



An examination of the implementation and institutionalisation of Bluearth Foundation's Active Schools program in Australian primary schools: Final report

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All recommendations identified by IHeS are based on information and data provided by Bluearth and questionnaire respondents from Australian primary schools. IHeS has relied on this information to be correct at the time this report was prepared.

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Table of Contents

Acknowledgements	2
Table of Contents	3
Executive Summary	1
Context	4
School-Based Physical Activity	4
Bluearth’s Active Schools Program	5
Study Aims	5
Study Methods	6
Study Participants	6
Recruitment and Data Collection.....	6
Study Framework and Questionnaires	7
Data Analysis	10
Summary of Findings - Teachers	11
Teacher Characteristics.....	11
Classroom Implementation of the Bluearth Program	11
Experiences of Bluearth Training.....	13
Suggestions for Improving Bluearth Training Workshops - Teacher Comments	14
Suggestions for Improving Coaching Instruction - Teacher Comments	15
Suggestions for Improving Teacher Resource Centre - Teacher Comments	16
Factors Associated with Teacher’s Implementation of Bluearth Activities.....	17
Summary of Findings - Principals	19
Principal Characteristics.....	19
School Level Institutionalisation of the Bluearth Program.....	19
Perceptions of the Bluearth Program	21
Factors Associated with Institutionalisation of the Bluearth Program	21

Conclusion and Recommendations - Teachers	23
Recommendations for Increasing Implementation of Bluearth Active Schools Program by Teachers	23
Conclusion and Recommendations - Principals	29
Recommendations for Increasing Institutionalisation of Bluearth Active Schools Program	29
References	33
Appendices	36
Appendix 1 - Percentage of Teachers Delivering Various Activities during Bluearth Sessions and Classroom Breaks.....	36
Appendix 2 - Percentage of Teachers Accessing Various Online Resources	38
Appendix 3 - Detailed Analysis of Teachers’ Responses to Questionnaire	39
Appendix 4 - Associations with Teacher Implementation of Bluearth Activities	44
Appendix 5 -Detailed Analysis of Principals’ Responses to Questionnaire	46
Appendix 6 -Associations with Institutionalisation of Bluearth’s Active Schools Program (Principals)	50

Executive Summary

Bluearth Foundation (Bluearth) commissioned Victoria University (VU) to undertake an independent evaluation of the sustainability of their Active Schools program in Australian primary schools.

The aims of the study were to:

1. Evaluate the level of teacher implementation of the Bluearth program and investigate the factors associated with higher levels of implementation (teacher questionnaire);
2. Evaluate the level of institutionalisation of the Bluearth program in primary schools and investigate the factors associated with higher levels of institutionalisation (principal questionnaire);
3. Develop recommendations to improve the level of implementation and institutionalisation of Bluearth program.

Principals and teachers from primary schools who had the Active Schools program at any time between 2015-2017 were invited to participate in the study by completing an online questionnaire.

Key Findings - Teachers

- Of the 161 teachers invited, 76 (47%) completed the questionnaire.
- Most teachers conducted general physical activity sessions with their students at least once a week (81%), however, few teachers incorporated physical activity into academic lessons at least once a week (22%).
- 76% of teacher had received teaching instruction from a Bluearth coach; 54% had accessed the online teaching resources centre; and 43% of teachers had attended a Bluearth training workshop.
- The following factors were associated with higher levels of implementation of Bluearth activities:
 - Receiving hands-on instruction from a Bluearth coach;
 - Believing that student behaviour and work improved after Bluearth activities;
 - Having other teachers at the school who were supportive of physical activity promotion;
 - Having confidence in their ability to deliver the Bluearth activities;

- Having positive attitudes towards physical activity promotion in schools; and
- Being able to observe the benefits of Bluearth activities for their students, particularly in student behaviour and academic performance.

Key Findings - Principals

- Principals from 44 schools consented to be involved in the study, 30 of these principals completed the online questionnaire and 28 provided teacher details.
- 73% principals who consented to be involved in the study were from schools that had the Bluearth program delivered by a Bluearth coach at the time of the study.
- The most commonly reported aspects of institutionalisation that principals reported were having a permanent physical space (e.g., oval, basketball court) where the program could be delivered (80%) and having a member of the leadership team involved in advocacy of the program (70%). Least common were: having goals and objectives for the program put in writing (37%) and conducting a formal evaluation of the Bluearth program (17%).
- The following factors were associated with higher levels of institutionalisation of the Bluearth program
 - Having the Bluearth program delivered in the school by a Bluearth coach at the time of the study;
 - Having a school staff member responsible for implementing the Bluearth program;
 - Believing that the Bluearth program has behavioural, health, and enjoyment benefits for students;
 - Believing that the Bluearth activities are more effective than regular Physical Education; and
 - Being able to assess the impact of the Bluearth program on students and teachers.

Recommendations for Increasing the Implementation of Bluearth Active Schools program

Recommendation 1: Increase teacher awareness of the effectiveness of the Bluearth program on student behavioural outcomes.

Recommendation 2: Appoint a teacher to 'champion' the Bluearth program and movement at each school.

Recommendation 3: Ensure that all teachers receive ‘hands-on’ training from a Bluearth coach.

Recommendation 4: Revise and modify the Bluearth training program for teachers, with a focus on integration of movement into academic lessons.

Recommendation 5: Ensure principals and teachers are aware that Bluearth training can be claimed as teacher professional development hours.

Recommendation 6: Offer teachers ongoing physical activity training, establish a ‘community of practice’.

Recommendation 7: Evaluate the effectiveness of new approaches to teacher training.

Recommendations for Increasing Institutionalisation of Bluearth Active Schools Program

Recommendation 1: Encourage schools to conduct an evaluation of the Bluearth program at their school.

Recommendation 2: Work with principals and teachers to embed and link the Bluearth program into Physical Education.

Recommendation 3: Work with principals to embed physical activity into school policy.

Recommendation 4: Work with principals to ensure that physical activity is part of their ethos at school.

Recommendation 5: Work with principals to adopt a ‘whole school’ approach to physical activity and health promotion.

Recommendation 6: Appoint a teacher to ‘champion’ the Bluearth program and movement at each school (as per recommendation above for teachers).

Context

School-Based Physical Activity

Physical inactivity is estimated to cause between 6-10% of major non-communicable diseases worldwide which is comparable to the health risks of smoking and obesity (1). Promotion of physical activity during childhood is important because children who are more physically active have better physical health (2-4), mental health (5, 6) and cognitive functioning (7-9). Additionally, physical activity habits are developed in childhood (10), so promoting physical activity in childhood could lead to positive physical activity attitudes and behaviours into adulthood (11). However, most children in developed countries do not achieve recommended levels of physical activity. In Australia, for instance, only 36% and 21% of Australian children aged between 5-8 years and 9-11 years, respectively, meet physical activity recommendations (12).

Schools have been identified as an ideal setting to promote physical activity because they provide access to the vast majority of children over an extended period of time (13). Additionally, schools have the essential facilities and equipment to promote physical activity to students (10). There is strong evidence from investigating trials that school-based physical activity interventions can increase physical activity in primary school students (14-16) and are associated positively with students' physical health (2-4), mental health (5, 6), as well as having behavioural and cognitive benefits (7-9, 17, 18).

Although it is clear that school-based physical activity programs have several benefits for students, they are not always successful at achieving desired outcomes (19). The success of school-based physical activity programs in achieving desired outcomes may be contingent on the level of implementation by classroom teachers that a program achieves (20). There are several studies that show a relationship between how well a program is implemented and more positive physical activity outcomes (21, 22). Furthermore, the long-term positive effects of physical activity programs may rely on whether the implementation of program elements is sustained within schools (23). Thus, the level of institutionalisation of a program, which is associated with sustained implementation of physical activity programs (24), may be an important factor in determining the maintenance of positive effects.

Bluearth's Active Schools Program

Over the past three years, the Bluearth program has been delivered in 225 primary schools across Australia. The Bluearth program is an evidence-based, holistic movement program that, when implemented long-term, has been shown to improve physical outcomes and academic achievement among children (25). The guiding principles of the program include:

- (1) Engagement: physical activity, games, smaller group activity, skill development, partner work and mindfulness practice;
- (2) Reflection: exploration of what took place, what learning happened, personal achievements, written and verbal reflection, discussion of the experience and how it felt;
- (3) Leadership: an opportunity to share what the children enjoy, communicating with others and larger groups, experiencing empathy, building self-belief and confidence.

The physical activity sessions are delivered on a weekly basis, alternating between Bluearth coaches and teachers, over a 12-month period. Teacher training and delivery of the program is an essential part of the program to facilitate teacher implementation and ongoing sustainability within the school.

Study Aims

Bluearth Foundation commissioned Victoria University to undertake an independent evaluation of the sustainability of their Active Schools program in Australian primary schools.

The aims of the project were to:

1. Evaluate the level of teacher implementation of the Bluearth program and activities and investigate the factors associated with higher levels of implementation (teacher questionnaire);
2. Evaluate the level of institutionalisation of the Bluearth program in primary schools and investigate the factors associated with higher levels of institutionalisation (principal questionnaire);
3. Develop recommendations to improve the level of implementation and institutionalisation of Bluearth program.

Study Methods

Study Participants

Participants eligible for this study were principals and classroom teachers from schools that had been involved with the Bluearth program at any time between 2015-2017. Schools who had the program at the time of the study (2018) were eligible.

Recruitment and Data Collection

Details of the schools involved in Bluearth Active Schools program over the study period were provided to the study researchers by Bluearth. Participant recruitment occurred in four stages:

Stage 1: approval was requested from the relevant ethics department to conduct the study at schools within their jurisdiction.

Stage 2: upon receiving ethics approvals (12 of 15 school boards=80%), the Bluearth CEO emailed schools to let them know that the study was taking place.

Stage 3: principals' approval to conduct the study within their schools was requested and consenting principals were invited to complete the principal questionnaire and provide the details of classroom teachers who had been involved with the Bluearth program over the study period.

- 44 of 211 (21%) of principals provided consent for their school to be involved in the study;
- 16 of these 44 principals completed the principal questionnaire but did not provide teacher details;
- 14 of these 44 principals only provided teacher details but did not complete the questionnaire; and
- 14 of these 44 principals completed the principal questionnaire and provided teacher details.

Stage 4: classroom teachers were contacted and invited to complete the online survey. Of the 161 teachers invited, 76 (47%) completed the questionnaire.

Data were collected using online questionnaires from March to September 2018. Qualtrics (Provo, UT) software was used to administer the online questionnaires. Several evidence-based strategies were used to increase the response rate to the online questionnaires: initial contact via mail; for jurisdictions with ethics approval to do so, participants were given the opportunity to go in to the draw to win a \$100 gift voucher; and two reminder

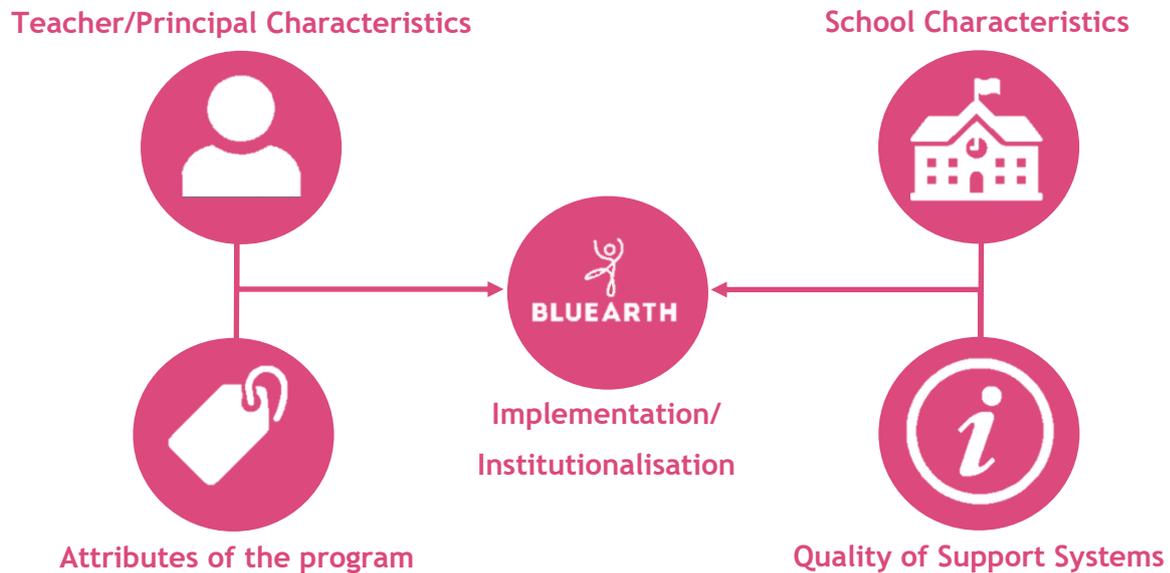
emails were sent to non-respondents. Each of these strategies have been shown to improve response rates (26).

The majority of teachers (75%) and principals (73%) who completed the questionnaires were from schools in which the Bluearth program was being delivered by a Bluearth coach at the time of the study.

Study Framework and Questionnaires

This study was guided by the Ecological Framework for Effective Implementation (27). This framework proposes that the level of implementation of a program is influenced by factors at several levels - structural (quality of support systems), organisational (school characteristics), provider (teacher/principal characteristics), and innovation (attributes of the program). The factors examined in this study were selected based on a literature review of implementation factors relating to school-based physical activity interventions (20) and previous research findings (28).

Figure 1- Ecological Framework for Effective Implementation





Implementation and institutionalisation

Level of implementation was assessed in the teacher questionnaire and was defined as how often teachers implemented four components of the Bluearth program:

1. timetabled sessions dedicated to Bluearth activities;
2. active classroom breaks;
3. mindfulness and relaxation classroom breaks;
4. integration of physical activity into academic lessons.

Level of institutionalisation was assessed in the principal questionnaire and was defined as the extent to which principals had integrated Bluearth activities into their school's curriculum and practices. Level of institutionalisation was assessed by asking principals questions such as "Have goals and objectives for the continual implementation of the Bluearth program by the teachers at your school been put in writing?", "Has a timetable or schedule for the implementation of the Bluearth program by teachers at your school been mandated?" and "Does your school have permanent physical spaces assigned where the Bluearth program can be conducted by teachers?".



Teacher/Principal characteristics

Self-efficacy assessed teacher's confidence in their skills and training to deliver Bluearth activities to their students.

Attitudes towards physical activity assessed teacher and principal attitudes towards promotion of physical activity/physical education in schools and the role of teachers in physical activity promotion.

Perceived benefits assessed teacher and principal perceptions about the benefits of the Bluearth activities on student behaviour, student enjoyment, and student health.

Level of physical activity assessed the number of days in the past week that the teacher or principal engaged in physical activity for 30 minutes or more.



School characteristics

School climate assessed the extent to which teachers agreed that other teachers at their school and administrators (principals/vice-principals) believed that providing physical activity was important and supported teachers to provide physical activity. For principals, school climate was assessed by asking whether physical activity was a priority at their school. **Subjective norms** assessed teacher and principal perceptions of the beliefs of important social groups (i.e., administrators, teachers, parents, and students) in supporting physical activity at their school and their motivation to comply with those beliefs.

General school capacity assessed the extent to which teachers and principals felt that there is at least one person in their school who could provide teachers with guidance for implementing Bluearth activities.



Attributes of the program

Relative advantage assessed the extent to which teachers and principals believed that Bluearth activities were more effective than Physical Education.

Complexity assessed the extent to which teachers and principals believed that Bluearth activities require complex teaching strategies.

Observability assessed the extent to which teachers and principals felt that methods for assessing the impact of the Bluearth activities on students and teachers were readily available.



Quality of support systems

Quality of support systems was assessed by asking teachers if they had participated in a Bluearth training workshop, received teaching instructions from a Bluearth coach during Bluearth sessions, or accessed the Bluearth teacher resource centre online. If teachers received or accessed the support, they were asked to rate their level of satisfaction and make suggestions for improvement.



Teacher, principal, and school demographics

School demographics that were measured were whether the Bluearth program was currently being delivered in their school at the time of the study, the school's Index of Community Socio-Educational Advantage (ICSEA), and whether the school had a dedicated Physical Education teacher.

Teacher demographics that were measured were gender, age, whether they were born in Australia, number of years and months of teaching experience, and whether they had received any formal training in Physical Education.

Principal demographics that were measured were similar to those of the teacher, except number of years and months of principal experience was measured rather than teaching, and whether they have received any formal training for Physical Education was not measured.

Data Analysis

There was minimal missing data and missing data was imputed using multivariate single imputation. Descriptive statistics were calculated for all variables.

Teacher questionnaire: To identify the factors that were significantly associated with classroom level implementation of the Bluearth program, mixed effect models with random intercepts analysis was used to account for the effect of clustering at the school level (29).

Principal Questionnaire: To identify the factors that were significantly associated with the level of institutionalisation of the Bluearth program, associations with continuous variables were assessed using Pearson's correlation coefficient analysis and associations with categorical variables were assessed using independent sample t-tests and one-way ANOVA analysis.

All data analysis was conducted on SPSS versions 25.

Summary of Findings - Teachers

Teacher Characteristics

Of the teachers in this study:

- 83% were female;
- 54% were younger than 40 years;
- almost all were born in Australia (92%);
- only 19% had formal Physical Education training; and
- on average they had 10.8 years' experience as a primary school teacher.

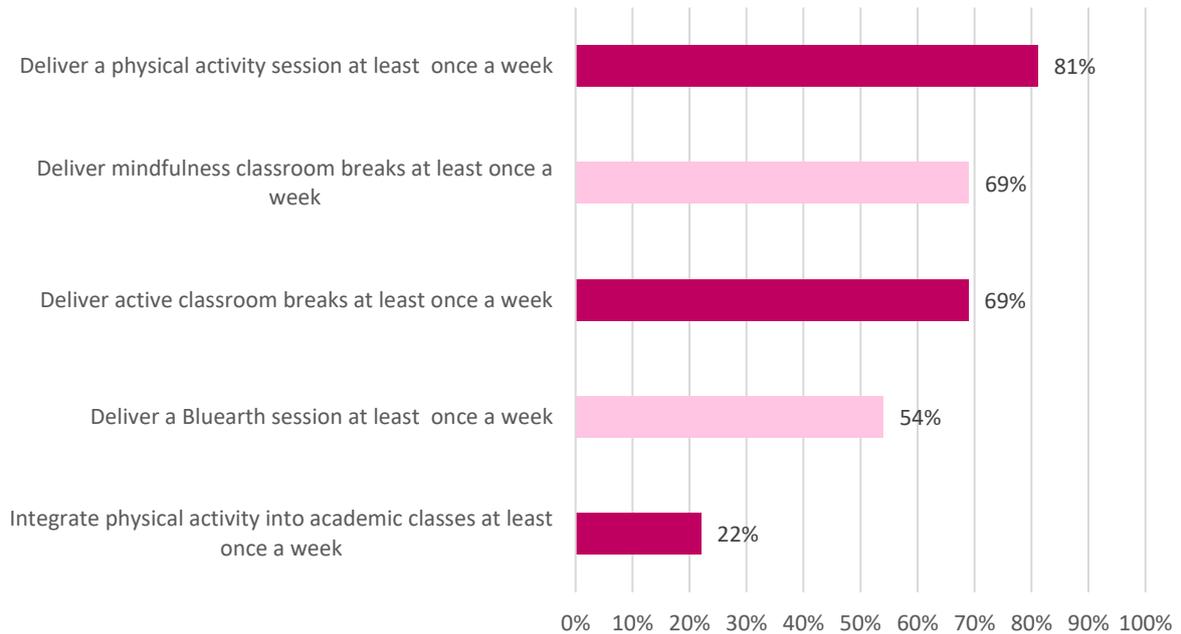
Of the schools that teachers were recruited from:

- 68% were public schools;
- 75% had the Bluearth program delivered by a Bluearth coach at the time of the study; and
- Were, on average, educationally disadvantaged (Average ICSEA=952.18; National Average=1000).

Classroom Implementation of the Bluearth Program

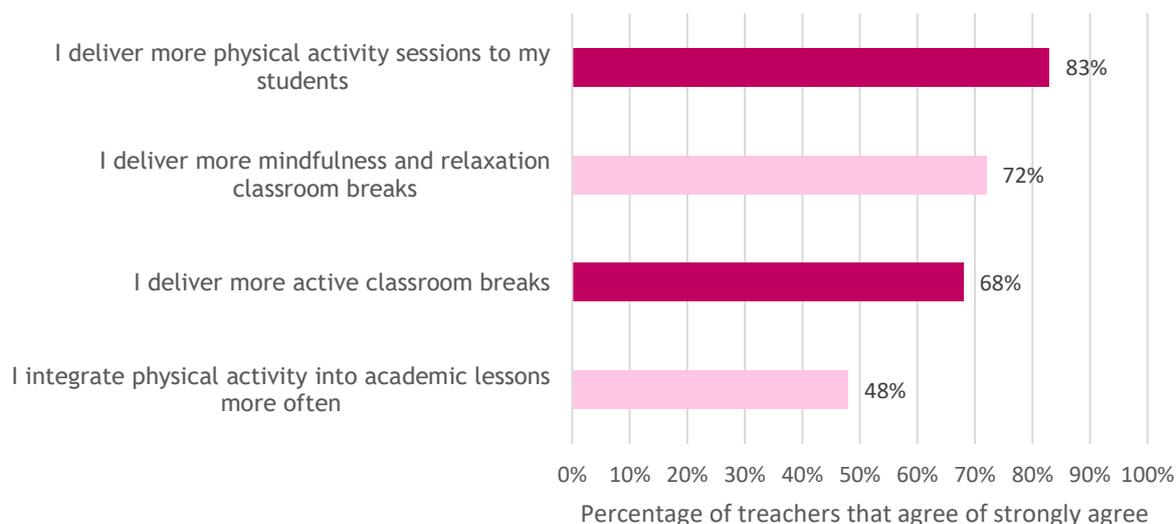
Figure 2 shows how often teachers implemented Bluearth activities, classroom breaks, and physical activities. The majority implemented general physical activity sessions (81%), active classroom breaks (69%), and mindfulness classroom breaks (69%) at least once a week. Approximately half of the teachers implemented sessions dedicated to Bluearth activities (54%) at least once a week, while few teachers integrated physical activities into academic lessons at least once a week (22%). The specific types of activities implemented in these sessions can be seen in Appendix 1.

Figure 2 - Implementation of Bluearth and Physical Activities by Primary School Teachers in their Classroom



As shown in Figure 3, most teachers reported that they deliver more physical activity sessions (81%), mindfulness classroom breaks (72%), and active classroom breaks (68%) as a result of having the Bluearth program delivered at their school. Fewer (48%) said that they integrate physical activity into academic lessons more often as a result of having the program delivered at their school.

Figure 3 - Influence of Having Bluearth's Active Schools Program Delivered in Primary Schools



Perceptions of the Bluearth Program

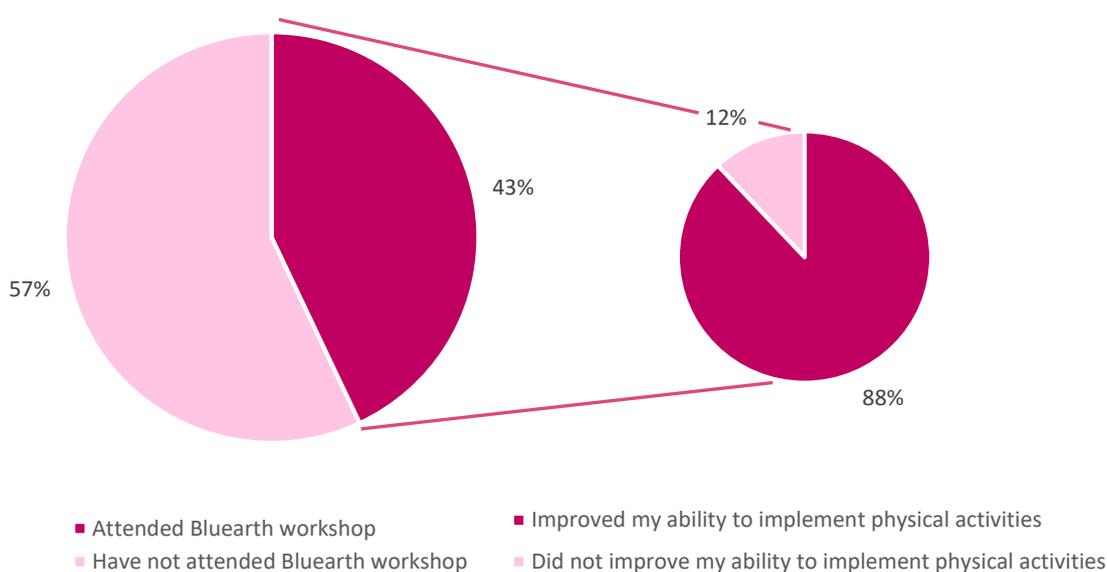
A detailed overview of the teachers' responses to each of the questions are shown in Appendix 3. Teachers were overwhelmingly positive about the Bluearth program. Selected findings include:

- 100% agreed that students enjoyed participating in the Bluearth program;
- 100% agreed that the program improves student's health;
- Fewer (62%) agreed that conflict in the classroom reduced after participation in Bluearth activities or that student's work improves after participating (77%);
- 95% agreed that Bluearth activities were more effective at developing attitudes that encourage physical activity than Physical Education;
- 7% felt that the Bluearth activities were difficult to teach; and
- 41% agreed that methods for assessing the impact of Bluearth activities on students were readily available.

Experiences of Bluearth Training

Figures 4-6 show the percentage of teachers who had received various forms of Bluearth training, and the perceptions of the teachers who received each type of training.

Figure 2 - Percent of Teachers who Attended a Bluearth Workshop and Perceived Quality of Workshops



- 43% of teachers had attended a Bluearth training workshop and 88% of those who attended agreed that the training workshops had improved their ability to implement physical activities.

Suggestions for Improving Bluearth Training Workshops - Teacher Comments

Cover a greater variety of activities during training workshops

- “More activities that align with classroom outcomes in different subjects so we can integrate more physical activities in, say, maths or history”*

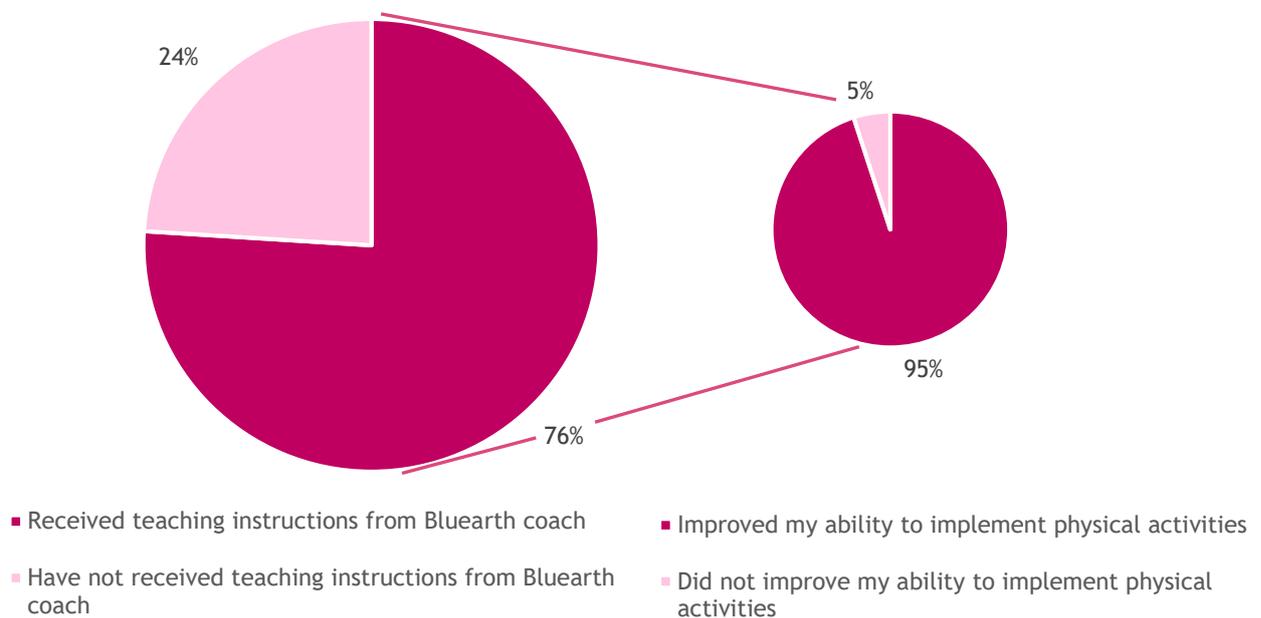
Provide training workshops on a more regular and ongoing basis

- “More funding so that more teachers and schools can participate in the training workshops on an ongoing basis”*
- “To regularly hold refresher courses for teachers who have completed their Bluearth training.”*

Engage members of schools’ leadership team in training, as well as teachers

- “Emphasise teacher and leadership engagement. A weakness at my school is that some members of the leadership make negative comments about physical activity, probably due to being physically inactive themselves. These negative attitudes are difficult to work under. They drain enthusiasm from the teachers.”*

Figure 3- Percent of Teachers who Received Instruction from Coach and Perceived Quality of Instruction



- 76% of teachers had received teaching instruction from a Bluearth coach and of those, 95% agreed that this instruction improved their ability to implement physical activities.

Suggestions for Improving Coaching Instruction - Teacher Comments

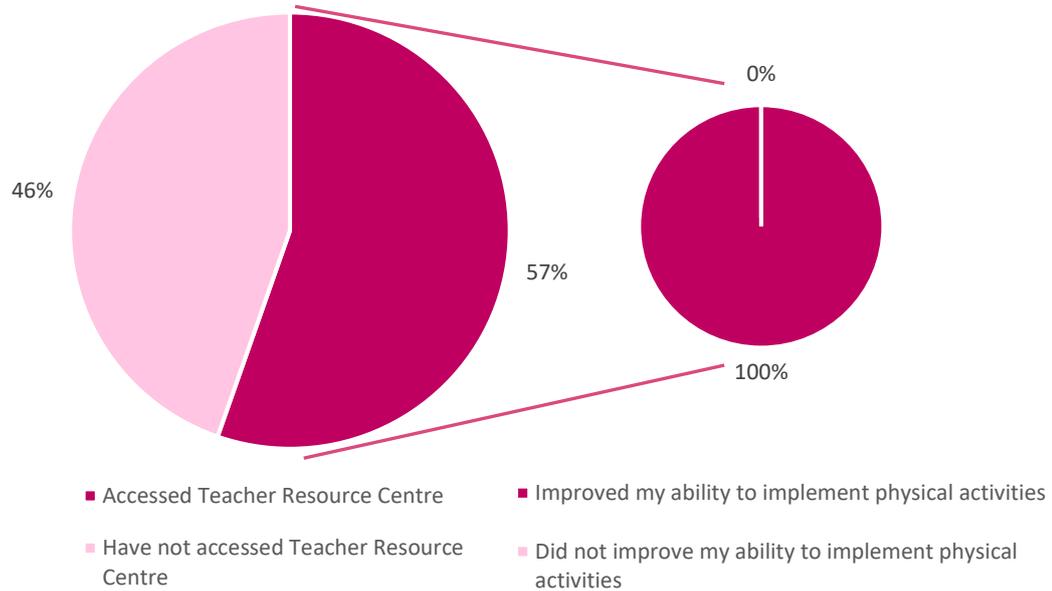
Increase the opportunities for teachers to receive instructions both during and outside of times that the Bluearth sessions are being delivered to students

- “More time spent discussing the planning and delivering of Bluearth sessions. This is difficult to do while participating with a class in a Bluearth-run session.”
- “The only improvement that I can see would be more timetabled Bluearth time as part of our weekly timetable including more teacher time being instructed/taught by Bluearth Coaches.”

Have coaches emphasis teacher engagement during Bluearth sessions

- “A strength of the Bluearth sessions has been my opportunities to observe the Bluearth coach by participating in sessions myself. This has particularly been the case with (name removed for confidentiality). The way he modelled the Bluearth approach and explained it to me has been the single most significant factor in my adoption of the approach.”
- “(name removed for confidentiality) is fantastic. She always includes me and makes sure I know the benefit of each activity and how each activity runs.”

Figure 4 - Percent of Teachers who Accessed the Teacher Resource Centre and Perceived Quality of Resources



- 54% had accessed the online teaching resources centre and of those, 100% agreed that these resources had improved their ability to implement physical activities. The resources most often accessed by teachers can be seen in Appendix 2.

Suggestions for Improving Teacher Resource Centre - Teacher Comments

Give information on activities that are modifiable for different contexts and student abilities

- *“Resources for Distance Education classroom settings, or resources that can be easily adapted to these contexts which have one, two or three students of differing ages and abilities.”*

Regularly update resources available and ensure that they are consistent with activities delivered by Bluearth coaches

- *“Many of the games sent to us in the weekly emails were not actually on the Teacher Resource Centre.”*
- *“At times, I found it difficult to find the games that Sarah was playing/teaching the students in our sessions with her. Maybe the names could be better organised?”*

Give more detailed descriptions of activities including video clips of the activities in action

- *“Video demonstrations/instructions of activities available on the Teacher resource centre.”*
- *“Mini Video clips of games in action.”*

Factors Associated with Teacher’s Implementation of Bluearth Activities

Results of the analyses that identified the factors that were significantly associated with implementation of Bluearth activities are displayed in Appendix 4. An overview of the results is presented below.



Teacher characteristics

From the teacher characteristics, self-efficacy, physical activity promotion attitude, and perceived behavioural benefits were positively associated with implementation, meaning that teachers who were more confident in their ability to teach movement and physical activities, those who held more positive towards physical activity promotion at schools, and those who thought student behaviour improved after Bluearth activities were more likely to implement Bluearth activities.



School characteristics

Relating to school characteristics, teacher climate was positively associated with implementation, meaning that teachers who felt supported by other teachers in their school to implement physical activities were more likely to implement Bluearth activities.



Attributes of the program

From attributes of the program, observability had a positive association, meaning that those teachers who felt they were able to assess the benefits of their student’s participation in Bluearth activities were more likely to implement them.



Quality of support systems

From quality of support, receiving instruction from a Bluearth coach was positively associated with implementation, meaning that those teachers who received instructions from a Bluearth coach were more likely to implement the activities. Attendance at training workshops and use of online resources were not related to how much teachers implemented Bluearth activities.



Teacher and school demographics

None of the teacher or school demographics had a significant association with implementation of the Bluearth program, meaning that factors such as teacher age, gender or number of years teaching experience, nor the type of school they teach at, had an influence on how much they implemented Bluearth activities.

Summary of Findings - Principals

Principal Characteristics

Of the principals in this study:

- 63% were female;
- 80% were 40 years or older;
- all but one was born in Australia (97%); and
- on average, had 8.1 years' experience as a primary school principal.

Of the schools that principals were recruited from:

- 60% were public schools;
- 73% had the Bluearth program delivered by a Bluearth coach at the time of the study; and
- Were, on average, educationally disadvantaged (Average ICSEA=980.77; National Average=1000).

School Level Institutionalisation of the Bluearth Program

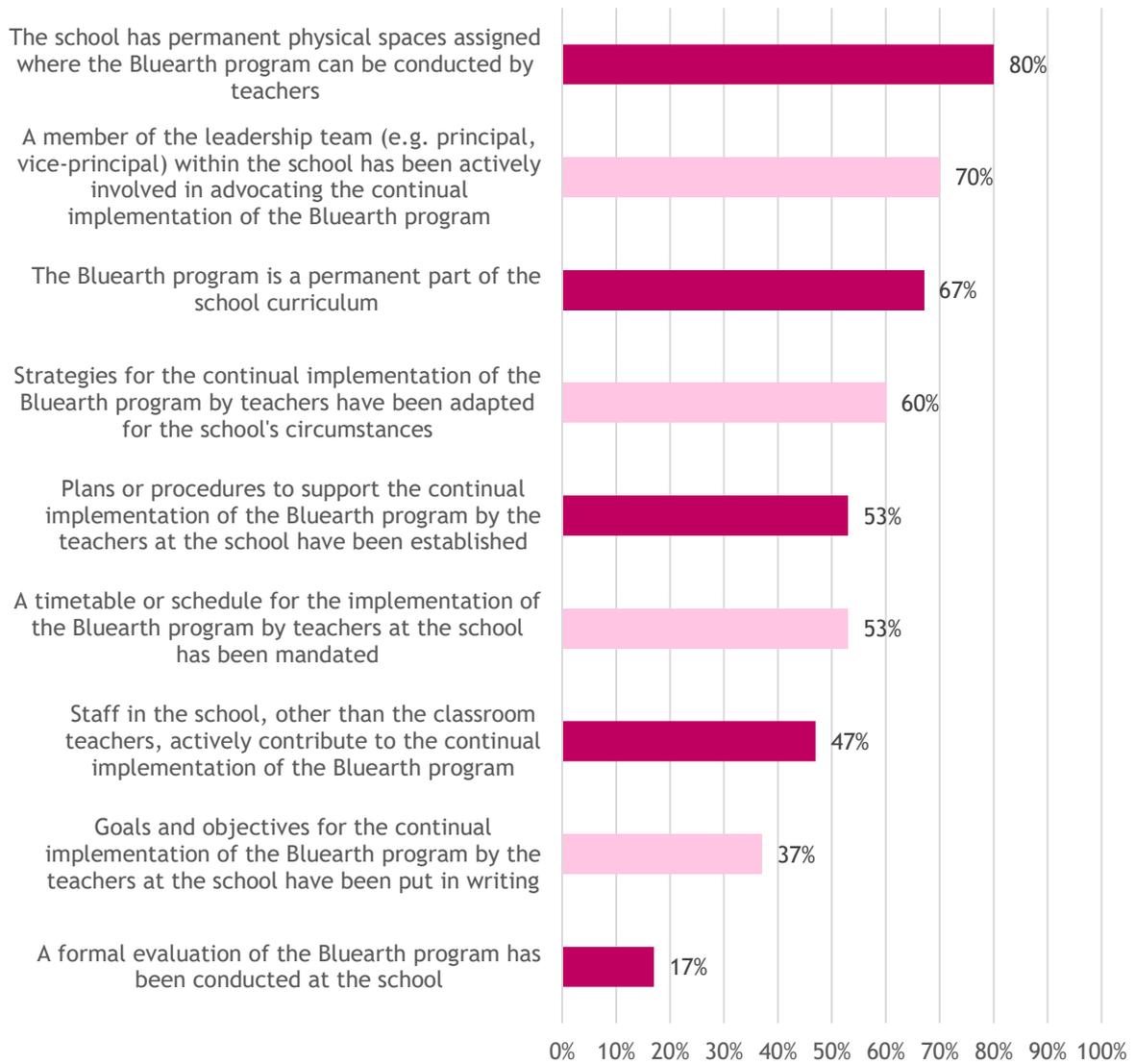
Figure 7 shows the percentage of schools that had completed various tasks to integrate the Bluearth's program into the school's curriculum and practices. Most commonly schools:

- had a permanent physical space assigned for the program (80%);
- had a member of the leadership team involved in advocacy of the program (70%); and
- had the program as a permanent part of the school curriculum (67%).

Least commonly, schools:

- had staff other than classroom teachers actively contribute to the program (47%);
- had goals and objectives regarding the program put in writing (37%); and
- had conducted a formal evaluation of the Bluearth program (17%).

Figure 7 - Institutionalisation of the Bluearth Program



Perceptions of the Bluearth Program

A detailed overview of the principals' responses to each of the questions is shown in Appendix 5. Like teachers, principal's perceptions of the Bluearth program were very positive.

- 100% agreed that students enjoyed participating in the Bluearth program;
- 93% agreed that the program improves student's health;
- 83% agreed that conflict in the classroom reduced after participation in Bluearth activities and 77% agreed that student's work improves after participating in Bluearth activities;
- 80% agreed that Bluearth activities were more effective at developing attitudes that encourage physical activity than Physical Education;
- Only 7% felt that the Bluearth activities were difficult to teach; and
- Only 40% agreed that methods for assessing the impact of Bluearth activities on students were readily available.

Factors Associated with Institutionalisation of the Bluearth Program

The results of the analyses that identified the factors that were significantly associated with the institutionalisation of the Bluearth program are shown in Appendix 6. An overview of the results is presented below.



Principal characteristics

From principal characteristics, perceived behavioural, enjoyment and health benefits for students were all positively associated with institutionalisation of the Bluearth program, meaning that principals who perceived the Bluearth program as beneficial for students were more likely to institutionalise the program.



School characteristics

From school characteristics, general school capacity was positively associated with institutionalisation, meaning that schools who have at least one staff member who can provide guidance for Bluearth activities were more likely to institutionalise the Bluearth program.



Attributes of the program

From attributes of the program, relative advantage and observability were positively associated with institutionalisation, meaning that principals who believed that the Bluearth program was more effective than Physical Education and that the benefits of the Bluearth program were easily assessed were more likely to institutionalise the program.



Principal and school demographics

The only principal or school demographic factor associated with institutionalisation of the Bluearth program was whether the Bluearth program was being delivered by a Bluearth coach at the time of the study. Schools where the Bluearth program was currently being delivered were more likely to institutionalise the program.

Conclusion and Recommendations - Teachers

The 76 teachers who responded to the questionnaire were positive about Bluearth's program. Teachers were more likely to implement general physical activity sessions than sessions dedicated to Bluearth activities at least once a week and few teachers incorporated physical activity into academic lessons. In terms of Bluearth training, three quarters of teachers received training from Bluearth coaches, half accessed online resources and half attended workshops. Although teachers felt that the Bluearth training workshops, online resources and hands-on instruction from a Bluearth coach improved their ability to deliver Bluearth activities with their students, in the association analysis, the only type of training that was associated with implementation was receiving hands-on instruction from a Bluearth coach. Teachers who: believed students behaviour and work improved after Bluearth activities; felt that other teachers at their school were supportive of physical activity; were confident in their ability to deliver Bluearth activities; had positive attitudes towards physical activity promotion in schools; and perceived that the benefits of Bluearth activities were observable, were more likely to implement the program.

Based on the findings of the questionnaire and literature relating to implementation of physical activity programs in schools, we recommend Bluearth take the following actions.

Recommendations for Increasing Implementation of Bluearth Active Schools Program by Teachers

Recommendation 1: Increase teacher awareness of the effectiveness of the Bluearth program on student behavioural outcomes

Why?

- Convincing teachers and administrators that health and student achievement are related will be essential to effect change (30).
- Teachers need to be able to see that the physical and mindfulness activities are effective in improving classroom behaviour and academic outcomes, preferably for their own students.

Likely Cost

Low if incorporated in to existing teacher training.

How?

- Bluearth to develop strategies to increase teacher understanding of the effectiveness of Bluearth activities such as classroom breaks and mindfulness activities on improving student behavioural and academic outcomes.
- Bluearth to provide education to teachers about the importance of physical activity promotion through schools and the benefits for their own students.
- Bluearth to provide teachers with tools to enable direct observations or feedback from Bluearth sessions with students.

Recommendation 2: Appoint a teacher to ‘champion’ the Bluearth program and movement at each school

Why?

- Teachers who felt there is someone at their school who could help with Bluearth activities were more likely to implement the activities.
- Role modelling (or peer observation) is important to encouraging teacher adoption and implementation of new activities.

How?

- Bluearth to work with principals to select and appoint a teacher to ‘champion’ the program across the school. This person should be a classroom teacher and highly visible to other teachers.
- The ‘champion’ is requested to coordinate Bluearth activities and is available to other teachers to assist if they have any questions about how to implement or instruct Bluearth activities.

Likely Cost

Low

Recommendation 3: Ensure that all teachers receive ‘hands-on’ training from a Bluearth coach

Why

- Ensuring that a Bluearth coach shows teachers how to implement activities is critical. The training provide by a Bluearth coach appears to be the key to improving implementation and therefore it is important that teachers engage in these sessions.
- Previous studies show that in-person, hands on training is most effective in encouraging teachers to implement physical activity programs (31).

How?

- Bluearth should try to make it clear to principals and teachers that teachers are expected to engage in the Bluearth sessions (and not use the time for other activities).
- Level of teacher confidence was associated with their implementation of Bluearth activities, thus it is important that hands on training develops teacher confidence to integrate movement in to their classes.

Likely Cost

Low

Recommendation 4: Revise and modify the Bluearth training program for teachers, with a focus on integration of movement into academic lessons

Why

- Although teachers perceive the current training workshops and online supports to be useful in improving their ability to implement physical activity with their class, the data analysis showed that attendance at workshops and use of online training materials were not associated with increased levels of implementation.
- There is a need to focus on improving implementation of movement in to academic lessons as this aspect of the Bluearth program had low implementation by teachers.

Likely Cost

Medium.
Consider partnering with a University or organisation such as ACHPER to assist with training design.

How?

- We suggest the Bluearth undertake a review of training programs and consider revising the program, incorporating the following evidence-based approaches:
 - A ‘sustained’ teacher training component. Teachers require approximately 130 hours of engagement with a new intervention or concept, otherwise known as ‘active learning’, to be able to transfer their learning to their own teaching context successfully (32). Bluearth should therefore ensure that training is of adequate length and intensity.
 - One of the most significant features of effective teacher training is the opportunity for teachers to reflect and collaborate (32). Thus, facilitating teachers to reflect on their movement practices and work with other teachers to improve their practice is likely to be successful.
 - Teacher training programs should aim to provide teachers with the skills, knowledge, and competence to successfully plan and implement programs. Improving teacher practical skills and allowing them to practice these skills is important.
 - Assess teacher satisfaction with the training they receive and ask for suggestions to improve (33). Bluearth could regularly ask teachers about their satisfaction with each aspect of their training and use suggestions to improve.
 - Teachers engage more with program material when they perceive it to be practical, ‘hands on’, relevant and applicable (34, 35). We therefore suggest that Bluearth include teacher collaboration in training program design, content and implementation.
- Bluearth to focus training on integration of movement in to academic lessons. Perhaps linking this to improved student behavioural and learning outcomes would be an effective strategy, along with ‘hands on’ training.

- Bluearth to include videos on the online training resource centre and reorganise online content in to more logical sections so that teachers find it easier to access the information they need.

Recommendation 5: Ensure principals and teachers are aware that Bluearth training can be claimed as teacher professional development hours

Why?

- Around one quarter of teachers did not receive coach training and half did not attend workshops or access online training resources. A reason for this might be that they are not aware that training can be claimed as professional development hours.

How?

- In written and verbal communication with teachers and principals, Bluearth to ensure that principals and teachers are aware that Bluearth training can be claimed as professional development hours.

Likely Cost

Low

Recommendation 6: Offer teachers ongoing physical activity training, establish a ‘community of practice’

Why?

- To ensure ongoing implementation, teachers may require ongoing training and support or be facilitated to create a ‘community of practice’ to support continual implementation of physical activity programs.

How?

- We recommend that Bluearth offer ongoing professional development opportunities for teachers who have been involved with the Bluearth program. This could create a ‘community of practice’ for teachers who are interested in physical activity promotion, as well as ongoing revenue streams for Bluearth.

Likely Cost

Medium but potential of increased revenue would offset the upfront cost.

Recommendation 7: Evaluate the effectiveness of new approaches to teacher training

Why?

- To determine how effective the new training programs are, relative to current training, we recommend a robust evaluation.

How?

- An evaluation will help to determine effectiveness of training and how this might be optimised, prior to full roll out across all schools
- As part of this study, VU researchers conducted a literature search to find out the best methods of teacher training in physical activity and found that evidence about the most effective way to train teachers in physical activity is scarce. Thus, this is an opportunity for Bluearth to be a leader in this area through the development and evaluation of teacher training programs to improve implementation of physical activity programs.
- Once evidence of the effectiveness of this training is established, this presents an area that Bluearth could grow and potentially lead to opportunities for revenue streams in teacher training for physical activity.

Likely Cost

High.
Consider application for external funding or partner funding.
Cost could be offset by new product development and new revenue streams.

Conclusion and Recommendations - Principals

The 30 principals who responded to the questionnaire were positive about the Bluearth program. It was challenging to recruit schools who did not currently have the Bluearth program; 75% principals who consented to be involved in the study currently have Bluearth program. Having the Bluearth program delivered in the school by a Bluearth coach at the time of the study was related to higher levels of institutionalisation. Combined, these observations suggest that schools may not have Bluearth activities and practices imbedded into policy or strategies that would facilitate continuation after Bluearth leaves the school. General school capacity, beliefs about the behavioural, health, and enjoyment benefits for students, the belief that Bluearth activities were more effective than regular Physical Education, and the ability to observe and assess the benefits of the Bluearth program, were also associated with higher levels of institutionalisation.

Based on the findings of the questionnaire and literature relating institutionalisation of physical activity programs in schools, we recommend Bluearth take the following actions.

Recommendations for Increasing Institutionalisation of Bluearth Active Schools Program

Recommendation 1: Encourage schools to conduct an evaluation of the Bluearth program at their school

Why?

- Principals who observe the benefits of Bluearth the program are more likely to institutionalise the program.

How?

- Bluearth to encourage schools to conduct their own evaluation of the Bluearth program. This could be a student-led project, where students interview their peers about the program and report their findings back to the class. Schools then have documentation of the benefits of the Bluearth program.
- This initiative aligns with the importance of student voice in schools.

Likely Cost

Low

Recommendation 2: Work with principals and teachers to embed and link the Bluearth program into Physical Education

Why?

- Principals who perceived that Bluearth activities are more beneficial than Physical Education classes were more likely to institutionalise the program.

How?

- Bluearth to provide principals, schools and teachers with resources to embed and link the Bluearth program into their Physical Education program.
- Highlight the relationship between fundamental movement skills, fun, enjoyment, small-sided games, modifications and different types of physical activities (not just sport).

Likely Cost

Low

Recommendation 3: Work with principals to embed physical activity into school policy

Why?

- Leadership is important, as well as policy, to ensure that the Bluearth program continues to be implemented after coaches leave.

How?

- Bluearth to work with principals on physical activity policy and embedding of activity into school curriculum, physical activity classroom breaks, and mindfulness activity.
- Resources are available through several sources, such as: <https://www.cdc.gov/healthyschools/physicalactivity/cspap.html>

Likely Cost

Low

Recommendation 4: Work with principals to ensure that physical activity is part of their ethos at school

Why?

- Leadership and the whole school and community working together is important to ensure that the Bluearth program and physical activity continues to be implemented (becomes part of the school ethos).

Likely Cost

Low

How?

- Blueearth to work with principals, teachers and the wider community on creating a climate and atmosphere focusing on physical activity.
- Involve parents/guardians (Blueearth physical activity days, where parents are invited to the school to take part with their children).
- Involve the community (sport & recreation services & providers).

Recommendation 5: Work with principals to adopt a 'whole school' approach to physical activity and health promotion

Why?

- Principals involved in the advocacy of Blueearth, as well as having a school staff member responsible and involved in the implementation, was linked to institutionalisation of the program.

How?

- Blueearth to work with principals to help them adopt and embed a whole school approach to physical activity and health promotion, to ensure the institutionalisation and sustainability of the program.
- Resources are available through several sources, such as:
https://www.dhhs.tas.gov.au/__data/assets/pdf_file/0007/190483/2_2014_1119_PA_Whole_School_Approach.pdf
<https://www.healthykids.nsw.gov.au/downloads/file/teacherschilddcare/Awholeschoolapproach.pdf>

Recommendation 6: Appoint a teacher to 'champion' the Blueearth program and movement at each school (as per recommendation above for teachers)

Why?

- When there was someone at their school to provide guidance for Blueearth activities, principals were more likely to institutionalise the program.

Likely Cost

Low

Likely Cost

Low

How?

- Bluearth to work with principal to select and appoint a teacher to 'champion' the program across the school. This person should be a classroom teacher and be highly visible to other teachers.
- The 'champion' is requested to coordinate Bluearth activities and is available to other teachers to assist if they have any questions about how to implement or instruct Bluearth activities.

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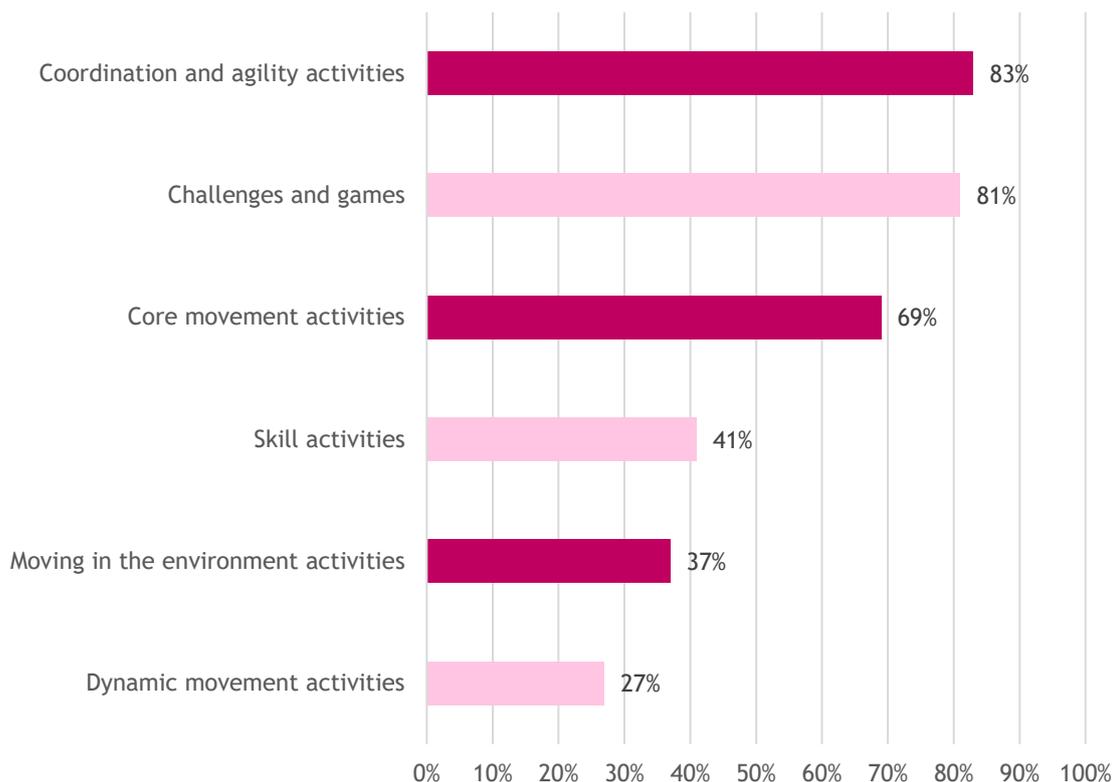
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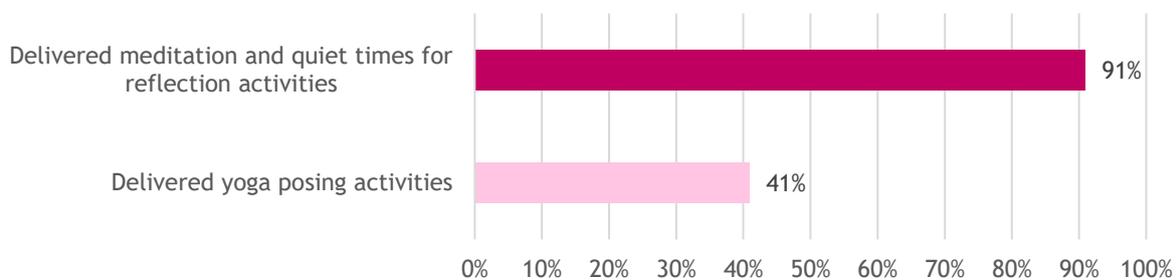
Appendices

Appendix 1 - Percentage of Teachers Delivering Various Activities during Bluearth Sessions and Classroom Breaks

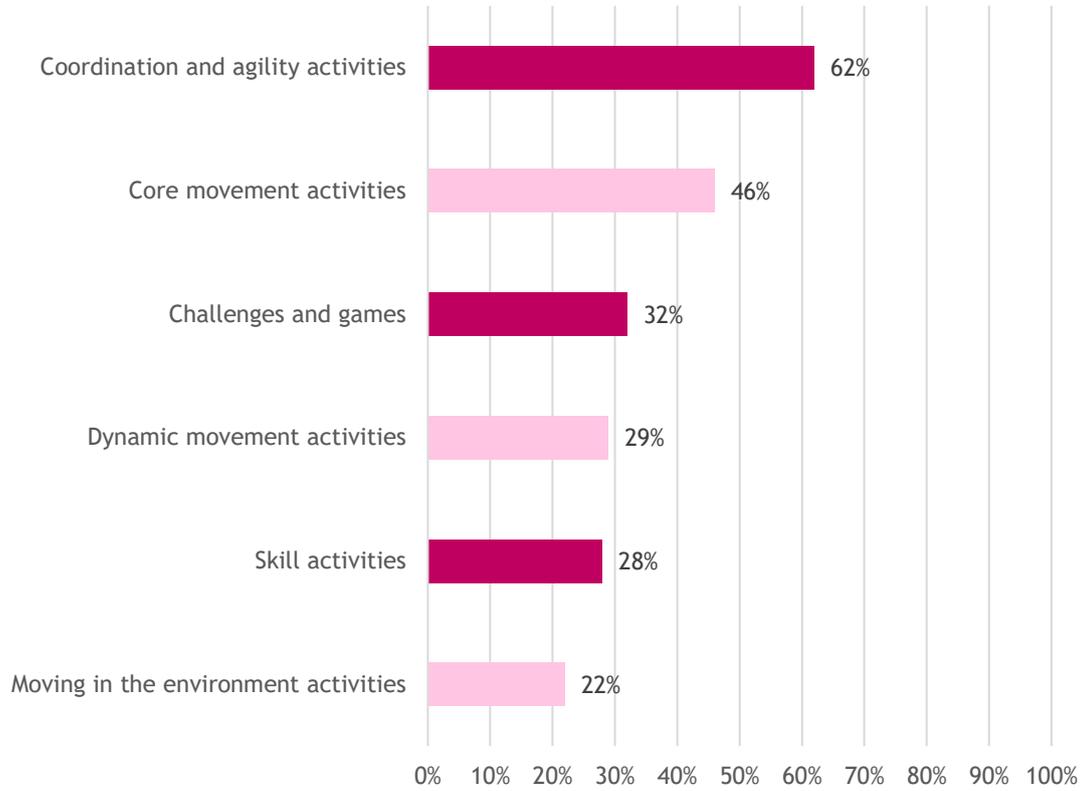
Percentage of Teachers Delivering Different Activities During Bluearth Sessions



Percentage of Teachers Delivering Different Activities During Mindfulness Classroom Breaks

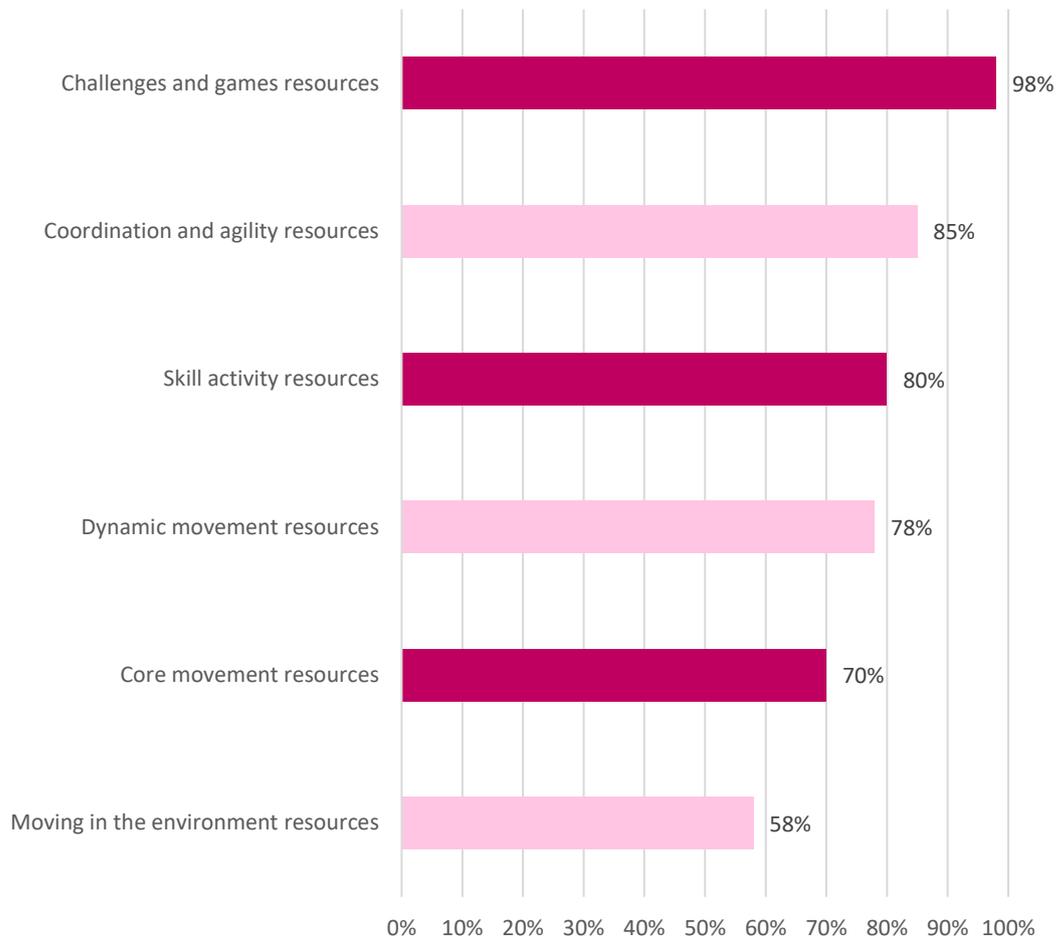


Percentage of Teachers Delivering Different Activities During Active Classroom Breaks



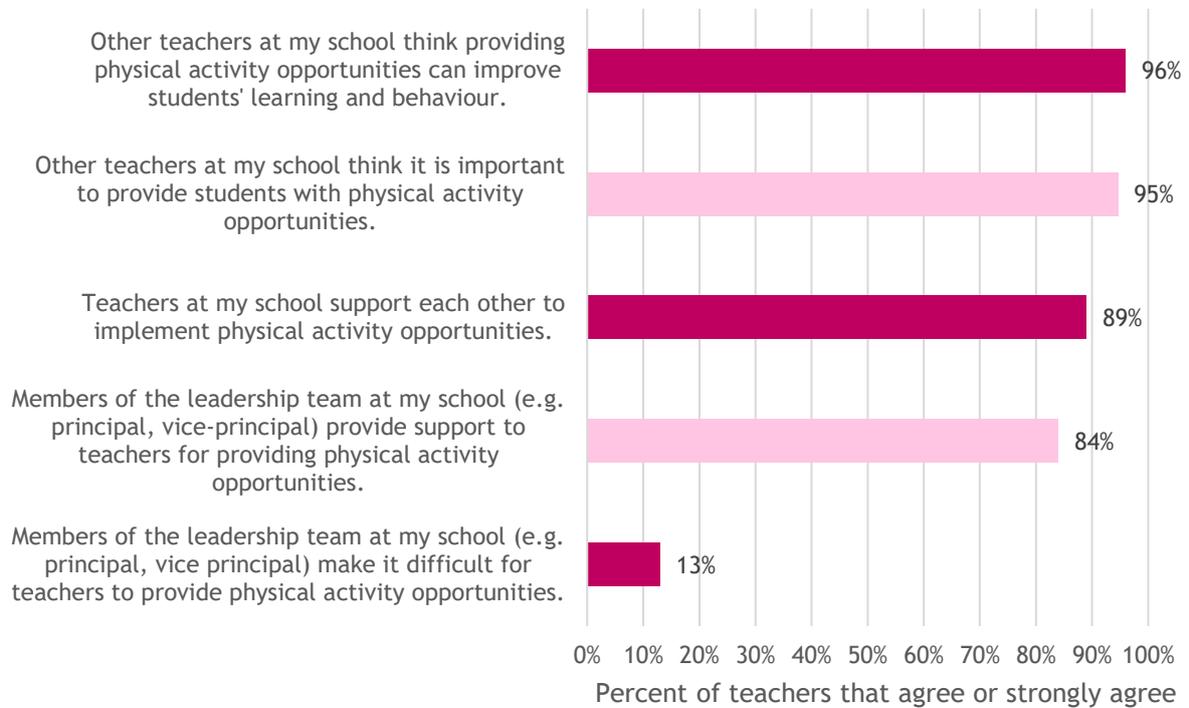
Appendix 2 - Percentage of Teachers Accessing Various Online Resources

Percentage of Teachers Accessing Different Online Resources

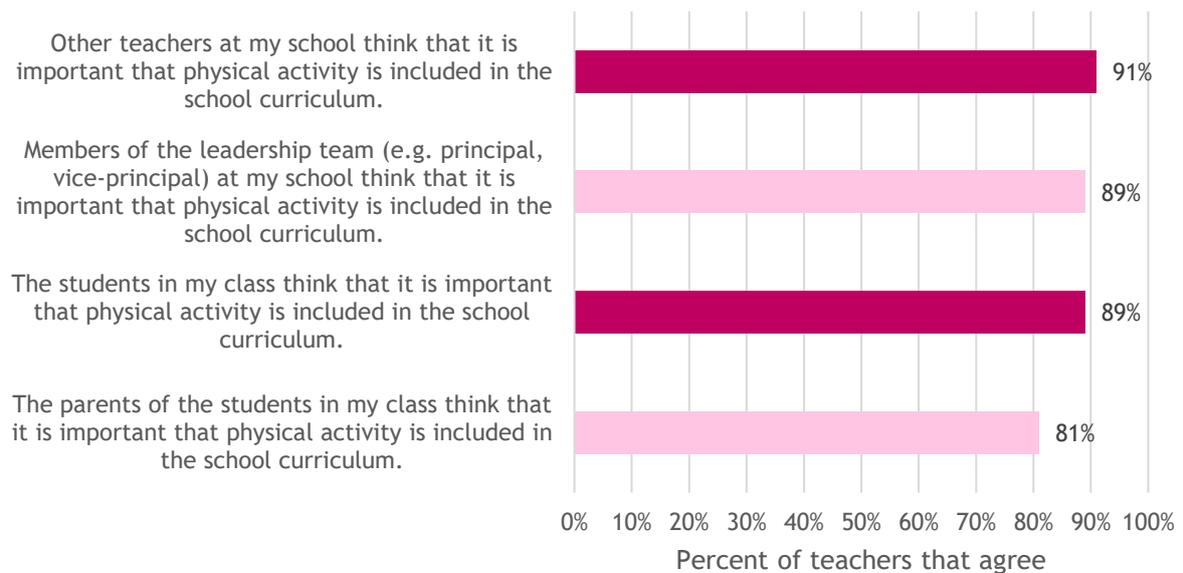


Appendix 3 - Detailed Analysis of Teachers' Responses to Questionnaire

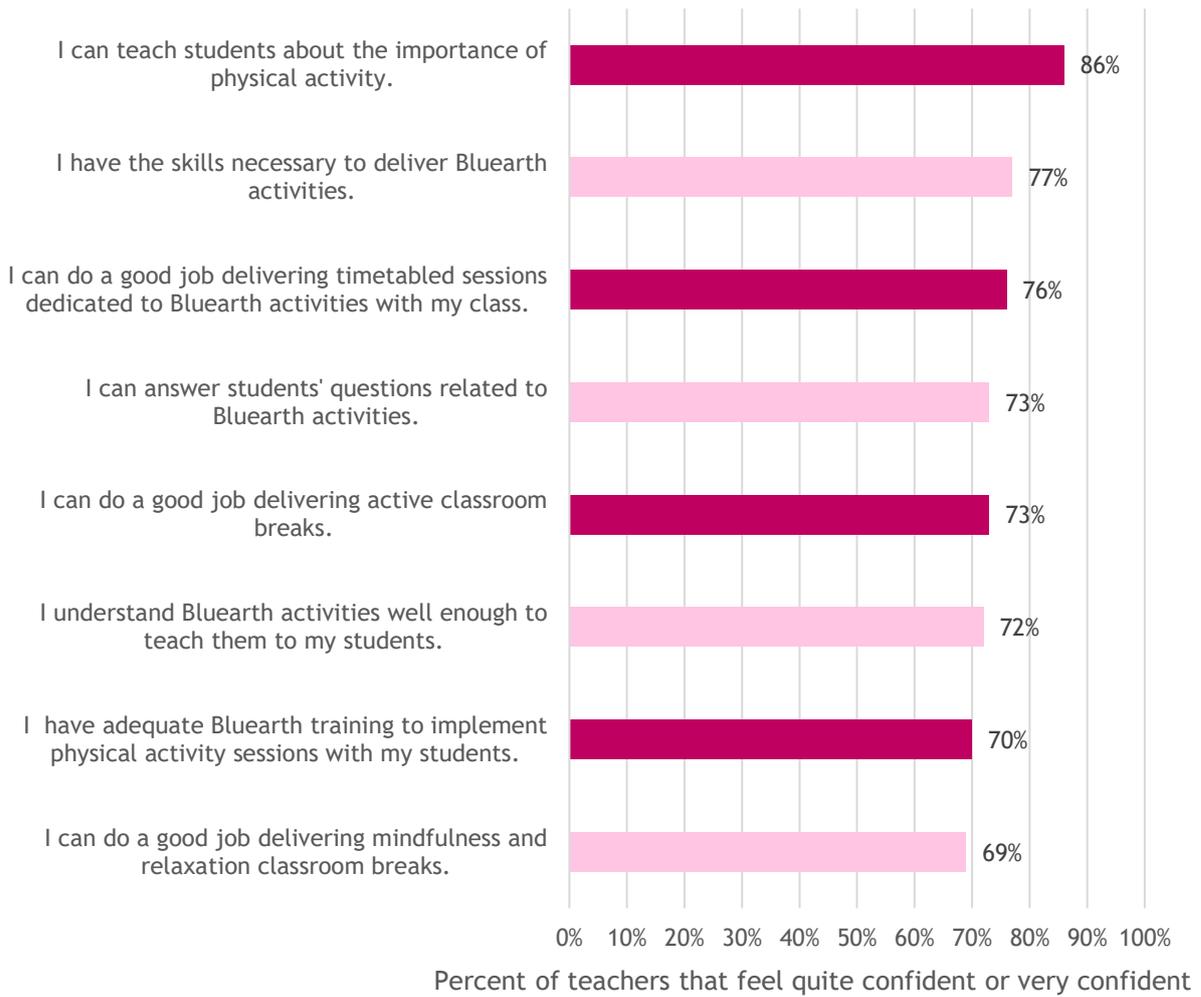
School Climate



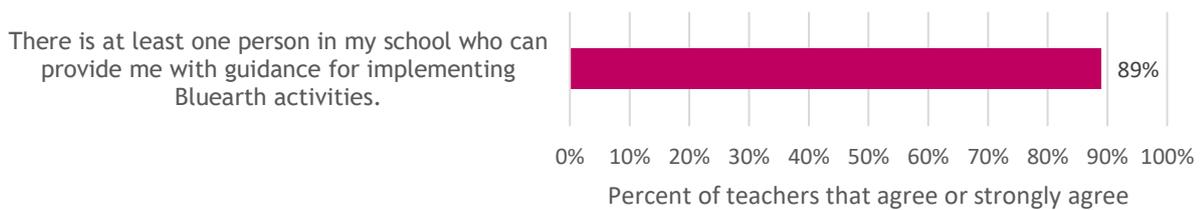
Subjective Norms



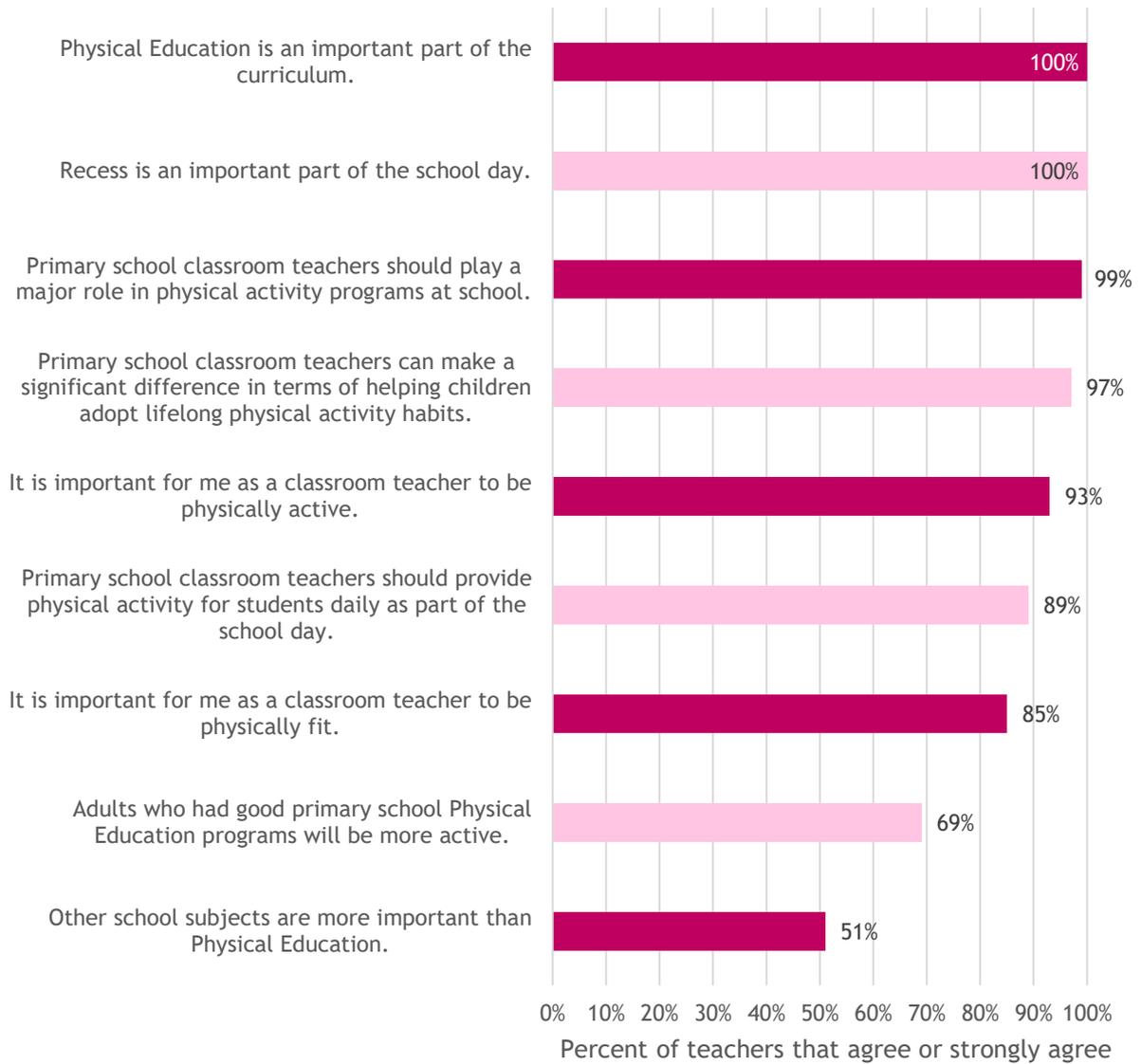
Self-Efficacy



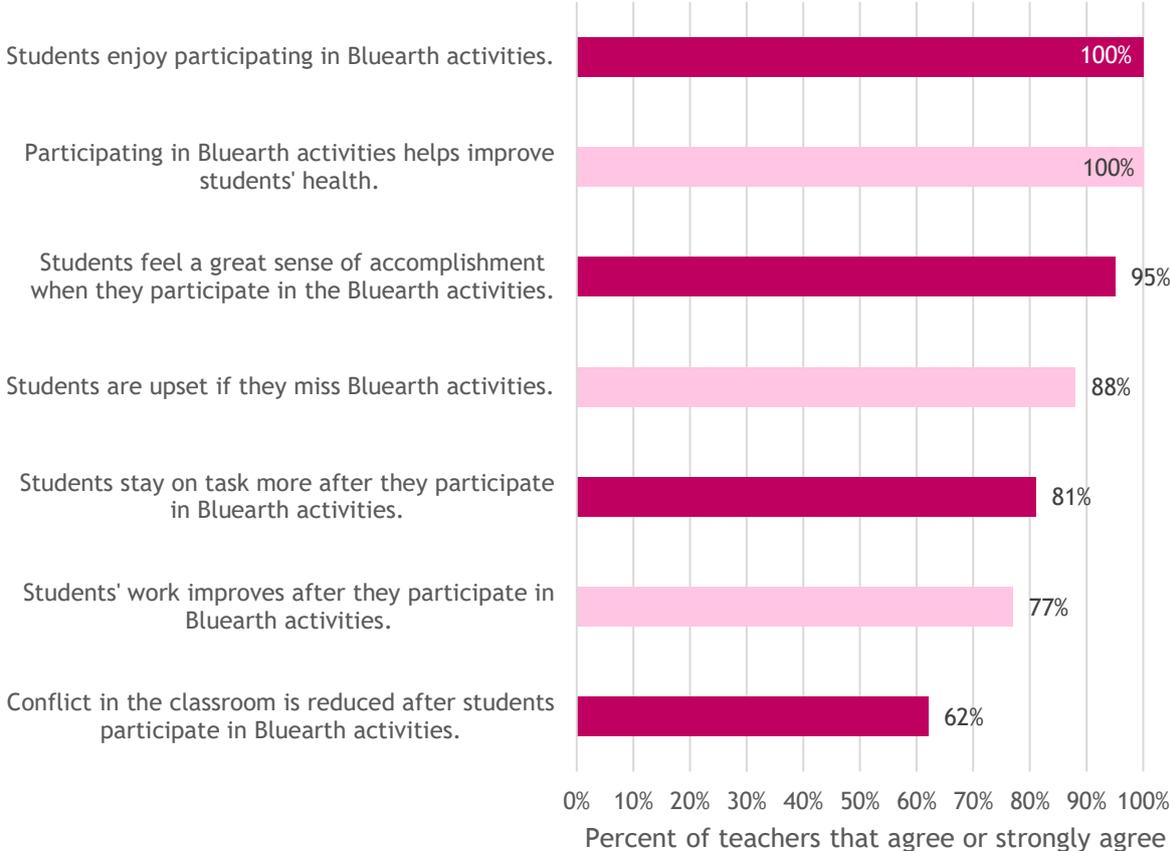
General School Capacity



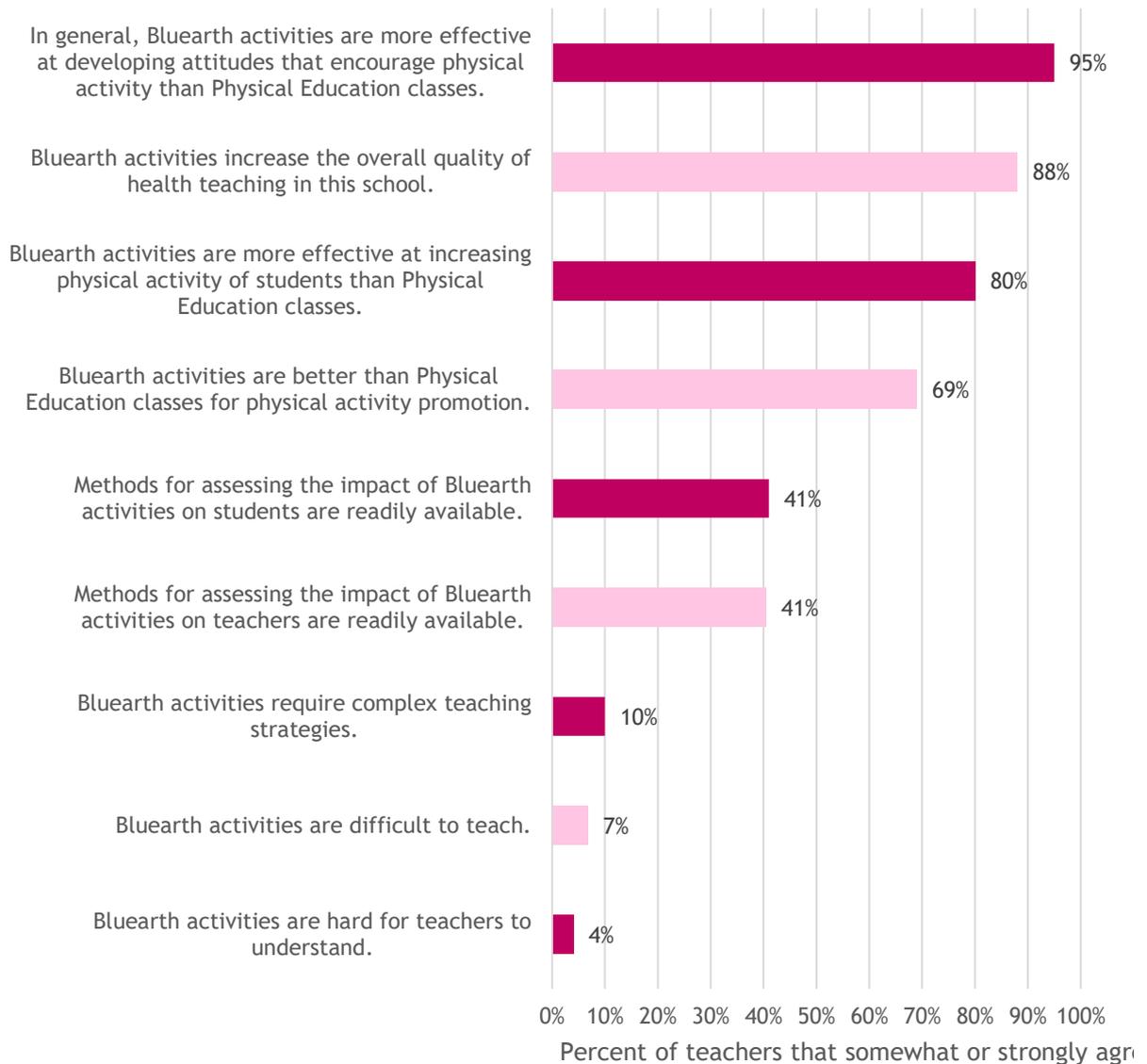
Physical Activity Promotion Attitudes



Benefits of the Bluearth Program



Characteristics of the Bluearth Program



Appendix 4 - Associations with Teacher Implementation of Bluearth Activities

Fixed Effects	Coefficient (95% CI)	Sig
School Demographics		
Public School	0.574 (-1.825, 2.972)	.620
Bluearth currently at School	1.318 (-1.361, 3.997)	.323
ISCEA	-0.007 (-0.005, 0.018)	.266
Teacher Demographics		
Female	0.905 (-1.730, 3.538)	.496
Age		
20-29 Years	0.361 (-3.108, 3.830)	.836
30-39 Years	-1.659 (-5.030, 1.712)	.330
40-49 Years	-1.750 (-5.066, 1.566)	.296
50 years and older	Ref	
Teaching Experience	-0.193 (-1.144, 0.759)	.688
Formal Training	0.979 (-1.426, 3.386)	.419
School Capacity		
Teacher Climate	1.045 (0.113, 1.978)	.028
Administrator Climate	0.589 (-0.369, 1.547)	.224
Subjective Norms	0.319 (-0.634, 1.273)	.506
General School Capacity	0.686 (-0.299, 1.671)	.169
Teacher Characteristics		
Teacher Physical Activity	0.542 (-0.434, 1.507)	.267
Self-Efficacy	1.590 (0.698, 2.482)	.001
Physical Activity Promotion Attitude	1.132 (0.182, 2.083)	.020
Student Behaviour Benefits	0.970 (0.023, 1.120)	.045
Student Enjoyment Benefits	0.073(-0.892, 1.037)	.881
Student health benefits	0.162(-0.795, 1.120)	.737

Attributes of the Program

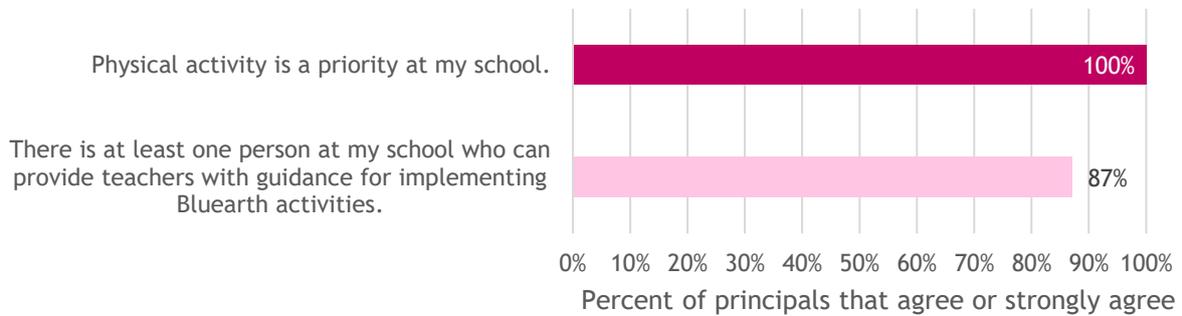
Relative Advantage	0.261 (-0.695, 1.218)	.545
Simplicity	0.219 (-0.737, 1.175)	.649
Observability	1.218 (0.302, 2.133)	.010

Quality of Support Systems

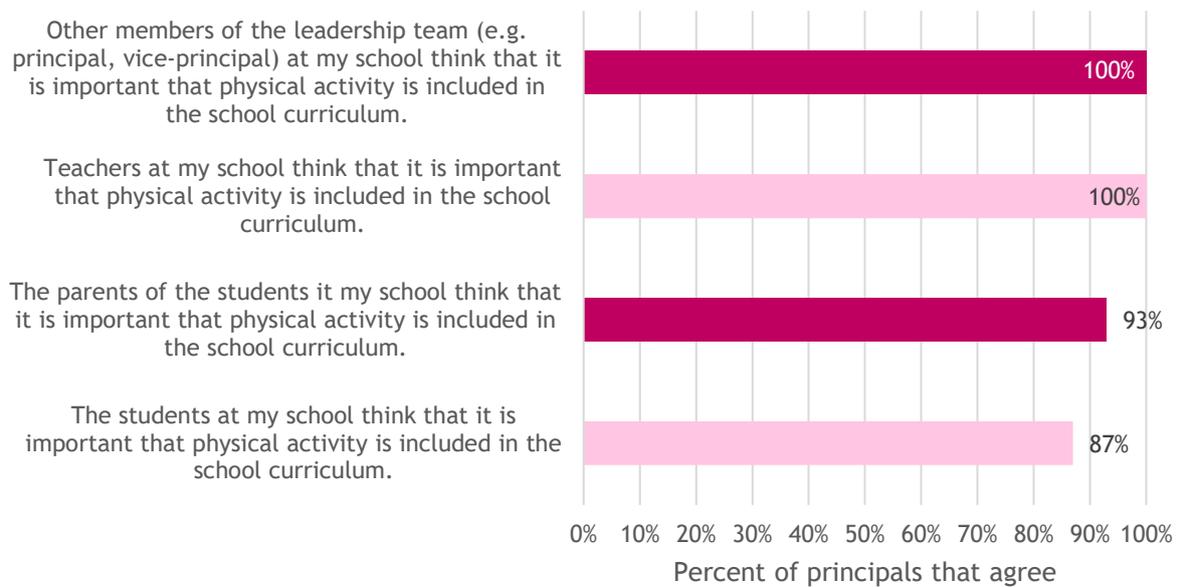
Attended Bluearth Workshop	-1.447 (-3.376, 0.481)	.139
Received Teaching Instructions	2.405 (0.275, 4.535)	.027
Accessed Teacher Resource Centre	1.137 (-0.763, 3.037)	.237

Appendix 5 -Detailed Analysis of Principals' Responses to Questionnaire

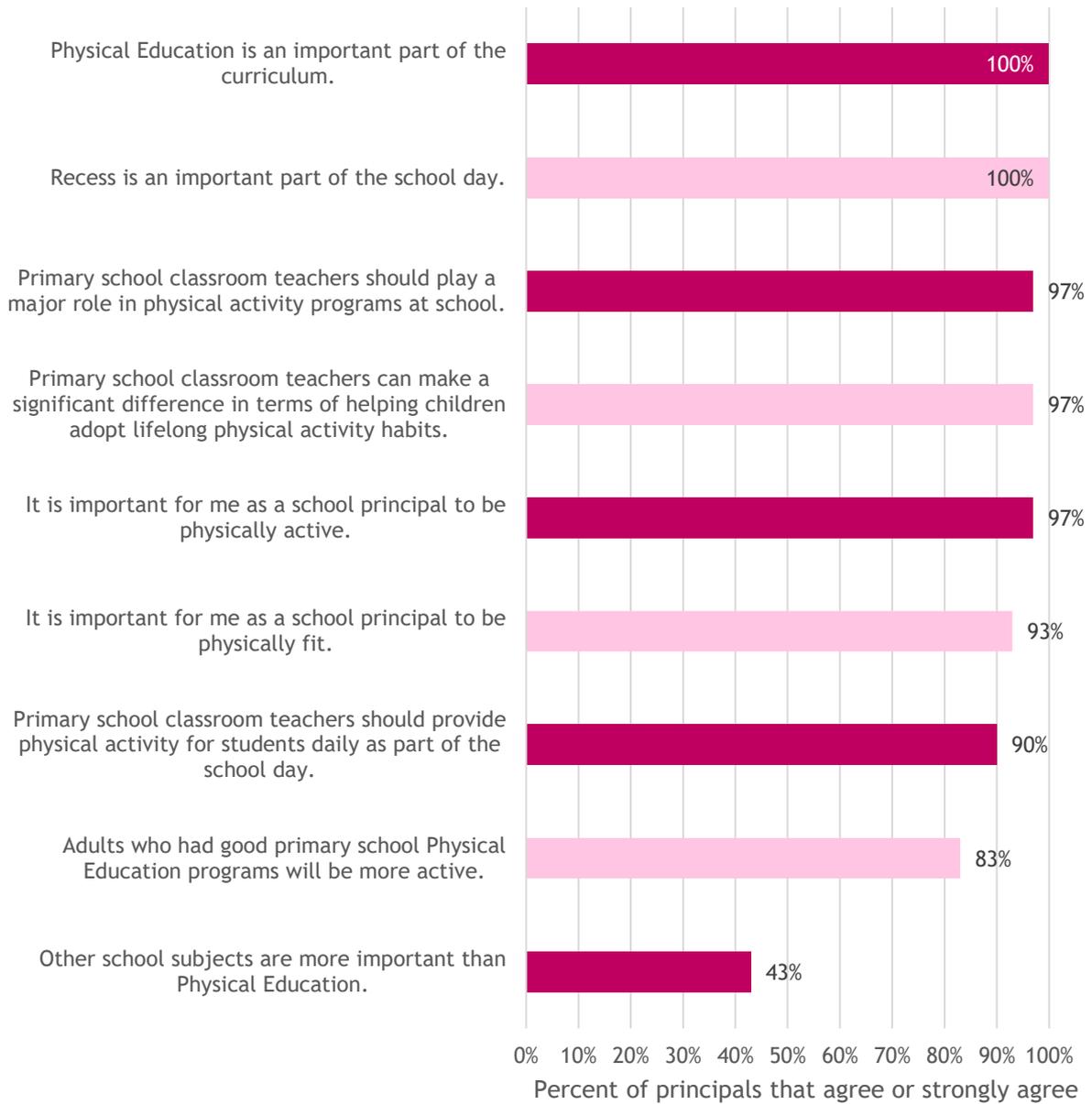
School Climate



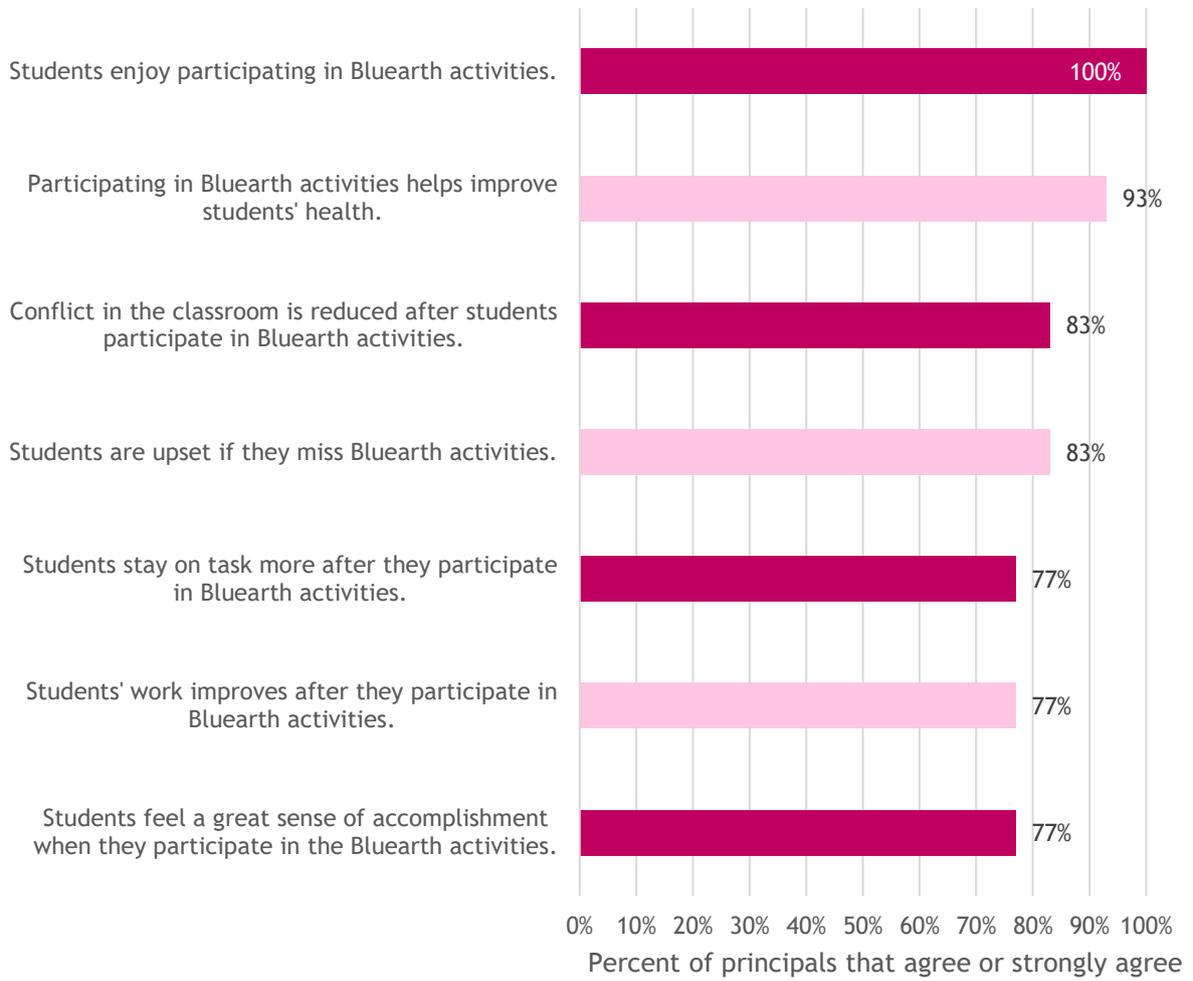
Subjective Norms



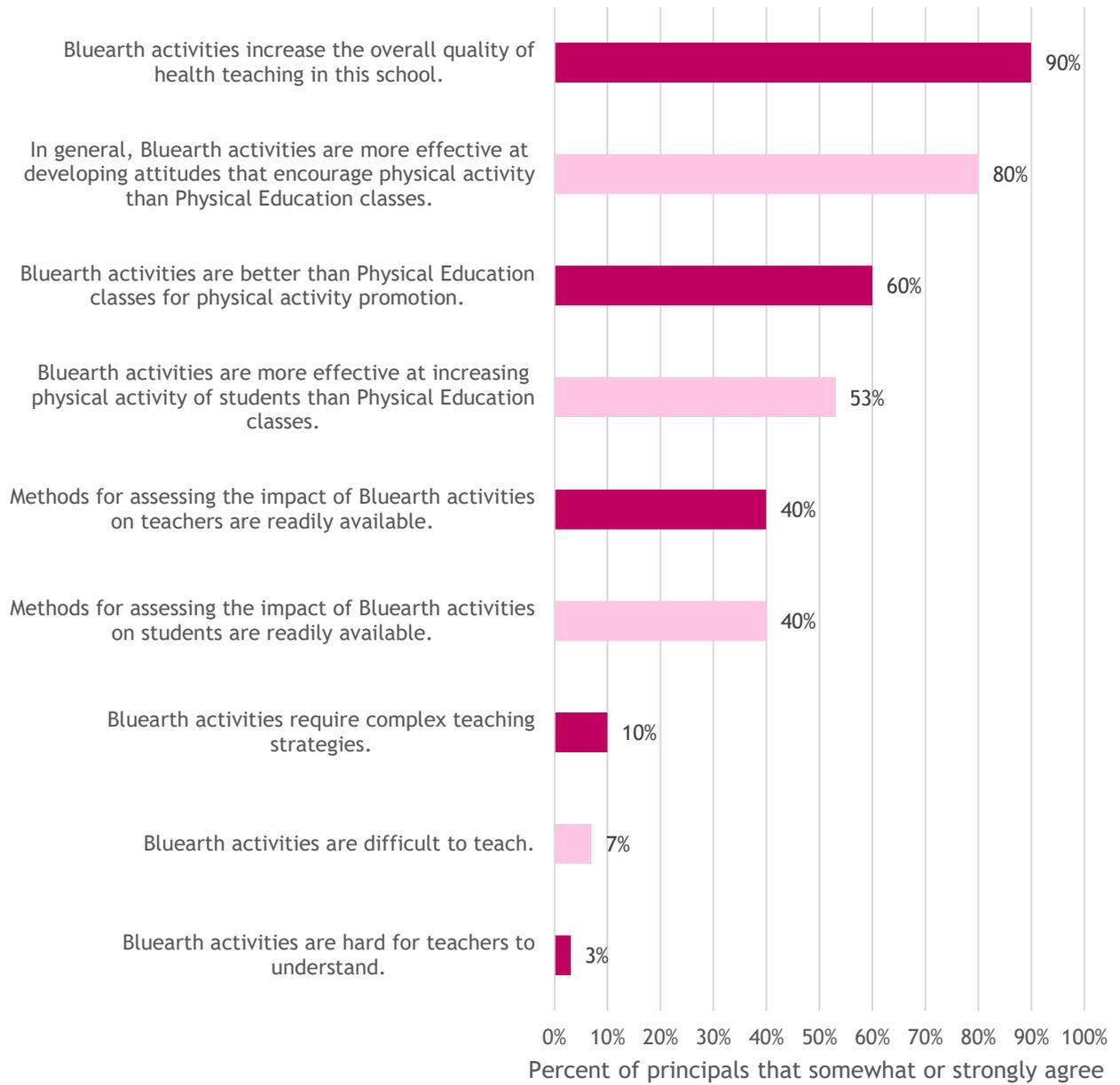
Physical Activity Promotion Attitude



Benefits of the Bluearth Program



Characteristics of the Bluearth Program



Appendix 6 -Associations with Institutionalisation of Bluearth's Active Schools Program (Principals)

	Pearson's r	p-value
School demographics		
ISCEA	-.132	.486
Principal demographics		
Years Experience as Principal	.192	.309
School Capacity		
School Climate	.183	.333
School Capacity	.617	<.001
Subjective Norms	.235	.210
Principal Characteristics		
Level of Physical Activity	.115	.543
Physical Activity Promotion Attitude	.267	.153
Student Behaviour Benefits	.577	<.001
Student Enjoyment Benefits	.529	<.001
Student Health Benefits	.499	<.001
Attributes of the Program		
Relative Advantage	.417	.022
Simplicity	.338	.068
Observability	.385	.036
	M(SD)	p-value
School demographics		
School Type		
Public School	4.39(2.85)	.291
Not Public School	5.50(2.65)	
Specialist PE Teacher		
Yes	5.42(2.81)	.357
No	4.44(2.77)	
Bluearth Currently Delivered		
Yes	5.91(2.05)	>.001
No	1.88(2.41)	

Principal demographics

Gender		
Female	4.79(2.94)	.912
Male	4.91(2.63)	
Age		
20-39 years old	3.67(1.75)	.581
40-49 years old	4.75(3.95)	
50-59 years old	5.41(2.87)	
60 years or older	4.00(2.65)	