skills and research outputs in training products to expand the professional base of the irrigation industry, from researchers and technologists to operators and workers, and contribute to the development of an industry learning culture.

The irrigation industry is made up of a number of sectors as listed in Figure 1. These sectors have a range of training requirements ranging from practical, skills orientated through to theoretical and knowledge requirements.

The CRCIF operates across the full range of industry sectors and course emphases. However, the CRCIF's research outputs and members experience and skills is concentrated towards the knowledge/theoretical end of the continuum as portrayed in Figure 1. Thus while some CRC courses will be at the practical end of the continuum, eg the Centre Pivot and Lateral Move Irrigation course, the greatest proportion of our training effort will be in transferring knowledge to sectors which then provide practical applications.

**Figure 1 Emphasis of CRCIF courses across industry sectors**



Courses that are ready and are being delivered

- Pivots and laterals – a two day course for managers, advisors and operators. It is designed for those planning on purchasing systems and those who would like to improve the performance of existing systems. This course has been delivered in Queensland, New South Wales and Tasmania
- Urban irrigation TBL reporting – a one day course for local governments and managers of public and private open space. This course has been delivered once in New South Wales.

Areas that are being explored as potential courses

- Travelling guns – a one day course for advisors that covers research on travelling gun irrigators and that uses a modelling program called TRAVGUN that helps in improving efficiencies through gun calibration and lane spacing
- Small dam management – a one day course for advisors and farmers that brings together resources on dams for horticulture, dairy and viticulture. Uses the Ready Reckoner (currently available on CRCIF website) which helps to decide when to use evaporation mitigation technologies, how much water can be saved and the cost.
- Solute signatures – understanding how monitoring solutes such as salt and nitrates leads to better irrigation management, productivity through water savings and environmental outcomes
- Master classes – one-off or ongoing classes designed to cover specific content. Possible classes being investigated are salinity and evapotranspiration

### **ACTION LEARNING CYCLE**

As a technically based organisation we are very good producing data, information, software, models and theories and need to work hard at getting application in the industry. In developing training products we are working to integrate tools and processes that focus on the learning as well as the information being passed on.

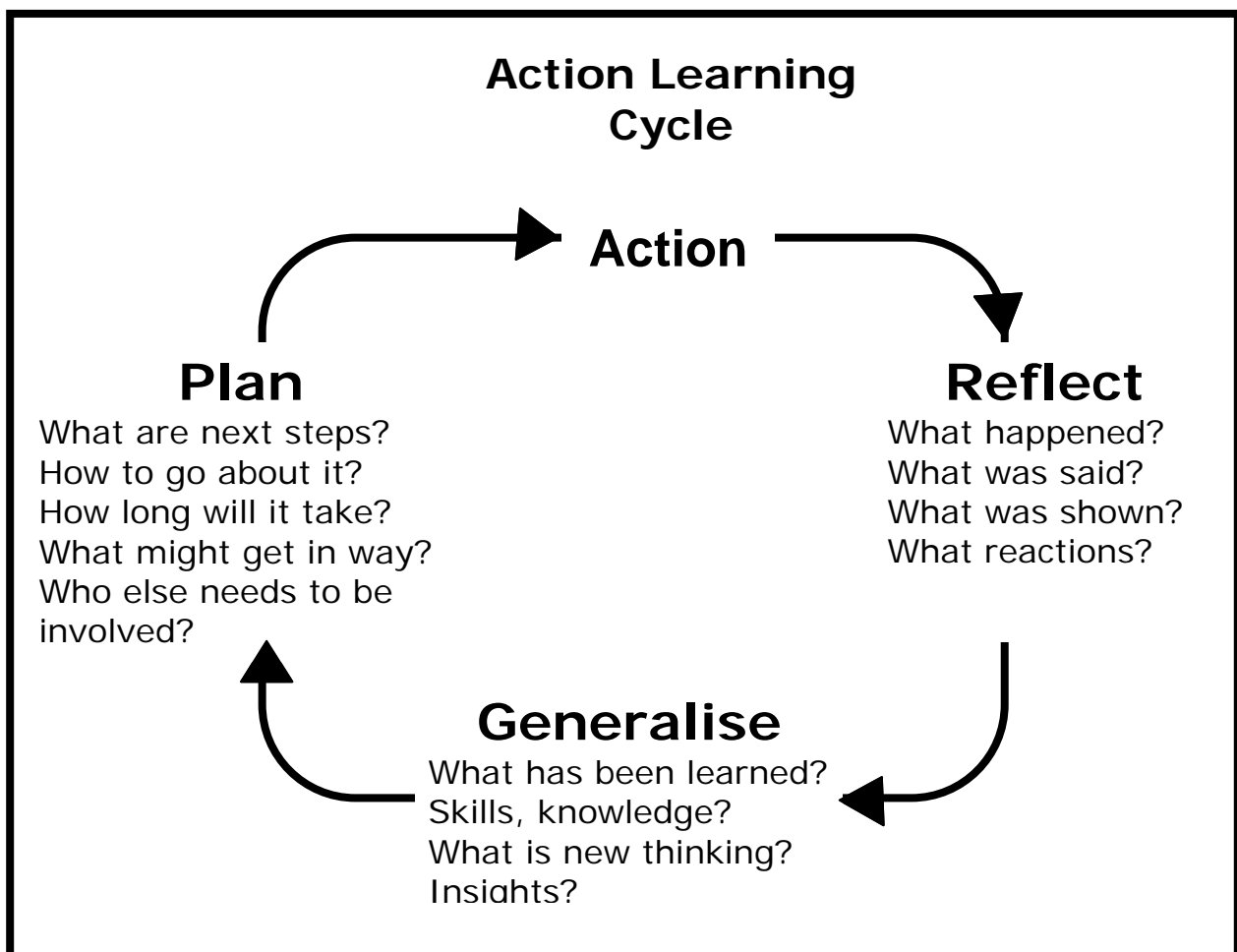
Providing information and skills is only part of the picture of providing training to industry. Participants are asked to think about their expectations of the course. This helps them mentally prepare for the course and it also helps the trainers to assess the needs and the

current knowledge of the participants. Through using an action learning (Revans 1982) approach participants are given time to reflect on their current knowledge, skills and practices and time again throughout the course to integrate the new information and plan how they will use their learning.

During a course the action learning cycle will be integrated into the program. The time allocated needs to be at least five minutes for each person to have some quiet time to go back over their notes or the manual or even chat to someone. Sharing thoughts, opinions and asking questions will help other people integrate their thoughts and lead to quality group discussion.

Reflecting at the end of a training course may be the last thing people want to do, or have energy for. It is good practice to break each session 2 hours into the four phases of the cycle. The notion of the learning cycle can then be conducted at two levels - micro (for each session) and macro (for the whole day - or for the whole workshop). Secondly, though the sequence of the four stages is important, the starting point is not.

Figure 2 Action learning cycle



The principles of adult learning guide the group activities in CRCIF courses. Participants are given time and opportunity to bring their own experience to the group knowledge. As a guide, 50% of the focus will be information presented by the course trainers, 25% of the content will be provided by the experience of the group through discussion and input and 25% of the time will be for participants to integrate and plan how they will apply the insights, knowledge and skills they pick up at the course.

## **MASTER CLASSES**

The structure and intent of the CRC sets the groundwork for developing training opportunities to tap into and share the knowledge of leading experts in the field of irrigation. The CRCIF master classes will bring together researchers on a topic such as salinity management and may be offered on a one-off basis or a series of workshops based on interest.

The focus of the master class will mostly be a technical information update to bring people up-to-speed with the latest data that is available. It may also lead to the identification of areas for research or collation of information.

Tapping into researcher's skills & knowledge while they are working on CRCIF projects will build on the intellectual databank that is available. The topics chosen will be based on demand for the information and by the perceived knowledge gap in the industry.

The target group for the classes will initially be CRCIF people such as researchers, CRCIF students and extension staff from partner organisations. This will be expanded to include lecturers, advisors and other extension and policy officers.

## **CHALLENGES**

For the CRCIF to design and deliver training that improves the capacity of the irrigation industry now and into the future several challenges will need to be managed. This includes meeting research and funding deadlines, the needs and perceived needs of the market and using e-learning as a training opportunity.

As a research group there are milestones and deadlines that are set with the funding body Department of Education Science and Training (DEST) and by the partner organisations that make up the CRCIF. This all contribute to pressures on staff that need to be managed.

As with any product or service, there can be strong demand for supply of some and weaker demand for others that leads to decisions on where to put efforts. There has been strong demand for Pivots and Laterals course and a weaker demand for the Urban Irrigation TBL Reporting. The challenge is to get one course to a point where it runs itself and work on the other course to get better promotion. All the while developing up and coming courses.

E-learning presents opportunities to offer training in new and different ways. The benefits are in easier access to training for acquiring skills and knowledge and expansion to a wider audience. The challenges are the cost and effort required in setting up and ongoing maintenance. CRCIF will be looking to others to learn tools and methods to make a transition to e-learning relatively painless and maybe even fun.

## **SUMMARY**

The CRC for Irrigation Futures is due to finish in at the end of June 2010 and by that date expect to have several training products and services that contribute to better irrigation, a better environment and a better future. The challenge from now to then is to rely on the quality research and planning that will lead to the expansion of the professional base of the irrigation industry, from researchers and technologists to operators and workers, and contribute to the development of an industry learning culture.

## **REFERENCES**

Revans, R (1982) What is action learning? Journal of Management Development. 1(3) 64-75.

