Using quantitative and qualitative methods to measure implementation of a school-based physical activity program.

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NATIONAL CENTRE OF **IMPLEMENTATION SCIENCE**

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Territorial acknowledgement

I thankfully join you today from the traditional territories of the lək̓ʷəŋən peoples – the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

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Background

Background

IMPLEMENTATION STRATEGY	DESCRIPTION
1. Centralize technical assistance and provide ongoing consultation	Project officers provide technical assistance to schools and support in-school champions throughout the study period.
2. Mandate change	Project officers meet with school principals. Schools are encouraged to develop a physical activity policy and to communicate their support to teachers, students and parents.
3. Identify and prepare champions	Schools nominate an in-school champion to complete a one-day, state-accredited training workshop.
4. Develop a formal implementation blueprint	In-school champions develop a plan for program implementation (during strategy 3).
5. Conduct educational outreach visits	Project officers meet with teachers for a 1-2 hour training session during a whole school staff meeting.
6. Develop and distribute educational materials	In-school champions receive an intervention manual and classroom teachers access the online portal.
7. Capture and share local knowledge	Project officers share case studies on the online portal.
8. Change physical structure and equipment	Each school receives a physical activity equipment pack and in-school champions are prompted to develop these for all teachers.

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Background

2017…

→

Pilot RCT

12 primary schools

✓Intervention effect **+36.6 minutes** teachers' weekly scheduled PA ($p<0.001$)

+15 minutes student MVPA ($p<0.001$)

Effectiveness RCT

61 primary schools

✓Intervention effect = **+44.2 minutes** teachers' weekly scheduled PA ($p<0.001$)

✓**Cost effective**

Noninferiority RCT

48 primary schools

✓Adapted PACE = **"as good as"** (noninferior) for minutes of teachers' weekly scheduled PA

✓ **Substantial cost savings** ($373/school)

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Background

PACE is effective, cost-efficient, and uses scalable modes of delivery

It is therefore considered optimised for delivery by our health service…

However …

We wanted to know more about implementation

> Is PACE better implemented by some schools compared with others?
> Why?
> What factors are associated with implementation?

This information may inform ways to further optimise PACE

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Quantitative – Strengths & Weaknesses

Strengths

- Systematic data collection, greater reliability

- Large number of people within population or across populations

- Identify similarities and differences b/n groups

- Generalizability and replicability of the results

Weaknesses

- Cannot provide context or explain 'why'

- Limited value for investigation of new, unexplored areas

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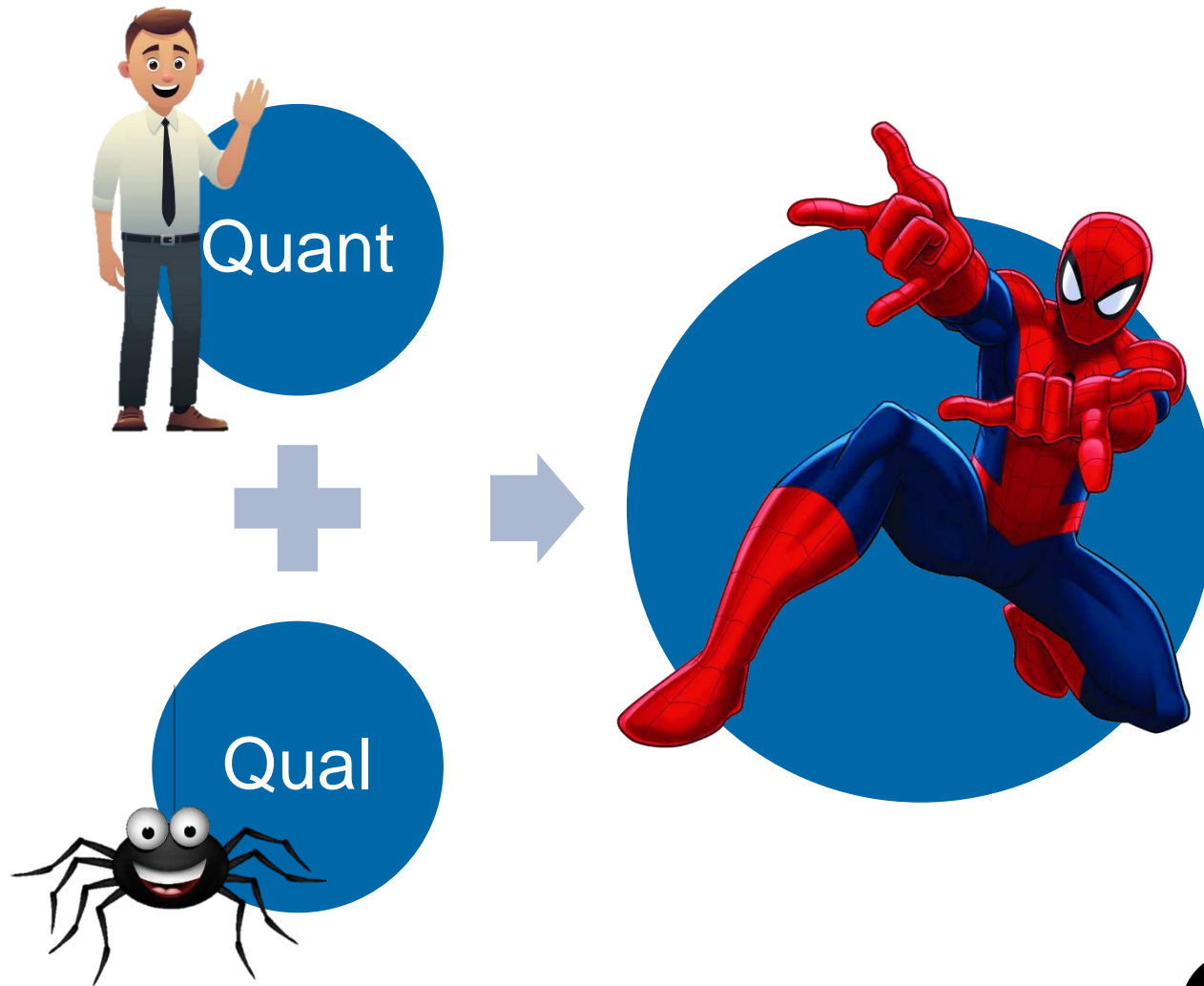# Qualitative – Strengths and Weaknesses

Strengths

- Appropriate for questions "how" and "why"

- Useful for examining and exploring a research question on a subject that is not very well known

- Presents individual responses in their own words, images, phrases etc.

- Provides insider-view

Weaknesses

- Difficult to generalize the results, representation problem

- Research quality mainly depends on researcher's knowledge, skills and experiences

- No standard questioning

- Subjective-professional bias

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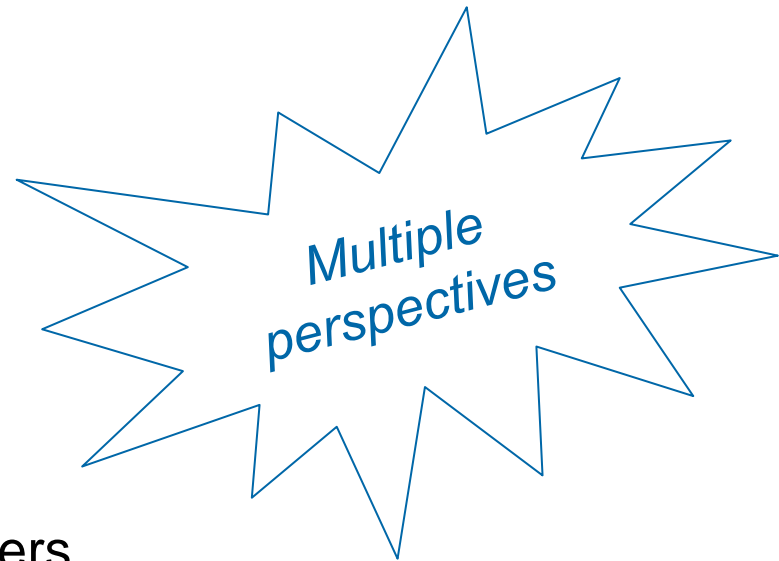**NEWCASTLE**
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Design

Quantitative – Research Objective

To measure each PACE strategy in regards to key implementation indicators.

Quantitative - Implementation Measures

- **<u>Surveys</u>**
  - Teachers
  - Principals
  - In-school champions

- **<u>Process records</u>**
  - Maintained by project officers

Multiple perspectives

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RESEARCH **Open Access**

Implementation and scale-up of physical activity and behavioural nutrition interventions: an evaluation roadmap

Check for updates

Heather McKay[1,2*†], Patti-Jean Naylor[3†], Erica Lau[1,2], Samantha M. Gray[1], Luke Wolfenden[4,5], Andrew Milat[6,7], Adrian Bauman[7], Douglas Race[1], Lindsay Nettlefold[1] and Joanie Sims-Gould[1,2]

Abstract

Background: Interventions that work must be effectively delivered at scale to achieve population level benefits. Researchers must choose among a vast array of implementation frameworks (> 60) that guide design and evaluation of implementation and scale-up processes. Therefore, we sought to recommend conceptual frameworks that can be used to design, inform, and evaluate implementation of physical activity (PA) and nutrition interventions at different stages of the program life cycle. We also sought to recommend a minimum data set of implementation outcome and determinant variables (indicators) as well as measures and tools deemed most relevant for PA and nutrition researchers.

Methods: We adopted a five-round modified Delphi methodology. For rounds 1, 2, and 3 we administered online surveys to PA and nutrition implementation scientists to generate a rank order list of most commonly used: i) implementation and scale-up frameworks, ii) implementation indicators, and iii) implementation and scale-up measures and tools. Measures and tools were excluded after round 2 as input from participants was very limited. For rounds 4 and 5, we conducted two in-person meetings with an expert group to create a shortlist of implementation and scale-up frameworks, identify a minimum data set of indicators and to discuss application and relevance of frameworks and indicators to the field of PA and nutrition.

Results: The two most commonly referenced implementation frameworks were the Framework for Effective Implementation and the Consolidated Framework for Implementation Research. We provide the 25 most highly ranked implementation indicators reported by those who participated in rounds 1–3 of the survey. From these, the expert group created a recommended *minimum data set* of implementation determinants ($n = 10$) and implementation outcomes ($n = 5$) and reconciled differences in commonly used terms and definitions.

Conclusions: Researchers are confronted with myriad options when conducting implementation and scale-up evaluations. Thus, we identified and prioritized a list of frameworks and a minimum data set of indicators that have potential to improve the quality and consistency of evaluating implementation and scale-up of PA and nutrition interventions. Advancing our science is predicated upon increased efforts to develop a common 'language' and adaptable measures and tools.

Keywords: Implementation science, Exercise, Healthy eating, Scalability, Dissemination, Public health

A minimum data set of indicators for evaluating implementation and scale-up of PA and nutrition interventions

Link to article

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Quantitative – Implementation Outcomes

- **<u>Dose</u>** - intended units delivered

- **<u>Adherence</u>** - extent to which strategies were implemented as prescribed

- **<u>Adoption</u>** - proportion and representativeness of school stakeholders that utilized strategies

- **<u>Acceptability</u>** - perceptions among school stakeholders that strategies were agreeable, palatable or satisfactory

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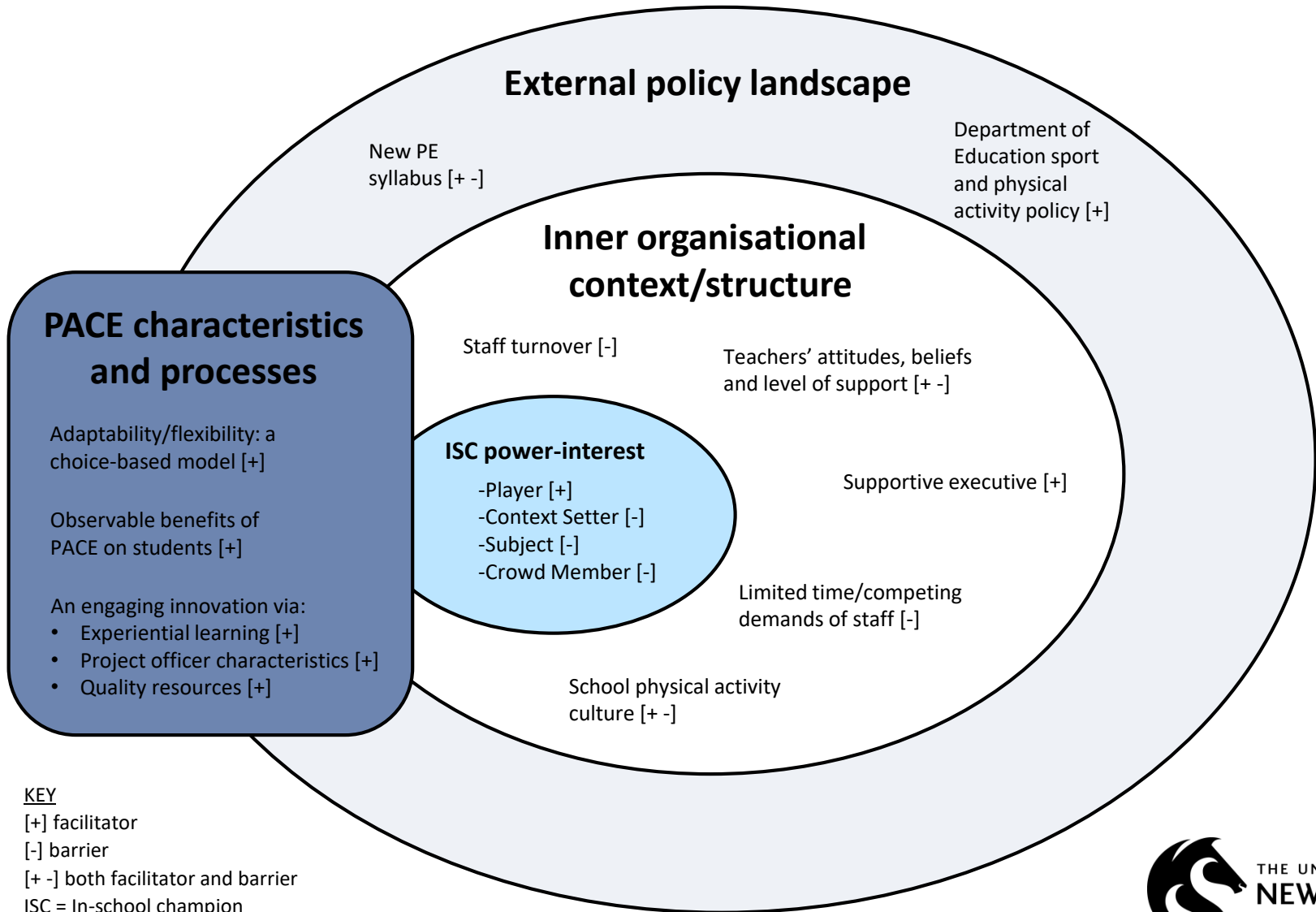AUSTRALIA

Qualitative – Research Objective

To explore the factors that influenced implementation from the perspective of key informants.

Qualitative – Implementation Measures

- **<u>Interviews</u>**
  - In-school champions
  - Project officers

Key implementation agents

Qualitative – Implementation Outcomes

External policy landscape

New PE syllabus [+ -]

Department of Education sport and physical activity policy [+]

Inner organisational context/structure

Staff turnover [-]

Teachers' attitudes, beliefs and level of support [+ -]

PACE characteristics and processes

Adaptability/flexibility: a choice-based model [+]

Observable benefits of PACE on students [+]

An engaging innovation via:
- Experiential learning [+]
- Project officer characteristics [+]
- Quality resources [+]

ISC power-interest
- Player [+]
- Context Setter [-]
- Subject [-]
- Crowd Member [-]

Supportive executive [+]

Limited time/competing demands of staff [-]

School physical activity culture [+ -]

KEY
[+] facilitator
[-] barrier
[+ -] both facilitator and barrier
ISC = In-school champion

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RESEARCH   **Open Access**

Identifying essential implementation strategies: a mixed methods process evaluation of a multi-strategy policy implementation intervention for schools

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[Link to article]

Abstract

Background: Physically Active Children in Education (PACE) is composed of eight implementation strategies that improves schools' implementation of a government physical activity policy. A greater understanding of each discrete implementation strategy could inform improvements to PACE for delivery at-scale. This study aimed to: (A) measure the dose delivered, fidelity, adoption and acceptability of each strategy using quantitative data; (B) identify implementation barriers and facilitators using qualitative data; and (C) explore the importance of each strategy by integrating both data sets (mixed methods).

Methods: This study used data from a cluster randomised noninferiority trial comparing PACE with an adapted version (Adapted PACE) that was delivered with reduced in-person external support to reduce costs and increase scalability. Data were collected from both trials arms for between-group comparison. Descriptive statistics were produced using surveys of principals, in-school champions and teachers; and project records maintained by PACE project officers (objective A). Thematic analysis was performed using in-school champion and project officer interviews (objective B). Both data sets were integrated via a triangulation protocol and findings synthesized in the form of meta-inferences (objective C).

Results: Eleven in-school champions and six project officers completed interviews; 33 principals, 51 in-school champions and 260 teachers completed surveys. Regardless of group allocation, implementation indicators were high for at least one component of each strategy: dose delivered =100%, fidelity $\geq$95%, adoption $\geq$83%, acceptability $\geq$50%; and several implementation barriers and facilitators were identified within three broad categories: external policy landscape, inner organizational structure/context of schools, and intervention characteristics and processes. All strategies were considered important as use varied by school, however support from a school executive and in-school champions' interest were suggested as especially important for optimal implementation.

Conclusion: This study highlights the importance of both executive support and in-school champions for successful implementation of school physical activity policies. In particular, identifying and supporting an in-school champion to

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- PACE delivery and evaluation team

- The National Centre of Implementation Science: https://ncois.org.au/

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- PACE economic evaluation: Lane, C., Nathan, N., Reeves, P. et al. Economic evaluation of a multi-strategy intervention that improves school-based physical activity policy implementation. Implementation Sci 17, 40 (2022).

- PACE YouTube video (Length: 5 mins)

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