

Embedding active pedagogy 'at scale' to improve child physical activity: *Transform-Ed!*

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Presentation Overview



- Defining the problem
- Linear progress of research
- Conceptual Framework
- Methodology
- Innovation and benefits

Defining the Problem



Only 14% of Australian children meet recommended levels of physical activity

70% of the school day is spent sitting

Why mathematics?



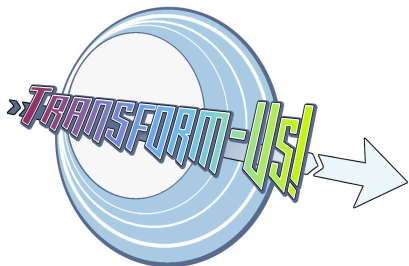
- While research supports the importance of challenging tasks (Sullivan, Clarke, & Clarke, 2012) and social interaction (Chan & Clarke, 2017) for learning mathematics, teachers often encourage students to work individually as they apply procedures.
- Research-informed pedagogies that might enhance mathematics learning are needed. Studies exploring the impact of active pedagogies on students' mathematics learning are beginning to emerge (Riley, 2016).

Defining the Problem



School-based professional development programs, including active learning, have been tested in efficacy on a small scale, involve professional development of in-service teachers already working within the education system.

Challenging:
uptake
scalability
sustainability



To test the effectiveness of a hybrid horizontal scale-up implementation pathway, to address the **critically low levels of child physical activity.**



RESEARCH Open Access

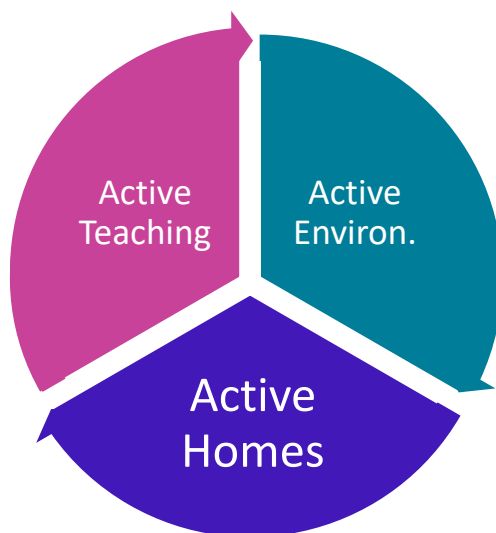
The feasibility and impact of embedding pedagogical strategies targeting physical activity within undergraduate teacher education: *Transform-Ed!*



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Figure 1: Linear progress of research from efficacy to effectiveness, to proposed implementation trial.





Organisations

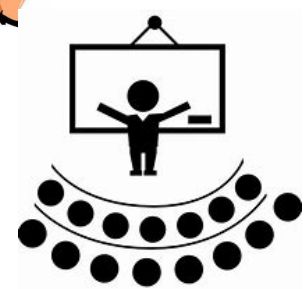
Senior Academic



Principal



Lecturer



Preservice Teacher



Primary School Student



CONCEPTUAL FRAMEWORK



Implementation

Theoretical framework. Rogers Diffusion Theory, evaluated via the RE-AIM framework

Design: Horizontal Scale-up Implementation

Participants: Pre-service Teachers (N = 300), primary school students (N= 600), lecturers (N= 24), senior academics (N=9), school principals/ teachers (N=15), partners (n= 4 organisations)

Implementation (Stakeholders)

Theoretical framework: Participatory Action Research (PAR) approach, RE-AIM



Design: Horizontal Scale-up Implementation trial

Participants: Course Directors (n=3), senior academics (n=9), Partners (n= 4 organisations), Lecturers (n=24)

Effectiveness (Pre-service teachers)

Theoretical framework: Practice Architectures Theory, located within Practice Theory. Transformative Embodied Education ¹⁰.

Design: quasi-experimental pre-post non-equivalent group design

Participants: Subsample of pre-service teachers (n=120) from implementation trial.



Effectiveness (Primary school students)

Theoretical Framework: Social cognitive theory, behavioral choice theory and ecological systems theory

Design: quasi-experimental pre-post non-equivalent group design

Participants: Subsample of primary school students (n=300) from implementation trial.



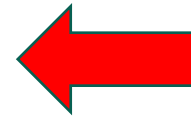
Implementation (Stakeholders)

Aim 3: To explore implementation effectiveness when integrating Transform-Ed! into pre-service teacher education, at scale

Theoretical framework: Participatory Action Research (PAR) approach

Design: Horizontal Scale-up Implementation trial (RE-AIM)

Participants:



Data Collection:

Self report online survey: mapped against the five RE-AIM components.

Three on site observations: Adherence

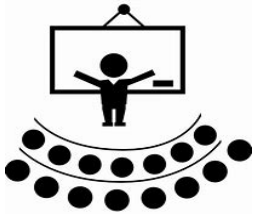
Interviews and FGD: exploring barriers and facilitators

Data Analysis:

Survey/observations descriptively analysed using Stata SE v13.

FGD analysed in NVivo 11, using a framework analysis approach, as guided by RE-AIM

Preservice teacher as change agent and **participant**...



Research
evidence

Pedagogies
modelled by
academics

Quality
mathematics
tasks

Active
breaks

Active
homework

Assessment
(lesson planning task)

Professional
experience
(10 days)

Active
environments



Effectiveness (Pre-service teachers)

Aim: To investigate the effect of *Transform-Ed!* on pre-service teachers' competence and confidence to deliver active pedagogies

Theoretical framework: Practice Architectures Theory, located within Practice Theory.

Design: quasi-experimental pre-post non-equivalent group design

Participants:



Data Collection:

Surveys: perceptions confidence/competence

FGD: Experience of Maths education and active pedagogy/emerging identifies as teachers: Focus group discussions.

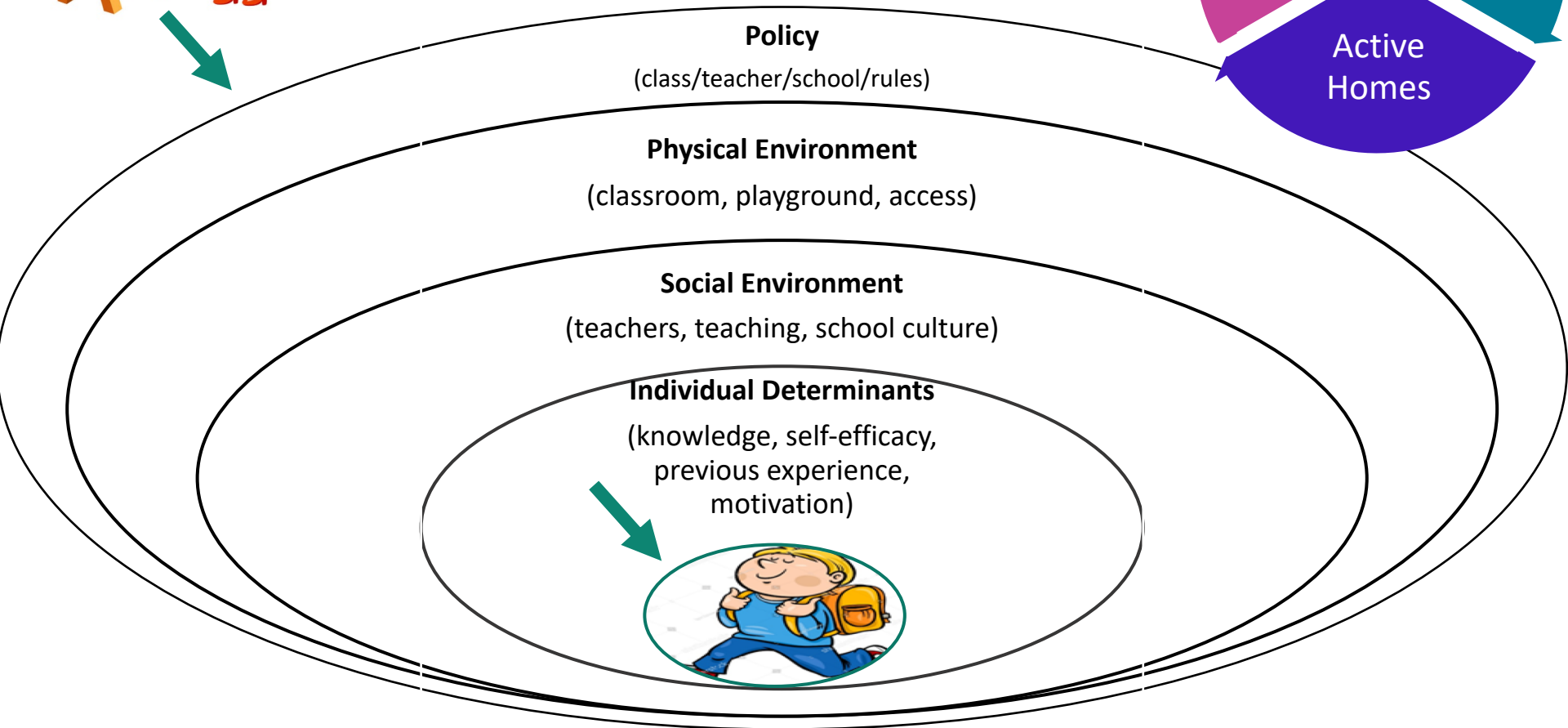
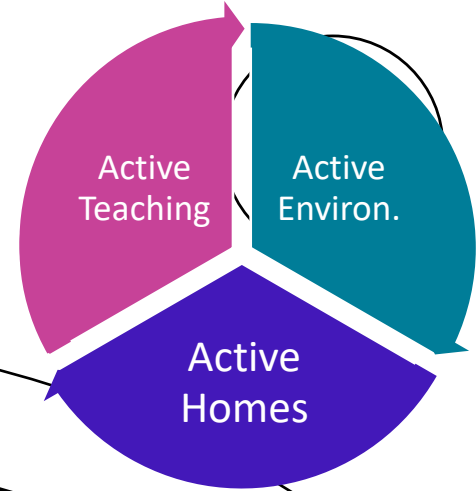
Data Analysis:

Surveys: Paired t-tests pre/post *Transform-Ed!*

FGD: analysed in NVivo 11, using a framework analysis approach, as guided by PAT



Preservice teacher as **change agent** and participant...



Ecological Model

(Targeting Physical Activity and Sedentary Behaviour)



Effectiveness (Primary school students)

Aim: *To investigate the effect of Transform-Ed! on pre-service teachers' capacity to increase children's physical activity, decrease sitting time and improve children's academic related outcomes.*

Theoretical Framework: Social cognitive theory, behavioral choice theory and ecological systems theory.

Design: quasi-experimental pre-post non-equivalent group design

Participants:



Data Collection:

Physical activity: Actigraph GT3X+ accelerometer.

Sitting time: activPAL inclinometers.

On-task time: Maher systematic on-task observational tool

Executive function: n-back

Data analysis:

General linear models: impact of the intervention on primary school children's physical activity, sedentary time and academic related outcomes at each time point (i.e., each placement experience), relative to matched controls.

Innovation and benefit



Urgent

Four out of five Australian children fail to meet physical activity guidelines

Timely

Void in at-scale research evaluation, fundamental for achieving sustained impact on health at a population level.

Innovative

Uses the fundamentals of implementation science as the basis to integrate Transform-Ed! into routine pre-service teacher education practice, at scale.

Ready

Key education stakeholders are committed and believe this work can substantially benefit all primary school children and warrants widespread implementation

Questions and/or Comments

*'Thank you for
reinvigorating pre-
servicer teacher
education, inspiring
our future teachers
and activating our
students'*
(Principal 4)

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