Title of Project:
Delivering optometric graduates ready for practice beyond the cities and ready to service an ageing population
(Ref: DS8-628)

Lead Institution:
The University of New South Wales

Partner Institutions:
Queensland University of Technology; The University of Auckland; The University of Melbourne

Stakeholders:
- Australian and New Zealand National Optometrist Associations
- Optometrist Association State Divisions
- Employer groups: Luxottica, ProVision, Visique, EYEPRO

Project team members:

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1.0 Executive Summary

Background Issues
This ambitious project addresses the issue of whether the student experience during optometry training in Australia and New Zealand influences the decision to practice in rural and remote Australia or to offer the specialty of low vision care.

As in all health fields, providing optometric care to the wider community is facing the well-documented health concerns of an ageing population, and the inequitable spread of practitioners between cities and rural regions (Economics 2004a; Economics 2004b). Healthy and independent ageing is compromised when vision is impaired, such as through cataract, diabetic eye disease, age-related macular degeneration, glaucoma or uncorrected refractive error (the need for appropriate spectacles). Three-quarters of vision impairment can be either prevented or treated (Economics 2004b). However, this leaves one quarter with permanent visual impairment and in need of ‘low vision services’.

Optometrists are the primary practitioners of non-surgical eye care, delivering 85% of Australia’s vision care. They are located largely in the cities and larger rural centres. Yet only 8% of optometrists [by personal communication Optometrists Association Australia (OAA)] have declared an interest in the care of persons with permanent vision impairment.

This Discipline-based Investigation pursued the premise that one contributing factor to increasing the provision of eye care to rural communities and special populations may lie in the student experience during basic optometric clinical training. The investigation has brought together the first Australasian body of optometric educators to work in a scholarly fashion on optometric pedagogy. In addition, it was recognised that a common tangible interface exists between optometric educators and the optometry profession, namely the ‘graduate attributes’ [which, regarding the clinical aspects of optometry, are documented for the profession as the Universal Entry Level Competency Standards for Optometry (Kiely 2009)]. Furthermore, as all optometrists were once students themselves, it seemed natural to invite the profession to share their experiences as both students and practitioners and be stakeholders in the project.

Approach
One academic from each of the three other schools of optometry in Australia and New Zealand was nominated to participate in this ambitious project alongside the instigator of the project at The University of New South Wales. Input was sought from the professional associations and two large employer groups of both countries. Surveys were devised after an extensive literature review across medicine and all fields in allied health. The surveys were created to:

(i) elicit practitioner opinion why they have chosen (or not) to provide care in the rural sector
(ii) elicit practitioner opinion why they have chosen (or not) to provide care to people with low vision
(iii) elicit practitioner opinion regarding providing preceptorship opportunities for students
(iv) elicit student opinions regarding rural preceptorships, a rural career, and their definitions of the terms ‘rural’ and ‘remote’
(v) elicit current practice amongst Australasian optometric educators regarding
directly or indirectly preparing students for careers in rural areas
(vi) benchmark Australasian low vision courses against those in the UK and USA.

In order to interpret the responses, it was necessary to understand the representativeness of each group responding, and hence, considerable demographic/descriptive information was collected and compared with that available through the Optometrists Association of Australia (OAA). This enabled a historical perspective regarding the student experience and better understanding of where the profession is now with respect to the research topics. In addition, a benchmarking of current Australasian curricula against the needs of the profession would be possible.

Input was also sought from Learning & Teaching @ UNSW to better understand the educators’ pedagogical perspective. As an incentive for low vision educators to participate in our survey, each was invited to contribute one ‘favourite’ student activity that shifts student understanding. The activities were compiled into a Compendium of Low Vision Learning Activities after pedagogical annotation. Thus, a resource was created for all low vision educators working in a field that is sadly lacking in good resource material.

Six one-day meetings of the project team were held and thereafter communication was maintained by email and telephone. A statistician was commissioned to analyse closed responses in the surveys, and a Summer Vacation Scholarship was offered to a student of optometry to carry out the analysis of the open responses in the surveys.

Results

Significant numbers of Australian and New Zealand optometrists responded to the rural survey (n=546) and the low vision survey (n=359), while 334 students responded to their rural survey. Fourteen of the potential 29 low vision educators from the UK and the USA participated. Results of the surveys were sent to the listed stakeholders and interested parties in the profession for comment. The open comments of survey respondents, the professional organisations, the educators and the project team members themselves were integrated into a working document for the future to facilitate exploration of current curricula with regards the needs of the community.

The achievements of this project have been considerable. There has been no previous joint working party with participants from all Australian and New Zealand schools of optometry to research and develop optometric pedagogy. Rural practice and low vision practice are two areas of professional optometry that require not only significant personal commitment, but also extension of core skills and adaptation of typical practice implementation patterns. This project team has now reviewed all aspects of the student experience relating to these two areas, including international benchmarking and consultation with previous and current students, educators and professional organisations. Hence, optometric educators in Australia and New Zealand are now able to ensure that the graduate attributes to which their courses are attuned are better matched to the entry-level Clinical Competencies desired by the profession and meet international standards.

Key Recommendations

Development of cross-institutional optometric education working parties. Under the auspices of this ALTC grant, the first ever formalisation of a group of optometric educators from all schools of optometry in Australia and New Zealand has worked exceedingly well and should be maintained in various forms for future cross-institutional pedagogical endeavours in optometry.
Development of cross-domain optometric working parties. The liaisons developed between the optometric educators and the professional organisations and employer/practice groups also worked well and have the potential to make better progress in the future. Efforts should focus on the establishment at an early stage of more formal understandings of the processes to be used and the specific outcomes expected. Inclusion in the actual writing of the project proposal would be desirable. The relative workload and responsibilities of the organisations should emerge and thus be a more consistent driving force towards real change.

Rural optometric education. The very latest studies (Kiely & Chakman 2011) indicate that there are actually sufficient optometrists to supply rural and remote areas across Australia and New Zealand, but new or different models of business practice will be required to service areas of low density population. It is clear from the surveys of both practitioners and students undertaken as part of this project that the schools can do more to motivate and prepare the new graduate for a rural career. In the scheme of things, it is not a matter of radical change.

A range of measures has been proposed in a ‘Future Directions’ analysis for rural practice preparation. These measures cover entry into optometry programs, location and duration of optometric rural education, general promotion of rural life, specific guidance on rural practice, suggestions for specific undergraduate student activities and even postgraduate activities. Specifically the measures include preceptorships in remote as well as regional/rural areas, addressing the financial issues which beset both the student and the rural practitioner hosting the student, coordination of the rural placements of all schools of optometry at national level, the role of professional organisations and employer groups in supporting the schools’ rural enhancement programs, and optimising government support. The efficacy of any measures implemented should be monitored using surveys (similar to the tools used for this study), as the current study outcomes will provide an excellent baseline for future comparison.

Low vision education. From the analysis of practitioner responses and the worldwide benchmarking, low vision curricula in Australia and New Zealand are complete but appear to simply suffer from the insufficient time devoted to teaching this important aspect of optometric care for an ageing population. Thus it is no surprise that practitioners clearly state they lack confidence and feel ill equipped. It is not a matter of omission of the particular components required to deliver low vision care in the community. More creative and efficient opportunities for consolidation of what has been taught is required in order that the intense staff/student ratios necessary for this teaching can be maintained without impacting budgets. Again, the efficacy of these measures should be monitored using surveys similar to the tools used for this study, as they will provide an excellent baseline for future comparison.

Specifically, a range of measures has been proposed in a ‘Future Directions’ low vision teaching analysis which covers actual student activities, the timing and possible creation of under/postgraduate tiers in the low vision experience for students, increasing the number of patients available for student clinics, looking more widely at the possible teacher pool, seeking alternative funding options to run clinics and supply the visual aids. The measures proposed include consideration of the possible current mindset of practitioners that low vision service should run like a charity rather than as a component of a successful optometric business model.
2.0 Summary of Acronyms

ARVO  Association for Research in Vision & Ophthalmology
ASCO  Association of Schools and Colleges of Optometry (in North America and Puerto Rico)
ASGC  Australian Standard Geographical Classification (Australian Bureau of Statistics)
DBI   Discipline-based Investigation
OAA   Optometrists Association of Australia
OCANZ  Optometry Council of Australia and New Zealand
NZAO  New Zealand Association of Optometrists
QUT   Queensland University of Technology
RAHMS (UNSW) Rural Allied Health & Medical Society
RNIB  Royal National Institute of Blind People
RRMA  Rural, Remote and Metropolitan Area (Australian Government Department of Health and Ageing)
SARRAH Services for Australian Rural and Remote Allied Health
UNSW  The University of New South Wales
3.0 Background and Purpose

Introduction

This project addresses the issue of whether the student experience during optometry training in Australia and New Zealand influences the decision to practice in rural and remote Australia or to offer low vision services. By seeking opinion from both previous students (currently also wearing the hat of a practicing optometrist) and current students, as well as educators, an audit has been undertaken of current curricula and what changes or refinements can be made.

Health care in Australia is facing many challenges. High on the list of priorities to be addressed are the well-documented health concerns of an ageing population, and, the inequitable spread of practitioners between cities and rural regions (Ageing 2006). The delivery of quality vision care faces exactly those same challenges (Economics 2004a; Economics 2004b). Healthy and independent ageing is compromised when vision is impaired, such as through cataract, diabetic eye disease, age-related macular degeneration, glaucoma or uncorrected refractive error (the simple need for appropriate spectacles). Three-quarters of vision impairment can be either prevented or treated, and the remaining 25% require low vision aids and/or visual rehabilitation (Economics 2004a; Economics 2004b). The globally accepted definition of permanent vision impairment translates into the fact that the patient cannot read the smaller letters on the bottom half of the regular eye chart despite the best pair of spectacles. The legal definition of blindness encompasses those who cannot even read the top letter of the regular eye chart despite the best pair of spectacles. Added to these problems of quality vision care is the current situation that (i) there are too few eye care practitioners in rural areas (whereas there is an oversupply in urban areas), and (ii) residents in rural areas delay seeking help for health problems and thus have more severe eye problems when they do present.

Optometrists are the primary practitioners of non-surgical eye care in Australia and New Zealand. They are the leaders in raising awareness, detection and prevention of vision problems. Through their training they are well suited to providing refractive correction (the cause of 62% of visual impairment in the over 40s), detecting and referring eye disease, co-managing diabetic eye disease, the treatment of macular degeneration and post-cataract care with ophthalmologists, or appraising and prescribing low vision aids for the permanently visually impaired (some 300,000 or 1.4% of Australians, with comparable proportions in New Zealand). In recent years, optometrists across Australia and New Zealand have additionally gained the right to prescribe over 40 therapeutic drugs for a range of eye diseases. This has vastly increased their capabilities within communities that have little or no access to therapeutics through ophthalmology, such as rural and remote Australia and the more remote areas of New Zealand.

However, according to the OAA and others, optometrists are located largely in the cities and larger rural centres (Kiely, Horton et al. 2007; Saliba 2008; Kiely & Chakman 2011). Servicing eye care needs in rural Australia has been recognised as a major issue, particularly where the population density is low (similar to the situation for general medical practitioners). What is more, extraordinarily few optometrists specialise in the care of persons with permanent vision impairment (low vision) either by providing clinical assessments, rehabilitation services or training in the use of adaptive technologies. Hence, most rural residents live where access to ophthalmic surgeons is invariably poor and may be doubly affected due to no easy access to low vision services. Indigenous communities are located predominantly in
rural areas and are also particularly affected by the maldistribution of practitioners. Poor hygiene and living conditions are well known factors in the manifestation of eye disease and indigenous people are particularly likely to require good access to quality eye care and rehabilitative vision services.

The solution to the problems of vision care delivery is not simply to train more optometrists, as there is a relative oversupply in the cities (Horton, Kiely et al. 2006; Kiely, Horton et al. 2007; Frederikson, Chamberlain et al. 2008; Kiely & Horton 2008a; Kiely, Healy et al. 2008b; Kiely, Horton et al. 2010). The degree of oversupply in the cities is most recently understood to have the capacity to largely address the undersupply in rural and remote areas (Kiely & Chakman 2011). Also, despite the provision of undergraduate training in low vision care for at least the last five decades, there is a dearth of optometric low vision practitioners even in the cities [approximately 8% Australia-wide (OAA by personal communication)], even with the help of limited Medicare rebates for specific low vision services.

It has been suggested that solutions to preventing vision loss and providing eye care in Australia may include increasing training conduits, improving sharing of workloads between eye care professionals (optometrists, eye surgeons and their orthoptists) and importing the skills required (Economics 2004a). However, economic appraisals do not look directly at pedagogical aspects as explanations of practitioner behaviour.

This project sought to pursue the premise that one promising solution to increasing the provision of eye care to rural communities and special populations lies in the student experience during basic optometric clinical training. That is, that there will be a continuation of skills and attitudes or social ethos acquired during appropriate learning activities and assessment tasks that after graduation will lead to an improved attitude and skill base of optometrists to embrace the desired community-based outcomes. If graduates feel uncomfortable either because the perceived task is beyond their university training or set in an environment never confronted before (such as dealing with ethnic minorities, or in an isolated community without power), then they will shy away from those situations.

Hence, this report covers an analysis of the optometric student experience regarding preparation for low vision service and for a career that includes rural/remote service. The analyses pursue the experiences of students themselves, those of educators, and those of today’s practitioners (who were yesterday’s students).

A comment about the time line for the project. This one-year grant was awarded under the Discipline-based Investigation (Scoping and Review) scheme late in 2007. Yet, sign-off did not occur until late 2008 for institutional administrative reasons. Hence, the project team first met in December 2008, the project manager was appointed mid-January 2009 through to end of January 2010. Investigations were carried out during 2009, with analyses and report-writing undertaken well into 2010.

Since the conception of the project early-2007, much has progressed in the area of student preparation for rural practice in optometry in particular that had not been foreshadowed or made public when the research proposal was being written. Some of what emanated changed the handling of proposed cross-disciplinary surveys, other aspects forced different potential interpretations of the results. Nonetheless, the role of the optometric educator in preparing graduates ready for practice beyond the cities and ready for an aging population is now far clearer.
Scoping and Review Priorities

A need was seen to undertake extensive appraisal and benchmarking of optometric curricula and the student experience as regards: (i) preparation for rural and remote career paths, and (ii) preparation for working with the visually impaired. Although these two are apparently quite disparate areas, the unifying theme derives from the fact that the patients from each of these areas fit into a demographic which is outside normal, that is, they can both be regarded in one sense or another as ‘special populations’.

A literature search quickly established that from the point of view of research into educating graduates for entry into a range of rural health services, Australia dominates in all the health care fields that have published on this topic. Yet, despite the fact that considerable data had been gathered regarding optometrist demographics and rural practice (Horton, Kiely et al. 2006; Kiely, Horton et al. 2007; Kiely & Horton 2008a; Kiely, Healy et al. 2008b), almost no information exists regarding the desires or needs of the optometric student and their attitudes to rural practice. Hence, this literature review set the ‘student rural experience’ as one priority for the project.

A search of the pedagogical literature revealed only a handful of articles relating to the provision of low vision care. None addressed benchmarking or the student experience. Thus, the second priority of ‘low vision education’ was set.

Project Conception and Vision

The curricula of the three Australian schools of optometry (at Queensland University of Technology, The University of Melbourne, The University of New South Wales) as of 2009 are intimately connected to that of New Zealand’s only school at The University of Auckland through a common accreditation authority (The Optometry Council of Australia and New Zealand, OCANZ). Additionally graduates from the New Zealand school can practice in Australia (and vice versa) without additional examination. Therefore, this project was conceived to include all four schools as equal stakeholders in this project.

A key premise behind this investigation is that there will be a continuation of skills and attitudes or social ethos acquired during appropriate learning activities and assessment tasks (i.e. the student experience) that will lead to an improved attitude and skill base after graduation and therefore increase the optometrist’s ability to embrace and deliver the desired community-based outcomes. If graduates feel uncomfortable either because the perceived task is beyond their university training or set in an environment never confronted before (such as dealing with ethnic minorities, or in an isolated community without power), then they will shy from even being near those situations.

The concept of the project lies in recognising that our students are studying a professional optometric degree. Hence, the educator must understand both the demands upon an optometrist as well as the demands on the student trying to learn. The educator’s challenge is to convert the naïve university entrant into someone who can think and act like a health care practitioner and optometrist, and be flexible under all situations. Within the university system this goal-post at the end of student-hood is referred to as ‘the graduate attributes’. Within our profession this interface is referred to as the Entry Level Clinical Competencies [which have been well defined for optometry in Australasia (Kiely, Horton et al. 1998; Kiely & Chakman 2003; Kiely 2009)]. For optometry, graduate attributes therefore represent the common ground around which educators design curricula, and from which professional experience
using core skills develops. Hence, both educators and the profession are stakeholders in ensuring that there is an understanding of what constitutes achievable and workable graduate attributes. It would be wise for both parties to be involved when investigating means to achieving the necessary graduate attributes. Community-based learning is commonly utilised, but this demands both educators and the professional community to be in a dialogue.

Optometry is practiced in most countries across the world, though to greatly varying degrees (ophthalmologists act as optometrists in some countries). The UK and North America also have optometrists as the leading primary eye care providers, and so optometric educators in these regions could provide us with valuable optometry-specific benchmarking information, especially in low vision service. Until now, there have been only two inputs into sharing ideas on optometric pedagogy across schools within Australasia: (i) the (typically) annual Heads of Schools meeting (where by anecdotal evidence, talk about optometric pedagogy itself is minimal) and (ii) a bi-annual half to one-day meeting of optometric educators held in conjunction with the Schools of Optometry in Australia and New Zealand Scientific Meeting (where rural optometry and low vision pedagogy had never received attention).

On a different level, it was recognised by the project team that optometry is not that different in many regards to many, if not all, disciplines within medicine and allied health. Therefore, it was envisaged that studies already conducted within these other disciplines might be useful regarding necessary/potential points for investigation, the choice of survey tools, as well as possible future directions for optometric education.

Thus, this project was primarily conceived with the optometry student, the optometric educator, plus the optometrist ('the profession') in mind. Opinions would be sought from each. Our vision extended to world-wide benchmarking through surveying overseas optometric educators, plus, reading of and talking with educators in other health disciplines to look at overlapping problems and whether they have already found solutions.

Aims

Generally there were eight aims for this project. They were to:

1. establish the first formal liaison of optometric educators across Australia and New Zealand to work on future development of optometric education in our region
2. better describe the regionalisation of optometrists than information currently available
3. identify, compare and evaluate existing rural-oriented teaching in the other health disciplines. In particular, to identify how others prepare students regarding rural culture, indigenous culture, and the culture of those with special needs (e.g. low vision)
4. identify, compare and evaluate existing optometry programs with respect to how they prepare students regarding rural culture, indigenous culture, and the culture of those with special needs (e.g. low vision)
5. benchmark the curricula in low vision for Australia and New Zealand against those in the UK and the US
6. identify the discrepancies between the current graduate clinical competencies
and those deemed by the profession to be required with regards rural practice and low vision practice, and if required, create a new inventory of competencies

7. create a Compendium of Low Vision Learning Activities through submissions by interested low vision educators. The creation of this compendium as ‘shareware’ was conceived as a reward for educators sharing with us the detailed descriptions of their low vision curricula that would permit benchmarking

8. create a ‘Future Directions’ document containing the ideas that have come out the student and practitioner surveys plus the talks with professional and employer organisations.

Project Team

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Stakeholders & Interested Parties

**Stakeholders**  
Optometrists Association Australia

New Zealand Association of Optometrists

Luxottica Australia (umbrella company for OPSM, Laubman & Pank, Budget Eyewear).

**Interested Parties**  
ProVision (Australia, consortium of independent optometrists)

EYEPRO (NZ, consortium of independent optometrists)

Visique (NZ, consortium of optometrists)

All educators (world-wide) in the area of low vision

All optometric practitioners in Australia and New Zealand

All allied health educators in Australia interested in preparing graduates for a career in rural areas.
4.0 Approach and Methodology

Establish Project Design Details

As the project was only loosely conceived across the schools of optometry and written largely by the project leader for submission to ALTC, the first one-day meeting of the entire project team had as its aim to revisit the ‘design the project’ and the approaches and tools to be used. By using the grant proposal document itself as scaffolding and brain-storming on a whiteboard, the project leader’s original dominance over the grant proposal was diminished and facilitated the assignment of ownership of the various elements and tasks to the members of the entire team. Timelines and responsibilities were established at this stage. Subsequently a stakeholder analysis spreadsheet was constructed enumerating their respective stakes in this project, the potential impacts, what was expected of each, their perceived attitudes and risks and hence a management strategy for each, plus their responsibilities.

At this stage the concept for a logo was decided upon as it was envisaged that multiple points of contact would be established with various people and organisations and it was desirable that they quickly recognise our identity and bona fides whenever our material crossed their desks.

Literature Review

Help was sought from the Outreach Librarian at the Library, UNSW, to optimise search strategies. Areas that were covered in the searches included: (i) how teachers in any of the health disciplines prepare students for rural practice, (ii) opinion of students from any of the health disciplines with respect to rural placements/preceptorships and future rural careers, (iii) why practitioners in any of the health disciplines practise where they do, (iv) why eye care practitioners choose gerontology/low vision practice, and (v) teaching low vision.

Surveys

Informed by the literature review, two project team meetings were held in February and March 2009 to construct the surveys with further refinement achieved through emails. The aim of the surveys was to collect information about why practitioners have chosen where they practice and what student experiences may have led to that decision, why they have chosen to offer low vision care, or not, and what student experiences may have led to that decision. Furthermore, we wanted to know what current students are thinking.

Six surveys were ultimately designed. Ethics applications to conduct the surveys were made to the Human Research Ethics Advisory Panel at UNSW and thereafter endorsement was obtained from the other participating universities.

The following lists the surveys that were created with an indication of the general construction of the questions and the intended recipients:

1. ‘Graduate Preparation for Rural and Remote Optometry’

   See Appendix 1. An 81-question survey was set up using the online survey tool Zoomerang Pro for all optometrists in Australia and New Zealand. Most questions were of the closed type, with some requiring a response on a 5-point Likert scale, or ticking of multiple options. In addition, there were a number of open questions.
Crucially, a decision was made to reference a practitioner’s location through use of the Rural, Remote and Metropolitan Area (RRMA) classification scheme rather than the Australian Standard Geographical Classification (ASGC) scheme. Thus, questions with prompts for current workplace or area of upbringning used the descriptors contained in the definitions of the RRMA scheme. Both schemes have relative advantages and disadvantages (Brady & Phillips 2004), however it was found that the RRMA classifications scheme was dominantly used in the medical and allied health education literature. It was felt that this would provide best opportunity for cross-disciplinary comparisons now and in the future. It is possible to cross-reference into the ASGC scheme through postcode, which has been done for this report in light of the fact that a recent publication on urban/rural distribution of optometrists (Kiely & Chakman 2011) has used the ASGC scheme.

This rural survey covers not only opinion regarding rural practice, rural life and the influence of prior rural experiences, partners and children, but also whether the practitioner would host students on preceptorship and if so what might be the requirements they would hope to impose.

2. ‘Gerontology and Low Vision Services’
See Appendix 2. A 39-question survey, for all optometrists in Australia and New Zealand. Again, most questions were of the closed type, with some requiring a response on a 5-point Likert scale or ticking of multiple options, plus, there were some open questions.

The survey covers not only opinion regarding decisions to be involved in low vision care, but also the range of visual aids prescribed and referring patterns to visual rehabilitation agencies. It was hoped this would provide information of how many optometrists were using the full extent of their low vision training.

3. ‘Early Perceptions of Rural and Remote Careers in Optometry’
See Appendix 3. A 38-question survey with a mixture of mainly closed questions and some open questions, was again set up using Zoomerang Pro for students of optometry.

4. ‘What do the terms ‘rural’ and ‘remote’ mean to you?’
See Appendix 4. A 4-question Zoomerang Pro survey was sent to all students who offered email addresses for further follow-up as a consequence of completing the ‘Early Perceptions of Rural and Remote Careers in Optometry’ survey in order to clarify what those students believed by the terms ‘rural’ and ‘remote’.

5. ‘Rural and Remote Optometry Educational Approaches’
See Appendix 5. A very short 5-question survey, was sent via email as a MS Word document to all lecturers at the four schools of optometry in Australia and New Zealand. All questions were open in nature.

6. ‘Low Vision Educational Approaches’
See Appendix 6. An 18-question survey for educators specialising in low vision. As the number of recipients was to be relatively small, the survey was created in Word in a table format with further subdivisions to key questions to guide the 18 open responses, the series of questions in the first column had corresponding
blank spaces for a response in the second column. Educators could thus write as much as they liked.

With Zoomerang Pro software it is possible to delineate which persons on the database have not responded to one’s online survey, and use of this facility was planned.

**Input from optometrists.** The aim was to survey the opinions of as many optometrists throughout Australia and New Zealand as possible to understand what led them to their current practice location choice and to what degree their student experiences influenced these. We also want to know what they thought are the pros and cons of rural practice. A separate aim was to canvas practitioner opinion and requirements regarding hosting students in their practice.

To disseminate the rural and low vision surveys to optometrists, use was made of the stakeholder professional associations’ databases. Optometrists across Australia were contacted by email using the database of the Optometrists Association Australia (OAA) with a short explanation of the exercise and a hypertext link to access the survey directly. Of the 3,800 members of the OAA in Australia (over 95% of all practicing optometrists), only 2/3 had given the OAA an email contact. Therefore, 1,160 were mailed hard copies of the survey (at our expense) through a mailing house under the direction of the OAA. Similarly, the same survey was sent to all New Zealand optometrists using the database of the NZ Association of Optometrists (NZAO).

Although it was originally intended to send out reminder emails, this proved not to be possible given the short backup times for data collection that the organisations use. Hence, articles in the optometrists associations’ hard and soft copy newsletters were relied upon as reminders.

**Input from students of optometry.** The aim was to survey the opinions of as many students of optometry as possible. This would provide base-line information for comparison with later evaluations of the trend with modern students in considering whether a rural career has appeal, and to gauge the impact of educational interventions we make.

Administrators from each of the schools of optometry emailed a short explanation regarding the survey accompanied by the hypertext link for direct access to the survey. Students in all years at UNSW and Queensland University of Technology were contacted. However it was deemed that only students in Years 2-4 at The University of Auckland and Years 3-4 at The University of Melbourne would have had significant contact with optometry coursework.

**Input from Australasian educators.** A key aim was to have low vision educators in the fours schools of optometry complete the survey on low vision courses. This was to form the basis of the benchmarking exercise against UK and USA courses.

Another ‘rural’ related aim was to survey current lecturers and clinic educators to determine the extent to which teaching touched on the various aspects of work and life as a rural optometrist. Once this knowledge was accompanied by the experiences and opinions of rural practitioners from survey (i), it would be possible to develop policies to ensure more appropriate student activities in the future.

Administrative staff were asked to send the survey on internal explode email lists to all lecturers and visiting clinical staff.
Input from optometric low vision educators across the world. The aim was to survey as many specialist educators in low vision as possible throughout the United Kingdom and North America. The low vision educators survey was sent via email to the head of school of all schools/departments of optometry in the UK for dissemination to the relevant low vision lecturer, and to all members of the Low Vision Special Interest Group of the Association of Schools and Colleges of Optometry (ASCO) [which covers the 23 institutions teaching optometry in North America and Puerto Rico]. The surveys were sent out after some reconnoitering to understand the organisation of low vision teaching in those countries. Personal contact (BJ) was made with leading low vision educators in the US and UK at the ARVO (Association for Research in Vision & Ophthalmology) Annual Meeting, 2008 in preparation for dissemination of our surveys. This led to representation on our behalf at the RNIB (Royal National Institute of Blind People) Low Vision and Rehabilitation project group meeting, UK, in May 2009, as well as at the ASCO Low Vision Special Interest Group meeting in July 2009.

Small 15cm boomerangs were issued with copies of the surveys in the hope that these boomerangs would lie around the educator’s desk as a reminder that there was something that they had to ‘send back’. Responses were very slow in coming, particularly from US educators, and it was decided that personal contact should be again made at the American Academy of Optometry Annual Meeting in October 2009 through a short presentation (BJ) at the ASCO Low Vision Special Interest Group’s breakfast meeting.

Apart from issuing the Low Vision Educational Approaches survey to current educators, several world-renowned educators now retired from two Australian and one US school of optometry were invited to complete the survey in the vein of ‘Considering likely time allocations for low vision teaching, what would be the philosophy and layout of your ideal course?’ It was hoped that these might provide another measure for benchmarking. A willingness to offer an honorarium for their time was made.

As we were aware that completing the low vision education surveys with information regarding the demography of their courses and their philosophy of teaching would take some time, it was decided that for little extra effort on their part we would be able to create a useful resource for teaching in the future. Hence, each educator was invited to submit their favourite low vision learning activity they give students. From their submissions we created a Compendium of Low Vision Learning Activities from Around the World. With much help from Dr Helen Dalton of Learning & Teaching @UNSW, each submitting educator was sent a short list of questions to answer so that a pedagogical focus could be added to each submission. Further annotation with the applicable Guidelines on Learning that Inform Teaching (http://www.guidelinesonlearning.com/) serves to alert educators to the gamut of considerations when creating learning activities. The additional citation of relevant Optometrists Association Australia Universal (entry-level) and Therapeutic Competency Standards for Optometry 2008 that activity develops (Kiely 2009, http://www.ocanz.org/component/docman/doc_download/12-candidate-guide-appendix-a), gives the graduate attributes professional contextual focus. The submitted activities were organised using a standardised layout and ordered from beginner’s activities through to sophisticated higher order thinking activities suitable for end-of-unit culmination.

Input from Agencies providing services for low vision patients. Contact was made with all such agencies in order to establish whether their name could be listed on our low vision survey as a potential organisation to which optometrists might nominate
that they refer their patients. Out of the process of contacting these organisations came the idea that a general project website be established for this ALTC grant (to be hosted on the School of Optometry and Vision Science, UNSW, website) with click links to all these agencies. All surveys sent out as part of this ALTC investigation also contained a link to this website. The site can be found at http://www.optom.unsw.edu.au/altc/index.html

Analysis of surveys

A statistician with experience in large social surveys was commissioned early in November to analyse the categorical and variable outcomes of the three larger surveys (practitioner rural, practitioner low vision, student rural) using SPSS (now PASW Statistics). A Summer Vacation Scholarship was offered to a high performing student of optometry at UNSW to analyse the open-ended questions using NVivo 8 software.

The project team met twice to deliberate the outcomes of the surveys and ask for further refinement of the analyses by the statistician.

Input from the profession. Abbreviated versions of the statistical analyses of the practitioner survey ‘Graduate Preparation for Rural and Remote Optometry’, student survey Early Perceptions of Rural and Remote Careers in Optometry’ and practitioner survey Gerontology and Low Vision Services’ were disseminated as confidential documents to the three listed stakeholders and the three listed interested employer organisations mentioned earlier. Their input into the Future Directions document was sought in writing with the opportunity for clarification by phone if necessary.

5.0 Outcomes and Impact

The outputs and potential outcomes from this project are extensive. These are summarized below grouped according to the original aims.

1. An Australasian group of optometric educators

This has now been achieved with resounding success. Considering that three of the four project team were appointees, there was nonetheless strong commitment from each to ensure this project would bear fruit. It would be true to say that lasting friendship, trust and professional support between all four on the team is a result of this project.

A sundry benefit has been the ‘incidental chat’ during each of the 6 separate days for project team meetings. The topics covered were very broad ranging but typically centred on matters relating to delivery of teaching and canvassing how the different institutions handled the situations. Some of the ‘incidental’ comments could be regarded as ‘teaching pearls’.

Further cross-institutional collaborative efforts to obtain optometric teaching research funding have now been initiated, which draw in academics additional to the original team.
2. The regionalisation of optometrists

This proved more difficult than originally expected. It had been thought in 2007 that the Optometrists Association Australia would have these data on hand ready to be mapped against the various RRMA, and that responding practitioner locations could be superimposed. However, this was not the case. The OAA has since made efforts to collect these data for all their practitioners (comprising some 95% of the profession, with the remainder being largely retired and overseas practitioners still carrying registration in Australia). These data have now been collated and married with ABS population data for publication (Kiely & Chakman 2011 in press). The data describe the relative numbers of optometrists in their primary/secondary/visiting practices against total population for each of the Australian Standard Geographical Classification Remoteness Areas (RA1, RA2, RA3, RA4, RA5) in every state and territory [the ASGC is another classification system developed by the Australian Bureau of Statistics somewhat similar to RRMA but with greater emphasis on city versus country and remoteness].

It was possible to map the location of practitioners responding to the current rural practitioners survey (mapped using MapInfo software courtesy of Adrian McMinn, UNSW Library – see Figures 1-7) and to tabulate the relative numbers of respondents according to their ASGC classification (Table 1).

![Figure 1. Optometric practitioners working in Queensland who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.](image)
Figure 2. Optometric practitioners working in New South Wales who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones. The white area represents the Australian Capital Territory where 9 practitioners who responded have their practices but are not presented on the map.

Figure 3. Optometric practitioners working in Victoria who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.
Figure 4. Optometric practitioners working in Tasmania who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.

Figure 5. Optometric practitioners working in South Australia who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.
Figure 6. Optometric practitioners working in Western Australia who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.

Figure 7. Optometric practitioners working in Northern Territory who responded to the survey ‘Graduate Preparation for Rural and Remote Optometry’, as marked by red dots. The coloured backgrounds represent the Rural, Remote and Metropolitan area zones.
Table 1. Percentage (%) of Australian optometrists responding in each state to the ‘Graduate Preparation for Rural and Remote Optometry’ survey by ASGC region.

<table>
<thead>
<tr>
<th>RA 1</th>
<th>RA 2</th>
<th>RA 3</th>
<th>RA 4</th>
<th>RA 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major cities</td>
<td>Inner Regional</td>
<td>Outer Regional</td>
<td>Remote</td>
<td>Very Remote</td>
</tr>
<tr>
<td>NSW</td>
<td>67</td>
<td>28</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Victoria</td>
<td>62</td>
<td>30</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Queensland</td>
<td>56</td>
<td>33</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>South Australia</td>
<td>72</td>
<td>8</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Western Australia</td>
<td>70</td>
<td>13</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Tasmania</td>
<td>0</td>
<td>50</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Using the known number of optometrists who work in each of the Australian Standard Geographical Classification categories from 2009 (Kiely & Chakman 2011) we can deduce that from 9% to 16% of each state’s optometrists responded to our survey ‘Graduate Preparation for Rural and Remote Optometry’. Compared with the Australia Standard Geographical Classification data available for optometric practitioners in 2009 (Kiely & Chakman 2011), the number of respondents in all major cities and inner regional South Australia and Tasmania was significantly under-represented in our survey. Yet, in almost all rural areas across each of the states there was over-representation. This has implications for interpretation of the surveys regarding the representativeness of movements between the general urban/rural populations of Australian optometrists.

A similar analysis for practitioners in New Zealand is currently not feasible.

3. Existing programs in other health disciplines

It quickly became clear as we compiled a list of schools of rural medicine and allied health educational institutions that a number of (now) well-established teaching facilities exist, applying sophisticated models of teaching delivery with a view to enhancing student exposure to rural practice.

Indeed, since this grant proposal was written, plans were released for a new School of Optometry at Flinders University that would deliver an emphasis on the rural experience for its students. This school saw its first student intake in February 2010. Yet another proposal currently seeking accreditation with OCANZ is for a rural Victorian school of optometry at Deakin University based near Geelong.

A face-to-face interview with the Executive Officer at the Rural School of Medicine UNSW, plus phone interviews with School of Rural Health, The University of Melbourne, and Deakin School of Medicine, yielded much useful information for deliberating future directions in optometric education in Australia and New Zealand. Speculation as to the degree of effectiveness of a range of their learning interventions was not forthcoming, as coordinated cross-institutional research is underway to determine the relative effectiveness.

*The literature pertaining to preparation for rural practice* therefore provided the most
information to drive what should be asked of practitioners, students, and educators. An extraordinary number of issues were revealed during the rural literature review. These issues could clearly be seen to touch the educator driving the rural experience, the students themselves, plus the staff hosting the student in the rural practice. Yet, the rural patients receiving care from the student, plus the community in general, may also be affected by the existence of rural preceptorships. Below is a comprehensive but not exhaustive list of useful publications from the education literature before early 2009.

1. **Considerations for the institutional educator:**

Program committees decided the general shape of courses and ensure articulation between courses. Individual course organisers ultimately set the detail of learning activities and assessments (where applicable). During both program design and course design, both sets of educators must be cognisant of the various inputs into the rural educational experience and their potential and relative impact (positive or negative). The following aspects have been cited as influences on the learner's experiences:

- the institutional mission (Rabinowitz & Paynter 2000)?
- the capacity to conduct rural preceptorships given the numbers of students (Liaw, McGrath et al. 2005)?
- the sustainability over the years (Liaw, McGrath et al. 2005; Lyle, Morris et al. 2006)?
- the sufficiency of resources and/or funding to effect programs (Hickner 1991; Newbury, Shannon et al. 2005; Ranmuthugala, Humphreys et al. 2007)?
- management of the expectations of government, etc (Liaw, McGrath et al. 2005)
- management of the links and engaging the commitment (Liaw, McGrath et al. 2005) or partnership (Smith, Emmett et al. 2008) between preceptors, boards, professional associations (Marriott, Taylor et al. 2005)
- whether a rural site coordinator required (Denz-Penhey, Murdoch et al. 2004)?
- the existence or not of academic-clinical appointments for rural teaching staff (Causby 2003)
- preparation of the community for the coming of students (Sen Gupta, Muray et al. 2008), and access to the private sector during rural rotations (Newbury, Shannon et al. 2005; Murray & Wronski 2006)
- the creation a learning community in the field (Barnett, Cross et al. 2008)
- allowance for staff crises in hospitals when students are on rural rotation (Vickery & Tarala 2003)
- use of non-medical clinicians for training students (Murray & Wronski 2006)
- the need to 'structure' the 'unstructured' rural environment (Denz-Penhey, Murdoch et al. 2004; Page & Birden 2008)
- the staff energy required (Newbury, Shannon et al. 2005)
- the timing of a rural preceptorship in the learning program (Peach & Barnett 2000) and duration of the preceptorship (Schoo, McNamara et al. 2008), avoidance of timetable clashes (Gum 2007; Sen Gupta, Muray et al. 2008)
- the fraction of curriculum time (Hickner 1991) or curriculum content (Laurence, Newbury et al. 2002) to be devoted to rural aspects of health
care, particularly how much should be deemed rural specific (Orpin & Gabriel 2005) versus core content (Walters & Worley 2006; Sen Gupta, Muray et al. 2008)

- the potential for a rural preceptorship to turn students off a rural career (Orpin & Gabriel 2005)?
- preparation of the student through cultural orientation programs (Pastorino 2000; Morgan 2006; Sen Gupta, Muray et al. 2008), specific indigenous orientation (Sze-Mun Lee, Sullivan et al. 2006; Sen Gupta, Muray et al. 2008) and indigenous health knowledge (Hardy, Miller et al. 1998)
- effective use of rural preparation generics (Krynowsky 2000)
- creation of novel activities such as a ‘Rural Week’ for 1st years (Newbury, Shannon et al. 2005)
- possible language barriers (Morgan 2006)
- generating student confidence in a rural setting (Hickner 1991), or, taking students outside their comfort zone (Nichols, Worley et al. 2004)
- whether the experience is with a patient-centred or student-centred focus (Smith, Emmett et al. 2008)?
- whether the rural placement is an assessment-driven curriculum and is rural-competencies inclusive? (Bell, MacCarrick et al. 2005)?
- provision of contact with students during rural placements via online chat for peer support, to gain advice, to talk to lecturer, plus overcoming difficulties with access (McLeod & Barbara 2005)
- supply of manuals (Kefalas, Usherwood et al. 2005) and maintaining currency of information packages (Marriott, Taylor et al. 2005) (both from point of view of students and the preceptors)
- development of protocols for behaviour of students etc (Newbury, Shannon et al. 2005)
- use of cadetships (Dunbabin, McEwin et al. 2006), fellowships (Nelson, Pomerantz et al. 2007), or scholarships (Mak & Plant 2001)
- use of student quotas to attract rural-background/indigenous students (McDonnel Smedts & Lowe 2008), use of targeted students (Rabinowitz & Paynter 2000; Ranmuthugala, Humphreys et al. 2007).

2. Considerations relating to the educator in the field:

It is all very well for course designers to put together a well-planned set of learning activities for the student, but it may be quite another thing for the educator in the field to execute this. The literature reveals that the following factors may impact the success of courses involving rural placements:

- use of rural academic-clinical positions (Causby 2003; Jones, Towie et al. 2004) or mentors (Krynowsky 2000)
- the existence of a critical mass of preceptors (Charleston & Goodwin 2004) and the use of a rural site coordinator (Denz-Penhey, Murdoch et al. 2004)
- the educational preparation of rural preceptor for the role as preceptor (Charleston & Goodwin 2004; Maley, Denz-Penhey et al. 2006), say, through the use of articulated preparatory programs such as POPPIES: Preceptor Onsite Prep Prog for Information Education and Support (Baker, Dalton et al. 2003), or online preparation (Marriott, Taylor et al. 2005; Dalton, Bull et al.
• conveyance of curriculum content to the rural preceptor (essential, desired, additional) (Denz-Penhey, Murdoch et al. 2004)

• the type of approach to training students (Kefalas, Usherwood et al. 2005)

• recognition of the positives of being a preceptor: personal benefits (Shannon, Walker-Jeffreys et al. 2006) and increased job satisfaction (Taylor, Best et al. 2007), service benefits (Richards, Symon et al. 2002; Walters & Worley 2006), opportunity to promote rural health career options (Shannon, Walker-Jeffreys et al. 2006), enhanced desire to keep up with latest (Shannon, Walker-Jeffreys et al. 2006; Walters & Worley 2006) and revise basics (Shannon, Walker-Jeffreys et al. 2006)

• recognition of the negatives of being a preceptor: having the confidence to teach (Sheehan & Jansen 2006), the time required and loss of productivity (Walters, Worley et al. 2005; Shannon, Walker-Jeffreys et al. 2006; Walters & Worley 2006), possible limitations to communicating with the parent institution {Shannon, 2006 #47}

• knowledge of reporting formats (Kefalas, Usherwood et al. 2005) and review of the impact upon the student (Walters, Worley et al. 2005)

• 'placement fatigue' (Liaw, McGrath et al. 2005) and the impact of student 'burden' (Sen Gupta, Muray et al. 2008)

• recognition and remuneration for the rural preceptor (Walters, Worley et al. 2005).

3. Considerations relating to professionalism and the rural work environment

Those in the workforce at the rural location plus the work conditions may indirectly significantly impact student learning. Furthermore, it is well documented that the patient base has different characteristics in rural areas. Thus, factors that should be considered when designing a course include:

• facility size and staffing (Armitage & McMaster 2000) and lack of availability of locums (Eley, Young et al. 2007a; Francis, Clarke et al. 2008)

• work conditions (Orpin & Gabriel 2005) and the environment (Armitage & McMaster 2000), plus the longer hours (Eley, Young et al. 2007a)

• the nature of the clients (Armitage & McMaster 2000) with potential for overlapping patient-practitioner relationships and caregiver isolation and stress (Nelson, Pomerantz et al. 2007)

• the increased variety of work due to the nature of the clients (Orpin & Gabriel 2005)

• the economic and health status of rural residents (Nelson, Pomerantz et al. 2007)

• the potential for professional interaction (Armitage & McMaster 2000) and opportunities for continuing education (Eley, Young et al. 2007a)

• the higher risks with procedural work due to the nature of the clients (Eley, Young et al. 2007a) (Eley et al 2007) and extended skills or emergency skills required (Morgan 2006)

• the frequent lack of professional support at systems level (Eley, Young et al. 2007a)

• difficulty of access to clinical trials (Francis, Clarke et al. 2008).
4. Considerations relating to the views of the student being sent on rural placement

In the land of marketing it is customary in recent times for the voice of the
customer to be sought. In the case of ‘education’, this is the voice of the student.
There has been much research on student opinion regarding exposure to rural
communities during health care training. Students raise the significance of the
following issues:

• student perceptions relating to
  - willingness to go (Azer, Simmons et al. 2001; Orpin & Gabriel 2005; Lea,
    Cruickshank et al. 2008)
  - expected benefits (Azer, Simmons et al. 2001; Jensen & DeWitt 2002;
    Francis, Clarke et al. 2008), broader and better learning opportunities(Denz-Penhey, Murdoch et al. 2009)
  - whether there will be engagement in meaningful work (Mak & Plant 2001)
  - potential solely clinical focus for the rural site (Critchley, DeWitt et al.
    2007)
  - potential change of status during preceptorship (Nichols, Worley et al.
    2004), even a sense of subordination (Dalton, Spencer et al. 2003)
  - poorer academic support (Gum 2007; Jones, DeWitt et al. 2007) and a
    poorer quality of teaching (Jones, DeWitt et al. 2007)
  - change of pace in rural areas (Nichols, Worley et al. 2004)
  - previous adverse media (Azer, Simmons et al. 2001)
  - interfering factors such as spouse/partner (Azer, Simmons et al. 2001;
    Jones, DeWitt et al. 2007), children's needs (Orpin & Gabriel 2005),
    frequency of travel (Azer, Simmons et al. 2001)
  - inherent negative career attributes for rural practitioners such as poor
    locum support or less access to continuing education (Jensen & DeWitt
    2002; Francis, Clarke et al. 2008)
  - transport issues (Liaw, McGrath et al. 2005; Jones, DeWitt et al. 2007)
  - availability of travel stipends (MacRae, van Diepen et al. 2007; van
    Diepen, MacRae et al. 2007)

• anxiety during placement (Denz-Penhey, Murdoch et al. 2004)

• feelings of isolation (Vickery & Tarala 2003; Morgan 2006)

• influence of group dynamics during rural placement (Denz-Penhey, Murdoch
  et al. 2004) and the disconnect from city colleagues (Maley, Denz-Penhey et
  al. 2006)

• the duration of the placement (Denz-Penhey, Murdoch et al. 2004; Denz-
  Penhey, Shannon et al. 2005)

• the impact of structure (Denz-Penhey, Murdoch et al. 2004) and compaction
  of lectures (Gum 2007)

• the potential for burnout (Denz-Penhey, Murdoch et al. 2004)

• the lack of financial incentives (Jones, DeWitt et al. 2007)

• the cost and time associated with finding accommodation whilst frequently
  having to maintain city accommodation (Liaw, McGrath et al. 2005; Murray &
  Wronski 2006; MacRae, van Diepen et al. 2007; van Diepen, MacRae et al.
  2007)

• possibility of interprofessional opportunities (MacRae, van Diepen et al.
  2007; van Diepen, MacRae et al. 2007)
• the ability to do meaningful work in the community (Mak & Plant 2001)
• the allied health team (Gum 2007; Dalton, Routley et al. 2008; Lea, Cruickshank et al. 2008).

5. Influence of student placements on practice location upon/after graduation from other disciplines?
Exposing students who have only ever experienced an urban lifestyle to an enforced rural preceptorship could go either of two ways: make them happier to entertain the idea of a rural career, or, cause them to reject the notion of a rural career. In the area of health care there has been a wide canvassing of the change in attitude as a consequence of exposure to rural healthcare delivery during training. Generally there is a consensus that the greater the rural exposure, the greater the likelihood that students will take up a rural placement after graduation. Also, there is consistent evidence within these studies that those who were raised in a rural environment will be even more likely to adopt a rural career. The literature is enumerated here according to discipline:
• nursing: (Finlayson 2002; Dalton 2004; Playford, Larson et al. 2006; Schofield, Fuller et al. 2007; Francis, Clarke et al. 2008; Lea, Cruickshank et al. 2008; Schoo, McNamara et al. 2008)
• dentistry: (Bazen, Kruger et al. 2007)
• other allied health (Crowe & Mackenzie 2002; Playford, Larson et al. 2006; Schofield, Fuller et al. 2007; Dalton, Routley et al. 2008; Schoo, McNamara et al. 2008).

6. Articles containing questionnaires/proformas
The most common means of obtaining student or practitioner opinion is to construct a set of questions and seek a written response. The particular foci for eliciting an understanding are covered by the following aspects:
• student attitude to rural preceptorship (Azer, Simmons et al. 2001; Bruening & Maddern 2003; Orpin & Gabriel 2005; Veitch, Underhill et al. 2006; Playford, Larson et al. 2006; Gum 2007; Jones, DeWitt et al. 2007; Wilson & Cleland 2008; Spencer, Cardin et al. 2008 )
• student attitudes to rural work/living (Crowe & Mackenzie 2002; Nichols, Worley et al. 2004; Adams, Dollard et al. 2005; McNair, Stone et al. 2005; Orpin & Gabriel 2005; Dunbabin, McEwin et al. 2006; Eley & Baker 2006; Critchley, DeWitt et al. 2007; Gum 2007; Eley, Young et al. 2007a; Eley & Baker 2007b)
• students' upbringing and attitude to rural work (Wilkinson, Beilby et al. 2000; Azer, Simmons et al. 2001; Ward, Kamien et al. 2004; Orpin & Gabriel 2005; Dunbabin, McEwin et al. 2006; Eley & Baker 2006; Veitch, Underhill et al. 2006; Gum 2007; Jones, DeWitt et al. 2007; Dalton, Routley et al. 2008; Francis, Clarke et al. 2008)

• indigenous knowledge (Hardy, Miller et al. 1998)


• heads of schools/staff (Laurence, Newbury et al. 2002; Newbury, Shannon et al. 2005)

• rural practitioners (Keane, Smith et al. 2008).

7. Articles based on focus groups/interviews considering future rural practice
Alternate to written responses, several studies have been conducted using focus groups and direct interviews (Crowe & Mackenzie 2002; Denz-Penhey & Murdoch 2007; Eley, Young et al. 2007a).

8. Articles organised by health discipline:
To assist the reader, articles relating to the student rural experience within particular domains of healthcare are presented here according to discipline:

• allied health combined: (Shannon, Walker-Jeffreys et al. 2006; Playford, Larson et al. 2006; Schofield, Fuller et al. 2007; Dalton, Routley et al. 2008)

• dentistry: (Richards, Symon et al. 2002; Bazen, Kruger et al. 2007; Abuzar, Burrow et al. 2009)


• occupational therapy: (Russell, Clark et al. 1996; Crowe & Mackenzie 2002; Whiteford & St.-Clair 2002; McLeod & Barbara 2005; MacRae, van Diepen et al. 2007)

• pharmacy: (Marriott, Taylor et al. 2005; McNair, Stone et al. 2005; Orpin & Gabriel 2005; Taylor, Best et al. 2006; Dalton, Bull et al. 2007; Taylor, Best et al. 2007; Dalton, Routley et al. 2008)

• physiotherapy: (McNair, Stone et al. 2005; Sze-Mun Lee, Sullivan et al. 2006; MacRae, van Diepen et al. 2007)

• podiatry: (Causby 2003)

• radiography: (MacRae, van Diepen et al. 2007)

• social workers (Krynowsky 2000)
• speech pathology: (McLeod & Barbara 2005; Trembath, Wales et al. 2005).

4. Existing optometric programs in Australia and NZ

Outcomes from the optometric practitioner survey regarding preparation for rural practice. Some 10% of optometrists practicing in Australia (n=390) responded to the ‘Graduate Preparation for Rural and Remote Optometry’ survey. The remainder of the total 546 responses came from New Zealand. Nearly two-thirds of the Australian practitioners came from RRMA1 and RRMA2 (capital cities and other metropolitan areas) which is lower than the known proportion of optometrists in these areas (Kiely & Chakman 2011). The number of respondents was somewhat disappointing. However, at the time of reminder newsletters (OAA hardcopy and softcopy) another educational institution had just sent out a large survey canvassing opinions and attitudes to rural optometric practice on behalf of a newly organised Rural Optometrists Group. We believe that practitioners could well have been confused and only responded to one or the other.

Respondents ranged in age from early twenties to over 65 years. Slightly more than half were males. Nearly one-quarter had lived in a rural or remote area prior to studying optometry, usually including being schooled in a rural area. One in five had undertaken a preceptorship in a rural area during their studies (median length of 10 days). Interestingly, slightly more than half had practiced optometry in a rural or remote area at some point in their career, with approximately one-third currently located in a rural practice (without gender bias). Although practitioners reported overwhelmingly that their rural preceptorships had been a positive experience, there was no association between having undertaken a rural preceptorship and currently working in a rural area. This result was surprising and has implications for programming preceptorships. As might be expected, there was a positive influence from partners whose occupation could also be carried out in a rural area and whose lifestyle preference was rural.

This is the first study of its kind in optometry, and 75% of respondents completed their studies at university more than 10 years ago. Thus, through time, memories might have been distorted compared with the reality of original intentions, and one must have some reservations about the findings regarding intentions to practice in rural areas. On face value, over two-thirds who had considered a career in rural areas during their studies did practice in a rural or remote location at some time. Furthermore, somewhat less than half who had not considered working in a rural area during their studies did indeed practice in a rural or remote location at some time or another. Importantly one half of optometrists responding who currently have only urban experience, are still open to working in a rural area in the future, subject to the wishes of their partner. The fact that more than one-third of respondents graduated at least 20 years ago makes undertaking a survey of current students all the more important to provide baseline data for comparison with later studies that investigate where their lives have really taken them as against where they fancy they might go.

Only slightly more than half of respondents believe that their undergraduate studies had prepared them adequately for practice in rural or remote areas. This is extremely important for educators in optometry to note. Notable for each of the schools of optometry in Australia and New Zealand, is the fact that no significant institutional differences were found amongst respondents. Hence, all schools must equally lift their ‘game’.

Given the relatively high numbers of responding practitioners who have participated in rural practice at some time or another (the relative bias in rural respondents not
withstanding) the above results auger well for the supply of optometrists into rural areas at current demand - particularly considering the number of urban practitioners who have not yet ruled out possibly taking up rural positions, optometric professional organisations and employers should take heart and seek strategies to capitalise on this potential pool.

The role of the schools in preparing students for rural and remote practice therefore is to achieve this with the greatest efficiency both regarding time and costs, and through activities designed to have the greatest impact. From the literature it is clear that the duration of the preceptorship is of great significance. However, issues not directly related to teaching per se have also been deemed important (e.g. opportunities for socialisation in the local community) and should not be discounted as being outside the realm of the educator to help facilitate.

Expecting that rural preceptorships would be a necessary part of the curriculum, all practitioners were questioned regarding their attitudes to hosting students. Over two-thirds of responding practitioners indicated a willingness to host students on preceptorship, with significantly more from rural areas being willing to so do. An overwhelming number are willing to undertake teacher training, with a preference for online delivery. One-quarter are willing to undertake regional face-to-face training. This indicates potential for the development of an enormous learning community to support students as they come to understand the realities and satisfaction of rural or remote practice.

The full details of this survey into optometrists’ opinions regarding preparation of undergraduates for entry into rural practice will form the basis of a publication to be submitted to a journal focused on rural and remote education.

Outcomes from the optometry student survey regarding preparation for rural practice. Of the 334 undergraduate optometry students that participated in the main survey on rural background and rural preceptorships, over 90% were local students and one-third live away from home. Only 15% had lived in a rural area prior to taking up studies, significantly fewer than the number of responding optometrists in the practitioner survey (perhaps a reflection of the bias towards relatively more rural practitioners responding to that survey?). Somewhat under a half of the students stated that they intended to commence employment outside a major metropolitan city upon graduation, of whom, one-quarter were only three months away from graduating. Their intentions regarding rural employment were not different regardless of gender or ethnicity. As was found with current practitioners, students who do not believe they will initially practice in a rural area have not necessarily discounted going into rural practice at some later time.

Only 50 students had undertaken a rural preceptorship at the time of the survey, representing just over half of those who were offered preceptorship opportunities. At the time of the survey, Melbourne students had only been required to complete a mandatory rural preceptorship (of at least 3 days) for the last 3 years, and Sydney students had only been encouraged to seek rural preceptorship for the last two years, whilst students in Brisbane and Auckland were not influenced either way. As might be expected, the majority of those who had undertaken a rural preceptorship were studying at The University of Melbourne. Over half the students taking rural preceptorships stated that the experience had influenced their opinion regarding rural practice, overwhelmingly in a positive way.

It was found that intention to seek rural employment was not related to having previously completed a rural preceptorship, and was independent of training institution. However, there was a trend for those intending to work in a rural location
to have undertaken a longer preceptorship. Importantly, these findings must be viewed with regard to the relatively short period Melbourne and Sydney students have been expected to undertake training in rural areas, and the fact that the mean duration of rural preceptorships was only 12 days.

As with other studies in medicine and other allied health disciplines, students reported an increased clinical experience (particularly in relation to the amount of pathology encountered) and scope of practice as the key benefits of a rural preceptorship. Limited hands-on experience, lack of entertainment and limited recreation facilities were cited as key drawbacks. The higher cost of rural preceptorships was cited as significantly influencing the decision regarding where to go on preceptorships. Overall, three-quarters of students believe that rural preceptorships should be compulsory, although students approaching the final stages of study are more likely to agree with compulsory rural placements.

Based upon the fact that an unexpectedly high number of students were indicating a willingness to practice in rural areas after graduation, it was decided to send a second survey to students to clarify what they understood by the terms ‘rural’ and ‘remote’. The apparently high numbers of students willing to go to rural practices after graduation could simply have been because to them ‘rural’ was not actually very far away. Although there are significant differences between some responses from students attending some of the schools, it is interesting to note that the furthest mean interpretation of ‘rural’ is only some 200km in terms of distance. To students the connotation of ‘remote’ generally meant ‘isolation’ or ‘lack of services’ to students.

The full details of this survey into optometry students’ opinions regarding preparation for entry into rural practice will form the basis of a publication to be submitted to a journal focussed on rural and remote education.

Outcomes from Australasian educators survey regarding preparing students for rural practice. From the point of view of understanding the need for cultural appreciation education, having a member from New Zealand on our project team helped us quickly realise where Australia stands on this. There are significant differences between the integration of the indigenous peoples in Australia versus in New Zealand, and New Zealand’s understanding of the varying cultural moirés appears to be significantly better and already better translated into health care models. A rigorous review of rural and special population teaching preparation in other disciplines was relegated to a lower priority for this project than originally intended. This is not to say that we believe that we handle indigenous acculturation particularly well with our Australian optometry students. It was simply a reality of what we believed we could achieve with the resources in the given time, and that could be applied to all schools of optometry party to this grant.

Each of the Australian schools conduct a limited number of clinics for undergraduate students that involve the Aboriginal Health Service or other similar services, and one could thus say that our undergraduate students do interact with aborigines in preparation for rural practice. Thus, our survey focused on the coursework preparation for such encounters. Only responses from UNSW and The University of Auckland educators are available, and only those from UNSW are relevant to the point in question regarding acculturation relevant to rural practice in Australia. Of the 8 UNSW respondents, three have experience as an optometrist in a rural setting. Only three (two with no rural experience) deliberately incorporate aspects of rural practice into their discussions with students. The frequency with which staff mention rural scenarios was cited as ‘as often as possible’ by only two, ‘every now and then’ by four, ‘very rarely’ by one, and was not declared by the remaining person. There is no reason to believe from the other project team members that the situation is
particularly different at the other schools of optometry in Australia, although it appears that QUT is closer to having a unit on aboriginal acculturation. Those staff at UNSW who do mention using rural scenarios when teaching, report they do so when on Clinic supervision, and in Ocular Disease or Ocular Therapeutics courses. They indicate that they do not confine their discussion simply to factual comments about disease frequency etc, rather, also mention social and lifestyle aspects, and give tips for practical integration of patient management challenges.

From the literature review, the background and resources provided by the Services for Australian Rural and Remote Allied Health (SARRAH) web site plus our own personal feelings, there is much for Australian optometric educators to come to understand about preparing graduate optometrists for the realities of the rural and remote Australia.

The current grant was allocated within the DBI scoping and review scheme. A further investigation of the range of particular pedagogical strategies to prepare the optometry student for interacting with rural patients is warranted, and when combined with the outcomes from the practitioner's survey indicting our current teaching practice, should be rated as a priority.

Outcomes from the optometric practitioner survey regarding preparation for low vision practice. Three hundred and fifty-nine practitioners completed the survey into gerontology and low vision care. As with the rural survey, the age spread was relatively evenly spread across the 25-55 year age range with a few older practitioners. A little over half were self-employed, and three-quarters came from city and other metropolitan locations.

The survey first enquired about involvement in the care of older patients in general (as this sector of the community is the most likely to be affected by low vision, and from a medical point of view is a specialty in itself), and the degree to which practitioners alter their scheduling, physical practice, or cost structure. Over 70% instigate longer consulting times when the patient is known to be elderly. Self-employed or older practitioners are more likely to offer physical access assistance or special pricing structures. However, half of practitioners who gave a reason for not providing gerontology services, stated that longer consultation times were not appropriate for their mode of practice and one quarter of the practitioners who provided reasons, believed that the cost of providing special services is prohibitive. It is pleasing to see that one-third of all 359 practitioners undertake domiciliary visits. Interestingly, almost one in five practitioners, regardless of age, claim they lack the confidence to care for older patients with particular needs.

The main part of the survey enquired about prescribing and the provision of low vision services and referral patterns to outside low vision agencies such as Guide Dogs or Vision Australia. A little over 10% of respondents stated that they provided 'all care' for at least 80% of the low vision patients. One-third stated that they managed 'between 20 to 80%' and the remaining half of practitioners, particularly the younger optometrists, manage 'almost none' of their low vision patients themselves. Interestingly, there was no association between the degree of provision of services and educating institution. This is most interesting in that a significant number of respondents (n=54) practiced in New Zealand, where postgraduate interventions have been undertaken to increase the competencies of practitioners in the area of low vision and ensure easy access to the additional visual aids required in order to evaluate low vision. Mitigating this may be the fact that the up-skilling took place only one year before the time of the survey, and practitioners were perhaps still growing into their new role?
Amongst reasons given why practitioners do not undertake low vision evaluations themselves but rather refer, was that one in eight practitioners indicated a lack of confidence in this area. For some practitioners one explanation for the poor development of such skills could be that the catchment for their practice lacks the elderly demographic (in which most low vision cases can be found). Another point of relevance here is that low vision does not strike only the elderly, at times it affects children and teenagers, which in itself provides emotional challenges for the practitioner – that they might handle by referring these patients out. The nett result is that to understand the numbers of practitioners troubled by the nature of the patient, then, the one in five practitioners who lack confidence seeing elderly patients is partially additive to the one in eight lacking confidence seeing low vision patients. Given that most of the responding practitioners have at least a decade of experience, the situation is a challenging one for educators, and must now be addressed at both undergraduate and postgraduate levels.

The range and prevalence of visual aids cited as being prescribed reveals a clear demarcation between three types of practitioner: those stretching normal prescribing protocols to achieve higher magnification through spectacle lenses or magnifiers (over two-thirds of practitioners), those additionally prescribing telescopic devices (one-quarter), and those seeking solutions utilising electronic and computerised devices (a handful). How and when to prescribe all types of low vision assistive devices is taught as part of the undergraduate low vision courses at all schools of optometry in Australia and New Zealand. Therefore, these prescribing patterns probably marry with the factors previously mentioned, namely, the extra time required to see these patients, the cost to keep a full range of visual aids, and the confidence to address low vision issues per se as a result of too few patient encounters at university.

The needs of the patient do not go away because a practitioner is not prepared to service their peculiar needs. Hence, the survey sought information regarding the agencies to which practitioners refer patients for services that they do not wish to provide themselves. More than half refer to an eye specialist (ophthalmologist, who then presumably takes over secondary and tertiary/rehabilitative levels of care, or refers yet again), and even more refer to Vision Australia (formed following the merger of the Royal Blind Society (RBS), the Royal Victorian Institute for the Blind (RVIB), Vision Australia Foundation (VAF), and the National Information Library Services in July 2004).

Only one-quarter of practitioners responded to the question regarding whether their undergraduate education had influenced decisions to provide special services, or not, for elderly people. Overwhelmingly the responses were positive. However, this leaves three-quarters believing they were unaffected. An analysis of the age of practitioners responding in the affirmative reveals that the younger optometrists recall being influenced in this respect. Is this then an indicator that surveys should not rely on the long-term memories of graduates when asking questions relating to the student experience?

Nearly one-third of practitioners responded to the question regarding whether their undergraduate education had influenced decisions to provide special services, or not, for people with low vision. Of this one-third, only four-fifths believe their undergraduate training influenced their decision in a positive sense. This means that 20% of the one-third responding were put off by their undergraduate experiences. Clearly, this is a message for educators that warrants further investigation. A side remark to this is the experience of the project director who found in preparing for this grant proposal that many low vision specialist optometrists presenting at
conferences prefaced their talks with impassioned thanks to those who had motivated them as undergraduates to enter the area of low vision practice. It thus appears clear that an educator can play a key role in turning young practitioners-to-be ‘on’ to low vision.

5. Low vision curricula benchmarked against the UK and USA

The literature pertaining to preparation for low vision practice. In comparison to the abundance of articles on education relating to preparing students for rural practice, articles on education pertaining to the student experience when learning low vision care are almost non-existent (Panneton, Moritsugu et al. 1982; Greenblatt 1988; Greenblatt 1990; Rumsey 1993) and do not specifically address the areas of interest to us. Therefore, this current benchmarking exercise represent a major achievement.

Outcomes from the optometric educator survey regarding low vision curricula. The lecturers responsible for teaching the unit on Low Vision at each of the four schools in Australia and New Zealand completed the survey ‘Low Vision Educational Approaches’ as did the international educators. From this survey it was learnt that low vision is taught in the final year of the lecture program at all four schools, with clinical experience following in the final year of Clinics. Observational experiences are offered in earlier years on occasions. Competency in low vision care is an expectation that has been present for at least the last four decades for optometrists in Australia and New Zealand and is specified in the Optometrists Association Australia Universal (entry-level) and Therapeutic Competency Standards for Optometry [see Kiely and Chakman (Kiely 2009) for the latest version]. Across the four schools there is some variability in the hours devoted to teaching low vision, ranging from a low of 8 hours of lectures plus 6 hours of laboratory classes to a high of 18 hours of lectures with 8 hours of laboratory classes and an additional 2 tutorials. Naturally, any theoretical course on clinical care must be accompanied by clinical experience. Little imagination is required to recognise the inadequacy of the typical student experience which ranges across the four schools from 1 to 6 patient experiences. Each school incorporates activities based on the multi-disciplinary nature of working with visually impaired persons, often in the buildings of organisations specializing in care for the disabled. The principal lecturers in the low vision courses each commented on the lack of good textbooks in this area that are ‘in print’, and all provide their own manuals to help students. This latter comment indicates that the proposed Compendium of Low Vision Activities will be a significant resource for all low vision educators. Assessment procedures follow the usual gamut of health-based assessment protocols. The degree of specialisation required for competency in the full range of low vision care also brings with it a possible dearth of fully experienced low vision educators. Thus, the four schools each raised issues pertaining to the expertise of supervising staff (mentioning also the issue of succession planning). Each also mentioned the usual budget issues that come with seeing patients that require extended consultations under tight supervision and culminating in the prescribing of expensive visual aids.

Given the minimal practical experience our students undertake, benchmarking against internationally recognised schools of optometry is an exercise which may have major impact on Australian and New Zealand low vision curricula. The overall programs in the UK and North America differ significantly: In the UK optometry is a four-year undergraduate program similar to in Australia, while in the US and Canada optometry is a four-year postgraduate program. In the UK, the paradigm is one that sees a very basic unit of low vision instruction within the undergraduate program with further development of skills left to interested individuals undertaking what is essentially an apprenticeship with a low vision specialist optometrist working in an
outpatient clinic at a large hospital. Although, there have been moves in Wales to up-skill certain practitioners strategically chosen by location (somewhat similar to the moves made in New Zealand). On the other hand, in the US and Canada a greater level of expertise is already acquired during the basic optometry degree, with advanced skills acquired through a one-year clinical residency following the professional doctor of optometry degree. The Australasian paradigm has greater similarity with that of North America in respect to general coverage of the low vision course, plus potential for advanced clinic skill residencies in some schools to include low vision if the resident wishes.

Fifteen international low vision educators (4 out of the 6 schools in the UK and 11 of the 23 schools in North America and Puerto Rico) completed the ‘Low Vision Educational Approaches’ survey. Low vision teaching is offered towards the end of the program at all institutions, but there were significant differences between the two continents regarding the hours devoted. The hours allocated in the UK more closely matched, but slightly exceeded, the hours devoted to teaching low vision in Australia and New Zealand. This is interesting in that the UK is not trying to skill graduates to as high a level as we are. The hours in the North American schools were on average double and occasionally significantly higher than even this. As in Australia and New Zealand, overseas educators reported a lack of availability of patients, lack of appreciation by administrators of the additional time required to offer low vision services and hence teach it, a shortage of widely-experienced staff, and budget implications.

When this project officially commenced in December 2008, the graduate attributes to which Australasian low vision educators taught were driven by the entry level competencies contained in the *Optometrists Association Australia Universal (entry-level) and Therapeutic Competency Standards for Optometry* in its various editions (Kiely, Horton et al. 1998; Kiely 2009). North American educators did not have similar guidance, and the low vision educators were well aware that across North America the graduate attributes to which the various educators aspired did differ significantly between the schools and colleges of optometry. However, a Special Interest Group for Low Vision had recently formed as a subcommittee of ASCO and met in July 2009 to commence the process of deriving a common standard of competencies for low vision care for all its schools and colleges. They saw benefit in cooperating with our survey, and looked forward to the outcomes. The ASCO Low Vision Group recently published their entry-level competencies in the July 2010 issue of Optometric Education (Kammer, Jamara et al. 2010) and there is little to distinguish these from the Australian competencies. Critically, they recommended that the entry-level competencies would not describe the complete level of competencies required to care for some patients, and that a second tier of low vision specialist is required (usually working in a multi-disciplinary rehabilitation setting), to be trained through a low vision specialty residency. This is somewhat similar to the UK model of low vision education.

Unfortunately, our invitation to several eminent low vision educators who are no longer directly involved in curriculum planning and course coordination to furnish us with their opinions on a sound curriculum (in light of current day pragmatics of hour allocations) resulted in only one reply. This shed no new directions in which to go, simply ideas for fine-tuning our existing courses.

The outcome of this exercise, along with the outcomes of the practitioner survey into low vision care has been to flag that Australian and New Zealand low vision educators should look again at a one-tier model of education for low vision service. Clearly, some practitioners are able to cope as a result of the current educational
model, but most do not cope for a variety of reasons, not all of which relate to educational preparation (see Section 8: Future Directions). In particular, the practitioner survey did not raise issues of ‘we were not taught ….’. Rather, one of the crucial findings simply relates to the concept of ‘confidence’.

Further refinement of the current courses might achieve strong effects if only complemented with a far greater clinical experience which drives home to students that they can indeed cope. Practitioners with considerable experience in low vision care know that the great number of patients who are in the early stages of low vision can actually be helped with simple strategies that do not require that much time to evaluate and convey. Clearly, monitoring the translation of any interventions introduced over the next few years into changed patterns of patient care is required as graduates move into private practice (see Section 8: Future Directions).

The full details of this comparison of the low vision curricula submitted by the 19 schools or colleges will form the basis of a publication to be submitted to the journal Optometric Education.

6. Discrepancies between current graduate clinical competencies and those deemed necessary by practitioners

In retrospect, the questions asked in the surveys did not yield the information required to marry the competencies deemed necessary in private practice with current curricula. There is a sense that the clinical skills per se are being taught, but student preparedness for the realities of working in non-urban areas and/or with special populations, such as those with low vision, is lacking.

These hypotheses need further clarification.

Of note is the fact that the Optometrists Association Australia Universal (entry-level) and Therapeutic Competency Standards for Optometry (2008) do not mention the word ‘rural’ at all.

This omission should be explored considering that some practitioners believe advanced skills are required in some areas of rural practice, particularly remote practice.

7. A Compendium of Low Vision Learning Activities from Around the World

Fourteen of the nineteen low vision educators who answered the curriculum survey also (a) submitted a copy of their favourite learning activity (in the format as handed out to students, and which could be readily adapted for inclusion in a compendium), and, (b) subsequently answered a handful of specific pedagogical questions relating to the student activity sheet. These activity sheets (5 from Australasia, 4 from the UK, 5 from USA) were compiled using a standardised layout and annotated with:

(i) why that particular activity was chosen
(ii) the learning objectives
(iii) the principles addressed
(iv) prior knowledge required
(v) the graduate attributes and capabilities addressed
(vi) the particular *Guidelines on Learning that Inform Teaching* which are demonstrated in the activity

(vii) the specific Optometrists Association Australia Universal (entry-level) and Therapeutic Competency Standards for Optometry (2008) developed by the activity.

A forward was written explaining how to use the Compendium to make best use of the pedagogical annotations. Appendices were added to: (a) provide a blank copy of the template we used so that educators could model activities they develop in the future upon this, (b) show all Guidelines on Learning that Inform Teaching as one complete document, and (c) specify the relevant sections of the Australian and New Zealand Universal (entry-level) professional competencies for their reference.

Having sent the annotated versions of the activities back to the fourteen educators for proofing, a number of compliments on the idea and the use of pedagogical annotation have already been received.


8. Future Directions for the Student Experience

There are two main threads to where the schools of optometry in Australia and New Zealand go next: (i) improve preparation of our students for rural practice, and (ii) improve preparation of our students for the delivery of low vision care and specifically target the development of a greater confidence to better use what has been taught. Scrutiny of the analysis of the surveys and talks with the profession reveals both threads are multi-dimensional issues, involving multi-disciplinary care. This is particularly true for low vision care.

Therefore, there are no simplistic solutions. It is not as simple as manipulating existing curricula. Involvement with agencies outside the particular school offering the curriculum will be required. It will be necessary to carefully monitor student opinion during studies, and also to follow the involvement of new graduates in rural practice and those graduates providing low vision care.

The points presented below for consideration derive from:

- survey responses (both analysis of the closed answer questions and the open answer responses)
- responses from the professional associations (OAA and NZAO) and employer/practice groups (Luxottica and ProVision)
- input from members of the project team.

In a number of cases, multiple persons/organisations made the same point, but this has not been indicated. Ideas are organised in clusters that might best be viewed according to particular areas of responsibility (e.g. program coordinator, course coordinator, lobbyists for government support or social change). Some ideas have already been introduced in some form or another by some institutions, but it has been suggested that further refinement be undertaken.
Future directions regarding rural education

As pre-empted by the outcomes of the literature review and the subsequent construction of the surveys, unsurprisingly, many of the suggestions for future educational initiatives derive directly from items covered in the literature and the surveys.

Entry into Optometry Programs

The quality and numbers of students accepted into a program can be regulated through departmental, institutional or government driven factors. Possibilities are listed below without regard for the logistics of achieving such changes.

1. Introduce a quota of designated places in optometry programs for students from rural backgrounds as it has been well established that graduates raised in rural environments are far more likely to return to practice in rural areas.

2. Offer rural students entry into an optometry program with a reduced ATAR/GPA. The challenge would be how to define rural/regional. In addition, the current number of students drawn from ‘rural’ areas already reflects the population proportion – perhaps it is an issue of monitoring this over time to ensure that the desired relative proportions are maintained.

3. Offer Australian indigenous students entry into an optometry program with a reduced ATAR. This condition is already imposed in NZ in order to satisfy obligations under the Treaty of Waitangi to have a student population that reflects the make-up of that local area. Applicants identifying as Māori have 1.0 added to their GPA for the purposes of competitive entry into a BOptom program.

4. Offer alternative entry pathways for students schooled in rural/remote areas:
   - for example, allow better articulation of Year 1 programs of basic biosciences conducted in rural institutions into Year 2 of 5-year optometry programs, perhaps with a GPA gate? This would increase the time the student could study nearer home
   - again, caution would be required with the definition of what is ‘rural’
   - there are issues for schools of optometry that commence optometry-based courses already in Year 1.

Location of Units of Training

Currently the entire class-based instruction in optometry at the four schools is conducted on the main campus, with only relatively short rotations off-campus for practice-based experience. Rigid adherence to this inflexible paradigm should be challenged. Better matching of off-campus experience to the individual student could be offered with more thought and better resources:

1. Look at carrying out some of the regular class-based optometric-generic training through regional rural colleges: e.g. Bathurst/Orange/Ballarat/ Bendigo/Cairns/ Townsville etc and/or by using video-link or telemedicine technology?

2. Set a mandatory preceptorship of 3-6 months to ensure that students truly experience the range and nature of rural practice.

   The current format where even only 3 days is an acceptable rural preceptorship is far too brief. The advantages of longer preceptorships are that the students will really become exposed to and immersed in the lifestyle and that they are more likely to make friendships with locals that could
provide a tangible connection which lasts longer than the preceptorship itself, especially in this era of electronic social networking.

3. Ask students whether they have any particular locations in mind for going out into practice after graduation and arrange a preceptorship in that, or a nearby town.

4. Uncouple the notion that all lectures must be given in the city to all students simultaneously. If effecting regional placements in a way that is satisfactory to both students and practitioner makes attendance at the regular lecture series difficult, then consider having students on rural rotation participating in video-conferencing into the lecture hall instead. Some universities are already (looking at) uncoupling the obligation for students to attend live lectures and provide a televised version online as an alternate means of the student ‘attending’ lectures. Online lecture availability would offer tremendous advantages regarding flexibility of timetabling. NOTE: This might be more appropriate for some parts of courses than others.

5. Look at the feasibility of matching students with preceptors. The process for achieving this was not proposed, but could perhaps be done in a manner similar to how overseas student programs select host families?

6. Look at funding one or more rural practices (run jointly by more than one optometry school?) for students to rotate through as an outreach clinic:
   - choose a practice where it is the only one in town to prevent antipathy from other practitioners in the town? Or buy in with a practitioner wanting to retire and phase this person out?
   - permanent staff could be adjunct appointments
   - the venue could also be a place where students gain further exposure to practice management
   - seek funding for a feasibility study and set-up costs?

**Duration of Rural Training**

Contrary to nearly all the published literature across medicine and allied health, our practitioner rural practice survey found no association between having undertaken a rural preceptorship and thereafter taking up a rural career. This is likely to be because the median preceptorship duration was only 14 days, and the minimum period was 3 days. The literature points strongly towards longer preceptorships leading to a greater likelihood that the graduate will seek rural employment. In medicine and nursing the rural placements are generally in the order of several months or longer. Hence, increasing the duration of rural placements appears to be most important goal. Through increasing exposure to rural life comes the inevitable increased socialisation of the student in the ways of rural life and acceptance of the people. The benefit of an extended exposure to more severe ocular disease (which is encountered in rural areas) will be far better consolidation of theoretical learning.

**Promotion of Rural Life, Rural Practice**

Some students have never travelled to a rural town, let alone a remote community, or knowingly interacted for any length of time with rural people. Where are the glossy brochures advocating consideration of a rural career? Of course, they do not exist. We educators have to create and deliver the tantalising audio-visual references/experiences to ensure contextual significance.

1. Have lecturing staff at each school of optometry convene a workshop to identify points in time during the 5-year program where students can have
their awareness of rural practice raised. The outcomes of our survey of staff (only responded to by UNSW and The University of Auckland) regarding whether they individually introduce rural concepts to students currently suggests that there is no coordinated effort, indeed perhaps no effort at all, to achieve (let alone optimise) the presentation of rural scenarios to undergraduate students. Thus:

- identify where best for staff to weave into their conversations with students the differences in rural attitudes, rural culture, challenges of running a rural practice, etc

- identify where to include formal lectures/tutorials/workshops to cover the challenges presented by rural people with interesting ocular conditions not usually seen by optometrists in the city, etc.

2. Promote the fact that due to a lack of easy access to eye care, ocular disease progresses further in severity before eye care is actually sought in rural and remote regions. Hence rural preceptorships offer significantly greater benefit for enhancing understanding of ocular disease.

3. Educate students as to what the terms ‘regional’, ‘rural’ and ‘remote’ really mean in the context of accessibility. ‘Regional’ is not defined as being about 1.5 hours from a capital city.

4. Have regional/remote/rural optometrists make YouTube video clips or webinars offering the positives about their life as a practitioner outside the cities and how they have overcome commonly perceived negatives.

5. Create a Facebook site for regional optometrists and undergraduate students that can reflect the rhythm of rural life according to the seasons, highlight the highpoints of life as a rural practitioner, etc.

6. Invite rural practitioners to be a ‘pen-pal’ with a student, and thereby simply be a mentor. It could be expected that there would be incidental transfer of information relevant to rural practice.

7. Introduce students to the (UNSW) Rural Allied Health and Medicine Student Society. Facilitate student access to RAHMS activities, even if exemption from lectures and rearrangement of clinics is required.

Undergraduate Student Activities

No matter the number of glossy brochures or videos that could be developed for students, interactive or experiential learning is proven to develop deeper understanding and better outcomes. Thus, activities must be created where students become personally involved.

1. Include taking a substantial rural preceptorship as a mandatory requirement. Based on student comments and upon the knowledge that practitioners who never thought about rural life prior to graduating do enjoy rural practice, plus the growing literature from medicine and allied health, it would seem that better outcomes for satisfaction with rural practice can only accrue from such a move.

2. Include in each year’s curriculum a visit from a rural optometrist (preferably former student of that school) to give a presentation to students on their experiences as an optometrist: the range of patients, the community of local health care providers, the personal benefits, debunking of rural myths, etc. Ensure that there is sufficient time for student questions. Change the focus of the presentation according to the course in which it is delivered:
for example, a presentation delivered as part of the Ocular Diseases course would focus on the extensive diseases experiences in rural areas and the challenge of being the only individual for miles with expertise in emergency care, needing good personal relations with ophthalmologists in nearest large centres so support is only a phone call away: where as in the Low Vision course the presentation could underline the doubling of difficulties for low vision patients who are so far from the few practitioners who specialise in low vision; in practice management lectures the focus is on difficulties of succession planning, getting locums, additional costs to get to continuing education venues

pairs of practitioners might work more comfortably together to present their experiences. Perhaps the pairs of practitioners would be best if they are not “matched”. For example a younger and older practitioner would give a broader presentation. Similarly a female and a male practitioner could co-present. This puts less pressure on each practitioner and would allow for more lively discussion.

3. Organise an evening to meet rural practitioners, employer groups offering rural employment opportunities, and past students practicing in a rural area. Perhaps include a distributor of optometric equipment who is a good raconteur to present an opinion on their perceptions of the difference between city and rural practitioners.

4. Include visits/video clips from regional, rural and remote patients that bring their need for optometric care to the personal level for the student. Educators must generate a sense of social responsibility in students to ensure that they play their role in ensuring that every Australian and New Zealand person has the best possible access to the eye care they need.

5. Formally introduce students to the notion that we have culturally and linguistically diverse (CALD) peoples in rural Australia and New Zealand that students must personally be able to address. Although metropolitan living already offers conditioning to the notion of ‘many peoples’, the rural spread is not the same as the urban spread and involves different cultures and languages yet again.


7. Pursue online courses available in other disciplines [say through Services for Australian Rural and Remote Allied Health (SARRAH)] and build them as assessable components into the most appropriate course prior to the commencement of rural preceptorships.

8. Ensure that optometry students meet medicine and other allied health students whilst on preceptorship to improve the outlook for support in the future, also to facilitate opportunities for socialisation given their common outlook.

9. Ensure that at least several students in each year participate in preceptorships that represent novel modes of optometric practice. This is critical to preparing the mindset of the next generation of optometrists for resolving the situation in which Australia has sufficient optometrists for the overall population, but they are not covering the vast expanses where the population density is extremely low and unsuited to the conventional
optometric business premises with the patient simply ‘popping in’ as necessary:

- for example, outreach aero-practices where the practitioner visits particular outlying isolated townships on a periodic basis by light plane
- these may be centres where patients have already been triaged as needing optometric care by a local health worker in order to maximise the time of the optometrist towards deserving cases. Such use of ancillary staff is in itself already outside the conventional primary care model for optometry, but is most pragmatic given the circumstances
- another example is to join ‘health trains’, where a group of health practitioners and allied health personnel sequentially visit a cluster of outback towns at yearly or two-yearly intervals (e.g. The Croc Festival)
- prepare students for videoconferencing
- participating students should then be required to make a presentation of their experiences to their peers. Through this, the whole class will become conditioned as to the nature of practice in the outback.

**Postgraduate Activities**

Our surveys found that a rural optometric career does not necessarily start upon completion of the undergraduate degree. Many city-based practitioners are open to the notion of ‘going rural’ at some time in the future. Hence, ‘marketing’ to these city practitioners should include opportunities to upgrade skill levels to match those of rural practitioners, interact with rural optometrists and visit rural communities.

1. Considering that a significant percentage of existing optometrists may yet take up rural practice, continuing education should be offered by existing rural practitioners to current city practitioners.

2. Postgraduate coursework, when offered, should be scrutinised for appropriate points facilitating the integration of rural optometry just as proposed for undergraduate courses.

3. Professional organisations and others should look at holding conferences in rural areas.

**Financial Issues**

Bringing rural teenagers to the city for education, or taking city students to rural locations for specific educational activities is costly. Who should pay? Where will the money come from? Both those delivering the education and those receiving the education will have increased costs. Some of the considerations are listed below without regard for the notion from where the money will come.

1. Offer students specific rural practice-based sponsorships during undergraduate studies with a per annum stipend and holiday employment.

2. Offer more cadetships than currently exist with large employer groups that will contract students with financial support during their undergraduate years but require rural service specifically for a set number of years in return for the annual student stipend:
   - this is already offered by multiple practice and franchise operations who enlist optometry students into cadetships etc at around Year 4 or earlier. The students who sign up are then offered preceptorships within the group. This helps keep the student loyal to the group but this arrangement creates great difficulties for the school that wants to organise its own
preceptorships, particularly if they are able to arrange financial support. No optometrist who is independent (except the most philanthropic and generous spirited) will want to have a student who is already committed to a competitor practice. An extern student in a practice is a significant undertaking and has a significant cost for the participating practice. The comments we have heard are along the lines: “Why should I (individual optometrist or group) help put the finishing touches to the training of a student who will be back in my town working for the group who is my competitor”. Similar problems arise when financial support is contemplated.

- prevail upon the large employer groups to look at the bigger picture and facilitate their cadets undertaking preceptorships that are ‘out of house’ when organised by the student’s own educational institute. Whilst this may seem philanthropic on the face of things, in actual fact it is in the company’s interest for their employees to have been educated as widely as possible in the ways of optometric (business) practice. Good ideas might flow back to the company if the students are encouraged to critically appraise their experience from all points of view and give feedback to their benefactor. The points above need to be addressed.

3. Support the optometrist:

- offer remuneration to rural practitioners hosting students in their practice to offset the lost income through the added time to stop and help the student and explain to them. Considerable face-to-face time is required with the student, and this detracts from through-put of patients. One costing might be the Allied Health Clinical Placement scholarship of $300 per week
- some practitioners enjoy teaching more than others and it is not fair for them to assume the total cost burden of this
- offer Foundations of Supervision teacher training and access to the educational literature
- ensure all information is in writing (i) contractual arrangements: dates, expected support (both from the institution and from the preceptor), expected interventions by the optometrist, expected feedback etc, (ii) information packages/manuals are up to date relating to preceptorship protocols.

4. Support the student:

- travel costs. Government scholarship availability? Professional association support?
- accommodation costs, remembering that many students are already paying for accommodation in the city that cannot be temporarily dropped because they will be away for a month or so
- internet access during preceptorship has been shown by others to be crucial to ameliorating the feelings of isolation.

5. Commit schools of optometry funds to membership of SARRAH to gain full access to investigations and reports, teacher support materials and student support materials.

6. Commit an academic to familiarise themselves with all aspects of student rural preparation and coordinate all components of rural teaching across the entire 5-year program.
7. In order to dispel notions that rural optometry could not possibly be financially viable, further educate the undergraduate student as to the supplementary remuneration available for delivering eye care to remote Australia under government schemes such as the Visiting Optometrists Scheme.

8. For students who return to rural areas following graduation, seek inclusion of Optometry in the Rural HECS Reimbursement Scheme where a percentage of their Higher Education Contribution Scheme (HECS) fee is rebated.

9. Are additional schools of optometry with an emphasis on rural practice really required as a net increase in graduates is not indicated based on current manpower studies and current recommended eye examination intervals? Flinders started 2010, Deakin is currently seeking accreditation with OCANZ. The set-up costs are enormous and presumably will detract from funding available elsewhere for education. The number of high caliber optometric educators may be diluted at each individual institution as each school must teach entirely the same core courses. The same outcomes might be achieved by setting up a rural campus as a satellite campus of an existing school, but at greatly reduced cost.

Coordination of preceptorships between Australian and New Zealand schools of Optometry

With over 3,000 optometrists and just three schools of optometry in Australia, it would be very easy for more than one school to approach a particular optometrist with a view to hosting a student. Indeed this has already happened and caused irritation. Therefore, coordination between schools would appear essential.

1. Create a national register of willing preceptors according to regional, rural, remote designations. Allocate locations across the schools in a coordinated fashion:
   - the Australian federal government is already looking at a National Clinical Placement network system
   - cooperation between the (now) four existing schools of optometry in Australia would be required, and perhaps some would need to give up current placement locations to facilitate more equitable or more financially viable options for all students. A previous attempt at this failed, but since then the rural priorities have become more urgent (particularly with the federal government backing increased student numbers to fill the shoes of future providers in rural areas)
   - some practitioners are being approached by other schools despite having indicated to a first school that they are not interested in hosting students, and indicating a feeling of being harassed
   - it may be wise to confine willing preceptors to only receiving students from one institution in order that the administrative, learning outcomes, knowledge base/stage of student, record keeping aspects etc be kept as a single focus for the practitioner?
   - seek help from the Optometrists Association with keeping this register?
   - there seems to be no reason why New Zealand could not be included in the program if students are willing (although regulatory patient/practice-management scenarios do differ between the two countries).
2. Instigate a common clinical preceptor training program across all schools as regards the basics of the role of the clinical supervisor, evaluating students, offering feedback, ethical issues, etc:
   - evaluate the Pharmacy online clinical training preceptor program
   - evaluate the UNSW Professional Placement Supervision course (mainly online, one campus visit?)
   - seek funding to develop this training program properly.

**Role of professional organisations**

Historically there have been excellent relations between the schools of optometry and the professional organizations on a range of matters. There has been considerable support from the professional organisations both in Australia and New Zealand to help the workforce meet the needs of the community in practical ways, in particular, creating opportunities for new graduates and employers to link together. This perhaps can be refined to link existing older urban practitioners with a hankering that maybe the rural life is for them with practitioners already in rural areas.

**Future directions regarding low vision education**

An interesting outcome of the practitioner survey was that when there was comment about their student experiences, the comments were very positive apart from the numbers of patients seen. Thus, one could interpret this as meaning that low vision instruction in Australia and New Zealand over the last decades has been on the right track and fine-tuning is required rather than total revision. This notion should be taken also in light of the fact that the entry-level competencies are not greatly different to those expected overseas.

**Student Activities**

Creating clinical learning opportunities for students is seen as the ideal way to help students come to understand the myriad factors in low vision patient care. From the surveys it appears clear that the key factor for students appears to be lack of patient encounters in the area of low vision care (something which most educators already knew themselves). However, how to achieve this experience is the challenge:

   - it has been suggested by an eminent low vision educator that 30 patient encounters would be ideal
   - clinic managers must work to increase patient numbers: both geriatric and low vision
   - low vision educators must seek alternate venues for students to have active involvement in the evaluation of low vision workups and the clinic decision making for short and long term patient care
   - pay low vision patients to come in to discuss their difficulties and to act as demonstration patients
   - virtual classroom experiences should be explored.

**Timing of enhanced student experience**

The surveys of practitioners, and indeed of the educators themselves, indicate split opinion on when delivery of the more advanced aspects of low vision training would be desirable. Some of the considerations cover:
1. There is a feeling amongst some practitioners that a number of undergraduates have the wrong attitude for the working with people who are elderly or those with disabilities. It is unclear whether this is simply an aptitude problem and/or a maturation phenomenon. Monitoring the outcome of educational interventions to improve the student experience will clarify this and facilitate decision making regarding when to teach the more advanced aspects of low vision care that caters for the low vision patient who has more severe vision loss and who can be more problematic.

2. The more advanced low vision could be taught at undergraduate or postgraduate levels. Rather than spend more time in the undergraduate curriculum, several employer groups and one professional organisation suggested the best time to really focus on low vision care is after graduation and when new graduates have developed a better appreciation of the range of patients and the varying needs of the visually disabled:
   - there is generally a world-wide concordance that a basic instructional unit on low vision care and visual aids should be part of undergraduate education
   - the entry level competencies out of the basic optometry degree in Australia and New Zealand already include all facets of early low vision care as an expected skill. There was widespread consultation among practitioners to develop the Competencies, and these must therefore reflect the wishes of a reasonably representative group of optometrists
   - a further consideration is whether advanced low vision should be taught to all optometrists or just to the optometrist wishing to specialize.

**Undergraduate curriculum**

It is agreed that the basic components of low vision instruction (and actually also the most commonly required facets for care delivery) should be taught along with the general optometry course that covers primary care. However, changes to the current manner in which low vision is taught should be considered:

1. At least 10 low vision patients are required in final year to develop a ‘can cope’ mindset for the new graduate.

2. Double the hours of lectures and labs in Australia and New Zealand if wishing to match the benchmarks from the United State programs which espouse independence as a low vision practitioner upon graduation. Increase hours by at least 25% to match the hours offered to some optometry undergraduates in the UK where the philosophy is for perhaps a lesser-trained graduate than ours.

3. A key point to consider is the location where low vision patients are seen and fully attended to. It has been proposed that most/all patients with early signs of low vision (and no need for exotic, complex or high-end visual aids) need not be seen in a Low Vision Clinic. It may be wiser for all early low vision patients to be seen in a General Clinic without the badge ‘low vision’ as this appears to act as a mental deterrent for students. These patients are only slightly outside the continuum of normal and are easily treatable with just spectacles and magnifiers. Hence, General Clinic supervisors should be up-skilled if necessary to cope with the (minor) extension into low vision care.

4. As with preparation for rural practice, students should participate in low vision-oriented activities that will generate a natural desire to be socially responsible. Low vision patients place considerable strain on their own families and require extra resources from the community. This is not to say
that the provision of optometric low vision care should be run as a charity. Rather, that students should be brought to a full understanding of the impact of low vision upon the person, their family and local community, and the public purse:

- students can be sent to interview patients who are mildly/moderately/severely affected by low vision or legal blindness, and report back to the class
- U-Tube style video clips can be created of patients in their home or place of work for compulsory viewing
- students can become pen-pals of like-minded low vision patients of similar age, or create a social network site
- assignments could be set on the social costs of low vision, say, to be broadcast in poster format.

**Who is best to teach low vision?**

Conventional wisdom is that educators with much experience in low vision care should teach this significant component of optometry. However, considering that there are relatively few such persons, this wisdom should be revisited. In addition, if one wants an educator who carries such expertise with other desirable attributes such as an ability to demonstrate empathy and passion to students, then there are exceedingly few eminently qualified to teach low vision. Hence, low vision care might need to be taught outside the traditional model drawing only on permanent full time staff members.

1. Is the passion and empathy of the lecturer an influencing factor in student learning? Yes, according to many graduates who now undertake significant amounts of low vision care. Hence, universities should consider going outside the traditional permanent-lecturer model for designing/providing specialty low vision instruction when ‘the right person’ is not on permanent staff.

2. It is generally regarded that clinic supervisors who have great experience in low vision care should be the ones to supervise all low vision patients. However, in actual fact many patients who are technically designated as having ‘low vision’ do not actually require high-end visual aids. Indeed, as mentioned above these patients could be cared for entirely in a non low vision clinic setting by an experienced ‘general’ optometrist. Therefore, are we sending students a confusing message by insisting that all staff on clinics with low vision patients have particularly strong skills and experience in the field of low vision?

Regular clinic supervisors should be ‘upskilled’ so they are confident to prescribe for the first line of low vision care (and supervise students seeing such patients). This way, students will instead see many low vision care scenarios as being part of regular primary care practice and the incidence of optometrists prescribing high-powered reading additions and magnifiers should steadily increase.

3. Virtual patients? In actual fact, should all patients be live patients? Other areas of optometric education have been incorporated into computer-based learning programs:

- the existence of software incorporating low vision scenarios should be investigated. We suspect that no comprehensive programs devoted to low
vision patient simulations exist, although it may be possible to extend current refraction software to include low-acuity patient simulations

- the development of a low vision patient simulator should be explored and funding sought.

4. There is much that patients with vision loss can teach students about their visual conditions, their personal needs, the impact upon their lifestyle, etc:

- video clips of patients have the advantage that they can be viewed at any time to suit the student

- personal visits by patients could be implemented outside of regular class hours, say as pizza-lunch guests, without appearing to ‘add’ to the study load on students. The lunch venue is a way of increasing face to face teaching without the students minding, but should probably be used judiciously and only for novel modes of learning.

5. Although not directly concerned with the prescribing of low vision aids, a significant portion of low vision care is understanding gerontology and understanding the multi-disciplinary team required for best low vision management (particularly for patients towards the legally blind end of the spectrum). Therefore, some of the introductions to the area of low vision can be given capably by staff who are from other sectors of allied health. The advantage of this would be an exposure of best practice and an emphasis on the value of non-optometric components in total patient management.

Financial issues for educators

Teaching in the field of health is well known to be expensive. However, teaching low vision care is viewed as particularly expensive due to (i) the additional time required to sort out the complexity of the visual needs of the patient, (ii) the fact that patient is typically older with little financial means to pay for the expensive visual aids, and (iii) the patient typically has other health issues requiring consultation or interaction with other agencies.

1. Teaching beginning students about low vision care in a clinical setting needs close to a 1:1 student:teacher ratio. This adds a financial disincentive to schools of optometry to take low vision education as seriously as they should.

2. The cost of many low vision aids is quite high and beyond the affordability of some patients. Therefore, much time and effort by the student practitioner comes to nought because the most appropriate aid cannot be provided. One way of handling this might be to seek the professional organisations’ support in getting better government funding for visual aids, even if only for teaching clinics.

Postgraduate learning activities

Healthcare practitioners are all required now by law to undertake a certain number of units of continuing education. Providers of such education should capitalise on this and include low vision as a regular component of conferences and workshops. These venues are where non-academics who have considerable experience might be willing to give relatively shorter presentations rather than deliver a whole undergraduate university course on low vision. However, a willingness to sit through continuing education might still be far from changing practitioner habits. Considerations are:
1. There would appear to be a thirst for workshops on low vision at regular continuing education conferences (if the experience with the Tasmanian State Conference ‘TLC’ is an indication, where 40 participants were anticipated for the low vision segment but 83 arrived, or the NSW regional Sunday 1-day training workshops were some 250 optometrists participated).

2. Hence, more low vision continuing professional development is required. As there are now mandatory requirements for continuing professional development as part of annual re-registration, it should be ensured that low vision segments are offered as part of the regular conference circuit.

3. There should be investigation to find out why the prescribing habits of New Zealand optometrists are no different to Australian practitioners (according to our survey outcomes), despite the roll out of a program to strategically issue low vision aids trial-kits across NZ practitioners and train them in its use. A confounding factor is the fact that we did not seek evidence about whether our respondents were one of those practitioners issued with the trial kits and additional training or not.

The ‘business’ of low vision

Students should be made aware of ‘business’ factors as part of their education, without educators feeling the need to ‘teach business’. Professional organizations such as the OAA undertake significant research into the cost effectiveness and manpower requirements for a variety of aspects of health care delivery. However, those steering these organisations are practitioners themselves. Hence, an awareness of business logistics (in this case relevant to low vision care delivery) should be imparted to the student of optometry during their studies, without necessarily delivering all the details.

Through this students will be better prepared for the realities of business as an optometrist and to understand the business and roles of relevant professional and community organisations.

1. The Optometrists Association Australia is working with the federal government to raise the Medicare rebate for the low vision item. It is conceded by the OAA that much more needs to be done with regards this matter:

   - monitoring of utilisation of the current Medicare low vision consultation item should be undertaken through practitioner surveys that will also identify changes in graduate practice patterns in response to educational interventions
   - additional monitoring of utilisation of low vision services within other agencies (e.g. Vision Australia) in order to reconcile whether optometrists sufficiently meet the needs of those with low vision.

2. Remuneration may be a factor in the number of practitioners participating in the area of low vision care. A key wholesaler of low vision aids suggested that low vision service appears to be regarded by most of his optometrist clients as a ‘charity’. As a consequence he believes that:

   - patients are too often referred to low vision clinics such as Vision Australia
   - the additional time required to fully evaluate a low vision patient’s needs and trial likely devices is not allocated, nor the time to train and rehabilitate the patient, nor even encourage follow up appointments. In the case of the more severely visually disabled the additional time required is considerable
• optometrists do not receive the remuneration appropriate to the degree of service they give

• careful consideration must be given to the relative costing of the consultation versus the low vision device and where ‘charity’ might apply, if at all.

3. The practitioner should be encouraged to take full responsibility for patient care, including supply and delivery of any devices. Otherwise, the prescription may be dispensed by another optometrist or optical dispenser with no real interest in low vision (and hence little knowledge). The patient is then given either poor or no instruction how to use the device upon delivery. Undergraduate students must be alerted to the counterproductive effects of simply issuing a prescription.

4. As orthoptists also learn how to manage the low vision patient (some 38 orthoptists are employed by Vision Australia to manage patients who have low vision or are legally blind), should optometrists consider employing an orthoptist to evaluate and deliver low vision aids if there is a large geriatric base to their practice - and thus generate better efficiencies?

5. Anticipation of ‘market’ trends applicable to an ageing population will become increasingly important. For example, where will governments put their dollars?

• total funding of eye services is likely to become more difficult as research delivers more costly treatment options for age-related ocular disease causing low vision (e.g. Lucentis intravitreal injections for macular degeneration are very expensive yet prevent continuing severe central vision loss)

• to meet this known funding challenge, will the delivery of some eye services be more likely to be devolved to less expensive practitioners? Earlier recognition will often lead to better case handling and less vision loss. Optometrists comprise one group that is well trained and ideally placed to participate in these changes and in servicing the expected increased need for earlier interventions in geriatric eye care. Undergraduate curricula and postgraduate offerings by optometric educators need to anticipate these changes.

6. Monitoring the requirement of specialist low vision optometrist numbers versus optometrists who can manage just early low vision care as the population ages:

• for Australia’s population of 22 million, 99 optometrists would be required to work fulltime to see all low vision patients on a two-yearly basis (i.e. 2.6% of all optometrists). Clearly, the distribution of this few practitioners around Australia would lead again to access issues for patients. Indeed, there is currently only one specialty low vision optometric practice known in Australia. Thus, devolvement of low vision care must be spread amongst general optometric practitioners, and educators must address this in their teaching programs

• is having 8% of practitioners with an interest in low vision (such that they can competently manage all mild-moderate low vision scenarios) sufficient to the nation’s needs? If such low vision patients were evenly distributed across all optometrists in Australia, each practitioner would need to see approximately 80 patients in a 2 year period. Let’s say, one per week. This is quite manageable, although maintaining clinical skills and confidence might be an issue. If relegated to only a few optometrists, the
time burden and potential financial burden will distort the realities of a viable practice. Modelling must be done to better understand the situation as the population grows so that educators can apply appropriate responses.

6.0 Dissemination

Outcomes of the two key practitioner surveys and the main student survey were sent in confidence to all the professional and employer/practice organisations listed as stakeholders and interested parties in order for them to prepare their comments regarding future directions.

The Compendium of Low Vision Learning Activities from Around the World is to be sent personally to each of the contributors, and will be available to all educators through the ALTC open access site.

It is believe that at least six articles can be published in journals relevant directly to optometric education or rural and remote allied health education. These articles will centre on:

- demographic insights into the experiences of rural life for Australian & NZ optometrists
- Australian &NZ optometrists' opinions regarding the appeal of rural practice
- demographic insights into the impressions of rural life and preceptorships for current students of optometry in Australia & NZ
- optometrists' attitudes to hosting preceptorships for students of optometry
- the survey of Australian and New Zealand optometrists practice patterns regarding gerontology and low vision service
- the survey of entry level education in Australia, New Zealand, the UK and the USA for the specialty of low vision.

7.0 Linkages

No formal ongoing linkages have resulted from this project.

8.0 Acknowledgements

Dr Helen Dalton of Learning & Teaching has been a tower of support throughout the entire project, and provided invaluable guidance and input during the creation of the Compendium of Low Vision Learning Activities from around the World. We are indebted to her.

We wish to thank Ms Shirley Zhang, Statistician, for her professional expertise, patience, support and availability.

We wish to thank Mr Adrian McMinn, Librarian at UNSW Library for creating the maps indicating the location for each of the practitioners participating in the rural survey.
Above all, the other project team members wish to thank Ms Anna Palagyi, our project manager, for going beyond and above her job description, and bringing her professional expertise from other health care projects so expertly into this project.
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## 10.0 Appendices

### Appendix 1. Survey: ‘Graduate Preparation for Rural and Remote Optometry’

**AUSTRALIA – NEW ZEALAND OPTOMETRISTS:**

**GRADUATE PREPARATION FOR RURAL & REMOTE OPTOMETRY SURVEY**

**2009**

### SECTION 1: DEMOGRAPHIC INFORMATION

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<th>1.4 Primary mode of practice Self-employed:</th>
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<td>☐ Associate/Partner ☐ Sole practitioner ☐ Franchisee</td>
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<th>1.9 Before studying optometry, did you attend school in what you considered to be a rural location?</th>
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<table>
<thead>
<tr>
<th>For how long in total?</th>
<th>km</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ In town ☐ Out of town</td>
<td></td>
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<table>
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<th>In which town/township were you?</th>
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| Was this a positive experience? | ☐ No ☐ Yes Please explain why/why not: |

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<tr>
<th>How many?</th>
<th>☐ 1-2 ☐ 3-5 ☐ 6+</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>What are their ages?</th>
<th>0-2yrs 3-5yrs 5-11yrs 12-17yrs 18+</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How old?</th>
<th>0-2yrs ☐ 3-5yrs ☐ 5-11yrs ☐ 12-17yrs ☐ 18+</th>
</tr>
</thead>
</table>

SECTION 2: YOUR PRACTICING HISTORY

2.1 Regarding your present primary practice location:

Primary Practice Location POSTCODE:

Your Local Government Area (Council/Shire) is:

Your town could be classified as:
(select one that applies)
- ☐ Metropolitan (capital city)
- ☐ Other metropolitan centre (pop. >100,000)
- ☐ Large rural centre 25,000 – 99,999
- ☐ Small rural centre 10,000 – 24,999
- ☐ Other rural centre <10,000
- ☐ Remote centre 5,000 – 9,999
- ☐ Other remote centre <5,000

For how long have you been at your present primary practice location?

How many optometrists are in the primary practice at which you are based?

2.2 Do you, in your role in your primary practice, offer optometric services at other locations? eg a "country" circuit, secondary location in other towns/communities

☐ No ☐ Yes

If Yes:

For each location please provide:

<table>
<thead>
<tr>
<th>POSTCODE</th>
<th>DAYS PER MONTH</th>
<th>DISTANCE FROM PRIMARY PRACTICE (km)</th>
<th>TOTAL TIME TAKEN FOR RETURN JOURNEY</th>
<th>MODE OF TRANSPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3 In a working week:

How many hours on average do you spend on clinical consultation (optometric testing)?
- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35
- ☐ 36+

How many hours on average do you spend on optical dispensing (including frame selection)?
- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35
- ☐ 36+

How many hours on average do you spend on administrative tasks?
- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35
- ☐ 36+

2.4 Prior to commencing optometry training, were you considering rural practice?

☐ No ☐ Yes

☐ Had not thought about it

2.5 Did you choose your current practice setting:

- ☐ As your first position in optometry
- ☐ After exposure to other practice locations

2.6 Despite the size of your "town/city" in which you currently practice, would you regard this location as:

☐ Semi-Rural
☐ Rural/remote
☐ City/urban

2.7 If you are not working in a rural/remote area now, would you consider working in a rural/remote area in the future?

☐ No ☐ Yes

2.8 Throughout your practicing history, where (and for how long) have you practiced optometry?

☐ City/urban area for ___________ years
☐ Rural/remote area for ___________ years

If you have previously practiced in what you consider to be a city/urban area only, go to Section 4
If you have previous practice experience in what you consider to be a semi-rural or rural/remote area, continue to Section 3

SECTION 3: ATTITUDES TO RURAL PRACTICE

3.1 You have experience working in a rural setting. To what extent did the following factor(s) drive this choice?

<table>
<thead>
<tr>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Preference for a rural lifestyle
Necessary for partner's training and work requirements
Greater ability to step away from professional role (privacy, anonymity)
Increased opportunities for professional support activities, up skilling
Improved opportunities for locum support

Graduate Preparation for Rural & Remote Optometry Survey 2009 2 of 5
### 3.1 Continued:

<table>
<thead>
<tr>
<th></th>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closeness to your or your partner’s family and friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity for practice investment &amp; sustainable income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary for children’s schooling needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved income prospects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal career path strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broader scope of practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased professional independence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater opportunity to contribute to the community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.2 To what extent would you rate the following factors as positives of a rural practice environment?

<table>
<thead>
<tr>
<th></th>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater diversity and depth of practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More interesting / challenging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual role: practice &amp; community-based services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifestyle for self and family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being appreciated / valued</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better income prospects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less professional/commercial competition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.3 Are there any other positives of a rural practice environment that you would like to identify?

Please specify:

### 3.4 To what extent would you rate the following factors as negatives of a rural practice environment?

<table>
<thead>
<tr>
<th></th>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater pressure / burn out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of professional support / CPD / CE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult to escape professional role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation from family and friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers to partner’s employment / training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities for focus support / holidays</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.5 Are there any other negatives of a rural practice environment that you would like to identify?

Please specify:

### 3.6 Do you think your undergraduate optometry training prepared you adequately for rural practice?

☑ No  ☐ Yes

Please explain why / why not:

### 3.7 How might universities, through curriculum and environment, better prepare graduates for rural/remote optometry?

Please specify:

(Go on to Section 5)
### SECTION 4: ATTITUDES TO WORKING IN A CITY/URBAN PRACTICE

#### 4.1 You are currently working in a city-based or urban setting. To what extent have the following factor(s) driven this choice?

<table>
<thead>
<tr>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

- Preference for an urban lifestyle
- Necessary for partner's training and work requirements
- Greater ability to step away from professional role (privacy, anonymity)
- Increased opportunities for professional support activities, upskilling
- Improved opportunities for locum support
- Closer proximity to your or your partner's family and friends
- Opportunity for practice investment & sustainable income
- Necessary for children's schooling needs
- Improved income prospects
- Personal career path strategy
- Broader scope of practice
- Increased professional independence
- Greater opportunity to contribute to the community

#### 4.2 If you have lived or were previously employed in a rural/remote centre, what factors would influence your return to a rural workplace?

Please specify:

(Continue to Section 5)

### SECTION 5: ATTITUDES TO HOSTING PRECEPTORSHIPS

#### 5.1 Have you ever been approached to take a student on preceptorship?

- ☐ Yes (Go on to 5.2)
- ☐ No (Go on to 5.3)

#### 5.2 Did you agree to take students?

- ☐ Yes (Go on to 5.2.1)
- ☐ No (Go on to 5.2.2)

##### 5.2.1 If yes:

- How many times in total have you taken a student?
- What is the typical duration of the preceptorship?
  - Typically, at what stage of their optometry program was the student?
    - ☐ Second year
    - ☐ Final year

- Were you given an information pack by the university on what and how to supervise the student whilst visiting your practice?
  - ☐ No
  - ☐ Yes

- Have there been benefits to you and your practice from having a student on preceptorship?
  - ☐ No
  - ☐ Yes – Please describe:

- Have there been drawbacks to having a student on preceptorship in your practice?
  - ☐ No
  - ☐ Yes – Please describe:

- Have you ever offered incentives to attract students to your practice for a preceptorship?
  - ☐ No
  - ☐ Accommodation
  - ☐ Travel costs
  - ☐ Other – Please specify:

- Were any steps taken to ensure social opportunities for the students whilst staying in your region/area?
  - ☐ No
  - ☐ Yes – Please describe:

What other comments would you like to make regarding hosting students in your practice?

(Continue to Section 5)
5.2.2 If No: What influenced your decision (not) to take a student? (Please specify)

5.3 Please rate the importance of the following factors whilst considering your role as a potential preceptor:

<table>
<thead>
<tr>
<th>因素</th>
<th>非常重要</th>
<th>重要或不重要</th>
<th>不重要</th>
<th>不重要</th>
</tr>
</thead>
<tbody>
<tr>
<td>可以与大学的工作人员一起使用</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>自信作为“教师”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>理解学生评估过程</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>理解成人学习原则</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>成为学生学习的贡献者</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>课程知识的了解</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>提供实习作为职业选择</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>作为预科生的专业认可</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>预科生的报酬</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>感到更受激励来复习基础知识</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>感到更受激励来提高与最新的文献</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>提高与光学学院的个人联系</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.4 Would you be happy to have a student on preceptorship in your practice if approached in the future?

- [ ] No
- [ ] Yes

If Yes: Are there any conditions you would apply before you would take a student? (Please specify)

|在实习前你希望有哪些条件？（请详细说明） |
|---|---|---|---|---|

What support would you like from the university:

- Before the placement? (Please specify) 预实习前你希望从大学得到哪些支持？（请详细说明）
- During the placement? (Please specify) 实习期间你希望从大学得到哪些支持？（请详细说明）

Would you be willing to undergo ‘teacher training’?

- [ ] No
- [ ] Yes - Externally delivered online
- [ ] Yes - Externally in printed format
- [ ] Yes - Face-to-face at a School of Optometry
- [ ] Yes - Face-to-face within your region

If No: What is influencing your decision not to take a student?

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY

There may be discussion points arising from this survey that would benefit from your further input. Should this be the case, are you willing to be contacted for further conversation regarding the provision of eye health services in rural and remote areas of Australia & NZ?

If so, please provide your contact details below:

Name: 
Telephone: 
Email: 

Preferred time to contact: 

Alternatively, if you wish to be involved in further discussions but have your survey responses remain anonymous, you can email the Project Manager directly at: RuralOptometry@gmail.com
PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

Delivering optometric graduates ready for practice beyond the cities and ready to service an ageing population

Participant selection and purpose of study
You are invited to participate in an investigation assessing the preparation of undergraduate optometry students for rural practice and the servicing of special populations, including those patients with low vision. We hope to learn what you perceive as being the essential requirements for the preparation, attraction and retention of optometric providers to remote area practice and provision of service for special populations, and compare these requirements to the current entry level competencies of optometry graduates.

You were selected as a possible participant in this project because you have an interest in optometry services in either Australia or New Zealand.

Description of study and risks
If you decide to participate, we will require you to complete two self-administered questionnaires. These shall include questions designed to explore your own experience with rural life and rural/remote optometry services, and geriatric and low vision eye care. Your perception of the necessary preparatory requirements for optometrists entering into practice within remote geographic localities will also be elicited. We will also be asking you to reflect on your experience with undergraduate optometry education and invite your opinion as to whether this prepares adequately for direct entry into rural or low vision optometry practice.

The Project is being undertaken by the UNSW School of Optometry and Vision Science, in collaboration with the Department of Optometry and Vision Sciences at the University of Melbourne, QUT School of Optometry, and the Department of Optometry and Vision Science at the University of Auckland. It is funded under a grant awarded by the Australian Learning and Teaching Council (ALTC).

We estimate that your involvement in these investigations will take no more than 15 minutes of your time.

There are no risks (physical, professional or personal) associated with your involvement in this project. While the information collected may be reported and subsequently used by Schools of Optometry within Australia and New Zealand as a basis for the planning of learning, teaching and assessment approaches for undergraduate optometry students, we cannot and do not guarantee or promise that you will receive any benefits from this project.

Confidentiality and disclosure of information
Any information that is obtained in connection with this project and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. If you give us your permission by signing this document, we plan to discuss/publish the information obtained from the project through project reports, conferences and peer reviewed journals in such a way that no identification of you is required.

Complaints concerning this research project may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed of the outcome.
Feedback to participants
A written report of the key outcomes of this research project will be available to all participants upon completion of the project. This will be distributed by your relevant national optometry association, state representative body or employer group. Alternatively, should you be interested in viewing the full project report, please contact Associate Professor Barbara Junghans on +61 2 9385 4237, or email b.junghans@unsw.edu.au

Your consent
Your decision whether or not to participate will not prejudice your future relations with the University of New South Wales, QUT School of Optometry, Department of Optometry and Vision Sciences at the University of Melbourne, or Department of Optometry and Vision Science at the University of Auckland. Nor will it prejudice any support you receive in your role within optometry in Australia or New Zealand. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please feel free to ask us. If you have any additional questions later, please contact Associate Professor Barbara Junghans on +61 2 9385 4237, or email b.junghans@unsw.edu.au and she will be happy to answer these queries.

To participate, please:
1. Signed the attached consent form
2. Complete the enclosed questionnaires in blue or black ball-point pen, then
3. Return within one month of receipt both the signed consent form and the completed questionnaires by postal mail or fax without your name or address to:

ALTC Project Manager
School of Optometry and Vision Science
The University of New South Wales
Sydney 2052 NSW
Australia

Fax: +61 2 9313 6243
Attn: ALTC Project Manager

Please keep this information sheet for your records
PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM (continued)

Delivering optometric graduates ready for practice beyond the cities and ready to service an ageing population

You are making a decision whether or not to participate. Your signature indicates that, having read the information provided above, you have decided to participate.

........................................................................................................  ........................................................................................................
Signature of Participant                                             Signature of Witness

........................................................................................................  ........................................................................................................
(Please PRINT name)                                                (Please PRINT name)

........................................................................................................  ........................................................................................................
Date                                                              Nature of Witness

REVOCATION OF CONSENT

Delivering optometric graduates ready for practice beyond the cities and ready to service an ageing population

I hereby wish to WITHDRAW my consent to participate in the research proposal described above and understand that such withdrawal WILL NOT jeopardise any treatment or my relationship with The University of New South Wales, QUT School of Optometry, Department of Optometry and Vision Sciences at the University of Melbourne, or Department of Optometry and Vision Science at the University of Auckland.

........................................................................................................  ........................................................................................................
Signature                                                              Date

........................................................................................................
Please PRINT Name

The section for Consent / Revocation of Consent should be forwarded to

ALTC Project Manager
School of Optometry and Vision Science
The University of New South Wales
Sydney 2052 NSW
Australia

Page 3 of 3
Appendix 2. Survey: ‘Gerontology and Low Vision Services’

### AUS & NZ OPTOMETERISTS: GERONTOLOGY AND LOW VISION SERVICES SURVEY 2009

#### SECTION 1: DEMOGRAPHICS

| 1.1 Year of completion of undergraduate Optometry studies: |
| --- | --- |
| ☐ QUT/QIT | ☐ UNSW |
| ☐ UOM | ☐ Uni Auckland |
| ☐ Other (specify): | |

<table>
<thead>
<tr>
<th>1.5 Primary mode of practice:</th>
<th>☐ Associate/Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Sole practitioner</td>
<td>☐ Franchisee</td>
</tr>
<tr>
<td>☐ Employee of:</td>
<td>☐ Independent</td>
</tr>
<tr>
<td>☐ Corporate / Franchise</td>
<td>☐ University</td>
</tr>
<tr>
<td>☐ Hospital</td>
<td>☐ Non-Government Org.</td>
</tr>
<tr>
<td>☐ VCO</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.6 Primary Practice Location (POSTCODE</th>
<th>Country):</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Aus</td>
<td>☐ NZ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.7 Secondary Practice Location (POSTCODE</th>
<th>Country):</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Aus</td>
<td>☐ NZ</td>
</tr>
</tbody>
</table>

| 1.8 Gender: | ☐ Male | ☐ Female |

#### SECTION 2: GERONTOLOGY – VISION SERVICES FOR OLDER PATIENTS WITH PARTICULAR NEEDS

<table>
<thead>
<tr>
<th>2.1 Do you, in your daily practice, provide any of the following special services for older patients with particular needs? Tick all that apply:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Longer consultation times</td>
</tr>
<tr>
<td>☐ Special examination pricing structure</td>
</tr>
<tr>
<td>☐ Physical access assistance</td>
</tr>
<tr>
<td>☐ Other services for older patients with particular needs (please describe):</td>
</tr>
</tbody>
</table>

| 2.2 Please describe your motivation to provide these services: | |

<table>
<thead>
<tr>
<th>2.3 If you have not identified any services in 2.1, what are the reasons why you do not provide any special services for older patients with particular needs? Tick all that apply.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Longer consultation times not appropriate to mode of practice</td>
</tr>
<tr>
<td>☐ Cost of providing special services prohibitive</td>
</tr>
<tr>
<td>☐ Space/access problems within practice</td>
</tr>
<tr>
<td>☐ Other reasons why you do not provide services for older patients with particular needs (please describe):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.4 Did an experience during your optometry training influence your decision as to whether or not to provide special services for older patients with particular needs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ No</td>
</tr>
</tbody>
</table>

#### SECTION 3: LOW VISION SERVICES

<table>
<thead>
<tr>
<th>3.1 Approximately what percentage of low vision patients in your daily practice do you manage:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ 0-20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.2 If you provide low vision services directly, or co-manage with other providers, which of the following services do you provide? Tick all that apply.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ High addition spectacle lenses</td>
</tr>
<tr>
<td>☐ Stand magnifiers</td>
</tr>
<tr>
<td>☐ Telescopic devices</td>
</tr>
<tr>
<td>☐ Electronic magnifiers other than CCTVs</td>
</tr>
<tr>
<td>☐ Field expanders/field displacement devices</td>
</tr>
<tr>
<td>☐ Eccentric viewing advice &amp; training</td>
</tr>
</tbody>
</table>

Low vision being defined here as either (i) Distance VA less than 6/18, or (ii) Visual impairment that, when corrected by optimal refractive correction, is not adequate for the patient’s needs.
3.3 Please describe your motivation to provide these services:

☐ Other low vision services (please describe):

3.4 Do you have an ophthalmic assistant involved in your patient preparation?

☐ Yes  (Go to 3.6)  ☐ No  (Go to 3.6)

3.5 You have indicated you refer the majority of your low vision patients to a low vision agency.
What are the reasons why you do not provide low vision services in your daily practice? Tick all that apply.

☐ Happy to refer all low vision patients to other services available
☐ Unwilling to provide low vision services
☐ Space/access problems within practice
☐ Feel ill-equipped to provide low vision services
☐ Cost of providing low vision services prohibitive
☐ Not confident to provide low vision services
☐ Few people with low vision in patient base/catchment area of practice
☐ Not appropriate to mode of practice
☐ Other (please describe):

(Continue to 3.6)

3.6 Which referral agencies / pathways do you use for your patients with low vision? Select as many as apply.

☐ Vision Australia
☐ Association for the Blind of WA
☐ Guide Dogs NSW / ACT
☐ Able Australia (formerly Deafblind Assoc)
☐ Guide Dogs Vic
☐ Seeing Eye Dogs Australia
☐ Guide Dogs Qld
☐ School of Optometry (Mels/UNSW/QUT/Akio)
☐ Guide Dogs Tas
☐ Royal NZ Foundation of the Blind
☐ Independent Living Centre Qld
☐ Referral to an Ophthalmologist
☐ Qld Blind Association Inc.
☐ Patient-based peer support group (please specify group(s) in space below)
☐ Royal Society for the Blind SA
☐ Other (please specify):

3.7 Why have you decided to use these particular referral agencies / pathways?

3.8 Please describe the reasons why you refer your low vision patients to other providers? Also, which patients are you more likely to refer?

3.9 Did an experience during your optometry training influence your decision as to whether or not to provide services for low vision patients?

☐ Yes  ☐ No

If yes, briefly comment on specific experience(s) during your optometry training that had most impact on this decision:

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY
There may be discussion points arising from this survey that would benefit from your further input.
Should this be the case, are you willing to be contacted for further conversation regarding the provision of eye health services for elderly or low vision patients in Australia & NZ?

If so, please provide your contact details below:

<table>
<thead>
<tr>
<th>Name:</th>
<th>Telephone:</th>
<th>Email:</th>
</tr>
</thead>
</table>

Alternatively, if you wish to be involved in further discussions but have your survey responses remain anonymous, you can email the Project Manager directly at: LowVision.Optoms@gmail.com
Appendix 3. Survey: ‘Early Perceptions of Rural and Remote Careers in Optometry’

AUST/NZ OPTOMETRY STUDENT SURVEY 2009
EARLY PERCEPTIONS OF RURAL & REMOTE CAREERS IN OPTOMETRY

SECTION 1: DEMOGRAPHIC INFORMATION

<table>
<thead>
<tr>
<th>1.1 Currently attending:</th>
<th>1.6 Are you:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ QUT</td>
<td>□ Domestic student</td>
</tr>
<tr>
<td>□ Uni Melb</td>
<td>□ International student</td>
</tr>
<tr>
<td>□ Uni AkI</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 Stage of Program</th>
<th>1.7 Which of these best describes your ethnic background?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Yr 1</td>
<td>□ Australian/New-Zealand</td>
</tr>
<tr>
<td>□ Yr 2</td>
<td>□ European</td>
</tr>
<tr>
<td>□ Yr 3</td>
<td>□ North- or South-East Asian</td>
</tr>
<tr>
<td>□ Yr 4</td>
<td>□ South or Central Asian</td>
</tr>
<tr>
<td>□ Yr 5</td>
<td>□ Middle-eastern</td>
</tr>
<tr>
<td>□ Part 1</td>
<td>□ Other (please specify):</td>
</tr>
<tr>
<td>□ Part 2</td>
<td></td>
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<tr>
<td>□ Part 3</td>
<td></td>
</tr>
<tr>
<td>□ Part 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3 Age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 Gender:</td>
</tr>
<tr>
<td>1.5 Are you:</td>
</tr>
</tbody>
</table>

1.8 Before studying optometry, did you live in what you considered to be a rural/remote area?

- No
- Yes

For how long in total did you live in a rural/remote location?

What was your postcode?

(Domestic students only)

<table>
<thead>
<tr>
<th>1.8 Which of these best describes your ethnic background?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Australian/New-Zealand</td>
</tr>
<tr>
<td>□ European</td>
</tr>
<tr>
<td>□ North- or South-East Asian</td>
</tr>
<tr>
<td>□ South or Central Asian</td>
</tr>
<tr>
<td>□ Middle-eastern</td>
</tr>
<tr>
<td>□ Other (please specify):</td>
</tr>
</tbody>
</table>

1.9 Before studying optometry, did you attend school in what you considered to be a rural location?

- No
- Primary School
- Secondary School
- Both

For how long in total? __________ years

1.10 After graduation, do you intend to commence employment in a practice outside of a major metropolitan city?

- Yes
- No

Would you want to practice in a rural/remote location later in your career?

- Yes
- No
- Not yet sure

If YES - within what time-frame after graduation?

- Within 1 year
- Within 5 years
- After 5 years
- Unsure

1.11 Have you previously undertaken an optometry preceptorship in a “country” area?

- Yes (Continue to Section 2)
- No (Go to Section 3)

SECTION 2: IF YOU HAVE ALREADY BEEN ON RURAL OPTOMETRY PRECEPTORSHIP

2.1 During your optometric studies, you have already undertaken a rural preceptorship/clinical placement.

Where was the location?

- In Australia
- In NZ
- Overseas (specify country):

In which town/area were you?

For how long?

What was the most enjoyable aspect of the preceptorship?
What was the least enjoyable aspect of the preceptorship?

Were you offered incentives to undertake the preceptorship?
- No
- Accommodation
- Travel costs
- Other – Please specify: ________________________________

Were any steps taken to ensure you had social opportunities whilst staying in your rural town?
- No
- Yes – Please describe: ________________________________

Has this rural preceptorship influenced your decision whether or not to practice in a rural area?
- No
- Yes – Please explain why: ________________________________

What other comments would you like to make about a rural preceptorship versus a city one?

(Continue to Section 3)

### SECTION 3: ATTITUDES TO UNDERTAKING A RURAL PRECEPTORSHIP DURING OPTOMETRY STUDIES

<table>
<thead>
<tr>
<th>3.1 Whether or not you have undertaken a rural preceptorship placement, please rate your opinion on the following statements:</th>
<th>STRONGLY AGREE</th>
<th>AGREE</th>
<th>DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have an interest in working in a rural area after graduation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>If I go to a rural location for preceptorship I may miss out academically</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidised accommodation would influence my decision to go to a rural/remote location for preceptorship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidised travel costs would influence my decision to go to a rural/remote location for preceptorship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very aware of the status of health care delivery to rural and remote areas of Australia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural preceptors will be just as able to train me as a city-based preceptor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optometry schools should have a compulsory rural/remote preceptorship placement</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I am aware of indigenous issues in optometric care</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I think that rural people will be very friendly</td>
<td></td>
<td></td>
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<tr>
<td>I think that rural towns will have the recreational facilities I would like</td>
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<tr>
<td>Going on a rural preceptorship will prepare me better for my career than going to an urban location</td>
<td></td>
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</tr>
</tbody>
</table>

3.2 What other factors would influence your decision whether or not to undertake a preceptorship in a rural area?
- Personal, professional etc
### SECTION 4: YOUR IMPRESSION OF A CAREER IN RURAL OPTOMETRY (FOR ALL STUDENTS)

<table>
<thead>
<tr>
<th>4.1 To what extent is each of the following a factor in your decision whether or not to work in a rural area AFTER GRADUATION?</th>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living close to family</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Living close to friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural lifestyle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities to socialise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities for recreation/sport activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of living</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of accommodation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of public transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Opportunities for professional/peer support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Opportunities for continuing education and upgrading skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.1 Continued

<table>
<thead>
<tr>
<th>VERY GREAT</th>
<th>GREAT</th>
<th>MODERATE</th>
<th>LITTLE</th>
<th>NOT AT ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparedness for rural optometric care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Remuneration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Availability of relief staff to be able to go on holidays</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparedness to handle indigenous issues in optometric care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner's employment / training needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment for raising children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire to help people in rural/remote areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The scope of working in rural areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whether or not I have been on a rural preceptorship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nearness of a capital city</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of access to nearest capital city</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of visiting/resident ophthalmologist</td>
<td></td>
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</tbody>
</table>

**THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY**
Appendix 4. Survey: ‘What do the terms ‘rural’ and ‘remote’ mean to you?’

Survey of students who gave emails for further follow up of Student Rural Survey.

Email subject line: What does the word ‘rural’ mean to you? [2 minute survey]

“In September you were asked via email to participate in a survey concerning your attitudes to undertaking a rural preceptorship, or ultimately working in a rural area.

Thank you for giving us your time back then (334 students did so), and, for providing your email address for further follow up.

Can you help us with just one small point before this Thursday 21st January?

Please click on this link (to Zoomerang) for this 2-minute survey on what the words ‘rural’ and ‘remote’ mean to you.

Thank you,

Anna Palagyi,  Project Manager the Delivering Optometric Graduates Ready for Practice Beyond the Cities and Ready for an Ageing Population
Ethics UNSW  090009

Q. 1  In which city is your School/Department of Optometry?  …………………

Q. 2  How far away from a metropolitan centre (i.e. any city/town with over 100,000 inhabitants) do you think a township has to be to count as ‘rural’?

   a) How far do you think this is in kilometres?……………  km

       [Note. Sydney to Canberra is 250km as the crow flies, Auckland to Hamilton is 125Km, Brisbane to Noosa is 125 km, Melbourne to Bendigo is 150 km]

   b) Tell us how much time you think this takes-to drive ………..  hours

Q3.  For you, what is your definition of a ‘remote’ area?  …………………………..………

For further information you may contact the Project Manager, ALTC Grant: Delivering optometric graduates ready to practice beyond the cities and to serve an ageing population, Anna Palagyi at a.palagyi@unsw.edu.au or (02) 9385 9879.
### Appendix 5. Survey: ‘Rural and Remote Optometry Educational Approaches’

#### RURAL & REMOTE OPTOMETRY EDUCATIONAL APPROACH

**ACADEMIC STAFF AND CLINICAL SUPERVISORS**

<table>
<thead>
<tr>
<th>INSTITUTE:</th>
<th>EMAIL (Optional):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NAME (Optional):**

<table>
<thead>
<tr>
<th>PHONE (Optional):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Please highlight, or mark, the applicable response and elaborate where required.

1. Have you, in your experience as an optometrist, had experience providing optometry services in rural or remote settings?
   - [ ] No
   - [x] Yes

2. In your teaching/clinical supervision, how often would you mention in passing rural optometry scenarios:
   - [ ] As often as possible
   - [ ] Every now and then
   - [ ] Very rarely
   - [ ] Never

3. a) In your teaching, do you deliberately incorporate discussion of aspects of rural or remote practice?
   - [ ] No (go on to question 4)
   - [ ] Yes – which course(s) do you incorporate these discussions?

   b) Please provide a brief summary of the aspects of rural or remote practice you discuss:


4. Do you have any further comments, based on your own rural experience or otherwise, regarding effective strategies for introducing rural optometry to undergraduate students in Australia & New Zealand?

LOW VISION EDUCATIONAL APPROACH
OPTOMETRY TRAINING INSTITUTES
INTERVIEW GUIDE

INSTITUTE:  
EMAIL:  
CONTACT NAME:  
PHONE:  

In undergraduate program:

1. Describe the path of a typical student through low vision in your optometry program

- In addition to your responses, you might consider including:
  a. Learning objectives in the area of low vision, and graduate capabilities (competencies)
  b. What drives these learning objectives (rationale, stakeholders, etc.)

2. What strategy does your optometry program implement to connect low vision-related components throughout the degree?

3. Describe the didactic part of your low vision program:
   - How many lecture hours are allocated to low vision?
     - At what year level(s)?
   - Do you have laboratory hours allocated to low vision?
     - How many hours?
     - At what year level(s)?
   - How many tutorials are allocated to low vision?
     - How long are they?
     - In what year level(s)?

4. Describe the patient oriented components of your low vision program:
   - How many practical sessions are allocated to low vision?
     - How long are they?
     - In what year level(s)?
   - How many low vision patients do students observe through their training?
     - In what year level(s)?
   - How many low vision patients do students examine themselves?
     - In what year level(s)?
     - Where?
       - eg. University clinic, other clinic?
     - What types of low vision patients are seen?
     - How many new patients? How many review patients?
     - How many hours would be spent in clinic seeing these patients (overall)?

5. What presentations or visits to blindness agencies, low vision support groups, and other health professions relevant for referral and rehabilitation are given to students?
   - What your level(s)?

6. What textbook/textbooks are recommended to students in the area of low vision?

7. What essays, assignments, style of exam questions, etc are used to assess students in the area of low vision, and what relative proportion does each format have?
   - In what year level(s) are each of these used?

8. What are your institute’s future plans for education of optometry students in the low vision area?
   Notes for clarification, or written answer if relevant.
9. What are the perceived limitations in low vision training at your institute?
   eg. Budget, time, attracting patients.

10. Please provide a copy of at least one learning activity used in your low vision training (preferably a
     favourite of either the educators or the students at your institute).

11. Do you have any other general comments regarding preparing optometry students to provide
     low vision services upon graduation?

In postgraduate program:

- Do you offer any low vision courses/training for graduated optometrists?
  If so please provide details about the courses/courses: