



Evidence to Action: It works – How do we get it implemented and sustained?

Dr. PJ Naylor, UVic

Dr. Heather McKay, UBC

Louise Masse, UBC

Dr. Joan Wharf Higgins, UVic

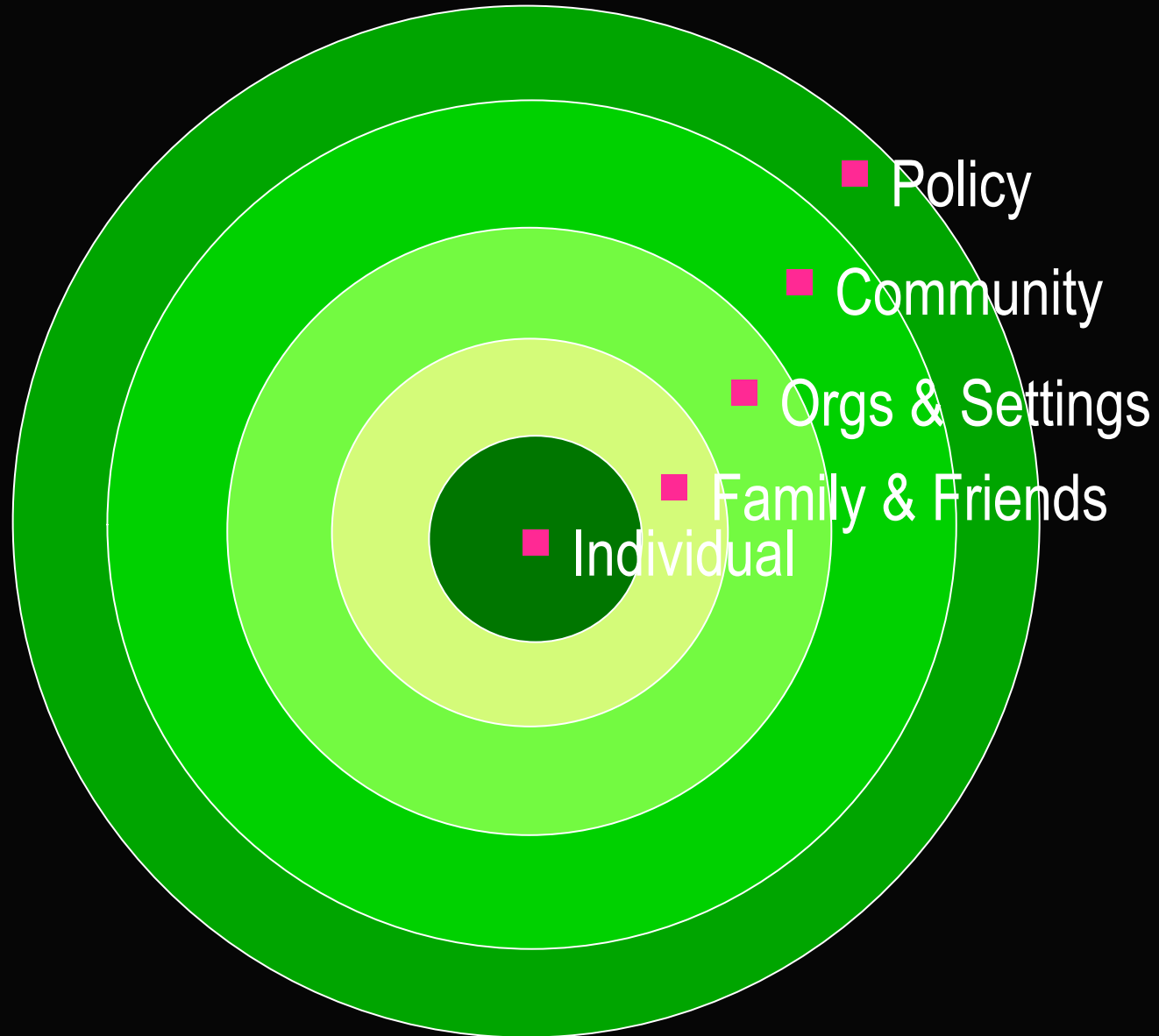
Overview

- Relevance of implementation & sustainability
- Small Group Brainstorm – implementation factors
- Reviewing the evidence about factors that affect implementation
- Action Schools! BC – an implementation ‘case’
- How do we keep physical activity on the radar in challenging times (round table discussion)

Childhood obesity and chronic disease are increasingly alarming problems.



Schools are part of a socio-ecological solution



Why schools?

- Reach large numbers of children
- Children spend lots of time
- Diverse ethnic groups
- Socioeconomic backgrounds
- Responsible for health curriculum
- Teaching is core business
- And.....





Physical activity and healthy eating are about more than health.



They are about achieving children's educational goals

See Jane run
(for at least 30 minutes)

See Jane play violin
(preferably in a youth orchestra)

See Jane's grades soar



Globe and Mail, Nov 7, 2009

NEUROSCIENTISTS RESEARCHING THE BRAIN'S 'EXECUTIVE FUNCTIONS' HAVE MADE A SURPRISING DISCOVERY: PARENTS WHO WANT TO BOOST THEIR CHILDREN'S MENTAL PERFORMANCE SHOULD ENCOURAGE KIDS TO HIT THE ROAD BEFORE THEY HIT THE BOOKS. **ANNE McILROY** REPORTS

Physical activity
enhances
executive brain
function and
improves cognitive
performance



Schools are part of
the solution

&

We have evidence-
based International and
Canadian made
models.

There are a number of effective school-based interventions

- Structured fitness breaks
- Increased moderate to vigorous PA in PE
- Hired PE specialists & trained generalist teachers to teach PE
- Enhanced playground markings and structures

Stewart et. al. 2004 -Take 10

Pangrazi et. al, 2003 - PLAY

Scruggs et. al. 2003 - Fitness Breaks

Luepker et. al. 1998 - CATCH

Mackenzie et al. 1993 – SPARK

Kriemler et. al. BMJ, 2010- KISS

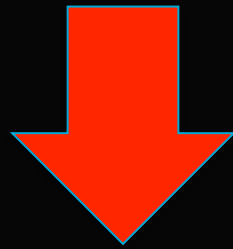
Elder et. al. 2008 TAAG

Graham et. al. 2008 Project Energize

Gutin et. al. 2008 Fitkid

Stratton and Mullen, 2005

- Interventions have:
 - largely been prescriptive
 - focused on a single target (e.g. PE, playground, classroom)



'Whole school' models recommended.

- *Naylor and McKay Prevention in the first place: schools a setting for action on physical inactivity. BJSM 2009*
- *van Sluijs EMF, et. al.. Effectiveness of interventions to promote physical activity in children and adolescents BMJ 2007;335:703–7.*

'Whole school' models



- Engage school stakeholders
- Recognize the importance of local context
 - “One size does NOT fit all”
- Provide action breaks
- Integrate curriculum (PE & classroom)
- Engage family and community
- Engage youth (adolescents) as partners in the design

Effective whole school PA models for elementary schools

- Action Schools! BC

Naylor et. al. ...McKay, J Science Med Spt, 2006; Macdonald et.al ...McKay Osteop Intl. 2006; Reed et. al. ...McKay, Prev Med 2008; Naylor et. al....McKay, BJSM 2008, 2009.

- Jump IN

de Meij et. al...Van Mechelen BJSM November 2010

- PAAC (Physical Activity across the Curriculum)

Gibson CA et. al International Journal of Behavioral Nutrition and Physical Activity. 2008

“...developing effective interventions is only the first step toward improving the health and well-being of populations.

Transferring effective programs into real world ‘settings’ and maintaining them there is a complicated, long-term process

if many people are to benefit diffusion must be successful in multiple communities [and settings]....

Durlak and DuPre, 2008

We need to know more about 'wide spread' and 'sustained' implementation

That is

If we know it works – how do we get everyone doing it?

The Importance of Implementation

Durlak & DuPre 2008

- Reviewed the Findings of 5 meta-analyses
 - Dubois et al 2002 – mentoring programs that monitored implementation achieved effect sizes 3 times larger
 - Smith et al 2004 – 14 anti-bullying programs – those that monitored implementation twice the mean effects on self-reported bullying
 - Wilson et al – 221 school based aggressive behaviour prevention programs – Regression analysis showed that implementation was the most important program feature influencing outcomes

Further Implementation studies

- 59 quantitative studies
 - 76% - positive relationship between implementation and 50% of outcomes
 - 24% - minimal variability in implementation
 - Perfection unattainable; results with 60% implementation
 - Marked variability across providers (20-40%)
- 81 studies - 23 factors influenced implementation across five areas of their framework

Small Group Exercise

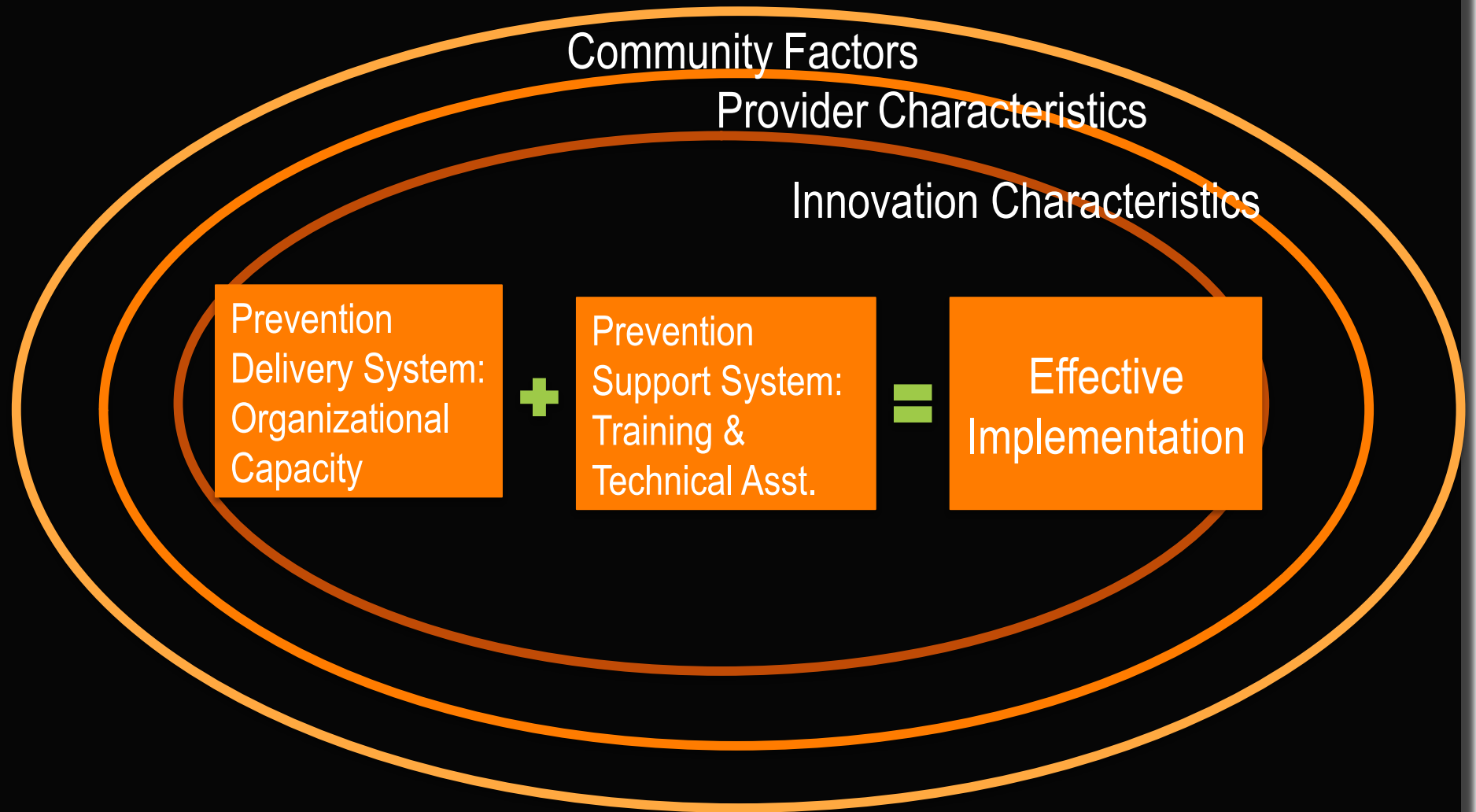
*Are you as smart as a 5th grader or...
implementation researcher?*

- Generate a list of factors that you think are important for implementation and sustainability
- Write them on your post-it notes
- Bring them up and stick them into the category you think they fit in.

Time = 10:00 minutes

Framework for Effective Implementation

Durlak and DuPre, 2008



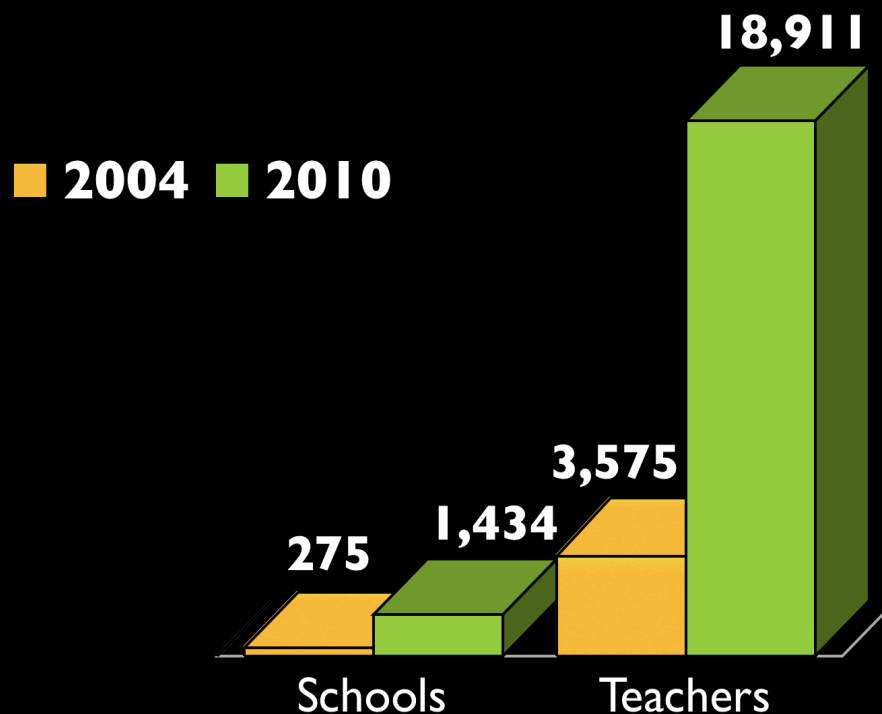


Action Schools! BC

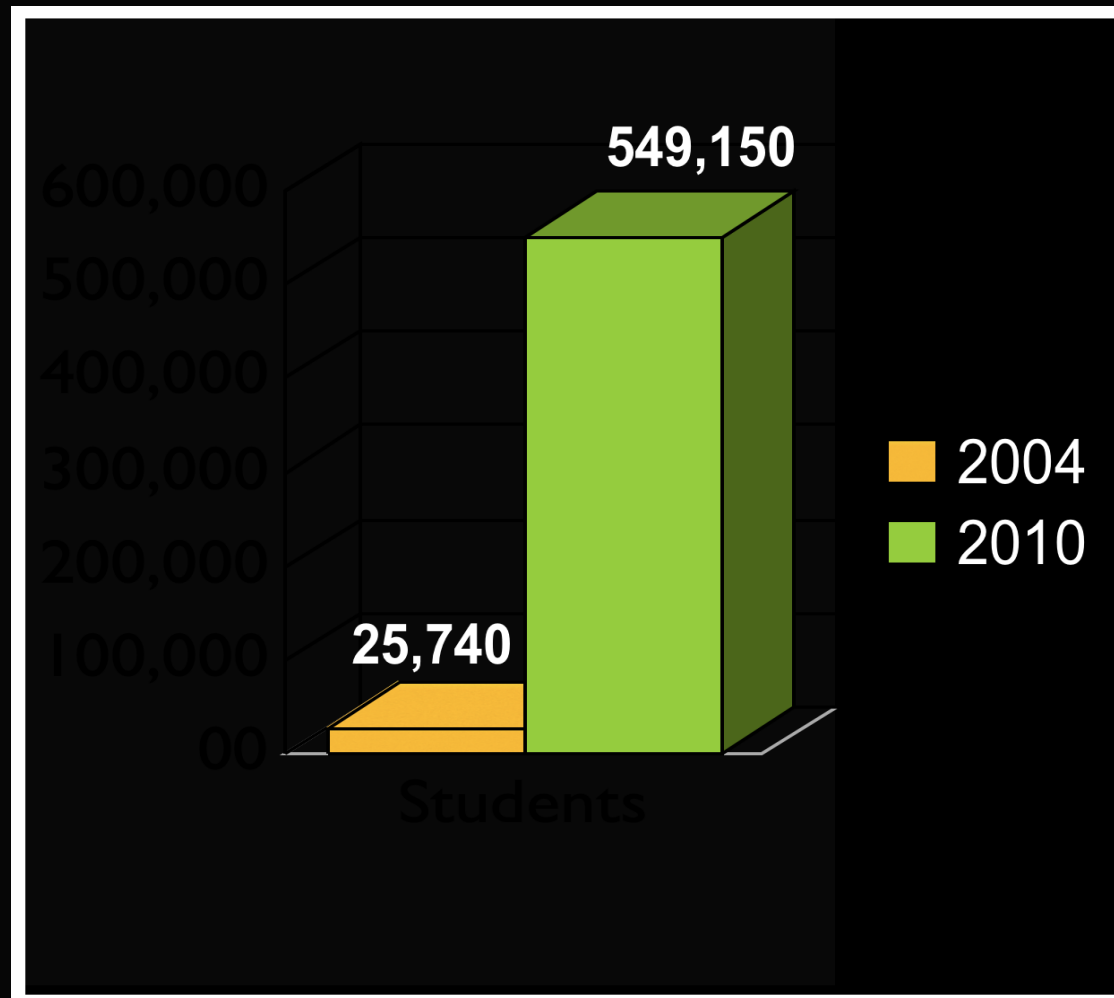
Promoting Healthy Living

An Implementation Case Study

Uptake of Action Schools! BC has been substantial.



More than 500,00 children
currently participate in AS! BC



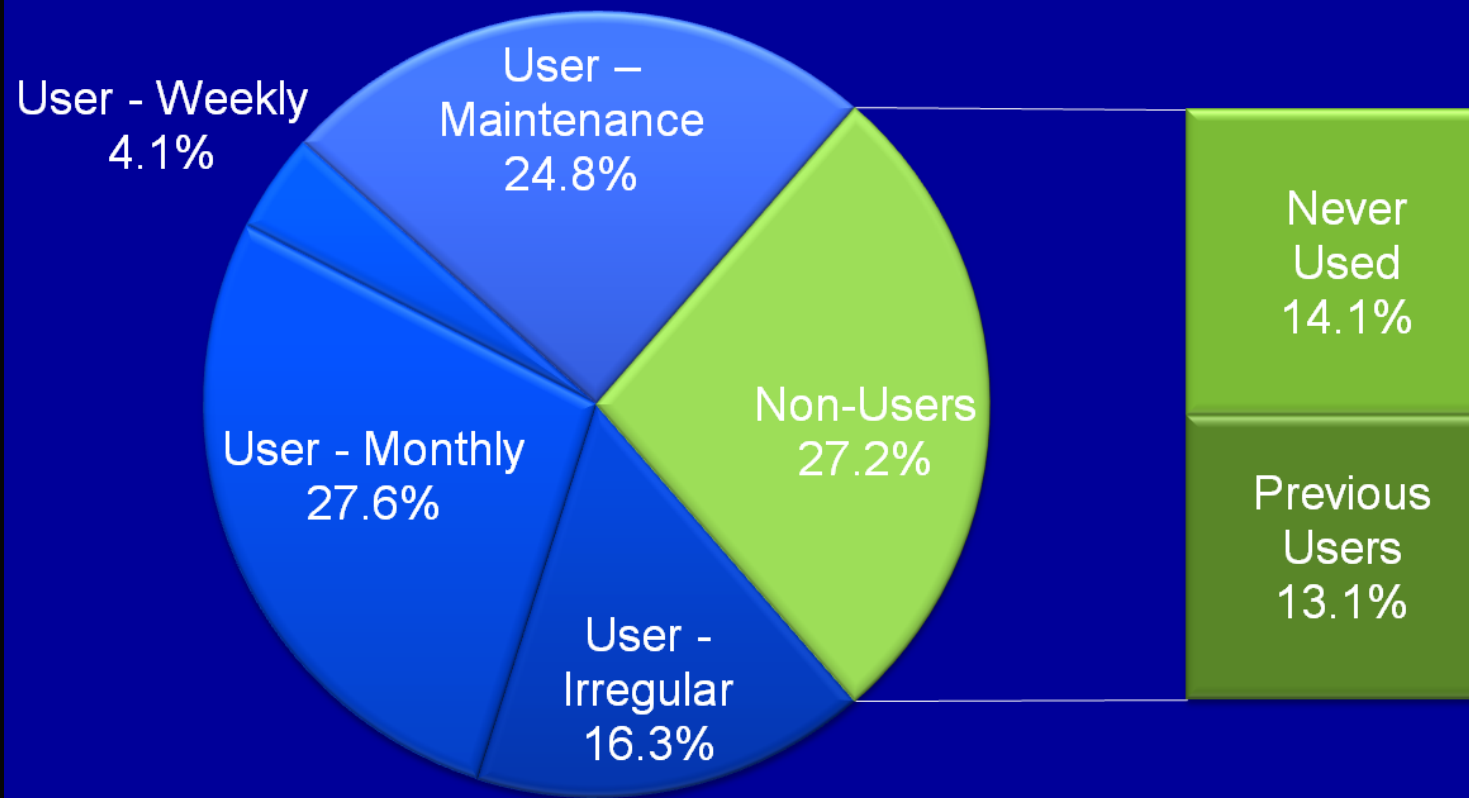
*Preliminary results of provincial dissemination study
(n=588)*

**In 2008 the BC government mandated 30 minutes of daily physical activity in schools.*

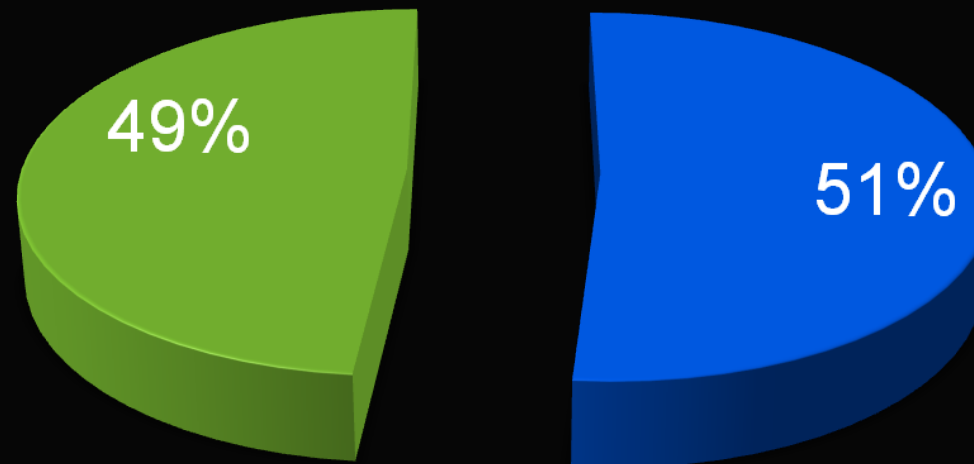
Teachers are using AS! BC to meet DPA requirements

- 80% had no formal PE training but taught PE
- 76% - teachers currently using or planning to use AS! BC to meet DPA guidelines. (95+% Admin)
- 60% - attributed increases in PA to AS!BC + DPA

Teacher – Level of Uptake



Teacher - Sustainability



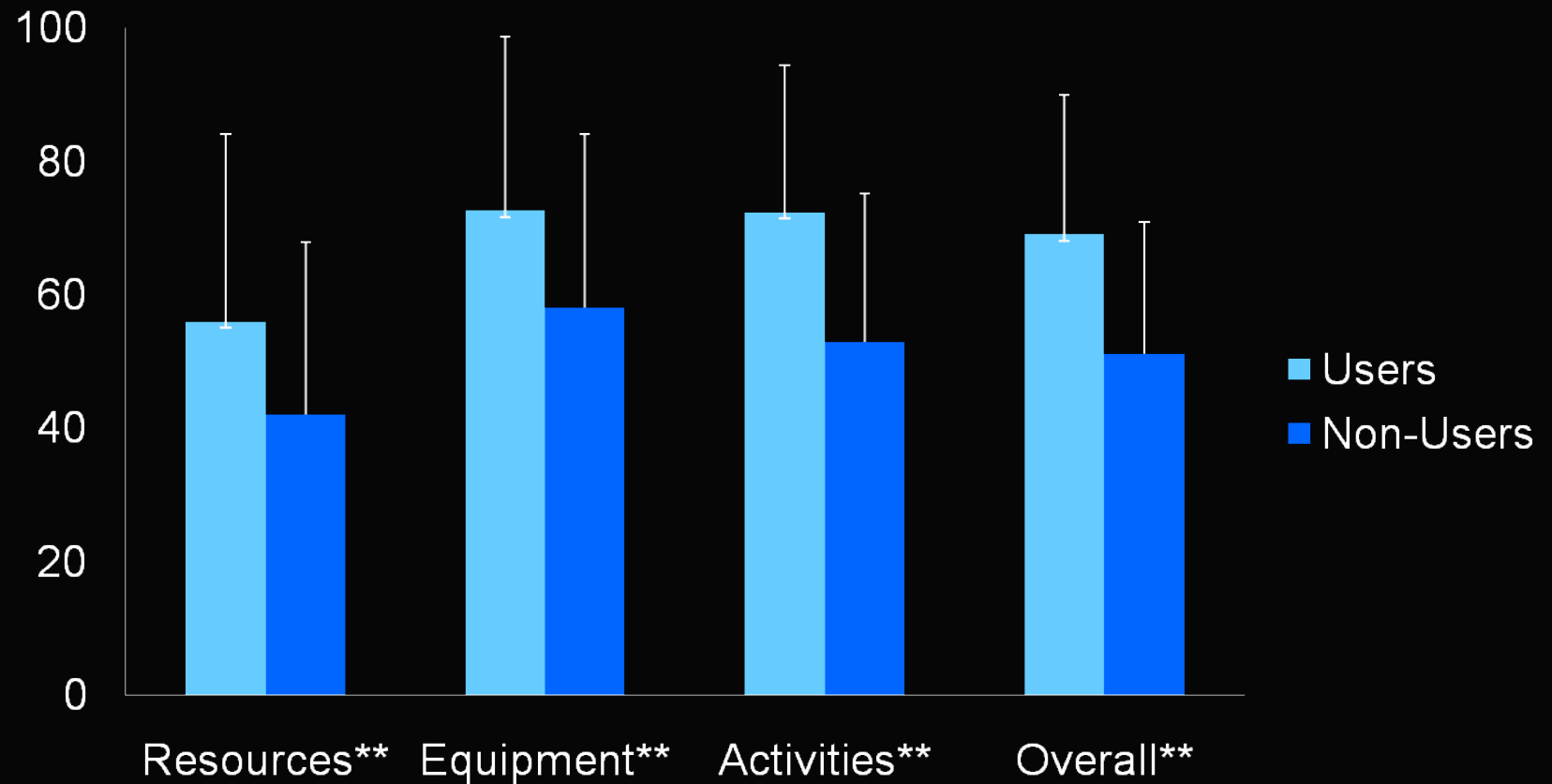
- Sustained user 2+ yrs
- Current user < 2 yrs

Teacher – Institutionalization

Use of original materials	
User	21.6%
Partial user	61.1%
Use other materials	17.3%

Teacher - Fidelity

Use of PA materials



** significant at P<.001

Teacher - Dose

PA & PE opportunities		Users	Non-Users	
# days provided Action Breaks	0 days	2.4%	4.5%	$\chi^2(2)=2.42,$ $p=.2909$
	1-2 days	30.4%	34.7%	
	3+ days	67.2%	60.4%	
Total min / week provided Action Breaks	< 15 min	7.8%	16.7%	$\chi^2(2)=6.45,$ $p=.0398$
	15 to 44 min	39.7%	36.8%	
	45 + min	52.6%	46.5%	
# of PE days	2 or less	47.9%	37.7%	$\chi^2(2)=3.60,$ $p=.1652$
	3 days	32.7%	37.1%	
	4 – 5 days	19.4%	25.2%	

Results

		OR (CI)	p-value
Attributes of the innovation (Level 1)		2.02 (1.11 – 3.59)	.029
Characteristics of teachers (Level 1)	Attitudes	.93 (1.07-3.50)	.576
	Self-efficacy	2.09 (1.126 – 3.49)	.005
	Outcome expectancy	1.32 (.75 – 2.33)	.338
	Teacher level of PA $\chi^2(2)=2.55, p=.279$		
	• None	.53 (.09 – 2.99)	.473
	• Some (less 150 min/wk)	1.37 (.86 – 2.22)	.201
• Active (150 + min/wk)			
	Teach PE (% yes)	1.34 (.74 – 2.43)	.331
	Attended workshop (% yes)	2.64 (1.60 – 4.36)	.000
Characteristics of schools (Level 2)	Min of PE/week $\chi^2(3)=1.81, p=.613$		
	• < 90 min/wk	1.08 (.56 – 2.10)	.812
	• 90 – 119 min/wk	1.39 (.70 – 2.74)	.349
	• 120 – 149 min/wk	1.67 (.68 – 4.06)	.269
	• 150 + min/wk		
	DPA implementation (% Yes)	.84 (.40 – 1.77)	.647
	Institutionalization	1.83 (1.14 – 2.92)	.012

Conclusions - PA

- ◆ Characteristics of the innovation, teachers, and schools significantly influenced uptake
- ◆ Making school level change (specifically policy changes) was instrumental in the uptake of the program at the teacher level and appears to influence classroom practice.
- ◆ PA materials – promoted by AS! BC were used more often with users than non-users.

Preliminary Findings

- 48-62% changed their approach to HE curriculum because of AS! BC
- 40-53% increase the amt of HE in curriculum
- 60% of respondents had increased HE in the last 3 years because of both school food guidelines and AS! BC

DPA Implementation Study Results

- 70 qualitative interviews with school stakeholders
- 10 elementary schools in sample
 - 9/10 schools – at least 1 interviewee independently mentioned AS! BC as an aid for DPA
 - 14/20 teachers
 - 3 out of 10 principals (although 95% said they were planning to use it in an earlier study)
- DVD's, Suggested Activities, Training workshops!

Successful implementation based on

UPSTREAM FACTORS

- Political will and sustained funding
- Engagement across multiple sectors and stakeholders
- Shared common vision
- Policy development

DOWNSTREAM FACTORS

- Principals and teachers as partners
- Teacher training, resources and support
- Multiple component design
- Flexibility and adaptability
- Comprehensive evaluation



Community Factors

UPSTREAM

Alliances are imperative for sustained success.



Government Alliance

Min of Education
Min of Health
Min of Healthy Living
and Sport




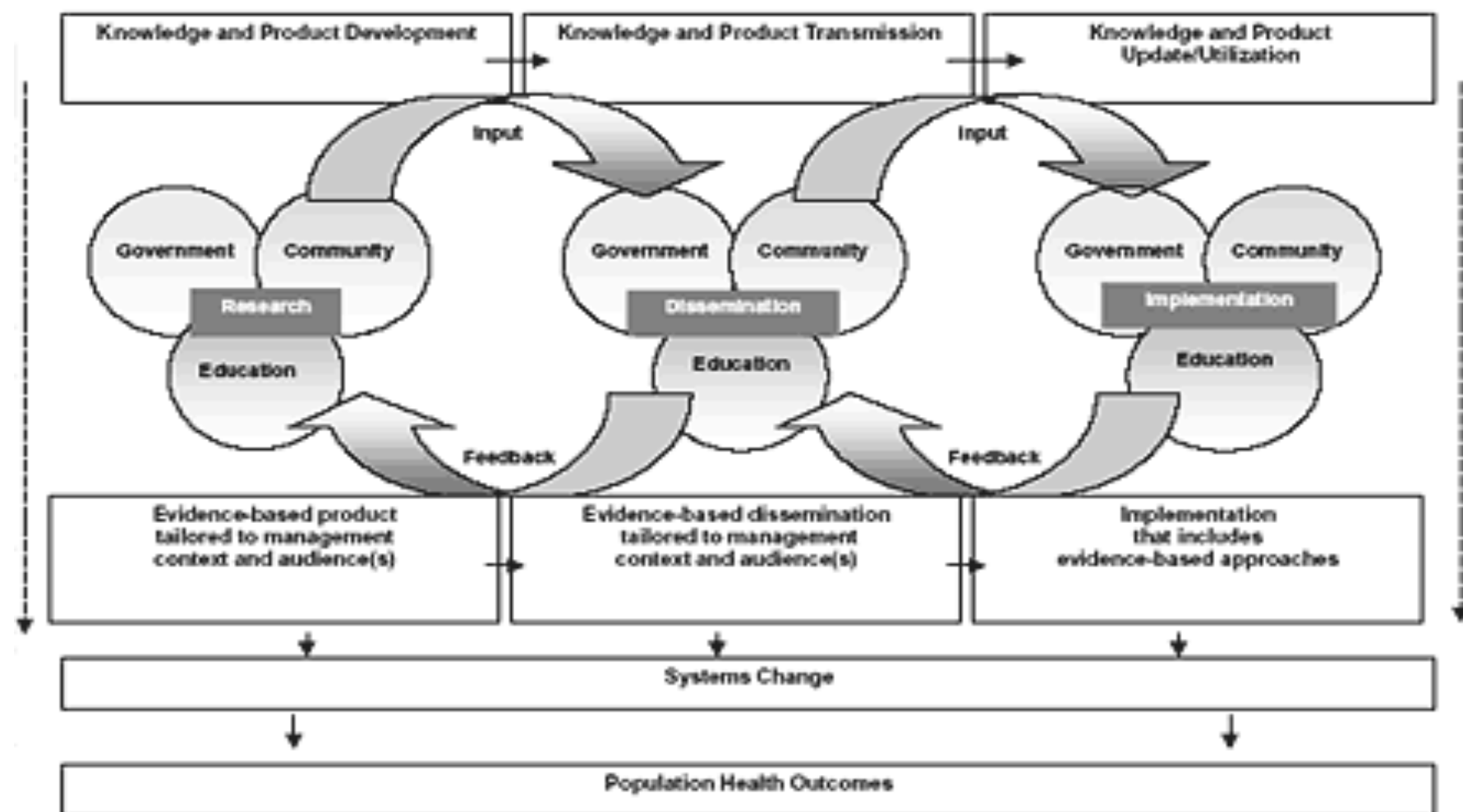
Community Alliance

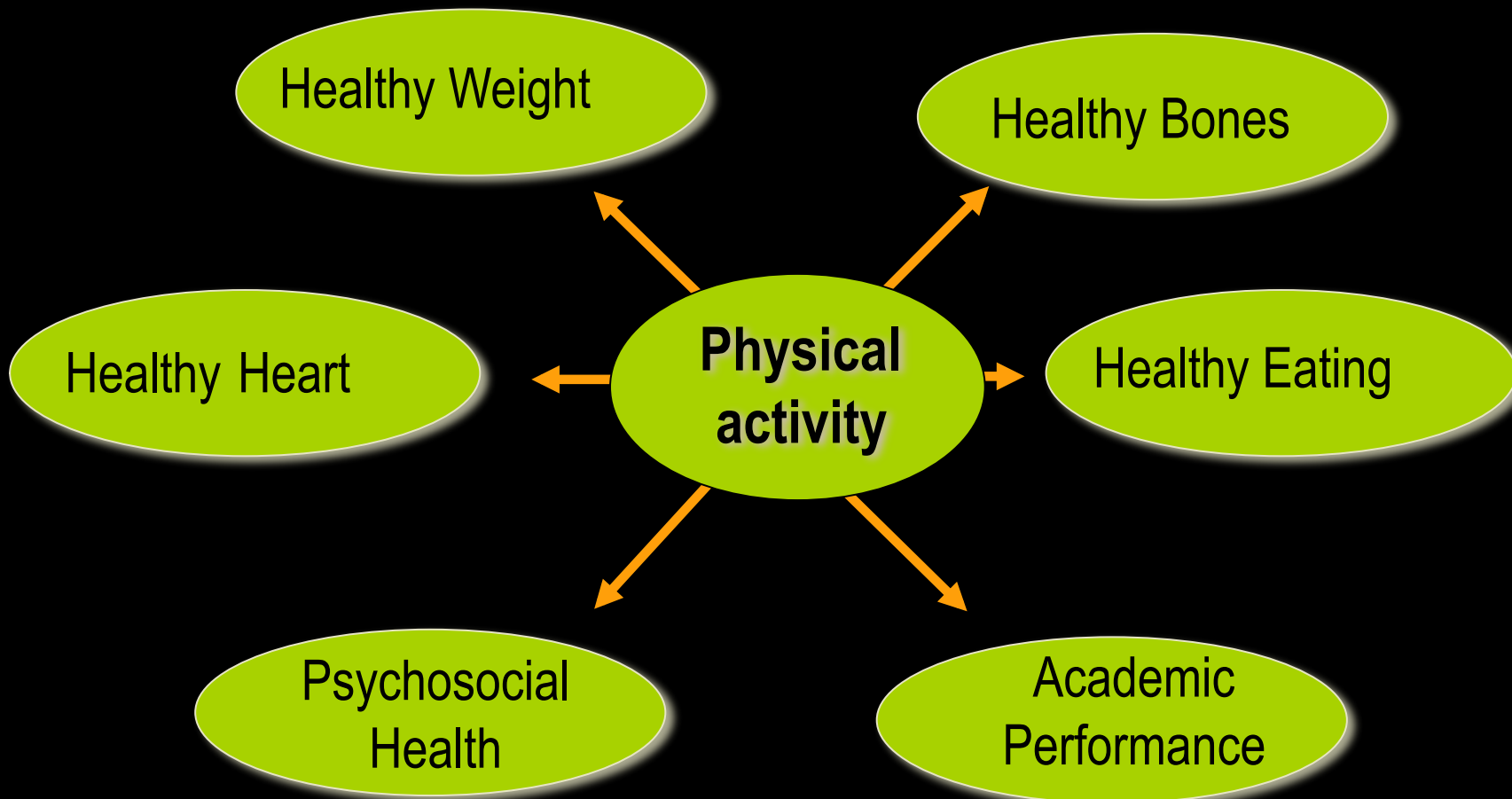
NGOs
BC Parks and Recreation
Municipal Parks and Rec.
Regional Health Authorities
Physicians groups

Education Alliance

Schools
BC School Superintendents Assoc
BC Parent Advisory Assoc
University and college teacher training
Physical Education Specialists Assoc.
BC Principals & V.Principals Assoc.
Teachers, Principals,
Parents, Students







Process evaluation



Research Evidence: Demonstrated many health benefits in those schools that participated in AS! BC



Action Schools! BC

Bone health

Physical
Activity

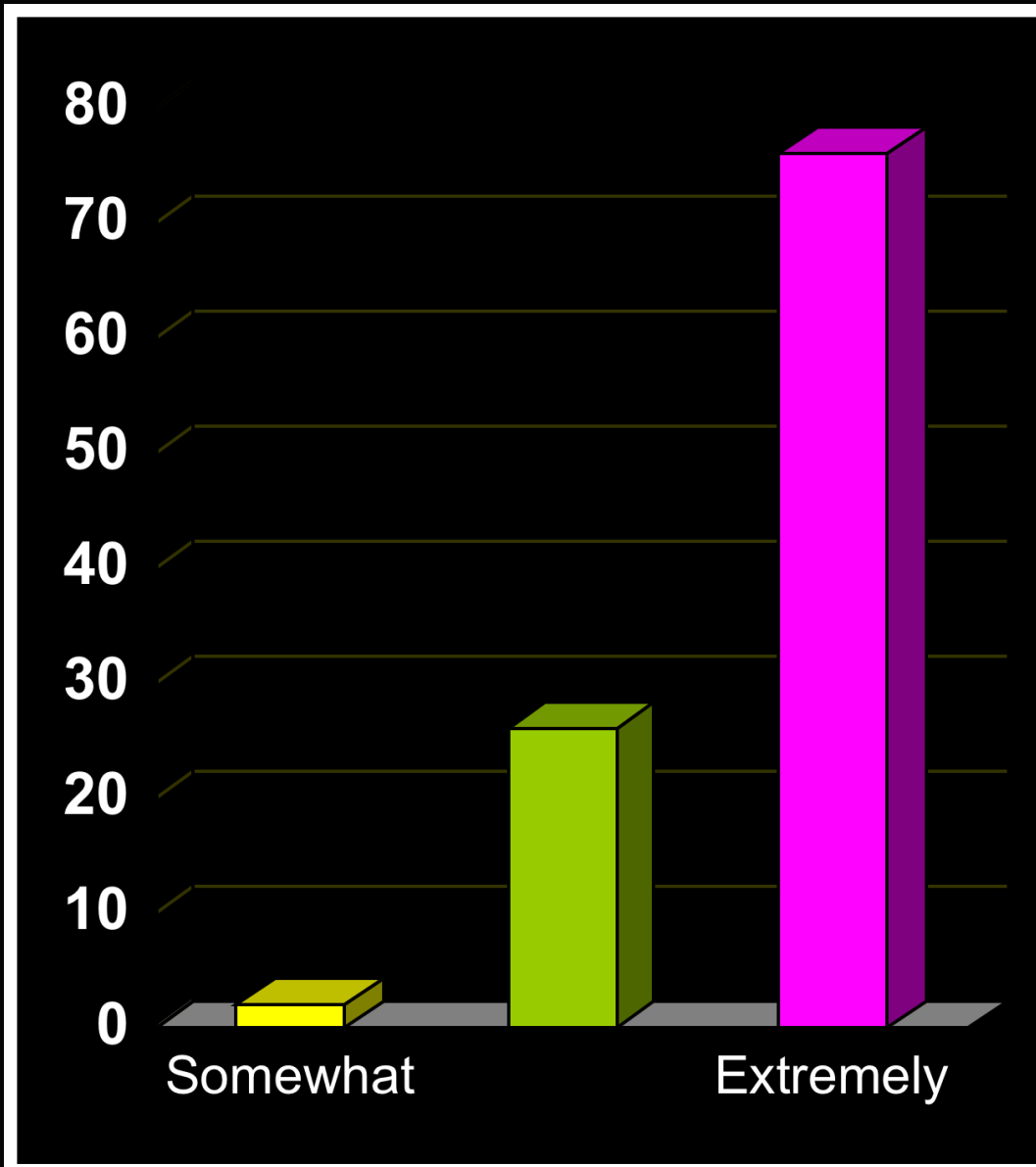
CV Health

Healthy
Eating

Academic
Performance

Body Weight

www.actionschoolsbc.ca



Approximately 80% of teachers were very satisfied with teacher training.

Process evaluation



- Teacher quotes: “.... [Action Schools] is building a culture of being more physically active”

“... for me the incentive was just that the kids were so much more focused the next period and for the whole rest of the morning they were just ready to work more. Days I didn't do it ... they were just off the wall and they weren't able to focus and concentrate as much

Teacher Feedback: Barriers To Implementation

Theme	Sample Quotes
Teacher Constraints (60%)	<i>“A constraint, that I find when doing this everyday as a teacher, is clothing. You almost have to be in aerobic gear. Like one day I went to do it and I’m wearing boots and a skirt and I was just like oh Ok, you know... “</i> <i>“...the time constraints with the other curriculum demands that we have, for sure.”</i>
Physical Barriers (26%)	<i>“...having the requisite tools, um so, you’re not having to think all of the time, like Oh, I have to go and get the VCR and the TV from X point to this point for a certain time.”</i>
A supportive school environment (8%)	<i>“If only 75% of the staff were not into it, it would be very problematic. You need a leader in each area, like in administration and on staff. The principal is the key leader...”</i>
Needing money (4%)	<i>“Obviously money... “</i>

1. Naylor PJ, Macdonald HM, Reed KE, **McKay HA**. Preventing Chronic Disease. Apr;3(2):A60, 2006.
2. Day M, Strange K, Fenton J, Kopelow B, Naylor PJ, **McKay HA**. Principals Online. Vol. 1(3), 2006.
3. Rhodes, RE, Macdonald HM, **McKay HA**.. Social Sciences & Medicine (62) 3146-3156, 2006.
4. Reed KE, Warburton DER, Whitney CL, **McKay HA**. Pediatric Exercise Science. 18:364-373, 2006.
5. Macdonald HM, Kontulainen SA, Khan KM, **McKay HA**Journal of Bone Mineral Research. J Bone Miner Res. 2007 Mar; 22(3):434-46, 2007.
6. Ahamed Y, Macdonald HM, Liu-Ambrose TY, Naylor PJ, Reed K, **McKay HA**.. MSSE. 2007 Feb; 39(2):371-376, 2007.
7. Reed KE, Warburton DE, Macdonald HM, Naylor PJ, **McKay HA**. Prev Med. 46:525-531, 2008.
8. Macdonald HM, Kontulainen SA, Petit MA, Beck TJ, Khan KM, **McKay HA**. Osteoporosis International. 19:1445-1456, 2008.
9. Naylor PJ, Macdonald HM, Zebedee JA, Reed KE, **McKay HA**. *Lessons learned from Action Schools! BC - An 'active school' model to promote physical activity in elementary schools*. Journal of Science and Medicine in Sport. 9(5):413-423, 2006

Innovation Characteristics

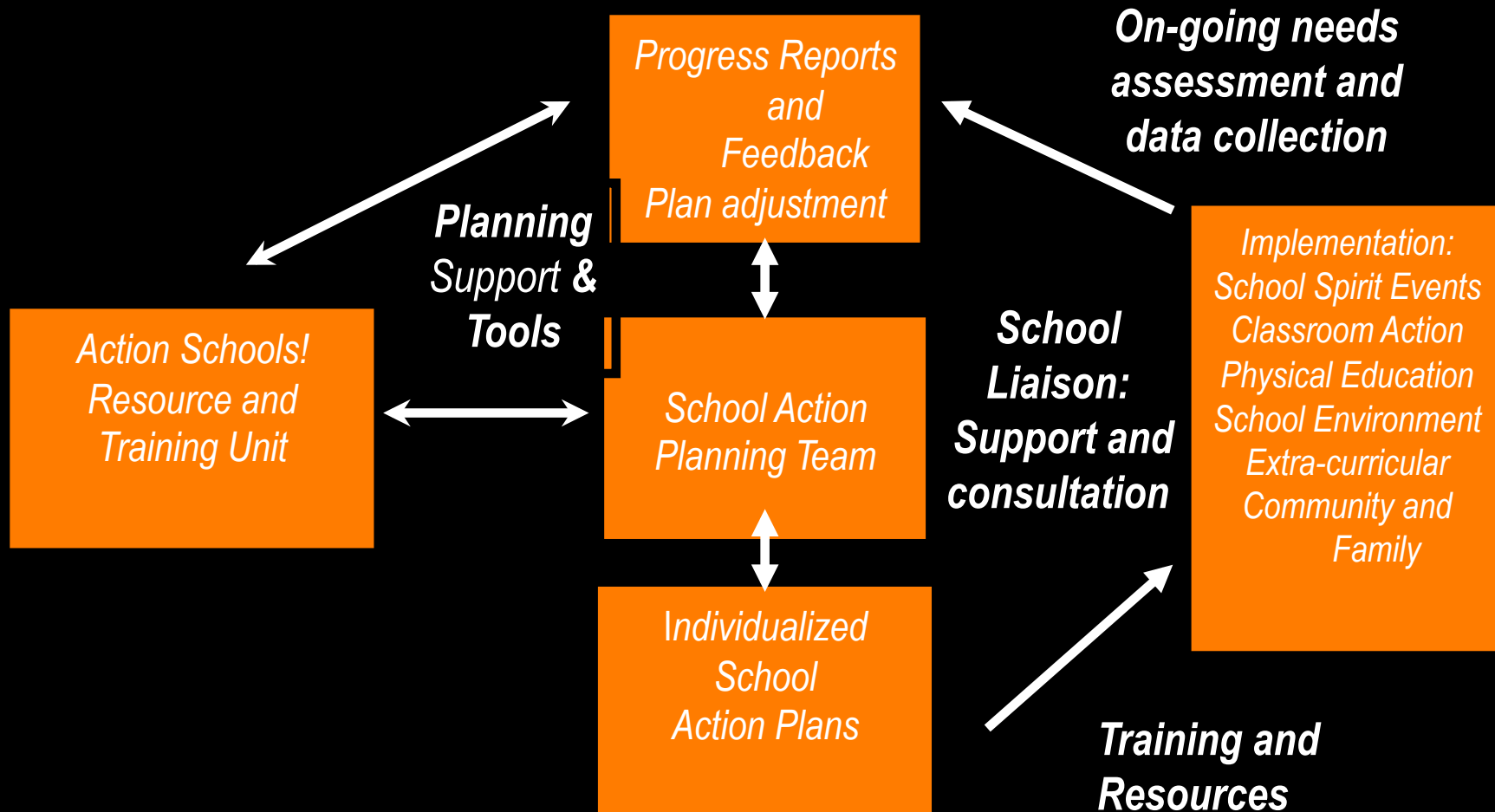


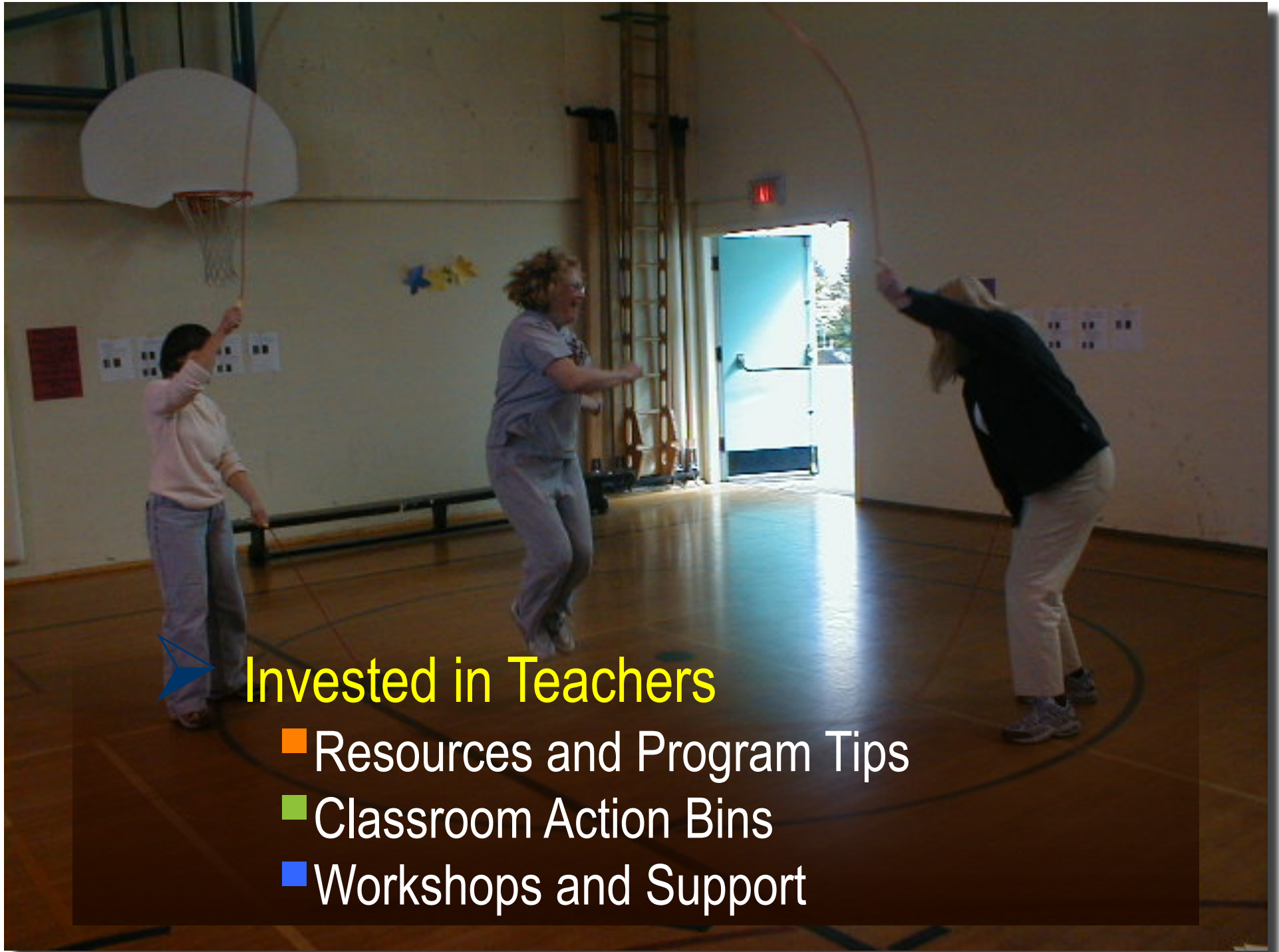
**A whole school PA
and HE model
that
encompasses
6 Action Zones.**

- **FLEXIBLE**
- **FEASIBLE**
- **AFFORDABLE**

Prevention Support System

AS! BC School level - Implementation Model





Invested in Teachers

- Resources and Program Tips
- Classroom Action Bins
- Workshops and Support

AS! BC highlighted in the National Plan for Physical Activity Education Sector in the United States pp. 14-16

“A COMPREHENSIVE INNOVATION

The most comprehensive innovation reviewed was in the Canadian province of British Columbia.

This model brings together government policy and leadership, adequate training of education professionals, adequate provision of resources for schools and a clear set of expectations for PA and healthy eating.”

D. Siedentop

Successful implementation based on

UPSTREAM FACTORS

- Political will and sustained funding
- Engagement across multiple sectors and stakeholders
- Shared common vision
- Policy development

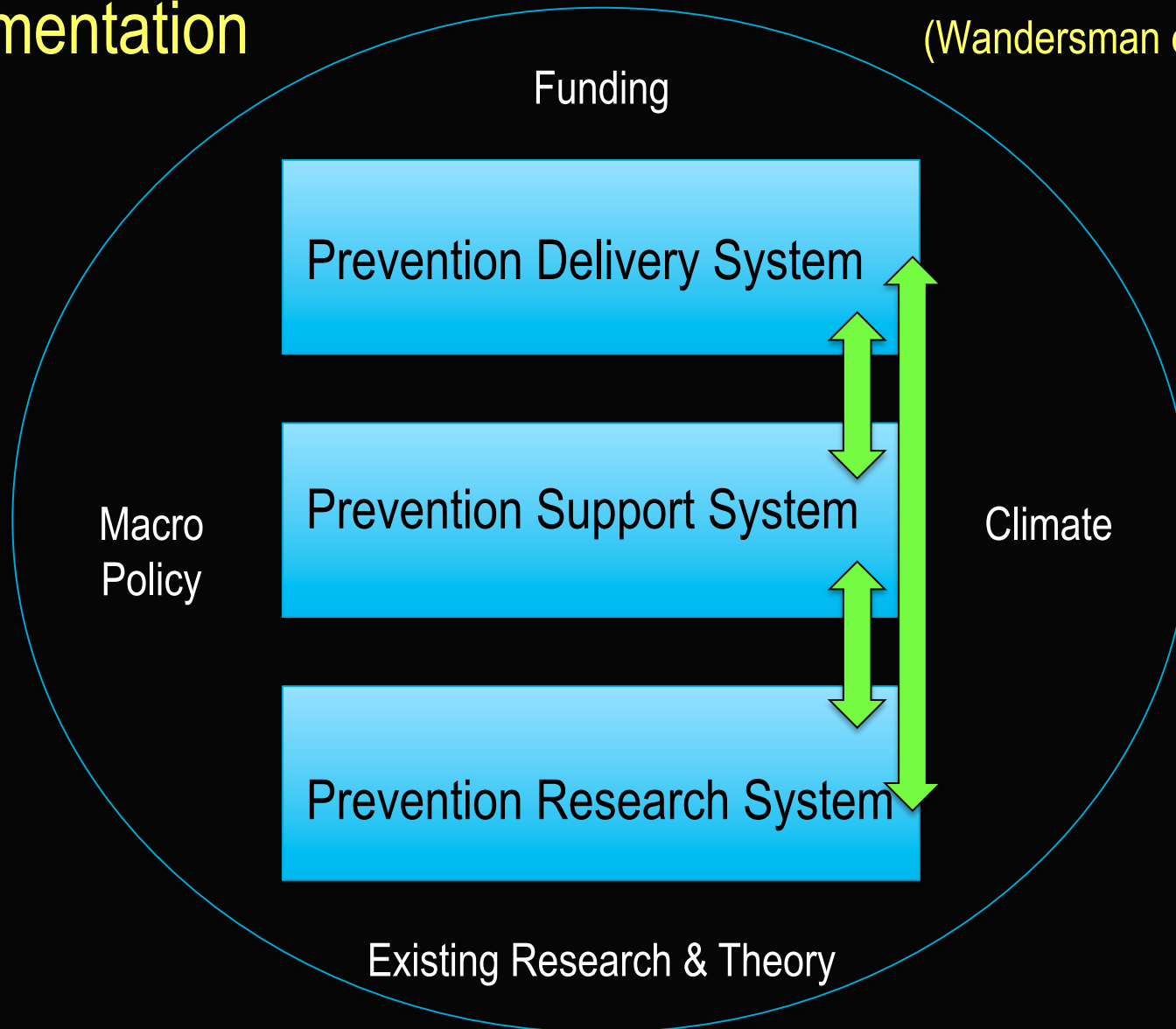
DOWNSTREAM FACTORS

- Principals and teachers as partners
- Teacher training, resources and support
- Multiple component design
- Flexibility and adaptability
- Comprehensive evaluation



Interactive Systems Framework for Dissemination and Implementation

(Wandersman et al 2008)



Take Home Messages

- One size does not fit all
- Multiple component strategies with multiple routes of entry may be the best solution.
- Must continue to build the evidence for action.
- Need to better understand barriers and facilitators to implementation and sustainability.

But does the story end there?



How do we keep physical activity on the radar in challenging times (round table discussion)

Things to consider



Thank you!
Merci!