Speaking Easy for Living and Learning: school-based service-learning for speech pathology students

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Abstract

Overview: Service learning is increasingly being recognised as an important part of health curricula and contributes to the community engagement of universities. As part of their final year clinical placement, speech pathology students from James Cook University and University of Sydney provided speech and language assessment and therapy where appropriate for children and families within a primary school which services disadvantaged families. Students also assisted with referrals to community and health services and contributed to teachers' professional development relating to classroom support of speech and language development and management of children with difficulties in these areas.

The model: The Broken Hill community campus partnership service learning model was adapted to the local situation to help address the well recognised lack of allied health services in rural and remote areas. As a result, a strong and dynamic partnership between universities, primary schools and local communities developed, with all members of the partnership contributing time, equipment and other resources without external funding. In 2014, funding was obtained from the Australian Government funded Northern Territory Regional Training Network to appointment a part-time discipline specific supervisor on site; inter-professional and remote supervision was also provided.

The outcomes so far: The positive outcomes of this ongoing project are already becoming evident. Teachers report that families are now engaging with the school and tackling previously unaddressed speech and language problems. Other community organisations have become aware of the value of these initiatives and are discussing possible expansion of the program within the wider community. The speech pathology students improved their understanding of program design that facilitates community engagement and the complex issues affecting learning outcomes and school success for Aboriginal families and communities. Students are now in active competition for these placements, recognising the invaluable professional, teamwork and cultural learning experiences such placements provide.

The future: This service learning model can be used in a primary school setting to benefit communities and to provide valuable learning opportunities for students and the partners. The key elements of success are the strong commitment from the services, the people involved, and the ongoing engagement by families. The program enables access to allied health services, engages communities and enhances service provision across sectors, while contributing to the health promoting environment in the school. This model can be applied in other primary schools and can incorporate other health disciplines, and has potential to be applied in other rural and remote locations with limited access to allied health services. The only requirement is ongoing commitment (not a problem), and funding for locally based clinical educator support (more of a challenge).

Overview

The importance of effective communication skills on the life outcomes of Australia's children cannot be understated. A growing body of evidence is identifying the immediate and longer term detrimental impacts of undiagnosed and untreated speech, language, and communication disorders on the social, education, health, and economic attainment of children in adolescent and adult stages of their lives.[1,2,3,4]

The link between educational attainment and enhanced life and wellbeing outcomes is well documented[2,3,5,6] ; some compelling evidence has been published by the Australian Institute of Criminology (2012),[1] which identified that a high proportion of young offenders (up to 50% in Australian studies) were found to have had a clinically significant, but previously undetected oral language disorder.[1] The other prevailing factor across the rural communities is that these communities

continue to experience significant challenges in health care access and service delivery[7] from across a broad range of early intervention and school based therapy services.[8]

The Council of Australian Governments' (COAG) has initiated national, systemic and local-level improvement actions directed at increasing school readiness, improving school engagement, strengthening literacy and numeracy skills for Aboriginal and Torres Strait Islander children.[9,10] The direct link between language and literacy attainment is well documented.[1,2,5,6]

Not all Australian children learn how to communicate effectively and intelligibly prior to their entry into the primary school learning environment. Commencing primary school is an acknowledged transition period for young children who need to locate themselves within new learning and social contexts. Having an appropriate vocabulary is essential in achieving educational and social engagement of children.[11]

Early Intervention is essential to preventing or reducing livelong implications associated with language and communication impairment.[12,13,14]

In rural Australia there is inequity of access to early intervention allied health services such as speech pathology. Data suggests that only 4.5% of speech pathology practitioners provide services to rural communities but these communities constitute 30% of the total Australian population.[15] Only 0.7% of Speech Pathologists working in the NT[16] but the population of the Northern Territory is proportionally much greater[17] and is more dispersed. Rural and remote Australian children are more likely to be identified as experiencing developmental vulnerabilities that impact on education and health attainment on entry into primary school than their metropolitan counterparts.[18]

The overarching project named 'Speak Easy for Learning and Living' has been developed to increase access to speech pathology as an early intervention within the community of Katherine through the development, delivery and evaluation of an innovative allied health student service-learning model (speech pathology students are from James Cook University and University of Sydney), within a primary school setting (i.e., partner Clyde Fenton Primary School Katherine) and early childhood development programs such as those offered by other partners (e.g., Good Beginnings). A core principle of the project is to align community identified areas of priority and unmet health needs to clinical placement growth and workforce capacity in the region.

Service-learning delivery models that are underpinned by community-campus partnerships may be one suitable approach to establishing innovation solutions to entrenched health care inequities, health workforce deficiencies, and cross-sector collaborations that are 'fit for purpose' within rural and remote contexts.[19,20,21,22] If there is some solid evidence of benefit from such models in adults therapy, there is a dearth of international and national literature for elementary school-age children with recommendation for expanded research.[23,24] The participatory, developmental and empowerment approaches to Speak Easy for Learning and Living (S.E.L.L. - name for the initiative) are favoured by our community-campus partners in Katherine who work in contexts where programs and people face challenges associated with inequity, disempowerment, exclusion, or injustice.

Based on the service-learning model, the S.E.L.L. program aims at supporting social and educational outcomes for children; by assisting with referrals to community and health services and contributing to teachers' professional development relating to classroom support of speech and language development and management of children with difficulties in these areas. The model equally provides access to speech pathology services at the school, develops communication and school readiness skills, and supports school attendance by engaging teachers, children and families; with the ultimate goal of assisting them to reach their full potential in life.

The S.E.L.L. Model

Background

Although there is an increasing policy move towards cross-sector collaborations in addressing childhood educational and health disadvantage, many challenges remain in the provision of integrated and sustainable cross-sector service delivery approaches. This becomes even more challenging in rural and remote settings.

Service-learning has been an acknowledged educational approach in the United States of America and Canada for over 40 years[23] and is an emerging approach to the education of Australia's future health workforce.[25,26]

Proponents of service-learning claim that this educational approach enhances health student learning outcomes by engaging students in challenging community settings that require the transfer of theory (classroom based learning and course content) to new environments where students are exposed to unfamiliar issues, different perspectives, and solutions focused activity to health and social issues.[19,27] Service-learning is considered compatible with other changes in higher education approaches including a transition from teaching to student-led learning, autonomous work of students in collaboration with partners, and movement towards higher education and public agency partnerships to enhance democratic approaches to academic work of.[19] It is also considered as having the capacity to shape students' willingness to treat the underserved and provide a more socially responsible training.[21]

There is an increasing body of evidence that documents the efficacy of service-learning participation during undergraduate years.[29] These studies have shown an impact on personal, social and learning outcomes for students. The integration of service-learning in the education of healthcare professionals has been shown to benefit students, faculty members, communities, and higher education institutions.[21,28]

Translation to Katherine context

The Broken Hill University Department of Rural Health, The University of Sydney, has been delivering allied health service-learning programs since 2009. The Allied Health in Outback Schools Program sees students from the disciplines of Speech Pathology, Occupational Therapy, Dietetics and Orthoptics providing screening, assessment, therapy and referral services within primary and pre-school settings in far western NSW. These students are supervised by locally embedded academic / clinicians employed by the Broken Hill University Department of Rural Health.

A partnership has been established for proof of concept and feasibility between Clyde Fenton Primary School, Flinders NT Katherine Rural Clinical School, and Broken Hill University Department of Rural Health. Partner organisations agreed to work collaboratively on the development of a Speech Pathology Service-Learning initiative for Clyde Fenton Primary School. To progress the initiative each partner organisation drew on their areas of expertise, human and infrastructure resources, networks and shared commitment to improving the educational and health outcomes of remote and Indigenous children. The Katherine program enabled community stakeholders to explore the transferability, adaptability and sustainability of the Broken Hill model in this location and for this context.

More recently the partnership extended to Good Beginnings and James Cook University.

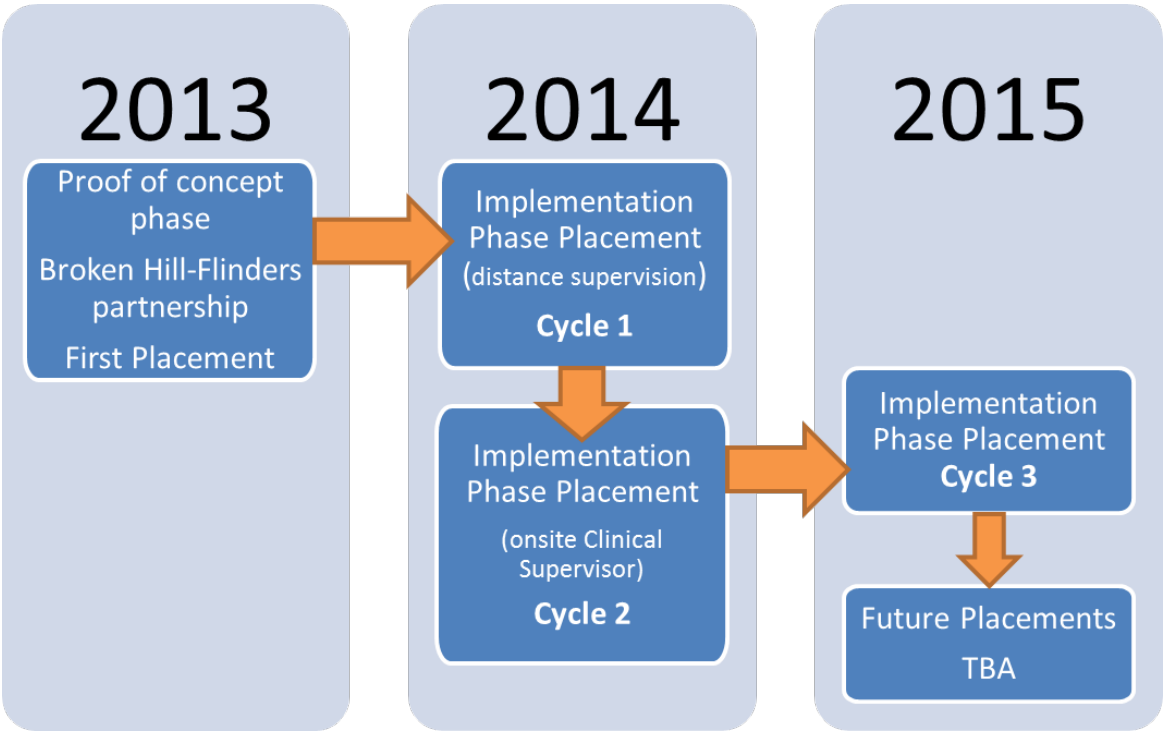
The Broken Hill (BH) service-learning model formed the foundation of the SELL project and the fundamental principles of student-led service learning services for school aged children transferred effectively to the Katherine Region. Transferability was monitored closely by the local advisory group set up in 2012 to support planning and implementation of the SELL project. This advisory group continues to plan the future implementation of the SELL project, now looking to expand to pre-school aged children.

It is noteworthy to highlight that cross-sectoral partnerships between universities, health services, school education and the community are critical to the success and sustainability of this model. These models offer participants leadership opportunities to expand their awareness of issues central to the inequities confronted by disadvantaged and underserved populations.[21]

Groups of students (in their last year of the degree in speech pathology) work under the guidance of a clinician academic to deliver services that include screening, assessment, treatment and referral. Prior to commencing placement, students participate in a comprehensive induction and orientation program that consists of key clinical skills development and consolidation, introduction to model and community of practice, and cultural education. The service-learning model developed in context for the Katherine region, as opposed to the Broken Hill model, focusses on Aboriginal pupils' needs who

attend the school but who are unlikely to access health services. Diagram 1 presents the sequence of S.E.L.L. project life (2013 to current; proof of concept and implementation phases).

Diagram 1 Sequence of SELL project life (2013 to current)



The placement offers unique opportunities for student speech pathologists to gain experience and confidence working with Aboriginal children and families prior to graduation, addressing the need for development of these skills within the profession. An additional aspect of the Katherine model is aligned with the well-recognised and documented need for professional development in the pre-school sector to support school readiness,[30] especially school readiness for Aboriginal children who speak English as a second language.

The outcomes—evaluation

S.E.L.L. has developed and grown through two stages:

- first stage: the proof of concept (inaugural program) was implemented in September in 2013.
- second stage: the implementation phase of the program which morphed and consolidated into a robust model (two cycles 1&2 in 2014 - one cycle 3 in 2015).

For clarity, this part will concern itself with the outcome at each of the two stages.

Stage 1: The Proof of Concept

The inaugural program was made possible by a financial arrangement where the local partners accepted to support 'in kind'. A Community for Children competitive grant from the Smith Family (Katherine) enabled the payment for the travel expenses for four students and the four weeks secondment (including travel) of the speech pathology clinical academic from Broken Hill to Katherine.

Table 1 presents the format of the inaugural program; table 2 informs on the schedule for the placement.

Table 1 Format of the inaugural program

Speech Pathology student numbers:	4 Master Speech Pathology University of Sydney
Clinical placement duration:	30 September 2013 – 8 November 2013
Host Academic Institution:	Flinders NT Katherine Campus
Placement location:	Clyde Fenton Primary School, Katherine NT
Consultancy support:	Broken Hill University Department of Rural Health
Speech Pathology academic / clinician provided by:	Broken Hill University Department of Rural Health
Number of participating children:	12 (9 Aboriginal children)

Table 2 Inaugural 6 week program placement timetable/schedule

Week 1: Program Content	Orientation and Induction week Katherine NT Cultural orientation and education, clinical preparation
Week 2:	Community and Clyde Fenton Primary School Pupils and teacher; start assessment
Week 3:	Assessment and therapy development and delivery Meet with families in the communities
Week 4:	Assessment and therapy development and delivery COMPASS assessment
Week 5:	Assessment and therapy development and delivery Deliver feedback to teacher and families
Week 6:	Assessment, therapy development and delivery, and development of home/school therapy plans. Professional development for teachers. Placement debriefing sessions COMPASS assessment

Arrangements were made through the Broken Hill - Flinders partnership for the housing arrangements and interdisciplinary supervision of the four students. This group of students were in their final placement for the Master of Speech Pathology at The University of Sydney.

Key stakeholders included parents/carers of participating children, teaching staff at Clyde Fenton Primary School, the cultural advisor/support at the school, participating Speech Pathology students from The University of Sydney, the supervising Speech Pathology academic/clinician from the Broken Hill University Department of Rural Health, a senior executive representative from Clyde Fenton Primary School (Principal) and Flinders Northern Territory Director in Katherine.

Due to the social, educational and community partnerships, participatory evaluation methods appeared to be the most suitable to gather data for quality improvement. As discussed by Patton[31] and Spooner et al[32] the fundamental element of participatory evaluation is a *"commitment to involving people in the setting being studied as co-inquirers*".

Information on key stakeholders' experiences provided by this initiative was obtained through individual interviews, focus groups, and questionnaires undertaken at the completion of the program. Questionnaires were also provided for informants who were unable to attend face-to-face sessions. Consent was gained from all respondents.

Interviews and focus groups were facilitated by an academic from Broken Hill University Department of Rural Health with extensive experience in qualitative evaluation and research, service-learning program development and delivery, and cross-sector partnerships including school education, higher education institutions and health providers.

Data obtained from stakeholders was thematically analysed to identify key themes associated with the program. A specific focus was placed on the identification of suggestions and recommendations for improvement that would inform the feasibility and development of future activities associated with this

initiative. Data also provided evidence for the local advisory group regarding transferability and adaptability from the BH model to the Katherine context.

The following quotes are sourced from parent/carer completion of the questionnaires.

> "[child's name] is talking lots more at home. I am so happy these ladies were able to help … with communicating. He is getting easier to understand."(P1)
>
> "[child's name] is talking much more at home he is always asking lots of questions now and helps me cook-especially damper, his favourite."(P3)
>
> "[child's name] is using many more words at home that are English words. This is good for his school learning."(P11)
>
> "Yes I think the program should run again. I thought [child's name] got a lot out of it. I am sure there's plenty of other kids that will need this kind of program in the future. I think the students (Speech Pathology) would have gained a lot out of this experience as they would not have a great scope of experience and city kids are a lot different to kids in the NT. Different lifestyles, make different people. So I'm sure they will be taking a lot home with them."(P9)

Students provided the comments below as part of feedback on the experience:

> "It's been tough, it's going to be tough to leave, but it's really been worth it."(S1)
>
> "We did not expect such a cultural challenging environment and it shows that we should have prepared better to come here. The cultural orientation was awesome and don't change it."(S4)
>
> "… working independently and time managing were a learning curve for me. But I am feeling more confident to apply for a job now (which I did)."(S3)

From the themes emerging from the qualitative analysis, recommendations were drawn and presented to the local advisory group. The outcomes were as follows:

- Transferability was evidenced and the elementary school decided to continue this program as an add-on for their transition and transition readiness classes,
- The BH model could be adapted to the Katherine region context with some changes; the majority of pupils were from English as second language background and assessment tools had to be reviewed for relevance. Speech pathologists practicing in the region assisted in this step. Cultural orientation was more extensive and contextualised for the Katherine region and the service delivery format.
- Sustainability was the main hurdle to overcome. The results gathered provided evidence to support a grant application from the NT Government and Department of Health under the NT Regional Training Network. This innovation grant was part of a last funding round from Health Workforce Australia (HWA).[35] It enabled the recruitment of a clinical speech pathologist academic in Katherine to supervise the subsequent student placement cycles (2014 and 2015) undertaking their service-delivery placement.
- As explained to the students, the clinical placement was an inaugural and unique experience that was offered to them, therefore their feedback was not only paramount for the continuation of S.E.L.L. but was a unique experience to be enriched by and to be proud of, and was aligned with the competency standards published by Speech Pathology Australia.[4]

Some of these findings are aligned with Cirrin et al[33] and Jones D et al.[34] Other aspects such as the cultural context in which the model was implemented influenced the perceptions reported by the participant students. The offer of a service in an environment where none is available can also be considered as a confounding factor for overestimated success. These results are a baseline to which the future phases can be compared.

Stage 2 The Implementation Phase of placement cycles – The S.E.L.L. project

All the stakeholders involved since the inception of the Speech Pathology project in 2013, and therefore familiar with the program were invited to contribute to the subsequent placement cycles. Participants are represented by the teachers, families (parents), elementary school age children (Indigenous and non-Indigenous), the academics and the students engaged in the S.E.L.L. program. Student participants from James Cook University Speech Pathology enabled the increase of the placement cycle from one to two in 2014 and three 2015. Each placement cycle was designed over eight weeks which fitted within the school terms.

Some families and pupils have been involved in the inaugural initiative; new participants joined with the expansion of the program while others left it as they moved out of Katherine. Longitudinal observation and evaluation is therefore challenging at this stage.

The format of the subsequent placement cycles are outlined below.

Format for cycle 1, 2014

Speech Pathology student numbers	2 Bachelor Speech Pathology James Cook University
Clinical placement duration:	Feb- April 2014
Host Academic Institution:	Flinders NT Katherine Campus
Placement location:	Clyde Fenton Primary School, Katherine NT
Speech Pathology academic / clinician provided by:	Flinders University, Katherine Site
Number of participating children:	9 (Aboriginal children)
Structure of service provision:	Group therapy (4 children phonics group, 2 children speech/language group) 4 times per week. Intensive individual therapy (3 children) 2 times per week. PD session for teachers: voice care.

Format for cycle 2, 2014

Speech Pathology student numbers	4 Master Speech Pathology University of Sydney
Clinical placement duration:	Sept 2014 – Nov 2014
Host Academic Institution:	Flinders NT Katherine Campus
Placement location:	Clyde Fenton Primary School, Katherine NT
Speech Pathology academic / clinician provided by:	Flinders University, Katherine Site
Number of participating children:	21 (19 Aboriginal children)
Structure of service provision:	3 children received assessment and programming support only. Group therapy (5 children) 2-3 times per week Intensive individual therapy (13 children) 2-3 times per week. GAS goals developed for 18 children. PD session for teachers: speech development.

Format for cycle 3, 2015

Speech Pathology student numbers	2 Bachelor Speech Pathology James Cook University
Clinical placement duration:	Feb-2015 April 2015
Host Academic Institution:	Flinders NT Katherine Campus
Placement location:	Clyde Fenton Primary School, Katherine NT
Speech Pathology academic / clinician provided by:	Flinders University, Katherine Site
Number of participating children:	21 (19 Aboriginal children)
Structure of service provision:	4 children received assessment and programming support only. 1 child received review, two therapy sessions and was provided home and school based programming only. Group Therapy (2 children speech and phonics group, 3 children phonics) 3 times per week. Intensive individual therapy (11 children) 4 times per week. GAS goals were developed for 16 children. PD for teachers: speech and language norms and interpretation of speech pathology reports and programs.

Two types of data collection were implemented:

- **1-Qualitative**: Parallel investigation of parent, school and university participants. Data was collected using questionnaires administered at the end of each student rotation through the school (i.e. each school term); open ended Interview and focus group questions based on partnership theory will invite participants to explore their experience and views of S.E.L.L. This process is replicating the qualitative evaluation designed for the proof of concept.

- **2-Quantitative**: Initial goals set and measurements taken regarding children's clinical achievements using Goal Attainment Scaling (GAS); the data from which assists exploration of factors affecting success and achievement of clinical outcomes (speech and language), as well as informing the overall design of the program/approach. GAS enables capture of outcomes relevant to individual patients/pupils, providing real-world outcome measurement. The tool also possesses valuable psychometric properties. The literature recognises the useful individualised clinical outcomes provided by the tool and the variation in implementation.[34,36,39]

There are several basic steps as outlined in Jones M et al[34] to the implementation of GAS:

- Assessment of each patient/pupil problem area/s (in this case speech, language and communication, including access to SAE school based curriculum) and goals defined for each.

- A GAS measure is created and an expected outcome is agreed (in this case between student, pupil and their family, teacher and other relevant stakeholders).

- GAS attainment levels are defined for each point on a (typically) 5 point scale (-2 to +2) with 0 being the expected outcome and -2 being the baseline. Each attainment level has to be relevant, observable, measurable and consistent.

- Overall Goal attainment is found using a standardised statistical formula. Due to the small pupil number reducing the statistical relevance, this calculation was not undertaken.[16,37]

Qualitative results

Stakeholder evaluation

The feedback provided by parent, school and university participants unanimously recognised the benefit of the program as a community-campus partnership model that delivers outcomes for the pupils at Clyde Fenton Primary School. All participants provided consent prior to the process.

The comments collected at the end of the inaugural program are very much echoed by those collected at the subsequent cycles during implementation phases 1&2 (2104) and phase 3 (2105).

Parent/family comments:

> "I am so glad that the program was offered again. My (child name) is using more words, gets ready in the morning to go to school and is more chatty when he comes back."(P2)
>
> "… the school has done so much for our kids. They are happier at school with this program and talk more at home."(P6)
>
> " Without his ongoing program my kid could not get this help for his language. Thank you."(P8)

Teacher response to the program was also analysed qualitatively via survey at the completion of each cycle. In addition to the work the speech pathology students undertook with pupils, they also provided a professional development session to the staff at Clyde Fenton Primary School. Some of the teacher comments in relation to the overall student placement and the PD session/s are included below:

> "Having the students at CFS is a huge benefit for our students with speech difficulties who struggle to access these professional services on a regular basis. Any access to this service is great, but the girls were professional, caring and dedicated to their work. Was great to have help with (student name)'s processing difficulty as well as the usual speech difficulties."(T2)
>
> "Very helpful with helping me to understand the barriers my students are faced with."(T3)
>
> "Yes, it was useful (PD session) as another opportunity provided by student Speech Pathologists to help me better understand language development – especially EALD."(T1)

These findings correlate with the literature when exploring the benefits of student-led clinics in primary schools.[23,33]

Student outcomes

Evaluation of student outcomes was undertaken, not only formally in terms of clinical and professional outcomes as measured on Compass, but the students were also asked to fill-in evaluation forms to obtain feedback on program orientation, achievement of learning outcomes (those measured outside of Compass) and individual learning experiences, placement outcomes, and general feedback on potential areas for improvement. Evaluation data received from students from all placements to date are clear that there are four specific areas in which student speech pathologists develop skills and confidence while undertaking clinical placement in Katherine at Clyde Fenton Primary School. These are:

- Increase confidence and skills in working cross culturally with Indigenous children and families who speak English as a second language.
- Increase confidence and skills in terms of clinical speech pathology skill application.
- Increase independence as a clinician.
- Increase confidence and skills in working in rural and remote and school based setting.

> "… opportunities were multiple to develop cross cultural skills and knowledge that we did not get anywhere else."(S4)

One aspect of the placement in Katherine is the cultural competence – workforce development that to date is not evidenced in the literature from Australia.

Developing the cultural competence and confidence at working cross culturally within the Speech Pathology profession is an established gap which does not appear to be closing, despite clinicians readily accessing cultural awareness training programs.[38] Clearly there is an opportunity within this project for speech pathology students to develop competency and confidence prior to graduation, primarily because of the unique population and cultural experience students are immersed in within the Katherine Region while on placement. Together with the comprehensive locally focussed cultural orientation program provided by Flinders University, Katherine Site and the ongoing cultural support available through Clyde Fenton Primary School and Flinders University Katherine Site, visiting students on placement have the opportunity to implement culturally appropriate practice within a supported learning environment. One hundred percent of students across all phases of the project implementation reported that their learning goals increased their confidence and/or competencies working cross culturally with Indigenous children who speak English as a second language. This has the potential to contribute to a nationally identified workforce need.

Some student comments reported on this aspect:

> "This placement gave me the opportunity to see children with a range of different diagnoses. Working independently has increased my confidence in my skills and abilities."(S1)

The other national workforce development issue affecting the Katherine Region in particular is strive with recruitment and retention of allied health staff.[15] As a result, access to services is significantly limited. By supporting student speech pathologists to develop confidence in working in this environment, and the benefits in terms of developing clinical skills and independence in practice, this project aims to promote active competition for Allied Health students and professionals in the future. Indeed, all students participating in a clinical placement in Katherine have recorded that their confidence and skills have improved as a result of working in this environment as evidenced by the following student quote.

> "… the cultural support has a paramount effect on the placement together with the supervisor support. My confidence across all areas of competencies has improved as a result of this placement."(S2)

Quantitative results

Goal Attainment Scale (GAS) pupils' outcomes

The S.E.L.L. program is unique in its utilisation of GAS as the clinical planning and evaluation tool.[36,39] As this tool is criterion referenced it enabled clinical, school based, and Community/family based goals to be integrated into the student speech pathologists therapy plan(s). It also had the benefit of ensuring evaluation and measuring of even small improvements in clients skills over the course of their therapy block across clinical, school based and home based objectives.[39] This was of particular importance given the client base and their developmental issues, which limited the likelihood of achieving 'normal' range outcomes at the end of the clinical block as a result of underlying issues around ESL, disability, and social health determinant factors (i.e., poor access to health and education, multigenerational unemployment, overcrowding and higher burden of disease).

It is difficult to have a quantitative measure that is meaningful and relevant because of the complexity of the confounding factors (social determinants affecting Community and pupils, ESL, accessing school based curriculum, accessing services including health, education, well-being, etc.). GAS represented the most adjusted quantifying tool for the context of the Katherine Region pupils.

Individual GAS goals were set for each pupil accessing the speech pathology student-led clinic, including those accessing one-on-one intensive therapy services and those accessing regular group therapy during the implementation phase - cycle 2 of the project (Sept-Nov 2014). A total of 99 GAS goals were set, however only 80 were directly targeted in the therapy session/s because they were determined achievable. Generally, this decision relates to two main reasons:

- poor attendance as per example below
- too many goals set for only 6 weeks of therapy made it difficult to focus on later developing skills which had goals set.

Example:

Pupil 'DC': female aged 6 years, diagnosis - severe receptive and expressive language delay and oral motor dyspraxia.

Goal 1. Able to understand 90% simple/basic familiar classroom vocabulary – achieved (GAS score = 0)

Goal 2. Able to use simple/basic familiar classroom vocabulary with 90% accuracy expressively – not achieved (GAS score = -1)

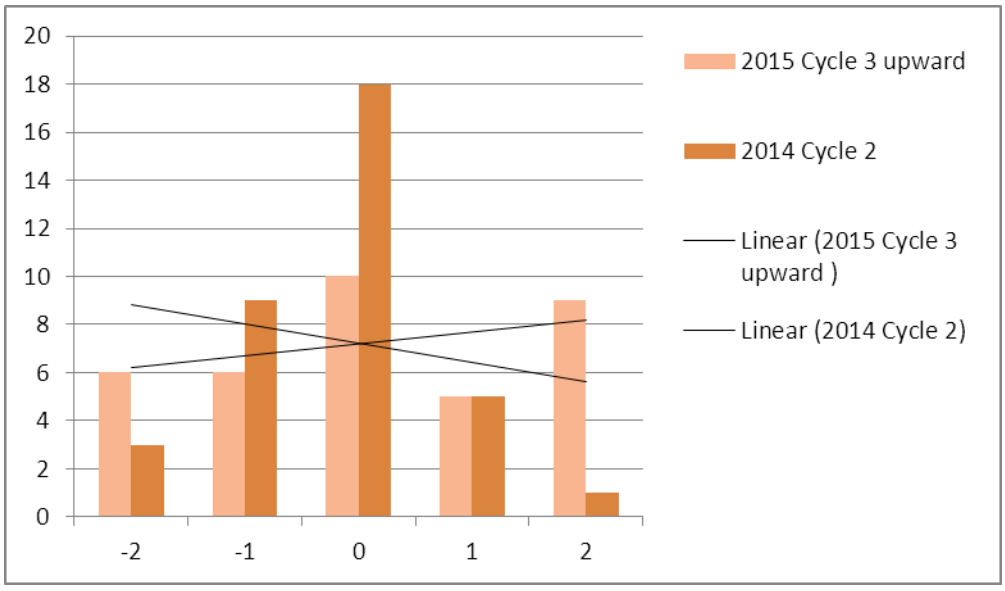
Goal 3. Intelligibility 40% with unfamiliar listener – goal not targeted as a result of very poor attendance.

At completion of the therapy block (implementation phase - cycle 2), children were all reviewed against their goals. Results demonstrated that 70% of goals were achieved or surpassed (receiving a GAS score of 0, +1 or +2). Of the 30% which were not achieved, one third (10% of the total) made no progress, and two thirds (20% of the total) made progress but not sufficient to achieve the goal (i.e., they scored -1 on the GAS scale when the target was 0).

Of the 80 targeted GAS goals developed for each client accessing therapy during the project's implementation phase - cycle 2 (Nov 2014), 35 were reviewed at the beginning of the cycle 3 of service delivery, Feb 2015 (same pupils, reviewed against the same goals).

Figure 1 shows a comparison of GAS results at two consecutive cycles during implementation phase (cycle 2 - Nov 2014 post therapy and cycle 3 - Feb 2015 pre-therapy). The same cohort of students have their results at the end of implementation phase - cycle 2 (November 2014) and are reviewed against these goals prior to undertaking cycle 3 (February 2015) to determine if the learned skills have been consolidated over the school holidays (refer to Diagram 1 p. 5).

Figure 1 Gas consolidation data over two consecutive cycles (2014 and 2015)



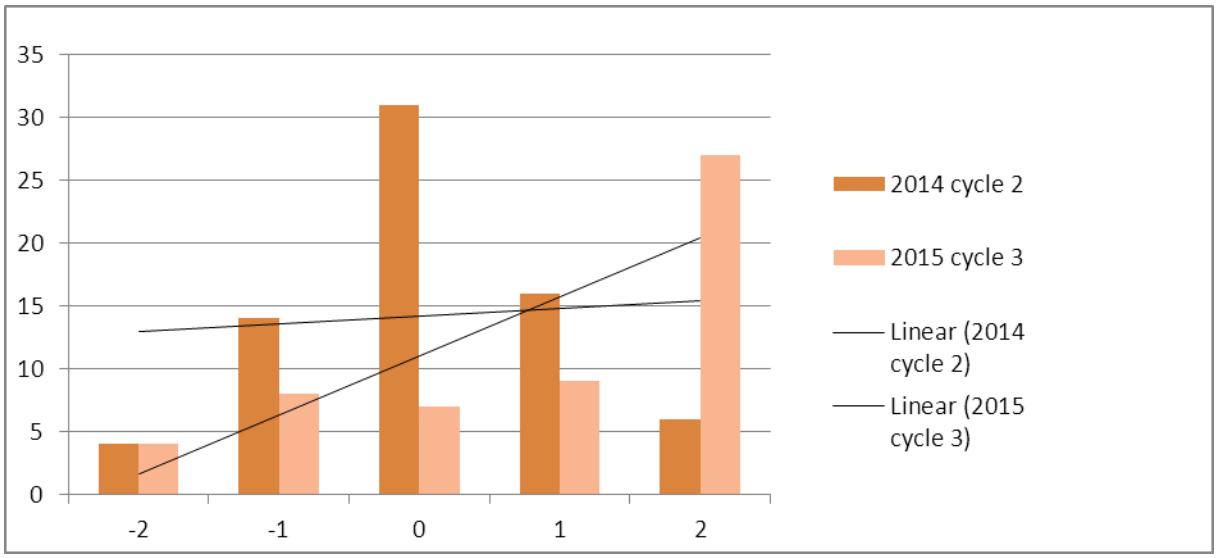
	5 point scale scores				
Same pupil sample with same goals measured	-2	-1	0	1	2
2014 Cycle 2 (2014)	3	9	18	5	1
2015 Cycle 3 upward (2015)	6	6	10	5	9

Over forty five percent (45.7%) of goals were consolidated. That is, the individual pupil results in Nov 2014 remained the same as measured in Feb 2015, indicating the skills learned at the end of implementation phase - cycle 1 (Nov 2014) has been consolidated as measured in Feb 2015. Over thirty four percent (34.3%) of goals demonstrated improvement from their previous level of achievement, indicating that skills had not only been consolidated but built upon between the end of the implementation phase - cycle 2 therapy block (Nov 2014) and the beginning of the implementation phase cycle 3 (Feb 2015). Only 20% of goals showed a decrease as measured at the time of review.

The data clearly demonstrates that the same cohort of children not only consolidated their learned skills from the end of 2014 (cycle 2, implementation phase), but a large number actually built upon their learned skills, a sufficient number to effect the overall trend.

Figure 2 shows the GAS results for pupils at the end of implementation phase - cycle 2 (Nov 2014) and at the end of implementation phase - cycle 3 (April 2015).

Figure 2 GAS results with cycle 2 (2014) data adjusted for attendance



	5 point scale scores				
Raw data incl. 2014 GAS adjusted for poor attendance	-2	-1	0	1	2
2014 cycle 2	4	14	31	16	6
2015 cycle 3	4	8	7	9	27

Eligibility for the first 2015 cycle was reviewed in consultation with stakeholders prior to commencement of the school term. Children whose attendance was below 80% were not included in the intensive one-to-one 2015 therapy cycle. They were instead offered a review, and school and home based program.

The first 2015 cycle also provided more access to therapy than the previous 2014 cycle. Despite the 2015 cycle being run with only 2 students, the program supported them to offer more frequent therapy (4 one-to-one sessions per week per pupil and 3 group therapy sessions per week per therapy group). This level of clinical service was unprecedented in the programs history, with an emphasis on speech pathology students developing clinical independence and experience by working as a sole practitioner

with their own ‘caseload’, as opposed to previous placements where peer supervision and working in clinical pairs was the clinical service delivery model. With access to an on-site clinical supervisor, the need for high level peer supervision was less imperative during the first 2015 cycle.

Conclusion

The quantitative results presented in the previous graphs, seem to support that increased access to therapy demonstrates quantifiable improvement in the pupils overall progress. Caution needs to be exercised however because there is no evidence at the time of writing for such outcomes in a student led clinic using GAS. While there is support for use of GAS in addressing communication disorders, not only as a tool to evaluate client progress but also as a tool for program evaluation in adult and rehabilitation settings,[39] further evaluations are required to fully evidence this output in this school based, student-led clinic setting.

Improving confidence and competence in working with Indigenous clients as a speech pathologist is a limited area of research. Hersch et al[38] emphasises the importance of accessing cultural support, facilitating links with Aboriginal Health Professionals and interpreters, training of Indigenous Speech-Language Pathologists and the development of culturally appropriate tools for assessment and treatment as being fundamental to meeting this need. Access to professional support throughout locations and settings was also identified by Hersch et al[38] to enable delivery of culturally safe and appropriate services. This aspect was built into the implementation phase with the employment of an Aboriginal Speech Pathologist, access to cultural supports across multiple settings facilitating cultural understanding and supporting access to family in culturally appropriate ways. Together with a comprehensive orientation program that provided comprehensive linguistic information regarding the primary language used in the Region, local cultural aspects, and meetings with the Aboriginal Interpreter Service, this program aimed to support student speech pathologists achieving confidence and competence in working with Indigenous children and their families.

The future

This service learning model (S.E.L.L.) can be used in a primary school setting to benefit communities and to provide valuable learning opportunities for students and the partners equally. As evidenced from the results, the model has delivered improved language and reading skills for children whose teachers accessed specific professional development provided by student speech pathologists and the results are similar to the findings by Snow et al.[1] Increasing access to communication professional development for teachers is an integral part of the S.E.L.L. program, while also developing one-to-one teaching and training opportunities to develop knowledge and skills of both teachers and speech pathology students in a shared learning environment. The approaches that have been used have the potential to investigate systems and/or tools for differentiating between second language and literacy issues, as opposed to speech pathology problems which would help in directing pupils for appropriate remedial intervention. The S.E.L.L. program will also attempt to replicate these results, gathering evidence of client outcome as a result of intensive language workshops with teaching staff.

The Katherine Region schools have a high percentage of Aboriginal Children, the majority of whom speak Kriol as a first language. There is a recognised need to develop speech pathologist (and allied health) competency in working with children[40] as well as adults who speak English as a second language.[38] The current program provides comprehensive cultural orientation and education prior to undertaking clinical contact and ensures the students have access to cultural support systems both within Flinders University and within the placement setting itself. This is a real and positive feature in the Katherine model and considered by the reference advisory group as the key to the success of the students in such a challenging environment.

There is an opportunity to provide student speech pathologists with a unique opportunity to gain experience and confidence working with Aboriginal children and families prior to graduation, addressing the need for development of these skills within the profession (Speech Pathology).

The need for professional development in the pre-school sector to support school readiness is clear, especially school readiness for Aboriginal children who speak English as a second language.[30] This is one of the objectives of the SELL project in its work with the Good Beginnings organisation. Development of culturally appropriate assessment and therapy tools, also part of this project, are also

recommendations for enhancing effectiveness of school readiness programs identified in McTurk et al.[30]

Another key element of S.E.L.L. success is the strong commitment from the education and health services, and the ongoing engagement by families. Engaging meaningfully with families from underserved communities in the Katherine surroundings can present difficulties and challenges that might take years to resolve. One of the key ingredients to the success of S.E.L.L. in Katherine can be attributed to the Aboriginal Speech Pathologist academic recruited in Katherine. This experienced clinician not only provided support to the students but also brought into the model her own wealth of experience and cultural knowledge.

The current service-delivery model enables access to allied health services (speech pathology), engages communities and enhances service provision across sectors, while contributing to the health promoting environment in the school. The speech pathology students were instrumental in developing adequate professional development for the teachers and delivering them at the school.

This model can be applied in other primary schools and can incorporate other health disciplines, and has potential to be applied in other rural and remote locations with limited access to allied health services. The only requirements are an ongoing commitment (not a problem) and funding for locally based clinical educator support (more of a challenge)!

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Presenters

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usage evaluation and education around medication and adherence and interdisciplinary education. Pascale Dettwiller's current role is to develop these community-campus partnerships and ensure appropriate feedback from the projects' outcomes is provided to the partners. She implemented the student–led clinics for allied health discipline starting with speech pathology in primary school. She is a relentless advocate for rural and regional integrated model and partnerships.

Trish Maroney is a Wardaman woman from Katherine Region. She has worked as a Speech Pathologist in Aboriginal Medical Services in remote Communities in the Region and in Katherine Township for 7 years. She also has significant clinical, policy and governance experience within the primary health care setting in South Australia. Trish currently supervises visiting Speech Pathology students undertaking their clinical placement in Katherine in her role with Flinders University to enable increased access to clinical services, develop culturally safe practice skills in the next generation of clinicians and to develop allied health recruitment and retention at the local level.