



Stage 3  
Interim research and evaluation report 5

**Professional Learning Facilitator Focus Group:  
October 2006**

A report by the Australian Academy of Science

Ms Louise Rostron  
Professional Learning Support Officer  
*Primary Connections* Project  
Australian Academy of Science

November 2006



**Australian Government**  

---

**Department of Education,  
Science and Training**



Australian Academy of Science

**Acknowledgements**

This project is funded by the Australian Government Department of Education, Science and Training as a quality teacher initiative under the Australian Quality Teacher Programme.  
Website: [www.qualityteaching.dest.gov.au/Content/](http://www.qualityteaching.dest.gov.au/Content/)

**© Australian Academy of Science 2006, Australia. This publication is protected by the intellectual property laws of Australia and other jurisdictions and is subject to the Australian Academy of Science Education Use Licence which can be viewed at [www.science.org.au/primaryconnections/licence.htm](http://www.science.org.au/primaryconnections/licence.htm). By using this publication you agree that you have read the Australian Academy of Science Education Use Licence and that you agree to be bound by the terms of that Licence.**

<b>Contents</b>	<b>Page</b>
<b>Purpose</b>	4
<b>Participants</b>	4
<b>Process</b>	5
Purpose 1: To construct a PLF value model defining the critical success factors which will optimise the effectiveness of PLFs	6
Purpose 2: To examine the PLF training in January 2006 and identify opportunities for improvement for PLF training in January 2007	9
Purpose 3: To make recommendations for the PLF training in January 2007	13
<b>Appendices</b>	
Appendix 1: The PLF value model process in detail	19
Appendix 2: Expectations, results, gaps and opportunities for improvement in detail	26
Appendix 3: Recommendations for PLF training in January 2007 in detail	29

**Professional Learning Facilitator (PLF)  
Focus Group 27 October 2006  
Evaluation Report and Recommendations**

A qualitative evaluation process informing the quality of services provided to professional learning facilitators of the *Primary Connections* programme was conducted on Friday 27 October 2006.

**Purpose**

1. To construct a “Professional Learning Facilitator (PLF) Value Model” defining the critical success factors which will optimise the effectiveness of the professional learning facilitators.
2. To examine the PLF training in January 2006 and identify the opportunities for improvement for PLF training in January 2007.
3. To make recommendations for the PLF training in January 2007.

**Participants**

- Facilitators: Louise Rostron, Professional Learning Support Officer for *Primary Connections* and Robyn Bull, Project Officer for *Primary Connections*
- Professional learning facilitators for *Primary Connections* were drawn from the following states and jurisdictions:
  - TAS Government sector
  - ACT Government sector
  - VIC Government sector
  - VIC Independent sector
  - SA Government sector
  - WA Government sector
  - NSW Government sector
  - QLD Catholic sector
  - SA Catholic sector
- Observer: Shelley Peers, Managing Director *Primary Connections* project

## Process

A series of inter-active techniques was used in order to achieve the goals. An outline of the total process is summarised in Table 1.

Table 1: Process and Product

<b>PURPOSE</b>	<b>STEP</b>	<b>PROCESS &amp; PRODUCT</b>
<b>1. To construct a PLF Value Model defining the critical success factors which will optimise the effectiveness of the PLFs</b>	<b>Step 1</b>	<b>Identify</b> and chart all “customer value” (services/products)  <b>Prioritise</b> services and products
	<b>Step 2</b>	<b>Discuss and record</b> good/poor experiences & highlight improvement needs; organisational “face” descriptors
	<b>Step 3</b>	<b>Use</b> inter-relationship digraph process to <b>identify</b> the factors which have the most effect on PLF effectiveness
	<b>Step 4</b>	<b>Conduct</b> SWOT analysis of most important factors
	<b>Step 5</b>	<b>Identify</b> and record major changes needed
	<b>Step 6</b>	<b>Identify</b> critical success factors of the PLF Value Model which define the ideal services and products provided to PLFs to optimise their effectiveness
<b>2. To examine the PLF training in January 2006 and identify the opportunities for improvement for PLF training in January 2007</b>	<b>Step 7</b>	<b>Construct</b> expectations chart and rate for importance  <b>Construct</b> results chart and rate for importance  <b>Define</b> the gaps between expectations and results and <b>identify</b> the opportunities for improvement
	<b>Step 8</b>	Collate all the opportunities for improvement
<b>3. To make recommendations for the PLF training in January 2007</b>	<b>Step 9</b>	<b>Finalise</b> recommendations for January 2007

**Purpose 1: To construct a PLF Value Model defining the critical success factors which will optimise the effectiveness of the PLFs**

The PLF Value Model in Table 2 below defines and describes the critical success factors which represent “value” in the minds of the PLFs. These are used to judge, often subconsciously, the quality of the services and products provided by the project.

Some of these things are being done now to varying levels of satisfaction. Some are not being done as yet. This list is a guide to what PLFs are saying they would like to receive in order to fulfill their role as a PLF. The PLFs will be as effective as they can be in their role if these factors are optimised.

All of the details which led to the construction of the PLF Value Model are contained in Appendix 1.

Table 2: PLF Value Model

<b>CRITICAL SUCCESS FACTOR</b>	<b>DESCRIPTION</b> <b>Ensure that.....</b>
<b>PLF WORKSHOP TRAINING</b>	<ul style="list-style-type: none"> <li>• the professional learning is best practice, based on contemporary research and examines content and issues from a school based perspective with examples “from the field” eg, work samples, classroom case studies;</li> <li>• the expertise of the participants is recognised and the inclusion of experienced teachers and facilitators as presenters in the workshops is considered;</li> <li>• the professional learning as hands-on as possible as well as providing ample time for participants to reflect and “make meaning” from the learning;</li> <li>• the professional learning models the 5Es teaching and learning model;</li> <li>• models of training are made available for rural and remote location teachers including on-line professional learning.</li> </ul>
<b>“QUESTIONING MINDS” DVD AND OTHER VIDEO IMAGES</b>	<ul style="list-style-type: none"> <li>• the DVD is a high quality resource and can be incorporated into professional learning in a flexible, adaptable way;</li> <li>• video images be developed which include real, “case study” examples of the <i>Primary Connections</i> project in action in classrooms.</li> </ul>

<b>PEDAGOGY</b>	<ul style="list-style-type: none"> <li>• the underpinning teaching and learning model and strategies are reinforced throughout all aspects of the programme;</li> <li>• links are constantly being made to the pedagogy including 5Es, the link between science and literacy and embedded assessment;</li> <li>• resources are made available to teachers eg, assessment rubrics, A3 posters of literacies of science.</li> </ul>
<b>STATE/TERRITORY &amp; JURISDICTION SUPPORT</b>	<ul style="list-style-type: none"> <li>• the Academy is doing everything in its power to influence decisions about the support and funding needed from State and Territory jurisdiction offices so that PLFs are able to provide the professional learning required for implementation of <i>Primary Connections</i> eg, release time, recognition, resources, recompense.</li> </ul>
<b>ROLE OF THE PLF</b>	<ul style="list-style-type: none"> <li>• the role of the PLF is explicit and clearly defined;</li> <li>• materials are available to assist facilitators including advice about protocols, logistics and strategies for facilitation and “letters of introduction” from the Academy.</li> </ul>
<b>COMMUNICATION</b>	<ul style="list-style-type: none"> <li>• communication about all aspects of the programme is ongoing and reflects a united and national perspective;</li> <li>• all communications are available electronically;</li> <li>• the website is up to date and contains all available information.</li> </ul>
<b>PROMOTION AND MARKETING</b>	<ul style="list-style-type: none"> <li>• that the Australian Academy of Science be continuously engaged in promoting, marketing and lobbying activities with decision makers and education leaders to “ease the way” for facilitators who are conducting professional learning at the school level. Targets include Principals, science and literacy associations, curriculum leaders, Directors of education.</li> </ul>
<b>ONGOING RESEARCH</b>	<ul style="list-style-type: none"> <li>• the programme collects research data in an ongoing way throughout the duration of the project to inform its progress;</li> <li>• the research data and its implications be communicated to PLFs;</li> <li>• actions result from the data to progress the project.</li> </ul>

**LINKS TO TERTIARY INSTITUTIONS**

- professional learning for *Primary Connections* becomes part of the curriculum for pre-service teacher education;
- academic recognition be sought for PLFs through links to Graduate Diplomas.



## **THE 3 DAY PLF TRAINING WORKSHOP**

**Purpose 2: To examine the PLF training in January 2006 and identify opportunities for improvement for PLF training in January 2007.**

Perception of quality of any service, experience and/or product is shown by the following equation:

$$\text{Perception of Quality} = \text{Results} - \text{Expectations}$$

This equation defines quality perceptions as being relative to initial expectations.

PLFs, in small groups, were asked to reflect, think about and record all of their expectations for the 3 day training workshop in January 2006 and rate their importance into three categories. Next, they recorded the results at the workshop (their actual experiences) and identified the opportunities for improvement (gaps) between their expectations and results. They identified whether the gap was a positive or a negative, that is, if the results exceeded their expectations the gap is a positive but if the result fell short of their expectations the gap was a negative.

The positive gaps indicate that we should keep providing and improving this level of service/product. The negative gaps are all opportunities for improvement and the higher the importance rating the higher the imperative to improve that element of the programme. The Opportunities for Improvement are summarised in Table 3 on the following page.

All of the details which led to the construction of the Opportunities for Improvement Chart are contained in Appendix 2.

Table 3: Opportunities For Improvement Chart

<b>FOCUS</b>	<b>MAINTAIN OR EMPHASISE</b>	<b>IMPROVE, ADD OR CHANGE</b>
<b>Professional learning</b>	Maintain the academic backing of the programme	Include many more hands-on, interactive learning sessions in smaller groups
	Maintain the excellent overall quality of the programme	Change the venue for greater number of workshop style formats
	Emphasise that <i>Primary Connections</i> is a professional learning programme in all learning sessions	More time for reflection and consolidation Increased emphasis on the professional learning component
	Make reference to the 2001 report (Goodrum, Hackling and Rennie)	Include a variety of presenters
<b>Pedagogy</b>	Emphasise the pedagogy of the programme throughout every aspect of the professional learning	Model the 5Es in learning sessions
<b>Networking and collaboration</b>		Ensure ample opportunity for high quality networking conversations and include more collaborative processes in learning sessions
		Use an anonymous process such as the "Question Generator" for eliciting high quality questions and sharing. Allow time for answers to these questions to be delivered
<b>Science and literacy link</b>		The links between science and literacy need much more emphasis and time for exploration and clarification; needs to be a major focus of the learning programme; make ample time for professional discourse; more literacy people as PLFs

<b>Strategic state/territory/ jurisdiction issues</b>		Explore ways of influencing the state/territory and jurisdiction on delivering the PC message
		Need to present different successful models of state/territory and jurisdiction support to ensure implementation in primary schools
<b>Housekeeping, food, accommodation etc</b>		Maintain the high standard of food and accommodation from 2006
<b>Implementation models in schools</b>		Include the Holden and Rolls Royce implementation models
<b>Resource and support materials</b>	Maintain the high standard of support materials	Re-organise the folder with a more logical sequence and include an overview page, a key organiser and each feature of PC categorised; Include inter-active strategies, keep it loose leaf and include “working pages” as well as “good” copies
<b>Research</b>		More succinct treatment of research data; main issues require emphasis and definition
		Provide preliminary information such as questionnaires and pre-readings to allow participants to do some preparation prior to the conference
<b>Meet and Greet</b>	Maintain the introductions of the PC team and researchers	Provide ample time for professional discourse among colleagues
		Encourage team work and relationships especially among same state people; partner people from same jurisdictions
<b>ICT</b>		Needs to have more focus on ICT links in curriculum units and the website

<b>Assessment</b>	Emphasise the way assessment is embedded in the pedagogy	Develop an assessment module as part of the professional learning
<b>Science inquiry and investigation</b>		More emphasis on inquiry and investigation activities
		More opportunity for hands-on science investigation practice using examples from the curriculum units
<b>Introduction</b>		Model an introduction to PC and include a new two hour introduction package for delivery in schools
<b>Auditing</b>	Keep a session on auditing as a powerful tool	Include a practical tool for auditing
<b>Scope &amp; Sequence of curriculum units</b>	Maintain the latest scope and sequence charts	
<b>History of Academy</b>	Good tour option, keep it in	

## **FRAMEWORK FOR THE 3 DAY PLF TRAINING WORKSHOP JANUARY 2007**

### **Purpose 3: To make recommendations for the PLF training in January 2007.**

The development of the PLF Value Model, the examination of the 2006 PLF training programme and the identification of opportunities for improvement have informed the recommendations for the PLF training programme in January 2007.

The overall framework incorporates the improvement opportunities and the specific recommendations for the 2007 PLF programme. In addition each of the 5 suggested workshops will have specific criteria in the design:

- Model the 5Es teaching and learning model
- Clearly define the main messages
- Include as much hands-on activity as possible
- Allow time for reflection and questions
- Show how this session connects with other sessions and the science and literacy linkage
- Allow for self assessment

Displays of work samples, opportunities to try the science concept CD and other resources should be available during the breaks.

### **It is recommended that the following pre-training elements be incorporated into the program.**

- Initial questionnaire be sent and collected
- Pre-reading on constructivism and the 5Es, the link between science and literacy and professional learning facilitation be sent to the participants prior to the workshop.

Please note that the opportunity to learn about how to write a curriculum unit is not included in the 3 day programme. It is an area which will need attention as PLFs may well be asked to assist teachers with this. It is recommended that a PLF session on this be organised for one of the follow up PLF meetings.

**DAY 1: An introductory day at the Shine Dome:**

1. Opening, introductions, expectations, the PLF role
2. Introduction to *Primary Connections*
3. Setting the scene
  - the research about the link between science and literacy
  - the research about science education and the 5Es model
  - the exemplary curriculum units
  - indigenous perspectives

9.00 (30min)	<b>Welcome Address</b>
9.30 (10min)	<b>Introductions:</b> <ul style="list-style-type: none"> <li>• <i>Primary Connections</i> Team</li> <li>• Research consultants</li> <li>• Writers</li> <li>• Introduce yourself to the people nearest you</li> </ul>
9.40 (30min)	<b>Opening Address:</b> <ul style="list-style-type: none"> <li>• Purpose</li> <li>• Why are you here?</li> <li>• Strategic position and role of the PLF</li> </ul>
10.10 (20min)	<b>Parking lot; Affinity diagram - expectations:</b> “What do you hope to know or be able to do by the end of the 3 days?”
10.30 (30min)	Morning Tea (affinity diagram collated)
11.00 (90min)	<b>Introduction to PC:</b> <ul style="list-style-type: none"> <li>• a “model” session experienced as PLFs might deliver to a new audience</li> </ul>
12.30 (30min)	<b>Setting the Scene:</b> The link between science and literacy
1.00 (45min)	<b>Lunch</b> (Activity during lunch to find others from your state across jurisdictions)
1.45 (15min)	<b>Dialogue for meaning:</b> <ul style="list-style-type: none"> <li>• Overview a range of processes</li> <li>• “Question Generator” process in pairs</li> <li>• Contribute to the parking lot</li> </ul>
2.00 (30min)	<b>Setting the Scene:</b> <ul style="list-style-type: none"> <li>• Academic/research review of science education and the birth of <i>Primary Connections</i></li> </ul>
2.30 (30min)	<b>Setting the Scene:</b> <ul style="list-style-type: none"> <li>• Orientation to the exemplary curriculum units which put <i>Primary Connections</i> into practice</li> <li>• Initial exploration of the curriculum units</li> <li>• The science background CD</li> <li>• The website</li> </ul>
3.00 (30min)	Afternoon Tea (Exploration of the curriculum units continues informally)
3.30 (15min)	<b>Setting the Scene:</b> <ul style="list-style-type: none"> <li>• The indigenous perspective, its philosophy and learning strategies</li> </ul>

3.45 (45min max)	<b>Preparation for Days 2 &amp; 3</b> <ul style="list-style-type: none"> <li>• Explain the workshop process for Days 2/3</li> <li>• Evaluation process: Describe, Interpret, Generalise, Apply (DIGA); collect on Day 2</li> <li>• Follow up parking lot, questions</li> </ul>
4.30	Close
4.45 (30min)	History of the Dome presentation (Optional)
6.00	Drinks, Barbeque at the Dome

**DAY 2: Getting into the detail at the Centre for Teaching and Learning:**  
A series of concurrent model workshops exploring the major features of the programme plus dedicated time for reflection and discussion in state/territory jurisdiction groups:

- 5Es teaching and learning model
- Links between science and literacy
- Inquiry and investigating in science
- Assessment and questioning
- Co-operative learning strategies

8.20	Buses travel to the Centre for Teaching and Learning
8.45 (15min)	Meet in Hall, collect DIGAs; allocate groups, clarify process
9.00 (90min)	<b>Workshop 1</b>
10.30 (30min)	Morning Tea (Informal networking, questions for parking lot)
11.00 (90min)	<b>Workshop 2</b>
12.30 (45min)	Lunch (Informal networking, questions for parking lot)
1.15 (90min)	<b>Workshop 3</b>
2.45 (30min)	Afternoon Tea (Informal networking, questions for parking lot)
3.15 (45min)	<b>Reflection and dialogue</b> in state/territory jurisdiction groups using suggested structured processes
4.00 (45min)	Meet in Hall, process questions, issues, concerns, distribute DIGA for Day 2
4.45	Close for the day
6.30	Dinner

**DAY 3: Getting into the detail (continued)**

A series of concurrent model workshops exploring the major features of the programme plus dedicated time for reflection and discussion in state/territory jurisdiction groups:

- 5Es teaching and learning model
- Links between science and literacy
- Inquiry and investigating in science
- Assessment and questioning
- Co-operative learning strategies

8.20	Buses travel to the Centre for Teaching and Learning
8.45 (15min)	Meet in Hall, collect DIGAs, clarify process
9.00 (90min)	<b>Workshop 4</b>
10.30 (30min)	Morning Tea (Informal networking, questions for parking lot)
11.00 (90min)	<b>Workshop 5</b> (Informal networking, questions for parking lot)
12.30 (45min)	Lunch (Complete final DIGAs from the workshop)
1.15 (45min)	<b>Auditing and action planning session</b> <ul style="list-style-type: none"> <li>• The Holden/Rolls Royce model</li> <li>• Practical tool for auditing</li> </ul>
2.00 (45min)	<b>Reflection and dialogue</b> in state/territory jurisdiction groups using suggested structured processes
2.45 (45min)	<b>State/territory jurisdiction meetings:</b> <ul style="list-style-type: none"> <li>• How does PC work in our state?</li> <li>• What support do we provide?</li> <li>• How is it co-ordinated?</li> </ul>
3.30 (60min)	<b>All together again:</b> <ul style="list-style-type: none"> <li>• What support does the Academy provide?</li> <li>• Post questionnaire, collect DIGAs</li> <li>• Re-visit expectations</li> <li>• Process parking lot and questions</li> </ul>
4.30	<b>Close and Farewell</b>



## WORKSHOP ORGANISATION

### WORKSHOP 1:

Group 1: 5Es  
Group 2: Science & literacy  
Group 3: Investigating  
Group 4: Assessment & questioning  
Group 5: Co-operative learning

### WORKSHOP 4:

Group 1: Assessment & questioning  
Group 2: Co-operative learning  
Group 3: 5Es  
Group 4: Science and literacy  
Group 5: Investigating

### WORKSHOP 2:

Group 1: Science & literacy  
Group 2: Investigating  
Group 3: Assessment & questioning  
Group 4: Co-operative learning  
Group 5: 5Es

### WORKSHOP 5:

Group 1: Co-operative Learning  
Group 2: 5Es  
Group 3: Science & literacy  
Group 4: Investigating  
Group 5: Assessment & questioning

### WORKSHOP 3:

Group 1: Investigating  
Group 2: Assessment & questioning  
Group 3: Co-operative learning  
Group 4: 5Es  
Group 5: Science & literacy

## WORKSHOP GROUP SCHEDULE

### Group 1:

5Es  
Science & literacy  
Investigating  
Assessment & questioning  
Co-operative learning

### Group 4:

Assessment & questioning  
Co-operative learning  
5Es  
Science & literacy  
Investigating

### Group 2:

Science & literacy  
Investigating  
Assessment & questioning  
Co-operative learning  
5Es

### Group 5:

Co-operative learning  
5Es  
Science & literacy  
Investigating  
Assessment & questioning

### Group 3:

Investigating  
Assessment & questioning  
Co-operative learning  
5Es  
Science & literacy

**A note about the workshops**

Each workshop is framed in the 5Es format and should model “a way” of delivering a workshop on the topic to an audience who are undertaking professional learning on *Primary Connections*.

The workshops are not meant to be prescriptive but to model the use of a variety of resources. The resource material provided can be assembled in any number of ways so that the elements of the session can be tailored to suit each individual audience.

As familiarity with the *Primary Connections* programme increases it will be possible to develop additional materials and/or techniques to enhance the resource pack.

**The resource pack will include:**

Background information; PowerPoint slides in Word and PDF format (CD provided); DVD; descriptions of facilitation tools and techniques; resource sheets; instructions for the “model” workshop.

## Appendices

### Appendix 1: The PLF value model process in detail

#### Step 1: PLF Identification of “Customer Value” (Services/Products) and prioritisation of importance

PLFs identify all of the services and products (customer value) which they have received from the *Primary Connections* project. Using a multi voting system, PLFs prioritise those services/products which are the most important in assisting them to become effective professional learning facilitators. These have been summarised in Table 1.

Table 1:

Value	Vote
Workshop training - initial and follow up	13
“Questioning Minds” DVD	7
Underpinning by quality teaching and learning (pedagogy)	6
Communication from the Academy – email, telephone, etc	5
“Making Connections” PLF manual	2
Academic backing	2
Backing by Australian Academy of Science and Department of Education, Science and Training	2
The way facilitators and trial teachers are valued	2
Trial teacher programme	2
Collegiality	2
Website	2
Underpinned by state syllabuses and National Statement of Learning	0
Research reports	0
Science background CD	0
Assessment rubrics	0

## Step 2: PLF Discussion of Good Experiences and Experiences which Need Improvement

Each participant reflects and recounts personal experiences in receiving services and products. Each describes their perception of the “face” of the Australian Academy of Science based on personal interactions with the Primary Connections project team. Comments are collated in Table 2.

Table 2:

<b>Good</b>	<b>Needs Improvement</b>
Pedagogical framework underpinning the project	PLF training delivery was poor, needs more hands-on activities and modelling of effective teaching and learning strategies
The professional learning programme, exciting material and programme leading to higher self satisfaction and self efficacy	Profile of the programme, PR needs to be sustained/improved
Combination of trial teacher and PLFs (perspectives from inside the classroom and outside)	Lack of prior knowledge before training, would have helped to have received some overview material
Balance of classroom teachers and non teachers as facilitators	PLF training needs hands-on investigations, variety of presenters
Lobbying for the project	Non commitment from principals and management (top down)
Intellectual quality of the project	Need a letter of introduction from the Academy to assist with credibility of the PLF (value adding)
Resources and curriculum units, the pedagogy, relevance, How To's etc	Training in protocols and negotiation (PC vs individual responsibility)
Top level commitment eg, Ed QLD, QLD Catholics	Need more reflective and evaluation tools in workshops and units
Positive uptake of the project	More reference to effective teaching and learning activities in curriculum units
Positive quality experience re accommodation and meals etc	Need opportunities for collaborative unit writing
PLF resources, DVD, Power point presentations, learning objects	Need more “expert reference points” for student and teacher questions arising from the curriculum units
PLF training, balance of small and large groups	Need for a strategic plan for remote professional learning eg, Mt Isa

Website	Lack of positive response from research consultant to ideas for the curriculum units
Focus on <b>primary science</b> and the “value” placed on teachers	Lack of explicit guidance about logistics of being a PLF eg, the role itself, time required, time management
Networking with quality professionals	PLF manual needs organisation, examples need to be relevant, perhaps match examples in the curriculum units
PLF manual, DVD and CD, used as needed, adaptable	Website navigation can be confusing
Research programme and reports	Need to consult with other PLFS eg non-active ones
	Need to target facilitators and provide explicit expectations of the role
	Suggest and encourage pairing of PLFs with trial teachers
	“Systematic” restraints re: access to training
	PLFs need access to “real” student and school work samples
	Embedded links in the curriculum units for ICT and “Working scientifically” need to be strengthened along state and jurisdiction directions
	Need advice on how to help and collaborate with schools in creating a school plan and progress towards it – the “what happens now” factor

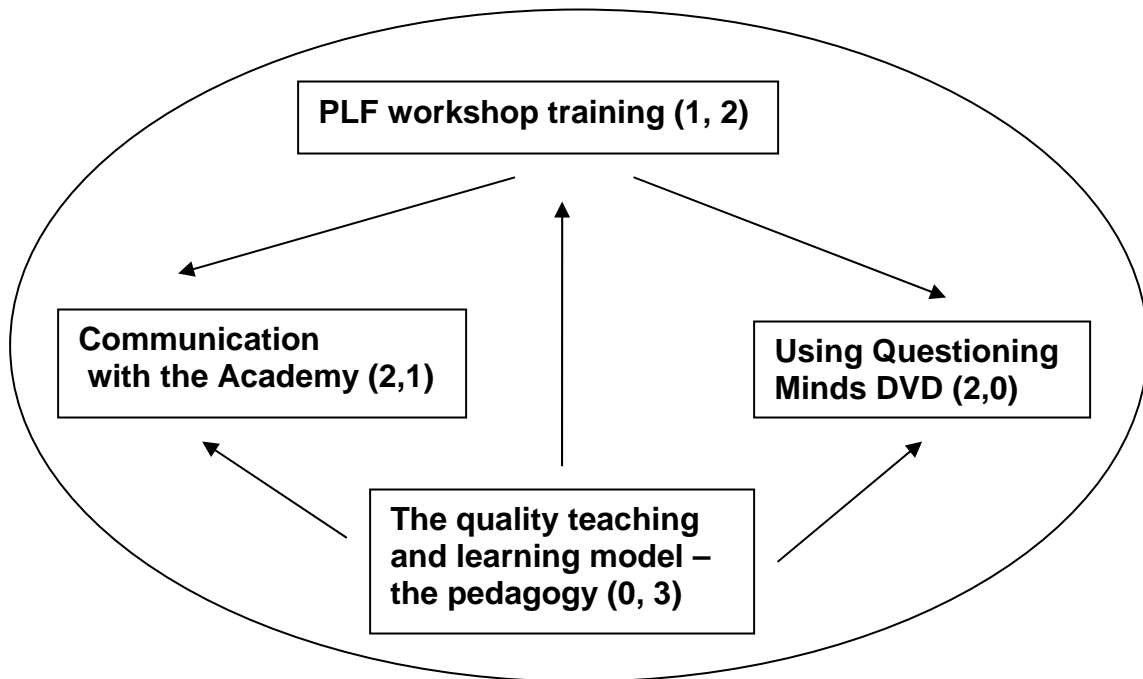
**Descriptors of the “FACE” of the organisation**

- Embracing (professional)
- Receptive
- Reliable
- Thorough
- Back up for needs, helpful and explicit
- Enthusiastic
- Responsive
- Friendly and welcoming
- Knowledgeable, professional and focused
- Organised
- Historical value and prestige of the Academy
- Quality product because it is an Academy project

### Step 3: Inter-relationship digraph of highest priority services/products

The inter-relationship digraph was used to examine the relationship between the top four factors contributing to the effectiveness of the PLFs. The digraph is shown in FIG 1. The factors with the largest numbers of “out” arrows have the greatest effect on the other factors. The top two are 1) the PLF workshop training and 2) the quality teaching and learning model, the pedagogy of the project.

Figure 1:



**Step 4: Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis of the highest priority services/products contributing to the effectiveness of the PLFs.**

Participants discussed the strengths, weaknesses, opportunities and threats of the workshop training and the underpinning quality teaching and learning model. Comments are summarised in Table 3.

Table 3:

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
<ul style="list-style-type: none"> <li>• Research background</li> <li>• Funding provided (eg, Teacher release)</li> <li>• Resources provided (eg curriculum units)</li> <li>• Pedagogy modeling</li> <li>• Flexibility with the pedagogy, basic, enriched and customised</li> </ul>	<ul style="list-style-type: none"> <li>• Delivery of “Investigating” training not linked to the investigations in the curriculum units(contextualised)</li> <li>• Explicit teaching of the essence of “Investigating” (eg, fair tests)</li> <li>• Modelling of the links between literacy and science, the time, delivery and focus needs to be strengthened</li> <li>• Time spent on “handling misconceptions”</li> </ul>
<b>OPPORTUNITIES</b>	<b>THREATS</b>
<ul style="list-style-type: none"> <li>• Strengthen the links between science and literacy in both the workshop training and the curriculum units</li> <li>• Strengthen co-operative learning strategies</li> <li>• Strengthen Information Communication Technologies links</li> <li>• Provide lists of curriculum units and the investigations relative to the stages</li> <li>• Attention to explicit links between scientific processes and scientific literacy</li> <li>• Revisit the science/literacy focus and links throughout all training</li> <li>• Time for reflection and “meaning making” in jurisdiction/state groups</li> <li>• Link training to Graduate Diplomas</li> <li>• Website needs a substantial upgrade</li> <li>• Provide black line masters of A3 posters eg, literacies of science, “real” work samples</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher mindsets and existing practice</li> <li>• Teachers and “thinking scientifically”</li> <li>• Teachers and ICT links</li> <li>• Lack of time spent on science and literacy links</li> </ul>



**Step 5: Identification of major changes within the Academy’s control and outside the Academy’s control**

Each participant identified individually two desired major changes. These are summarised in Table 4.

Table 4:

<b>Major change within Academy control</b>	<b>Major change outside Academy control</b>
More trained PLFs	Support of the NSW DET
Train more PLFs for remote/rural areas	System support
A list serve similar to the one I receive from the Principal’s Association where all emails are read by everyone, so questions /ideas are shared	100% backing by State Government and Catholic and Independent schools
Quality on-line training/support as we have <u>few</u> PLFs for potential large demand	\$\$\$ to support PLFs for preparation and delivery
A bit of ‘lightening up’ of some of the processes	System support for primary science and PC
Set guidelines of the facilitator role, what services could involve and a costing of services that can be given to those eliciting services: This is what they do. This is what it will cost.	For those people who have “clout” to understand how important scientific literacy is
	Systematic support for science curriculum, that is, get the rhetoric to match the action
	Full support from the ACT Government from education leaders to school leaders to classrooms
	State training in VIC if our “educators” of clusters are to support and drive science in schools we would like state or regional training for larger numbers

## Appendix 2: Expectations, results, gaps and opportunities for improvement in detail

**Step 7 & 8:** Small groups identified expectations, actual experiences, gaps and improvement opportunities from the PLF training in January 2006. These have been categorised and rated for importance.

<b>FOCUS (IMPORTANCE)</b>	<b>EXPECTATIONS (We expected.....)</b>	<b>RESULTS (We experienced.....)</b>	<b>GAP + / -</b>	<b>OPPORTUNITIES FOR IMPROVEMENT</b>
<b>Professional learning (high)</b>	High quality professional learning	<ul style="list-style-type: none"> <li>a programme which had an academic basis and was intellectually stimulating</li> </ul>	<b>+</b>	<b>Maintain the academic backing of the program</b>
	Hands-on modelling of practice	<ul style="list-style-type: none"> <li>a scarcity of hands-on activities and models of best practice and not enough small group work</li> <li>a theatre style format which was restrictive for reflection and discussion with a poor manner of presentation</li> </ul>	-	<b>Include many more hands-on, interactive learning sessions in smaller groups</b>  <b>Change the venue for greater number of workshop style formats</b>
	emphasis on the project as professional learning rather than units of work a high quality primary science programme because of involvement with Prim. Investigations	<ul style="list-style-type: none"> <li>less emphasis than expected, not strongly explicit</li> <li>a primary science programme which was better than expected - a tool for long term student outcomes in science</li> </ul>	-	<b>Emphasise the project as a professional learning program in all learning sessions</b>
	that the programme would respond to the 2001 report by Goodrum, Hackling and Rennie	<ul style="list-style-type: none"> <li>a programme which has responded to the report</li> </ul>	<b>+</b>	<b>Maintain the excellent overall quality of the program</b>
	much information over three days	<ul style="list-style-type: none"> <li>so much information in such a short time</li> </ul>	<b>+</b>	<b>Reference to the 2001 report</b>
			-	<b>More time for reflection and consolidation</b>

<b>Implementation models (High)</b>	implementation models in schools and classrooms	some ideas but the subsequent Holden and Rolls Royce models were excellent	+	<b>Include the Holden and Rolls Royce models</b>
<b>Resource and support materials (High)</b>	excellent support materials	excellent support materials, high quality units and DVD, CD, resource sheets, explicit content in a folder, the website	+	<b>Maintain the high standard of support materials</b>
	a folder or a manual	a manual which was confusing and difficult to manage; poor order of presentation	-	<b>Re-organise the folder with an overview page, a key organiser and each feature categorised. Include inter-active strategies, keep it loose leaf and include “working pages” as well as “good” copies</b>
<b>Research (Moderate)</b>	Reference to research material	too much emphasis on research and data collection	-	<b>More succinct treatment of research data; emphasise main issues</b>
	prior information and opportunity to develop knowledge about PC before the workshop	no prior information	-	<b>Provide preliminary information/pre-readings to allow participants to prepare prior to the conference</b>
<b>Meet and Greet (Moderate)</b>	to meet the PC staff and researchers	meeting the PC staff and researchers	+	<b>Maintain these introductions</b>
	to meet colleagues with similar interests and time for professional discourse  team relationships	meeting colleagues with similar interests but more time needed for professional discourse  good team relationships	+/-  +	<b>Make ample time for professional discourse</b>  <b>Encourage team work and relationships especially among same state people</b>
<b>ICT (Moderate)</b>	ICT links	few ICT links	-	<b>Needs to have more focus</b>

<b>Science Enquiry (Moderate)</b>	a variety of science inquiry models	Some emphasis on inquiry	-	<b>More emphasis on inquiry and investigation</b>
	focus on science investigations	science investigations were not related to the curriculum units and time was too limited for full exploration	-	<b>More opportunity for hands on science investigation practice using examples from the curriculum units</b>
<b>Auditing (Moderate)</b>	auditing and reflections	reflective auditing, deconstruction and detail provided	+	<b>Keep a session on auditing as a powerful practical tool</b>
<b>Introduction (Moderate)</b>	an introductory overview	an introduction but it would be good to have an experience of a modelled introduction	-	<b>Model an introduction and include a new two hour introduction package for delivering in schools</b>
<b>Scope &amp; Sequence (Moderate)</b>	a scope & sequence for curriculum units	a scope & sequence for curriculum units	+	<b>Maintain the latest scope and sequence charts</b>
<b>History (Moderate)</b>	(did not expect) a history of the Academy	an introduction and history of the Academy	+	<b>Good addition, keep it</b>
<b>Assessment (Moderate)</b>	reference to assessment	assessment in such detail	+	<b>Emphasise the way assessment is embedded in the pedagogy</b>
<b>Participant group (Low)</b>	A few more people from my jurisdiction	a surprise to be the only PLF in western NSW; only 2 Catholic educators in QLD; no rural PLFs in SA	+	<b>Partner people from same jurisdictions</b>

### Appendix 3: Recommendations for PLF training in January 2007 in detail

**Step 9:** PLFs make specific recommendations for the 3 day programme and record them in categories. The summary is detailed in Table 8.

Table 8:

Category	Advice
<b>What do we want people to know?</b>	Model for introducing the programme; 5Es teaching and learning model; science & literacy links/literacies of science; assessment and questioning; investigating; co-operative learning strategies
	Who to contact for help; that they don't have to do it alone
	ICT support
	Links between PC and their own state priorities and initiatives
<b>What do we want people to be able to do?</b>	Effectively promote quality teaching and learning in science and literacy
	Develop facilitation confidence and capacity
	Recognise where clients are at and where we want to get them to
	Feel that they can ask for and get help
	The process of conducting a science investigation
<b>Resources at the training</b>	A reference and resource folder with loose leaves, a key organiser; orientation pages; rearranged in the categories of the features of the programme, keep the detailed information; "Intro" workshop and facilitator notes
	Provide working copies, highlighters and post it notes as teachers do not like to write on "good" copies Advice on CDs, Website, Community links

<b>Resources to take away</b>	Rearranged folder; wall chart ideas (eg, list of literacies of science); scope and sequence chart; current and proposed units grid; Holden/Rolls Royce model; people contacts for networking and assistance
	Keeping up with the latest ICTs
<b>Presentations</b>	Much more hands-on activities; more variety in hands-on activities; more investigating; small group discussions; fewer "lecture" information sessions; sessions should model the 5Es; practical modelling strategies; all strategies in resource folder; have a go at trying to write a unit based on the 5Es
<b>Presenters</b>	Experienced and knowledgeable presenters; good mix of leading educators, perhaps a prominent female, include some case studies "stories from the field"; include some previous PLFs or Trial teachers
<b>Accommodation</b>	Keep it central, include breakfast, all good!
<b>Auditing</b>	Vic model? Other than VIC?
<b>Social activities</b>	Excellent programme last year, dinner, speakers, Questacon, appreciate some down time also as the programme is full on
<b>Certification</b>	Pro-forma sign on sheet; whole day PD certificate; document of exactly what was done for potential tertiary credit
<b>Other</b>	Brief 2 hour introduction for after school session; New one day "whole school" inservice with power points, group activities and hands-on
	Power point template to make own slides
	Pre reading information; quiz on pre reading with prizes/incentives advertised as a lure for completing the reading
	Facilitator material for 2007 on website for "old" facilitators to access

	State based training options
	Assessment, how to's; ICT embedded in all workshops
	Displays of work samples, computers showing learning outcomes and website
	Multiple opportunities to experience key elements