

STEME Research Group
Re-imagining futures in Science, Technology,
Environmental and Mathematics Education



Charting futures for Science, ICT, Mathematics Education in Rural and Regional Victoria

**A Forum organised by the SiMERR Victorian Hub of the Science, ICT, and
Mathematics Education in Rural and Regional Australia (SiMERR) project
Geelong Conference Centre, 17/18th March 2008**

REPORT OF THE FORUM

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**The forum was sponsored by SiMERR Australia, and the Victorian Department
of Education and Early Childhood Development**



Table of contents

Table of contents	1
Executive Summary	2
The Forum	3
Follow up to the Forum	3
Issues addressed at the Forum	4
1. Social, and sustainability issues in rural communities	4
2. School staffing issues	5
2.1 <i>Attracting teachers to rural areas</i>	5
2.2 <i>Providing appropriate, high quality professional development for teachers in rural areas</i>	6
2.3 <i>Retaining quality teachers in rural and regional schools</i>	7
2.4 <i>Ensuring effective leadership in education in rural areas</i>	8
3. Student learning opportunities	8
4. Images of rural education	9
Proposals for the way forward.....	11
Recommendations for action by Government	11
Recommendations for action by school systems	11
Recommendation for action by schools.....	11
Recommendation for action by universities engaged in teacher education.....	11
Recommendations for action by researchers	11
Attachment 1: Forum program	12
Attachment 2: Outline of the Forum content.....	14
Attachment 3: Forum Participants	16
Attachment 4: Issues and propositions arising from discussion groups on day one....	19

Executive Summary

A Forum organised by the Victorian Hub of SiMERR was held at Geelong on 17/18 March 2008. The participants were chosen to ensure that the Forum could draw on expert knowledge relevant to the teaching and learning of science, mathematics and ICT in Victorian regional and rural areas.

The ideas generated and discussed at, and following, the Forum have led to the formulation of the following recommendations for action.

Recommendations for action by Government

That Government develop a policy framework and funding base which will facilitate support for activity by schools systems, schools and universities to take appropriate action, including the actions proposed below, to ensure that schools are more effectively and appropriately able to develop the potential of students in rural and regional centres.

Recommendations for action by school systems

2. That school systems develop a strategic plan for the provision of professional development activity and increase the support for the provision of appropriate professional development for teachers in Victorian rural and regional schools.
3. That school systems put systems and people in place to ensure that worthwhile initiatives operating in Victorian rural and regional schools are communicated widely.
4. That school systems initiate a program to raise awareness in rural and regional communities of the value of education in science, mathematics and ICT both to the career prospects of the students and to the community.

Recommendation for action by schools

5. That rural and regional schools explore ways of collaborating with community members and organisations and using community resources, human and material, in programs in science, mathematics and ICT.

Recommendation for action by universities engaged in teacher education

6. That universities engage in partnership with schools systems to ensure that opportunities for students to engage in teaching experience in rural and regional schools are enhanced.

Recommendations for action by researchers

7. Researchers should undertake research into rural education which takes account of their wider setting and news ways of approaching opportunities.
8. Researchers should collaborate with schools and school systems to investigate effective ways of identifying and measuring the outcomes of innovative programs.

The Forum

The aim of the Forum was to establish productive directions for Science, Mathematics, and ICT education in rural and regional Victoria. By linking education to broader social issues, the Forum aimed to develop sharper understandings of key issues in these subject areas, to give direction for future action for government, school systems, schools, and researchers.

The program for the Forum (Attachment 1) and an outline of the foci and content of the various sessions (Attachment 2) are attached. There was a specific focus on Victorian issues since the situation in rural and regional areas of Victoria has significant differences to those in other states and territories.

It will be noted that speakers were invited who could help participants develop a broader understanding of the issues facing rural and regional communities in Victoria and hence the context in which education is occurring.

There were also reports of various projects carried out under the SiMERR umbrella to indicate what has been learned to date about both issues being faced in science, mathematics and ICT education, and steps being taken to address these issues. Further, senior figures from the National SiMERR Centre contributed to the program giving insights from the national perspective.

Discussion groups gave the Forum participants (see Attachment 3) the opportunity first to identify the critical issues emerging from the presentations, and then to suggest ways forward. A statement of issues and propositions related to addressing these issues generated during the first day of the Forum will be found as Attachment 4.

It will be noted that, although the focus of SiMERR and the expertise of the Forum participants is in the fields of science, mathematics and ICT education, a number of the issues identified are generic. For example, the issue of attracting and retaining quality teachers in rural areas is not unique to these specific subject fields, but is highly relevant to the improving the teaching and learning of science, mathematics and ICT.

Follow up to the Forum

The discussion groups held on the afternoon of the second day of the Forum produced reports which, due to the limited time available, could not be dealt with at the Forum. These have been analysed, and considered in the light of the recommendations made following the analysis of data collected by the SiMERR National Survey conducted in 2005. The linking of the insights produced by the Forum to those generated by the National Survey was not planned but was seen as useful as the two activities were directed to the same end – the improvement of science, mathematics and ICT learning by students in rural and regional areas. The Abridged Report of the National Survey (NSR) can be found at www.une.edu.au/simerr/national_survey/index.html.

When considering the recommendations generated by the Victorian Forum alongside those generated as a result of the National Survey it needs to be recognised that the Forum participants were able to draw upon data gathered in studies conducted since the National Survey, and that a Victorian perspective may be somewhat different from one developed through a national survey. Further, it is noted that the

recommendations arising from the National Survey were directed at government whilst the Forum recommendations are directed to a range of groups with a stake in the teaching and learning of science, mathematics and ICT in rural and regional Victoria.

The commentary and recommendations for future action which follow were generated by this process and circulated for comment by the Forum participants. Following revision, in the light of response, the commentary and proposals are set out for public information.

Issues addressed at the Forum

1. Social, and sustainability issues in rural communities

Forum participants acknowledged the need to address inequities in opportunity for rural students and teachers compared to their metropolitan counterparts. However, the presentations and discussion generally represented a view that the task before us is not simply to identify ways in which students in rural and regional schools could be brought up to standard in terms of existing curricula or pedagogy. Rather the Forum explored the possibilities for schools in rural areas providing learning opportunities in science, mathematics and ICT which would relate to their rural context, would draw on community resources, both human and material, and would contribute to the welfare and sustainability of the community, within state and national policy directions. The issues with schooling in rural Victoria need to be seen alongside broader issues facing rural communities.

To that end whilst the discussions were congruent with the Principal Recommendation of the NSR¹ the participants envisaged a situation where schools would be contributing to the realisation of a more vibrant and sustainable rural sector in Victoria.

¹ Principal Recommendation of the NSR

It is recommended that a whole-of-government approach to addressing the issues of rural and regional school education be developed and implemented in the form of a National Rural School Education Strategy. The aim of the strategy would be:

- To map a coordinated approach across all government and non-government education jurisdictions to addressing geographic disparities in school education.
- To foster the development of strategic partnerships between stakeholders involved in rural and regional education.
- To deliver a coordinated, collaboratively-designed and research supported package of programs to address the needs of rural teachers and students, rather than a collection of separate initiatives.

2. School staffing issues

The Forum noted that there are a number of staffing issues which impact on the quality of rural education in science, mathematics, and ICT. These include attracting teachers to teach in rural and regional schools, providing appropriate professional development for teachers, retaining quality teachers in these schools and ensuring effective leadership in education in non-metropolitan areas.

2.1 Attracting teachers to rural areas

A number of strategies were proposed as means of attracting teachers to rural areas. These related to both pre-service education and to attracting experienced teachers to country areas.

With respect to pre-service education it was proposed that students in pre-service programs should have opportunities to participate in teaching in rural areas during their course. It is noted that the discussions were consistent with Recommendation 8 of the Report of the National Survey².

Greater involvement of pre-service teacher education students in rural education could be achieved through course requirements or incentives. Group discussions at the Forum, whilst recognising the importance of student teachers having opportunity to experience first hand teaching in rural areas, identified a number of barriers to this happening sufficiently often. For example, many students have part time employment near the university centre which, without financial support, would prevent them having a teaching round away from that centre, and hence their employment. The Forum participants pointed to practical measures which could help overcome such barriers but which require commitment and support from government.

² Recommendation 8 of the NSR.

It is recommended that parties involved in the emerging national and state/territory standards frameworks for pre-service education include standards requiring that:

- a. primary teachers are adequately prepared for teaching mathematics, science and ICT
- b. all teachers are able to address the learning needs of students in rural and regional areas, especially Indigenous students.

2.2 Providing appropriate, high quality professional development for teachers in rural areas

A number of points were made about the provision of appropriate professional education for rural teachers. First, ensuring that further education opportunities are of high quality is part of the answer to retaining outstanding teachers in rural areas. Teachers who take pride in their professionalism will be attracted to teaching in areas where there are first rate professional development opportunities.

Further, since the professional issues for people teaching in rural areas are somewhat different to those of their city colleagues, the professional development programs will need to be tailored to the needs of these teachers. Finally, it needs to be acknowledged that the cost of providing professional development to teachers in rural areas will be greater than that of providing for the needs of city based educators.

The NSR includes a number of recommendations³ with respect to professional development and engagement.

³ Recommendation 10 of the NSR. It is recommended that education authorities, in partnership with schools and school communities, universities, and professional organisations meet the continuing professional development needs of teachers in rural and regional areas through a range of strategies that ensure equitable access to ongoing quality professional learning.

Approaches could include:

- a. the development of flexible staffing and school timetabling arrangements to allow scheduling of professional development
- b. the development of improved systems and strategies for collaborative face-to-face and on-line modes of professional development for teachers in rural and regional locations
- c. promoting cross-sectoral collaboration in meeting the professional development needs of teachers on a local basis
- d. funding research, development and dissemination of strategies to teach science, ICT and mathematics to the diverse range of students found in rural and regional classrooms
- e. implementing strategies for mentoring rural and regional mathematics, science and ICT teachers at various career stages, e.g., establishment of local networks such as the Association of Rural Educators, and initiatives such as the Rural School Leadership Program, suggested above.

Recommendation 11 of the NSR. It is recommended that education authorities and curriculum bodies address the professional isolation of rural and regional science, ICT and mathematics teachers by developing and monitoring strategies to ensure equitable access to and involvement in a range of core activities, enabling them to be engaged and contributing members of their professional community.

Core professional activities include:

- a. curriculum development
- b. state/territory and system-wide student assessment programs
- c. consultations on pedagogical practice.

2.3 Retaining quality teachers in rural and regional schools

The Forum participants recognised that innovative strategies are called for to retain expert teachers in rural and regional schools. A number of relevant issues which require to be addressed were raised in the group discussions. Amongst the issues raised were:

- teachers in small secondary schools are more likely to be required to teach outside their field of expertise;
- generally rural teachers have less opportunity to interact professionally with colleagues;
- teachers may have a relatively limited understanding of the unique context in which they are operating;
- technical support is less accessible for these teachers than for their city colleagues.

It can be noted that the NSR includes recommendations (Recommendations 12 – 15)⁴ which address some of these issues.

⁴ Recommendation 12 of the NSR. It is recommended that education authorities, in collaboration with school

communities, industry and business partners, provide improved access for rural and regional students and teachers to ICT hardware and network capacity. The level of access should allow increased use of online learning modes to compensate for reduced resources in other areas.

Recommendation 13 of the NSR. It is recommended that education authorities, in collaboration with school

communities, industry and business partners, develop and monitor strategies to improve the provision of technical support to rural and regional schools to maximise efficiency of hardware and networks, and to reduce the time spent by teachers in maintaining ICT systems. Initiatives could include:

- a. the establishment of strategic partnerships with other ICT users in the local area
- b. the employment of additional human resources for ICT system support.

Recommendation 14 of the NSR. It is recommended that education authorities, in collaboration with schools and other government and non-government agencies, develop and disseminate strategies and resources applicable to rural and regional contexts that support primary teachers in catering for students with diverse backgrounds, learning needs and aspirations, including Indigenous students, gifted and talented students, students from non- English speaking backgrounds and students with special learning needs.

Recommendation 15 of the NSR. It is recommended that education authorities, in collaboration with schools and other government and non-government agencies, develop and disseminate strategies and resources applicable to rural and regional contexts that support secondary science, ICT and mathematics teachers in:

- a. integrating ICT into their teaching

2.4 Ensuring effective leadership in education in rural areas

A key issue which arose regularly during the Forum was the importance of educational leadership to providing appropriate education in rural areas. The participants saw this is one of the most critical issues to be addressed. This is congruent with the findings of the Science in Schools Project⁵ which revealed the significance of leadership within the school as critical to effective change. Their suggestions were congruent with Recommendation 5 of the NSR⁶.

3. Student learning opportunities

This was an issue in which the Forum participants were able to take into account reports from researchers and teachers which indicated ways in which schools, school clusters and school systems in Victoria have been able to advance the learning opportunities of rural and regional students in science, mathematics and ICT. For example, Meg Parker, Cluster Educator, Lara School Cluster, and Adrian Waters, Cluster Educator, Oberon School Cluster, described the work that has been done in their clusters. Again, Professor Russell Tytler was able to draw upon several studies of schools and school clusters to point out ways in which they were creating

b. catering for students with diverse backgrounds, learning needs and aspirations, including Indigenous students, gifted and talented students, students from non-

English speaking backgrounds and students with special learning needs

c. teaching subjects out of their curriculum areas, including consideration of

alternative flexible staffing strategies and online learning to maximise the quality of teaching and learning where the availability of teachers in specialised areas is restricted.

⁵ Tytler, R. & Conley, H. (2003). School Innovation in Science: Focusing on leadership in the school change process. Proceedings of the 48th World Assembly of the International Council on Education for Teaching and the annual conference of the Australian Teacher Education Association, Melbourne, July.

⁶ Recommendation 5 of the NSR. It is recommended that education authorities, in collaboration with universities and professional organisations, establish a Rural School Leadership Program. This program would have both an incentive and a developmental dimension, be highly selective and competitive, and target experienced teachers with significant leadership potential.

Components of the program may include:

a. further university education, such as accredited action research (towards a masters or doctoral degree)

b. links to international rural teacher networks, with the possibility of an exchange program

c. fast-tracked entry into regional and state Succession Planning programs

d. provision of personal online coaches/mentors to assist with professional learning pathways and skill acquisition.

innovative approaches to learning, particularly in science. Dr David Russell described a successful innovation operating across states which appeared to have significant relevance to school clusters in many parts of rural Victoria.

These and other inputs placed the participants in a strong position to be able to suggest positive action in respect of student learning opportunities.

There was discussion around:

- making learning programs relevant to the students' lives and interests.

It was noted that this may be more readily achieved in science if the teachers are aware of ways in which science is utilised in rural communities and industries. In a number of innovations rural students are being made aware of careers based on science and technology which are open to them and which contribute to the sustainability of the community and rural industries. There are an increasing number of case studies which can point to ways to proceed.

- using community resources to enhance the learning experiences of students and to introduce them to appropriate role models.

Recent research has highlighted the benefits that have flowed from schools drawing upon the physical and human resources of the community in relation to initiatives in science, mathematics and ICT education in rural communities. For example, Professor Tytler and Dr Russell described examples where science programs had been enriched by working together with scientists working in the area and others where the presence of particular material resources were utilised to develop an innovative program.

- lifting student aspirations with regard to science, mathematics and ICT.

It was noted that this was often linked to community, and in particular parental, attitudes to the value of learning in these subjects. There is a responsibility on the school to be aware of community views and to take appropriate action.

- the importance of innovative programs being rigorous and schools being able to point to evidence of the learning outcomes of the programs.

Whilst it is possible to point to many excellent initiatives taking place there is currently a dearth of evidence of improved outcomes as a result of these innovations. This is not because there aren't improved outcomes but rather that there is a lack of appropriate expertise in, and commitment to, measuring the learning outcomes.

The absence of appropriate evidence makes it difficult to establish the value of these innovations. It is important that greater attention be paid to this issue as the whole focus of concern is to improve the learning opportunities for students in rural settings.

4. Images of rural education

This was seen as a key issue by the Forum participants. They identified the need to identify, research and systematically build on successful rural school initiatives. There are many reasons for this recommendation. It is important in relation to attracting and retaining quality teachers in rural and regional schools. The telling of the success stories will enhance the professional standing of those who live their professional lives in these areas.

Further, it is important that these successes are known in the rural communities themselves for the effect this has on both the understandings and morale of rural communities.

Proposals for the way forward

As is evident from the issues discussed above there are a range of groups who have a part to play in ensuring that learning opportunities in science, mathematics and ICT are maximised for students in rural areas. The following proposals which apply to specific groups are seen as practical and important.

Recommendations for action by Government

That Government develop a policy framework and funding base which will facilitate support for activity by schools systems, schools and universities to take appropriate action, including the actions proposed below, to ensure that schools are more effectively and appropriately able to develop the potential of students in rural and regional centres.

Recommendations for action by school systems

2. That school systems develop a strategic plan for the provision of professional development activity and increase the support for the provision of appropriate professional development for teachers in Victorian rural and regional schools.
3. That school systems put systems and people in place to ensure that worthwhile initiatives operating in Victorian rural and regional schools are communicated widely.
4. That school systems initiate a program to raise awareness in rural and regional communities of the value of education in science, mathematics and ICT both to the career prospects of the students and to the community.

Recommendation for action by schools

5. That rural and regional schools explore ways of collaborating with community members and organisations and using community resources, human and material, in programs in science, mathematics and ICT.

Recommendation for action by universities engaged in teacher education

6. That universities engage in partnership with schools systems to ensure that opportunities for students to engage in teaching experience in rural and regional schools are enhanced.

Recommendations for action by researchers

7. Researchers should undertake research into rural education which takes account of their wider setting and new ways of approaching opportunities.
8. Researchers should collaborate with schools and school systems to investigate effective ways of identifying and measuring the outcomes of innovative programs.

Attachment 1: Forum program

Charting futures for Science, ICT, Mathematics Education in Rural and Regional Victoria

17 & 18 March 2008, Geelong Conference Centre

Aim: To establish productive directions for Science, Mathematics, ICT in rural and regional Victoria. By linking education to broader social issues, the forum aims to develop sharper understandings of key issues in these subject areas, to give direction for future action for schools, school systems, and researchers.

MONDAY 17 MARCH

BUILDING FROM WHAT WE KNOW

- | | |
|--------------|--|
| 10am | Arrival and morning refreshment |
| 10.30am | Welcome Prof. Sally Walker, Deakin University Vice-Chancellor
Introduction Prof. Russell Tytler, Coordinator, SiMERR Victoria |
| 11am | Broad Regional and Rural Issues Chair: Russell Tytler <ul style="list-style-type: none">• Dr. John Halsey – Executive Officer, Rural Education Forum Australia• Fiona McKenzie – Manager in Victorian Department of Planning and Community Development• Grant Rau - Acting Regional Manager, DEECD Barwon South West Region |
| 12pm | Education in Science, Mathematics & ICT in rural areas –what do we know? Chair: Coral Campbell <ul style="list-style-type: none">• Dr Terry Lyons – Associate Director, Centre of Science, ICT and Mathematics Education for Rural and Regional Australia (SiMERR Australia)• Judy Mousley – Associate Professor, Mathematics Education, Deakin University• Rob Higgins – Principal, Leongatha Primary School• Professor Russell Tytler, Adjunct Professor David Symington, Science Education, Deakin University |
| 1pm | Lunch |
| 2pm | Discussion Groups Chair: David Symington
What are the key issues we need to consider and respond to, in relation to science, ICT and mathematics education in rural Victoria? |
| 3pm | Afternoon tea |
| 3.30- 5.00pm | Rural Education and communities Chair: Judy Mousley <ul style="list-style-type: none">• Dr. Anne Wallis – Faculty of Science and Technology , Deakin University |

- Associate Professor Ian Robottom – Environmental Education, Deakin University
- Dr. David Russell, Agricultural Science, University of Tasmania
- Meg Parker, Cluster Educator, Lara School Cluster
- Adrian Waters, Acting Principal Queenscliff Primary School, Cluster Educator, Oberon School Cluster.

7pm **Dinner: Geelong Yacht Club**

TUESDAY 18 MARCH THE WAY FORWARD

9am **Report back** - Prof David Symington will report on group discussions from the first day and provide an overview of the second day.

9.30am **The context for forward planning** Chair: Susie Groves

- Professor John Pegg - Director, The National Centre of Science, Information and Communication Technology, and Mathematics Education for Rural and Regional Australia
- Claire Bolster – Manager in the Office of Policy, Research and Innovation, Victorian DEECD.

10.30am **Morning Tea**

11am **Networking and Communication** Chair: Peter Hubber

- Professor Russell Tytler, Deakin University
- Dr. Kathryn Choules, Sustainability Education, Deakin University
- Dr. Lyn Carter & Dr. Caroline Smith, Australian Catholic University, SiMERR Project Coordinators

12.20pm **Lunch**

1.20pm **Networking and Communication**

- Dr. Gail Chittleborough, Science Education, Deakin University
- Dr. Gerard Calnin, Director, Policy & Research, Association of Independent Schools of Victoria

2.00pm
from the forum Break into groups to respond to a number of propositions that arise presentations.

3pm **Plenary – panel discussion** Chair: David Symington

Lyn Carter, John Halsey, John Pegg, Rob Higgins, Gerard Calnin

3.45pm **Concluding Comments** Professor Russell Tytler

4pm **Finish**

Attachment 2: Outline of the Forum content

Charting futures for Science, ICT, Mathematics Education in Rural and Regional Victoria

Day One (Monday 17 March) Building from what we know

The speakers on this day will provide an overview of the current situation in rural and regional areas. Aspects of rural life, problems and strengths will be identified and will contribute to a growing knowledge of living in rural communities and relationships between schools and their communities.

Session One - Broad Regional and Rural Issues

This introductory session will deal with the broad issues that face communities in rural and regional areas. Aspects related to the working environment, access to services and resources, known disadvantages and how these directly affect the communities will be highlighted by our first speaker, John Halsey. How groups and individuals deal with the identified issues will also be discussed. The second speaker, Fiona McKenzie, will provide an overview of trends in the economic, social, cultural and geographic circumstances of rural Victorian communities. The third speaker, Grant Rau, will focus on the specific issues related to education in rural and regional areas of Victoria.

Session Two - Education in Science, Maths & ICT in rural areas –what do we know?

This second session will feature a range of speakers who will provide insights, through their research, into the major issues facing students, teachers and schools in rural areas, in science, ICT and mathematics. Terry Lyons will provide an overview of an Australia-wide survey that identified a number of significant issues related to the teaching and learning of science, mathematics and ICT in country areas. He will be followed by Judy Mousley whose interview based research detailed teachers' experiences as educators in rural Victoria. Rob Higgins will speak of his first hand experiences as a Principal and also a science project officer, in dealing with some of these issues on a daily basis. Finally, Russell Tytler and David Symington will detail some research on a framework for the professional development (PD) of teachers, giving examples of both supportive structures and issues for PD.

Session Three - Rural schools and their communities

Anne Wallis will introduce this session by speaking about the broader concepts of regional sustainability, relating in particular to how communities support each other. This will be followed by a number of case studies. Ian Robotom will discuss how local councils can work with communities and schools to enhance understanding of sustainable development. David Russell will provide examples where schools and their communities in Victoria, SA and other states have addressed the decline of interest in science in Years 7-12. Adrian Waters and Meg Parker, both previously cluster coordinators, will discuss their own clusters and how schools can relate to each other, and make links with broader groups within the community.

Day Two (Tuesday 18 March) The way forward

Today, the speakers will present some ideas which will contribute to the improvement of educational outcomes for students of science, ICT and mathematics living in rural communities. Discussion will provide a way of viewing the opportunities that exist within country Victoria with examples of new ideas currently being trialed. The day will conclude with a plenary discussion on a number of challenging assertions which will contribute to a set of actions for the future.

Session One - The context for forward planning

John Pegg will discuss the successful SiMERR project and how research projects from around Australia have contributed to a greater understanding of rural and regional issues in science, mathematics and ICT. John will outline the results from a national SiMERR summit conference which give indications of where future research should be targeted and highlight areas of need. Claire Bolster will discuss the Victorian DEECD strategy for mathematics and science as it relates to rural and regional areas of Victoria.

Session Two - Networking and Communication

This presentation will open with Russell Tytler presenting a model of innovation based on research into exemplars from the ASISTM project, using an illustrative case study. This will be followed by Kathryn Choules who, through a local research project, has found a direction forward and is attempting to implement the strategy at Warrnambool. Finally, Lyn Carter and Carolyn Smith will discuss how authentic participatory processes that include all sectors of society can be harnessed to support authentic science learning.

Session Three - Networking and Communication

Following lunch, Gail Chittleborough will speak on a model of PD that has been successfully trialed in a number of independent school clusters in Victoria and the subsequent recommendations to improve it even further. Gerard Calnin will enlarge on the impact of the research and describe a major new infrastructure project in which the AISV is responding to teachers' identified needs for resourcing in country areas.

Plenary – panel discussion chaired by David Symington

David Symington will construct three statements or assertions arising out of the two days' discussions and presentations. These will be presented to the panel for examination and critique. It is intended that a position statement will be generated through this process that the forum can endorse.

John Halsey, John Pegg, Claire Bolster, Rob Higgins, Gerard Calnin, Lyn Carter.

Attachment 3: Forum Participants

NAME	Surname	Organisation	
Chris	Bigum	Deakin University	
Claire	Bolster	DEECD	Manager, Policy Branch Education Policy and Research Division Office of Policy, Research and Innovation
Jennifer	Bowden	Mathematical Association of Victoria	
Leicha	Bragg	Deakin University	Lecturer in Mathematics Education and Information Technology
Brian	Brennan	Catholic Education Office, Sandridge	Operational Leader Senior Education Officer: Secondary Professional Development/Curriculum Innovations
Gerard	Calnin	Association of Independent Schools of Victoria	Director, Policy & Research
Chris	Campbell	La Trobe University	Lecturer in ICT in Education
Coral	Campbell	Deakin University	Associate Head of School International, Community, Partnership and Marketing
Lyn	Carter	ACU Patrick Campus	Trescowthick School of Education
Carolina	Castano	Deakin University PhD student	
Simon	Cavenett	Deakin University School of Engineering and Information Technology	Senior Lecturer
Gail	Chittleborough	Deakin University	Lecturer in Science Education

Kathryn	Choules	Deakin University	
Linda	Darby	Deakin University	PhD student
Ruth	Davis	Deakin University	Tutor
Brian	Doig	Deakin University	Mathematics, Science and Environmental Education
Georgina	Ferencz	Deakin University	Lecturer
Susie	Groves	Deakin University	Head of School (Acting)
John	Halsey	Rural Education Forum Australia	Executive Officer Senior Lecturer, School of Education (Leadership and Management)
Rob	Higgins	Leongatha PS	Principal
Phillipa	Hodder	Deakin University	Researcher
Peter	Hubber	Deakin University	Mathematics, Science and Environmental Education
Robert	Hunting	La Trobe University -- Bendigo	Senior Lecturer in Mathematics Education Faculty of Education
Wendy	Jobling	Deakin University	Lecturer
Melita	Jones	ACU	Faculty of Education Aquinas Campus
Louise	Kilgour	Country Education Project	Project Officer
Travis	Lee	Marine Discovery Centre	
Terry	Lyons	SiMERR	
Fiona	Mckenzie	Department of Planning and Community Development	Manager Regional Analysis Spatial Analysis and Research Branch
Mark	Mclay	St Arnaud PS	Principal
Judy	Mousley	Deakin University	Mathematics Education Strand Coordinator

Ruth	Newton	VIT	Manager Accreditation
Vanda	Onno van den eynde	DECED Gippsland Region	Senior Project Officer Post Compulsory and Pathways
Meg	Parker	Lara School Cluster	Coordinator
John	Pegg	SiMERR	
Vaughan	Prain	La Trobe University Bendigo	Deputy Dean (International and Academic)
Grant	Rau	DEECD	Regional Director (acting)
Ian	Robottom	Deakin University	Associate Dean -- International
David	Russell	University of Tasmania	Senior Research Fellow, Primary Industry Science (Education), School of Agricultural Science, Cradle Coast Campus
Philip	Scambler	Country Education Project	
Caroline	Smith	ACU	Trescowthick School of Education
David	Symington	Deakin University	Adjunct Professor
Barbara	Tadich	DEECD LM	Curriculum Development Coordinator LM Regional Office
Russell	Tytler	Deakin University	Professor of Science Education
Anne	Wallis	Deakin University	Senior Lecturer School of Life and Environmental Sciences
Adrian	Waters	Queenscliff PS	Principal

Attachment 4: Issues and propositions arising from discussion groups on day one

Issue 1: Social, sustainability issues in rural communities

Propositions

1. Ways forward for rural education must be framed within broad trends and strategic directions for rural communities
2. Schools need to be seen as important contributors to addressing social issues in rural communities

Issue 2: Attracting and retaining teachers

Propositions

We need to:

3. Encourage pre service school experience in rural areas
4. Support teachers to understand local rural context and culture
5. Develop and support appropriate professional learning strategies
6. Develop improved ways to facilitate professional networking

Issue 3: Student aspirations in relation to science and mathematics

Propositions

We need to:

7. Raise student participation levels and performance in science and mathematics
8. Change community perceptions of school and tertiary science and mathematics
9. Increase understanding and experience of careers based on science and mathematics

Issue 4: Curriculum and assessment in mathematics and science

Propositions

We need to:

10. Make science and mathematics curricula relevant to students' rural context
11. Use local expertise to enhance the curriculum and provide role models

Issue 5: Images of rural schooling

Proposition

12. We need to promote and build on good news stories about successful rural schooling initiatives