

A PARTNERSHIP AIMED AT IMPROVING HEALTH AND PHYSICAL EDUCATION AT A RURAL SCHOOL: IMPACTS ON PUPILS, UNIVERSITY STUDENTS, TEACHERS AND ACADEMICS

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ABSTRACT

Challenges and benefits arose when a rural school and a neighbouring university formed a partnership with the aim of improving the school's Health and Physical Education (HPE) program. The HPE programs were enhanced through two joint research projects. The first research project had two facets, including an evidence-based curriculum for Physical Education in the school, and a remediation program for children identified through the coordination testing process. The second research project was designed to investigate students' Health Education knowledge and explore any behavioural changes in and around nutritional choices. Both the projects were conducted as mutually productive partnerships within the school, resulting in beneficial changes for the school, the university and for the multiple participants. For the school, the Physical Education curriculum and pedagogies were modified and for students identified as requiring remediation, a multi-partnered intervention program was implemented. Students, teachers, parents and pre-service teacher education students benefited from the movement intervention program. The health education curriculum was enhanced when the school developed a social marketing approach to facilitate health-related decisions for pupils, teachers and ancillary staff. The university changed their pre-service teacher education curriculum, teaching methods, and achieved stronger research based outcomes by partnering with the school across both projects.

Key words: health and physical education in rural schools, physical education curriculum and pedagogy, health-related decisions, school university partnerships

INTRODUCTION

This paper reports on two research projects conducted between an independent school and a rural university. The projects are described in terms of their research components to facilitate a contextual understanding of the process of developing the collaborative partnerships for multiple groups both within the school and the university. Overlaying the description of the research is a reflection of the evolving partnership for the multiple participants. Therefore, the foci of this paper includes the evolution of the partnership and the impacts for members of the school and university community.

Partnerships between universities and schools are based on diverse purposes and agendas. These may include strategic alliances, professional development opportunities, research collaborations and university to school-based professional practicums alliances. Aside from the motivation and the underlying mutual benefit for forming partnerships, many are known to be unsustainable over time (Kruger, Davies, Ekersley, Newell, & Cherednichenko, 2009). What factors keep some alive and glowing over an extended period of time? Is it collaboration, reflection and continued revision? Is it adequate resources? Or is it vigorous support from top levels of leadership? According to Jenkins (2001) a high level of commitment is a must, and so is leadership (Thorkildsen & Stein, 1996).

THE PARTNERSHIP

Instigation of the Partnership

The partnership was instigated by a large independent, predominantly single sex K-12 boarding and day school with a rural university when the highly committed teachers in the Physical Education (PE) team, met with their School Director of Studies to discuss their concerns about how best to meet the current perceived needs of the pupils in their charge. Following this 'in house' conversation in 2003, the school's main strategy was to seek expertise from the academics within the university teacher education program and an appropriate instrument that would give an accurate measure of student profiles, specifically aspects of motor development for pupils in the junior school. In addition, the teachers sought to upgrade their own skills, knowledge and profile to become a more research informed teaching team.

The school's Head Master, with the Director of Studies sought out and approached the most senior member of the university's Health, Physical Education and Sport Studies (HPESS) team. That was the start of a partnership that has persisted for more than a decade.

The Stakeholders

The independent school (the school) is located centrally, within a rural city, in the northern tablelands of NSW. The school has a total current enrolment in the vicinity of six hundred pupils, two hundred and fifty within the junior school. The enrolment includes all grades from kindergarten (K) to year twelve (Yr. 12), and includes both day and boarding pupils. The junior school is co-educational, and the secondary is single sex (males). Furthermore, the school has a drawing area that includes most of the rural areas of northern NSW and southern Queensland in addition to pupils from overseas (The School, 2014).

The School of Education at the rural university (the university) prepares both primary and secondary school teachers. Enrolled university students are catered for on a full-time, part-time (on-campus) and online basis.

During the development of the project, there were three other important groups of stakeholders (contributors). The parents/caretakers/guardians provided input in the form of permission for their children to participate, as well as receiving reports with regard to how their charge progressed throughout the project, and providing feedback about the project to the school. The pre-service teacher educators (PSTE) from the School of Education participated and, more recently, there has been involvement of additional school staff members including teachers, ancillary and outside providers, who were included when an additional health education project was instigated.

The Theory of Partnerships

The basic premise of the partnership related to what is termed a 'community of practice'. According to Le Cornu and Ewing (2008), Sim (2010) and Carter (2012) the concept of 'communities of practice' or learning communities is promoted as fundamental to the

establishment of 'enduring partnerships.' Within the understanding of the social practices of shared learning is the commitment to shared responsibility.

Engeström (1999) offered a model, based upon Sociocultural Activity Theory (SAT), that connects the analysis of how actions are mediated by cultural tools to produce outcomes that are culturally acceptable within a framework for understanding how actions and tools have been shaped. This structure offers an alternative way of examining the different actions within a complex system such as this school-university partnership. Bound within SAT is the contention that new knowledge is created in the context of the practice through collaborative activities, each of which may form parallel activity systems.

The Stages of the Partnership

There were various stages involved in what was required to establish, maintain and foster the partnership. Taking note of the work of Kenny (2012) strategies included establishing the guidelines for the partnership, which included briefing sessions, clarification of roles, facilitating collaboration between participants and strategies for feedback and discussion. Consequently meetings were arranged between the Physical Education (PE) school teachers and Health Physical Education and Sport Studies (HPESS) university staff. The initial meeting involved two PE teachers from the school, the Director of Studies, as well as the teacher in charge of the junior school, and the team leader from the university HPESS team. At this meeting a proposed program was discussed, and the roles each side of the partnership were to play were agreed upon. For the first joint venture, the agreed roles for the school included contacting parents to seek consent for research.

The research was commissioned in order for the school to demonstrate they had a valid and reliable measure of the impact of their physical education curriculum, in this case, for individual fine and gross motor coordination. Thorkildsen and Stein (1996) identified the benefit of school and university partnerships to establish a greater validity of educational research, particularly for the application to school settings. Larkin and Hoare (1991) identified that in the average classroom there will be between three and five children who present with Developmental Coordination Disorder. Rose, Larkin and Berger (1997) outlined the psychosocial implications of being poorly coordinated. Furthermore, if the educational setting neglects to intervene, the students will not grow out of this condition, but be further affected over time by the implications of developmental delay. Given this, it was important the students with developmental delay were able to be identified for remediation. The instrument used had the capacity to provide a motor quotient for each student while the research program of an initial three years could employ a repeat measure longitudinal study design to track measures for individual and group trends.

It was from these group trends that adjustments to the curriculum could be made and for individuals there was now a fine-grained analysis of the students' physical development around the factors of: muscular power; bimanual dexterity, kinaesthetic Integration and persistent control. Being able to track the fine and gross motor coordination of the students and make responses to any systemic group deficiencies emerged as a key benefit which underpinned and therefore emerged from the research.

The school-based partners provided details of each participant, such as the names and dates of birth, provision of a release time from regular classes for the pupils to be assessed in a 'distraction free' space, the design and distribution of individual pupils' reports to parents, and the financial agreement with the university upon the production of bi-annual research reports. The school provided substantial and critical logistical, financial and in-kind support for the project.

The university's HPESS team agreed to secure university research ethics approval, provide 'plain language' consent forms, provide leadership in the selection of the measurement instruments

and, train teachers and assistants in the reliable collection of data. They led the set-up of the testing area to minimize distractions for the students, oversee the data collection with their 'partners' analyse and report the data. Issues of intellectual property were negotiated and formalized.

In subsequent meetings between these rural partners a variety of discussions took place, dealing with issues as they occurred during the project. These included negotiating dates for future testing and how the results from the analysis of the data could be integrated into the teaching and learning process, it should be noted that within the theoretical framework of communities of practice, fostering shared responsibilities can only occur when all stakeholders agree to and understand their roles and responsibilities (Brady, 2002; Sim, 2010). Through frequent exchanges of ideas and genuine collaboration between stakeholders, the roles and responsibilities of each partner were clearly defined, and accepted as a fair and reasonable division of labour.

THE FIRST PROJECT- COORDINATION TESTING OF STUDENTS

For the first project relating to the assessment of neuromuscular development, the selection of an appropriate measuring instrument was paramount. There are many instruments available however, the McCarron Assessment of Neuromuscular Development (MAND), (McCarron, 1997) was adopted as it had both quantitative and qualitative measures and a track record of extensive use as a diagnostic instrument for remediation programs within the Australian setting [e.g., MAND was used at Unigym at the University of Western Australia (Larkin, 2001) and Gymstart (2001) at the University of New England (Miller, 2014)]. However, there were two more agreed upon factors that were relevant to the choice of instrument; namely, it was already available and the lead researcher had considerable experience in administering the MAND instrument in a previous research project (Miller, 2001). This experience provided leadership in up-skilling the teachers in the schools.

The test familiarization training regime was implemented over a period of three hours during which time PE staff and assistants from the school and other HPESS team members were familiarized with the ten test items of the MAND. Following this process each individual was selectively trained in one or two specific test protocols. The strategy of selective component specialization was implemented to achieve greater reliability of the data collected for these components (Cohen, Manion, & Morrison, 2004; Knudson & Morrison, 1997). In addition, intra-rater and inter-rater reliability checks were made within and across test items with the teachers and HPESS team testers. Data collection did not commence until test and retest reliability checks for inter-rater and intra-rater reliability indices were at acceptable and consistent levels.

Testing of pupils using the MAND began in November 2004 and February 2005 and repeat measures have been conducted in the month aligned from initial testing each year from that date. Testing took place at the school in a large play room adjacent to the PE staff room. There was sufficient space to allow the ten separate test items to be conducted in this room without distraction or interference. Students were withdrawn from their classroom in groups of five and were rotated around the five testing stations. They carried their score sheets to each station and the teacher or academic would conduct the test item and record the result on the scoring sheet. The principal researcher collected the data sheets and converted the raw scores to scaled scores using the look-up tables. Notwithstanding the fact that testing and reporting from the project's instigation was considered a success, an important innovation arose from the ensuing discussions over time between both partners. This was through the advent of a remediation program termed Efficient Movement (EM). This second facet of the first research project is now described.

Efficient Movement (EM)

The professional commitment of providing remediation for those school pupils who were identified as being below the age norms for their motor performance was shared by the two partners. Both cohorts explored parallel approaches to work out how this remediation could be undertaken. The school was considering parental assistance, whilst the university was considering the utilization of pre-service primary teacher education students (PSPST). This parallel approach is consistent with the findings of Engeström (1999).

It was fortunate that during the first years of the partnership that pre-service primary teacher education students (PSPTES) enrolled at the university were engaged in a program that afforded elective units of study, of which one was motor development within the Physical Education discipline. The university students undertaking this unit agreed to provide remedial activities for pupils based on both the application of theory from the elective unit of study and the potential to benefit pupils from focused, data-based motor skill instruction. Pupils identified by the Neuromuscular Development Index (NDI) as being one or more standard deviations below the norm were included in the EM program. The NDI is likened to a motor quotient with a mean of 100 and a standard deviation of 15 (McCarron, 1997).

This initiative was regarded by both partners as a method of assisting pre-service primary school teachers (PSPST) to develop and apply professional knowledge and create new concepts related to teaching skill development in an ecologically valid and supported setting. Presenting such an opportunity for professional practice, according to Sutherland, Scanlon and Sperring (2005) gives rise to a number of benefits. These authors purport that entering a community allows PSPST to engage in meaningful tasks that appear to facilitate the development of their professional knowledge. The students are then able to relate the theory taught at the university to the practical needs of pupil learning in schools. In this way, theoretical knowledge becomes more meaningful for them, as the legitimate peripheral participation activities provided PSPST with the experience in authentic settings for scaffolded and supported learning for the teaching profession (Thorkildsen & Stein, 1996).

The idea behind the initiative was to ensure that these PSPST had the opportunity to develop pedagogical content knowledge, and to critically evaluate teaching and learning whilst operating in an authentically supportive setting. The ultimate goal of the efficient movement (EM) program was to remediate pupils movement patterns and also to transform what was learned in this school-space into an outcome that was designed to shift the beliefs of the PSPST teacher, to create new knowledge as well as to provide a set of guiding principles that could inform the PSPST practices in the future. These goals are consistent with the ideas of Wilson (2004, p.595) who reported that *new knowledge is created within 'partnerships' through collaborative activities.*

Within the partnership the school community had the shared objective with the university, of educating pre-service teacher education students who would become more effective teachers in the future. The structures available to the PSPST, in this project, consisted of lecturers being available for regular consultation with the school, including the support systems available to staff and pupils, and access to a dedicated teacher mentor working with the beginning teachers in school. This person, termed the 'school-based person', was one of the school's PE teachers who was the instigator of the partnership and third author on this paper.

Apart from access to the lecturers for consultation, support from the university also included the provision of a data profile of the students from the MAND test results, and a resource booklet containing a wide variety of activity-based scenarios that could be easily matched up with the specific individual need(s) of the children requiring remediation. However, the PSPST were given autonomy in selecting or devising the activities they would use to address the remediation tasks, and were able to decide how they would interact with the pupils to organize, present and sustain the activities. This process was sometimes augmented by partnering with another colleague from their university cohort, and as a team they were also required to make explicit judgments

about the nature and level of the tasks and activities that each pupil should undertake.

This program created a unique teaching and learning context for the PSPST. They were being assessed on their ability to program, teach, review and then implement a tailor-made intervention program for a specific child. This may represent a unique set of educational conditions, quite possibly, not replicated in other educational settings!

Twenty pre-service teacher education students worked in pairs to progress the skills of each pupil. The school provided a variety of spaces and equipment, including classrooms, a gymnasium, an indoor heated swimming pool and various pieces of equipment e.g. gymnastics mats, balance beams, balls, cones and so on. Many PSPST chose to construct some small pieces of equipment themselves and also to bring equipment from the university sports storeroom. The EM program was conducted over a period of six weeks, and took place during the second half of the school lunch time at the school. While the mentoring PE teachers and the lecturers were present during the activities, they played a minor role in the conduct of the activities. They were, however, observing the interactions between the PSPST and the pupils. Following the six weeks of EM, meetings were held between the school teachers and HPESS team members and the PSPST to advise and construct the report, and glean some impressions from the student volunteers regarding the value of the process.

It is noteworthy that in subsequent years the opportunity to offer an *Efficient Movement* program was denied, not by the stakeholders, but by a change in the structure of the unit offerings to students enrolled in the Bachelor of Teaching. The NSW Institute of Teachers (NSWIT) mandated curriculum which resulted in all learning being in core teaching units, essentially replacing the elective units offered by the university. However, the MAND testing did continue on a regular twice-yearly basis. This testing was to track the individual development of the students and to assess group trends to fine-tune the curriculum focus to respond to any systematic deficiencies of the students.

IMPACTS OF THE EFFICIENT MOVEMENT PROGRAM

This section provides a summary of the outcomes that the partnership instituted on the various stakeholders, during the formative years. The summary includes: the MAND results for 2004–2005; the PSPST students; school teaching staff; the university; and, the parents/caretakers/guardians.

The MAND

To ascertain the effectiveness of the *Efficient Movement* remediation program, the MAND profiles of the students' pre and post intervention is one measure of effectiveness. Profiles of the pupils from the intervention program include those whose MAND data were collected at a 12-month interval. Table 1 presents the NDI scores for 2004 and 2005 (the original testing data is shown as it is the set that applied to the Peer teaching scenario) as well as the differences in column headed 'NDI Difference'. Pseudonyms are employed in the column headed 'Name'.

Table 1: Student profile from the Efficient Movement Program

Name	Sex	Years Months	2004 NDI	2005 NDI	NDI Difference	Sum & Average -ve & +ve NDI
Jimmy	male	6yr 0mo	89	79	-10	
Sean	male	6yr 2mo	76	71	-5	
Cecil	male	6yr 9mo	87	83	-4	
Frank	male	9yr 0mo	55	52	-3	Sum -22. Ave -5.5

Carol	female	5yr 9mo	77	78	1	
Sky	male	6yr 9mo	60	68	8	
Jocelyn	female	6yr 7mo	78	88	10	
Olive	female	6yr 9mo	75	88	13	
John	male	5yr 9mo	81	95	14	
Josie	female	5yr 11mo	71	86	15	Sum 61. Ave 10.7
						Average change +3.9

As can be noted from Table 1, the student profile included three females and seven males and ranged in ages from five years and eleven months to nine years. The NDI is age adjusted and therefore the range of children's ages is not an issue for interpreting the shifts in NDI. Although there were inconsistent gains for all pupils across the 2004 to 2005 NDI scores, six showed positive shifts and four negative, however, overall the average for all ten pupils was +3.9 NDI. Remembering, this group was a subset of a larger cohort (N=57) which showed an average shift of 3.05 NDI points (Miller & Haynes, 2006). Notwithstanding, the intervention cohort demonstrated a higher average shift of 3.9 when compared to the broader cohort (N=57). The referencing of the positive overall shift of NDI against the larger group indicates that the members of the intervention can be reasonably expected to have their shift in NDI be attributed to the EM Program.

The Pre-Service Primary School Students

The students who provided structured and sequential motor skill activities to those school pupils with a lower than acceptable NDI, reported positive outcomes, both from their increased knowledge and teaching skills and through interacting with their student. Figure 1 shows some the PSPS, in action at the school.



Figure 1: PSPS in action at the school (permission granted for photographs)

In Figure 1 the individuals in the forefront of picture on the left are engaged in activities to improve fine motor skill development. In the background notice the variety of activities that represent the different tasks designed to meet a specific need. The picture to the right exemplifies a PSPST assisting a child with dynamic balance and body control in the pool. Aquatic environments have been recommended to enhance control and stability for pupils with Developmental Coordination Disorder (DCD) (Larkin & Hoare, 1991).

Following are three comments that represent the 'reflective views' of the students.

The TAS project gave us as beginning teachers the opportunity to put all the theory into practice. We were actually teaching which is what our degree is all about. (Jane)

The part I liked most about the program was that all UNE students were provided great assistance when developing ideas and activities for their pupils. This helped develop our confidence, knowing that we weren't on our own and could ask for assistance when needed ... but we were given enough independence to allow us to feel as if it was our own program. ...it transformed the information in the texts into a whole world of understanding and application of motor development ideas and programs for remediation, which I now feel that I will have with me throughout my teaching career.
(Sally)

I would have to say the work done with the TAS kids last year has been amongst the most rewarding I have experienced since being at UNE! (Bill, a graduating student)

The comments by the pre-service teacher education students, Jane, Sally and Bill, regarding the opportunity to teach in the *Efficient Movement* program in a supported but independent environment contributes to the multifaceted benefit for a range of stakeholders in the partnership. These comments were gleaned from the aligned university student unit evaluations of 2004. The university programs also benefited as described next.

The University

The university's participation in the partnership resulted in changes not only to their pre-service teacher education delivery, curriculum and teaching methods, but it also achieved stronger research based outcomes. In addition to the pre-service teacher education students' responses to the *Efficient Movement* program, the application of the outcomes of these partnered research projects informed the curriculum and the pedagogy of the pre-service teacher education units – specifically in PDHPE. For example, the original elective unit Human Physical Performance 1 allowed for theory of motor development and skill acquisition to be applied in the *Efficient Movement* program. Teaching students about developmental delay and then providing them with a scaffolded environment in which to implement an intervention program based on the data from the MAND, modelled best practice of Individualised Education Program for a primary school aged child. Post-test data (presented in Table 1) allowed for meaningful comparisons for the student and exploration of the effect of the program designed and implemented by the UNE pre-service teacher education students. This program exemplifies the evidence-based approach to teaching for optimal student learning.

The School Teachers

A working relationship with the next tier of education has enhanced the professional performance of the PDHPE faculty at the school. This intellectual support has motivated the staff to consistently look at new and engaging pedagogies, as well as providing the stimulus to question traditional methods of delivering physical education. It was the ever increasing research into learning at university level, coupled with the opportunity to have this resource close at hand and the capacity to demonstrate dissemination of information in context, which supported the aspirational goals of the classroom teachers.

The Physical Education and Health teachers in the school reported to the university lecturers during informal conversations, that they had received benefits such as increased knowledge, greater efficacy, enhanced collegial interaction, and leadership skills. With regard to collegial activities, the higher order achievements included the writing, presenting and publishing of partnership research papers. These benefits include a refereed paper presented at AARE in Brisbane 2008 (Miller, Haynes, & Pennington, 2008) a joint paper presented at AARE in Adelaide in 2013 (Miller, Pennington, & Haynes, 2013), and a refereed journal article published in the *Asia-Pacific Journal Health, Sport and Physical Education* also in 2013 (Miller, Graham, & Pennington, 2013) and this paper. Co-writing is a powerful professional development and academic pursuit.

The School Pupils

To triangulate the effect of the EM program the changes in the ten individuals were viewed through a school-based ‘teacher/parent lens’. The pupils in the program were reported by the school, via teachers and parents, to show multiple indicators of a positive consequence of the EM program. From the list of names in Table 1, *Jimmy’s* enthusiasm, as reported by his teachers, increased for Physical Education and Sport generally. Similarly, *Sam* demonstrated a marked skill improvement in the subsequent soccer season, which his parents reported to the school, was attributed to be a direct result of the EM program. *Olive* continued to have a positive attitude to Physical Education evidenced by her school-age group representation in athletics and swimming. *Josie* moved into new sports – such as tee-ball as she was introduced to the fundamental motor skills of striking in the EM program and continued to progress from tee-ball to softball. Overall teachers reported the pupils had a positive attitude to be included in the program and subsequently showed they could participate across a range of sporting contexts resulting in increased self-confidence and social esteem for the long-term (Miller et al., 2008).

Parents/Caretakers/Guardians

Parents and pupils found the experience a positive one. Parents were 100 per cent supportive of the program. In fact, numerous parents have asked what has happened to the intervention program? It was popular amongst the parent body for two main reasons: firstly, the obvious improvement both physically and emotionally (confidence) for the child; and, secondly, to have an issue that is confronting their child being addressed and supported by the school in conjunction with the university, was highly regarded by the parents. The latter gives a certain presence, authority and accountability to what is being offered in the school curriculum.

The increased skill level, demonstrated by the participants due to the EM program was readily transferred to a greater diversity and intensity of physical achievement in the sporting contexts. Given the varied profile of the individuals who participated in the program, the long-term prognosis was shown to be positive in both the short and long-term, satisfying the PDHPE syllabus’ (Board of Studies NSW (BOS NSW), 2006) aim, namely, to provide skills for life-long participation in games and sports of the pupils. This successful outcome complements the school-based Personal Development, Health and Physical Education philosophy that ensured pupils have the skills to confidently apply to a wide range of sporting contexts within the physical domain (Miller et al., 2008).

The following two quotations from two different parents show the depth of response to the EM program.

I am ever so grateful for this program and the thought and care that everyone involved has shown towards my son. (Year 3 Parent)

This intervention has not only helped my son, but has given me ideas on what I can do at home to support him. (Year 2 Parent)

Overall, the MAND project provided an evidence-based approach to the assessment of physical development for the pupils in the program. The inventive method of applying learning in an EM program of remediation allowed for intensive two on one PSPTTE students to pupil engagement to improve the skills of the pupils identified through the research as most requiring remediation. Post-test data collection identified that some of the pupils improved above the overall group reference trends. Teachers and parents identified a shift in the confidence level of pupils and a greater willingness to try new sporting skills. The PSTPE students gained supported teaching environments not previously achieved in their practicum placements as part of their teacher preparation.

THE SECOND PROJECT: HEALTH EDUCATION

A second project was based around the concept of Health Education and nutrition. This project grew out of the opportunity to widen the partnership to include additional cohorts from the school, the university and the wider community. With Federal funding available to support and enhance school and community health outcomes, the school initiated the application process by gaining wide-spread community and professional expertise in order to inform a scholarly grant application. The university was invited to lead the grant writing research project.

The aim of the second project within the existing partnership was to devise (the university) and teach (the school) a series of health-related teaching units, focused on nutritional education and developing and applying a Nutritional Symbol System (NSS) to code food choices available within the school dining hall and canteen. The Nutritional Symbol System (NSS) was a form of social marketing devised to facilitate informed decision making regarding nutritional health-related choices for pupils, teachers and community members within the campus and the dining hall specifically.

The Literature

Intervention strategies within Health Education have been designed to address health practices for a range of population groups, including smoking (Conner, Sandberg, McMillan, & Higgins, 2006), safe-sex practices (Godin, Gagnon, Lambert, & Conner, 2005) and alcohol consumption (Johnston & White, 2003; Norman & Conner, 2006) to name a few. In addition, it should be noted that schools are a key setting for public health policy, and through Health Education programs and community involvement, they have been the setting for initiatives directed at changing 'risky behaviors' of school-aged populations (Colquhoun, Goltz, & Sheehan, 1997; Iverson & Kolbe, 1983). It is against this backdrop that the school and university worked together to address any health related barriers to optimal nutritional choices both within the school environment and beyond.

As noted previously, based upon the nature and composition of the school, the setting provided a culturally relevant contrast between the majority of Australian children who bring their lunch to school from home, with pupils who are dependent on the foods made available from the dining hall and serverly outlets. Schools like the one involved in the partnership have been identified as sites of intervention as, according to Bell and Swinburn (2004), the majority of kilojoules for boarding school pupils are consumed at school, with changes in eating behaviors often a targeted outcome (Laurence, Peterken, & Burns, 2007).

The Health Education Program (HEP)

This study was conducted over a three-year period, commencing in 2008. During the first year, consultation with the school informed the development and refinement of the instruments (including, the Nutritional Symbol System, the Health Education Program and a student interview schedule). The beginning of the second year witnessed the implementation of the Nutritional Symbol System and the Health Education Program that extended until the completion of the study. The evaluation interviews were conducted in August and September of the third year of the study.

The Health Education Program was constructed through the collaboration of both primary generalist classroom teachers and specialist secondary teachers. As such, an age and developmentally appropriate program of nutrition was developed and delivered to each of the class groups. Specifically, the Health Education Programs for the primary grades (Stages 1, 2 & 3) were based on the New South Wales (NSW) Kindergarten–Year 6 Personal Development, Health

and Physical Education (PDHPE) (Board of Studies NSW (BOS NSW), 2006) syllabus content strand of Personal Health Choices. These lessons were developed/changed/shaped into *something new*. The teachers saw this process as an opportunity to research and assess the applicability of what was being taught through testing/communication. As an adjunct, the Developmentally Appropriate Nutrition Education Resource for Youth Aged 6–11 gleaned from the Wisconsin Nutrition Education Program (2007) also provided a framework upon which teachers could base their programs of study.

Six generalist primary-school classroom teachers delivered the health education units to their primary school classes. At the same time, in the secondary grades, four specialist PDHPE teachers taught health education using the NSW Stage 4 & 5 syllabus, which centered on the syllabus outcome *analyses influences on health decision-making and develops strategies to promote health behaviours*. For example, pupils designed ‘ideal diets’ for health and performance for diverse age groups, and one powerful learning activity centered on pupils designing a physical activity regime (time x intensity) to burn the equivalent energy found in targeted fast food meals and then enacting their plan (Miller, Graham, & Pennington, 2013).

The Nutritional Symbol System (NSS)

To support the notion of a Health Promoting School, designed to inform (educate) and to persuade (or motivate) pupils to adopt health eating habits, elements of social marketing as described by Egger, Spark and Donovan (2005, p. 119) were implemented through the adoption of a Nutritional Symbol System (NSS). The NSS was the key instrument used in this project to inform pupils’ food choices in the dining hall and canteen. The strategy included the prominent display of several posters placed in the dining hall where race, gender, age were all represented for sporting stars, politicians, and artists. These posters carried the message about the relative percentages of protein (30%), carbohydrates (40%) and vegetables (30%) that pupils should aim to select and eat for a meal as part of a balanced diet. This strategy has been well established as a method of informing and persuading targeted populations to make certain choices. According to LeFebvre and Flora (1988) a social marketing strategy is a way of translating scientific knowledge into education programs, and this strategy has been shown to be effective for public health interventions.

Across a 12-month period the NSS was conceptualized, developed and refined by school staff members in consultation with a range of ‘experts’ who were invited to join the expanding partnership. These experts included: a nutritionist from the New England Area Health Service; the school chef; the Head of Nutrition from the Australian Institute of Sport; Head of PDHPE from the Association of Independent Schools; Sports Dieticians Australia; two local General Practitioners (GPs) – one with a background in pediatrics and one in sports science; and Education academics (HPESS team members) from the University.

The same specialist PE teacher (the *school based person*), who was instrumental in driving project one, the MAND, was authorized by the school Head Master with support from the Director of Studies to lead the school’s health education/NSS project. The teacher enacted the NSS project following broad consultation and review by the Australian Institute of Sport and the Sports Dieticians of Australia (SDA). The NSS was trialed for one year commencing in 2008.

The method of delivery of the nutrition education program was individualized in the school. The primary classroom teachers provided a health education program based on the NSW K-6 PDHPE syllabus (2007) and secondary school PDHPE specialist teachers similarly provided age appropriate Health Education units on the energy and nutritional facts for growing teenage children.

In this school’s case, NSS posters that identified the selection of balanced diet options with sports stars, politicians and artists were displayed. Moreover, to complement these posters, individual cards, providing nutritional information about each dish were also produced and

positioned prominently in the dining hall servery. The durable melamine dinner ‘plate’ that showed pictorially, portion sizes determined by the NSS and provided further nutritional suggestions, were donated for the project (see Figure 2). All diners used this plate as they selected their own food types and portions from an extensive choice in the server section of the dining hall.



Figure 2: The Plate

IMPACTS OF THE HEALTH EDUCATION PROGRAM

As for the first project this section provides a summary of the outcomes that the partnership instituted on the various stakeholders, during the implementation of the second initiative, the Health Education Program. This summary commences with the results about the Healthy Eating/Nutrition program from pupils, followed by the teaching staff, the university and the parents/caretakers/ guardians.

The School Pupils

The students demonstrated varied understandings of the elements of nutrition. These were based on their knowledge and understanding of concepts such as food groups and ‘sometimes’ versus ‘every day’ foods. The visuals of the obsolete but still present healthy diet pyramid and the Nutritional Symbol System (NSS) were recalled with high levels of accuracy, confirming the value of social marketing as a strategy to inform and educate. These conclusions were drawn from the responses the students’ provided to interview questions, designed to ascertain their level of nutritional knowledge and the impact on any change in their behavior. The students became engaged with nutrition, increasing their perceived self-efficacy when acting upon the classroom lesson content. Miller, Graham and Pennington (2013) provide further in depth results from this research project.

The Teachers

The teachers modified their Health Education units of study as they were well informed by the in-depth interview results from the students (n=16). The school appreciated the research-based approach taken by the partner university and both cohorts were much more informed about what students actually could recall about the content knowledge and the intersection with the skills of informed decision making. The NSS was also credited with changing some behaviours of the staff, with many staff reporting a shift in BMI due to closer attention to dietary choices at school. These findings were informed by self-reported effects from the teachers in the school.

The University

Findings from this partnered research has been incorporated into the health education curriculum units of the pre-service teacher education program, providing evidence-based examples of the knowledge of young people in schools and how their application of social marketing strategies can affect behaviour change in food choices. Overall, there were inaccuracies in the food groupings and the 'sometimes' and 'everyday' foods. Previous practice was to 'almost assume' that students could easily learn the basics of nutrition and now the curriculum in PSTE programs is more realistically underpinned by the findings of this project. University students are encouraged to ensure scaffolding is in place to support informed decision making for pupils in schools.

Parents/Caretakers/Guardians

Parents of the pupils involved in this school community come from diverse locations and cultures, which highlights the eclectic nature of the family backgrounds of the boarders. In addition such diversity is acknowledged as one factor that represents an increased complexity and challenge inherent in modifying the nutritional practices of a multicultural student population. In order to facilitate the involvement of parents in this project, the school provided an online forum as a key communication strategy for the workings of the Student Food Committee. This provision allowed the parents to be engaged, contribute and have a voice in the workings of the committee, regardless of their geographic location. Including a range of voices to the Health Promoting School project mirrors the multidimensional nature of the partnership between the school community and the university.

CONCLUSION

In keeping with the findings of other researchers, namely Rossner and Commins (2012), who indicated that there are benefits of a community of practice, as opposed to a loosely integrated approach to professional learning relationships, communication appears to outweigh the complexities.

As such the benefits noted in this partnership have so far included: a heightened professional respect that has been developed and nurtured for a decade; new experiences and activities that fostered personal and organisational growth; a seized opportunity to inform quality learning with robust research data in both the physical and health education curriculum areas; stimulated and respected professional interchanges of research in schools; an opportunity to bridge the gap between theory and practice; and, reality checks for pre-service teacher education units of study.

This genuine partnership benefited both the school and the university with pre-service teacher education learning. The mutually informed partnership was enhanced through collaborative and productive respectful arrangements. However, as in any relationship there are some difficulties that can lead to the partnership faltering.

Analysis of this partnership, led to the determination that, like many other studies (Edens, Shirley, & Toner, 2001; Jenkins, 2001; Peel, Peel, & Baker, 2002), the school administration was of utmost importance. This finding was borne out when the school administration changed, with consequential changes to the school's priorities. As a result, the partnership is now being 'maintained' by one member of the school's Physical Education team (co-author of this article). As roles change for individuals within partnered institutions there is always a risk that the partnership will no longer be as relevant as it was. This raises the sustainability question.

It is widely accepted that sustainability requires a resilient commitment to the partnership in the forms of both funding and personnel perspectives. The existing personal relationship between the school-based person and the university cohort now drives the partnership, and is seen as being pivotal to the maintenance of any future program. However, ensuring sustainability of the

partnership will, of necessity, require a whole school process and a trust that should the university coordinator or school-based person change, the partnership would continue.

Keeping in mind that support from the school's administration had changed direction, an attempt was made, soon after the conclusion of the nutrition program, to further the partnership. The school-based person, following discussion with a number of individuals including university staff, who were not currently within the community of practice, and some school staff, approached the university partner with a proposal. This proposal was to involve year twelve pupils in a broad 'getting to know your local university' event. However, after lengthy negotiations, both the school administration and the teachers found the proposal untenable and it did not proceed. This could be due to a combination of the economic implications of the global financial crisis affecting the degree to which the school can pursue research-based collaborations. In addition, from the university perspective, as academics' roles change and progress, there can be shifts in research foci. What does remain is a deep commitment to the multilayered and multifaceted relationship that honours and respects the workings of the teachers, pupils and parents of the school with the students and academics of the rural university.

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