

An introduction to systematic review methods

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What does an SR do?

- Summarizes the best available research on a specific question. This is done by synthesizing the results of several studies.
- Involves five basic steps
 - DEFINE
 - SEARCH
 - SCREEN
 - APPRAISE
 - SYNTHESIZE

May look like your regular literature review, but it is not

Let us apply the following criteria to a popular search

- DEFINE
- SEARCH
- SCREEN
- APPRAISE
- SYNTHESIZE

A definition of aSR

- Summarizes the best available research on a specific question using transparent and replicable procedures to SEARCH, SCREEN, APPRAISE and SYNTHESIZE to summarize the available research on a specific question:
 - Procedures are explicitly defined in advance, in order to ensure that the exercise is transparent and can be replicated. This practice is also designed to minimize bias.
 - Peer review is a key part of the process; qualified independent researchers control the author's methods and results.
 - Organizations such the Cochrane Collaboration, Campbell Collaboration and Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) act as peer reviewers and process auditors.

Review organizations

- Cochrane Collaboration
 - arising from the evidence movement in clinical medicine
- Campbell Collaboration
- Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)

DEFINE

- Research question
 - In terms of PICOCS (population, intervention, comparison, outcome, context, study designs)
- Causal mechanism

SEARCH

- Search terms and search strings (Derived from PICOCS)

Intervention* OR initiative* OR process* OR program* OR policy OR policies OR effect* OR "delivery mode"
OR implication* OR scheme* OR strategy* OR outcome* OR impact OR evaluat* OR delivery OR
implement* AND Nutrition* OR "fortification" OR "single nutrient fortification" OR "folic acid supplementation"
OR "iron supplementation" OR "multiple micronutrient powder" OR "early childhood development" OR
"micronutrient supplementation" OR "micronutrient powders" OR "micronutrient sprinklers"

- Sources

- Electronic database search

(EBSCO, ERIC, ISI, Dissertation databases)

- Hand search

SCREEN

- Inclusion/Exclusion criteria

Category	Criterion	Decision
Language	Published in English or title and abstract available in English?	Yes or maybe → Continue No → Exclude
Publication date	Published in 1995 or later ?	Yes or maybe → Continue No → Exclude
Region/Country	Concern a LMIC country or countries?	Yes or maybe → Continue No → Exclude
Population	-	Include all
Phenomenon	Does it concern a natural disaster (not)	Yes or maybe → Continue No → Exclude
Intervention/ Phenomenon	Intervention to manage any of the four stages of natural disasters	Yes or maybe → Continue No → Exclude
Outcome	Does it concern improvements in „	Yes or maybe → Continue No → Exclude
Study design	Is it a review of the literature (Systematic or otherwise)	Yes or maybe → Continue No → Exclude
	Is it a completed study and not a protocol	Yes or maybe → Continue No → Exclude

APPRAISE

(method depends on the aim of the study and/or study design)

- Risk of bias analysis
 - for experimental or quasi-experimental* studies
(or “Quantitative studies”)
- AMSTAR tool of other
 - for non-experimental studies
(or “Qualitative Studies”)

SYNTHESIZE

(method depends on the aim of the study and/or study design)

- Effect size calculations
 - For Experimental or quasi-experimental* studies
- Narrative synthesis
 - for non-experimental studies

Systematic Review

- [DEFINE] Research question & Causal mechanism
- SEARCH Search terms, Sources(METHOD)
- SCREEN Inclusion/Exclusion criteria (METHOD)
- APPRAISE Risk of bias analysis
- [SCOPE] Categories and subcategories
- SYNTHESIZE Statistical or narrative

Thank you

ICTs in the classroom

Can SRs lead to change inside the black box?

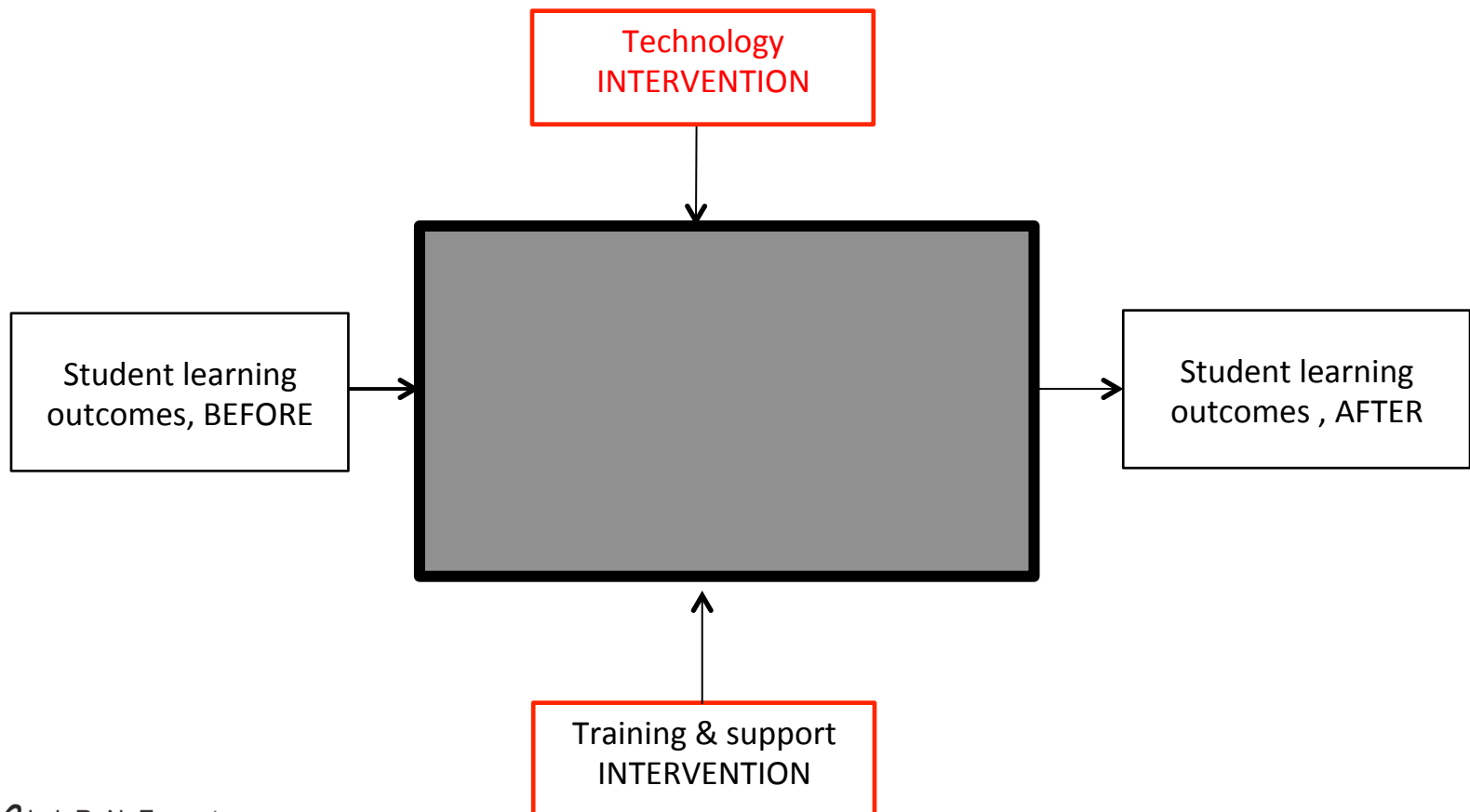
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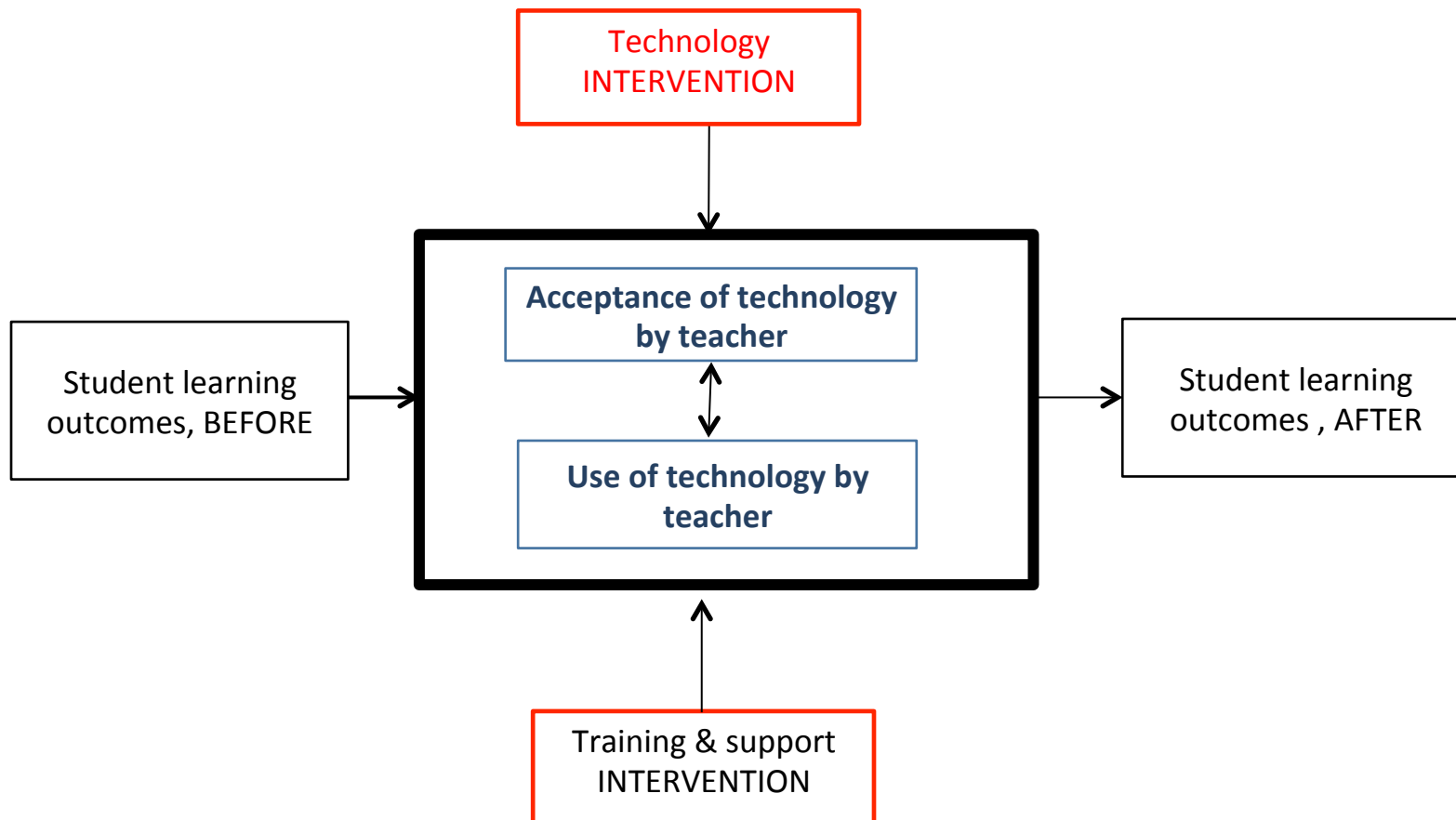
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The black box in ICT4Ed



Inside the black box is the “acceptance and use of technology by teachers”



PICOCS

- ❑ Population
- ❑ Intervention
- ❑ Comparison
- ❑ Outcomes
- ❑ Context
- ❑ Study designs

Teachers, K-12

Training/support

-

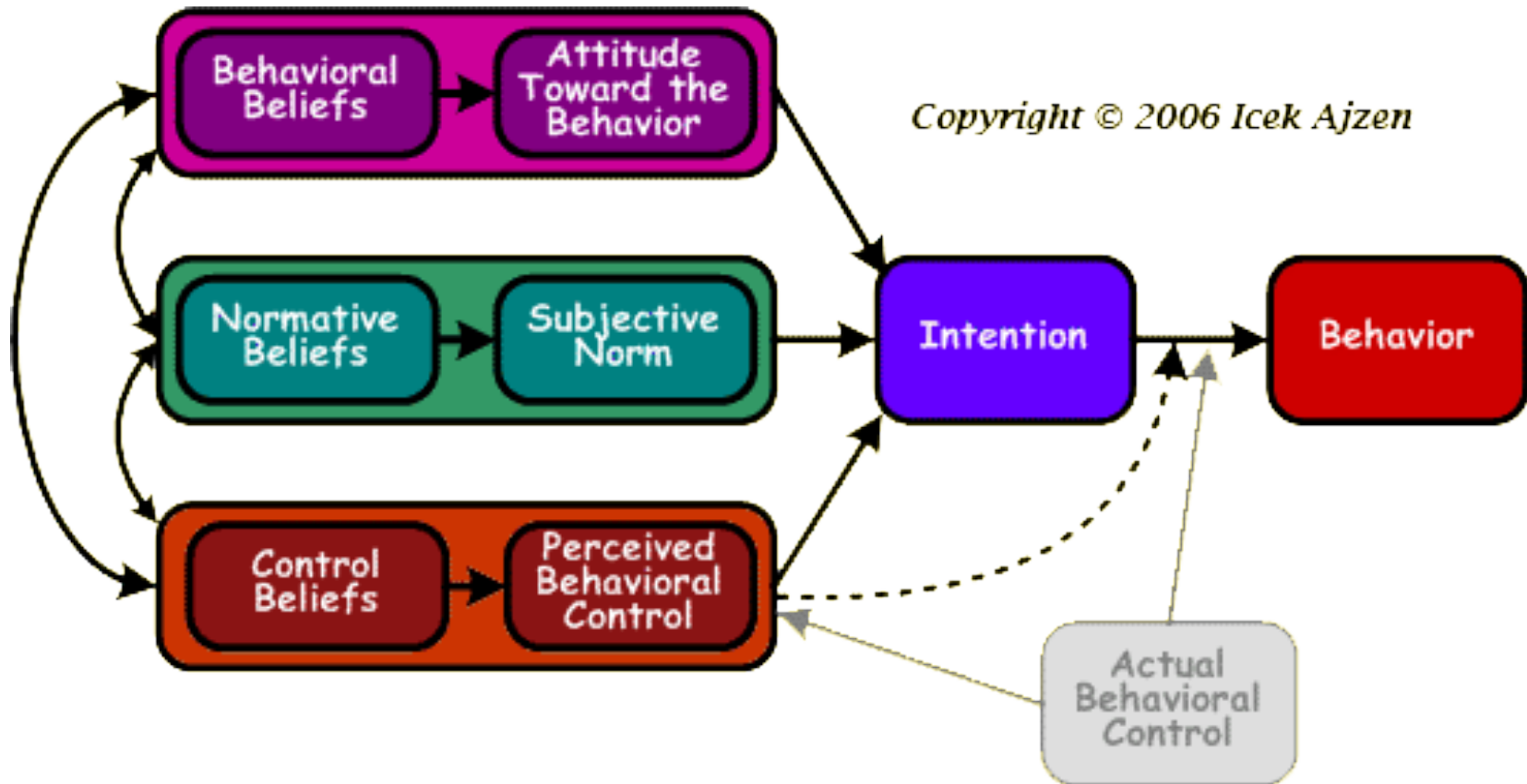
Use of ICT in the classroom

-

Exptl/Quasi-Exptl

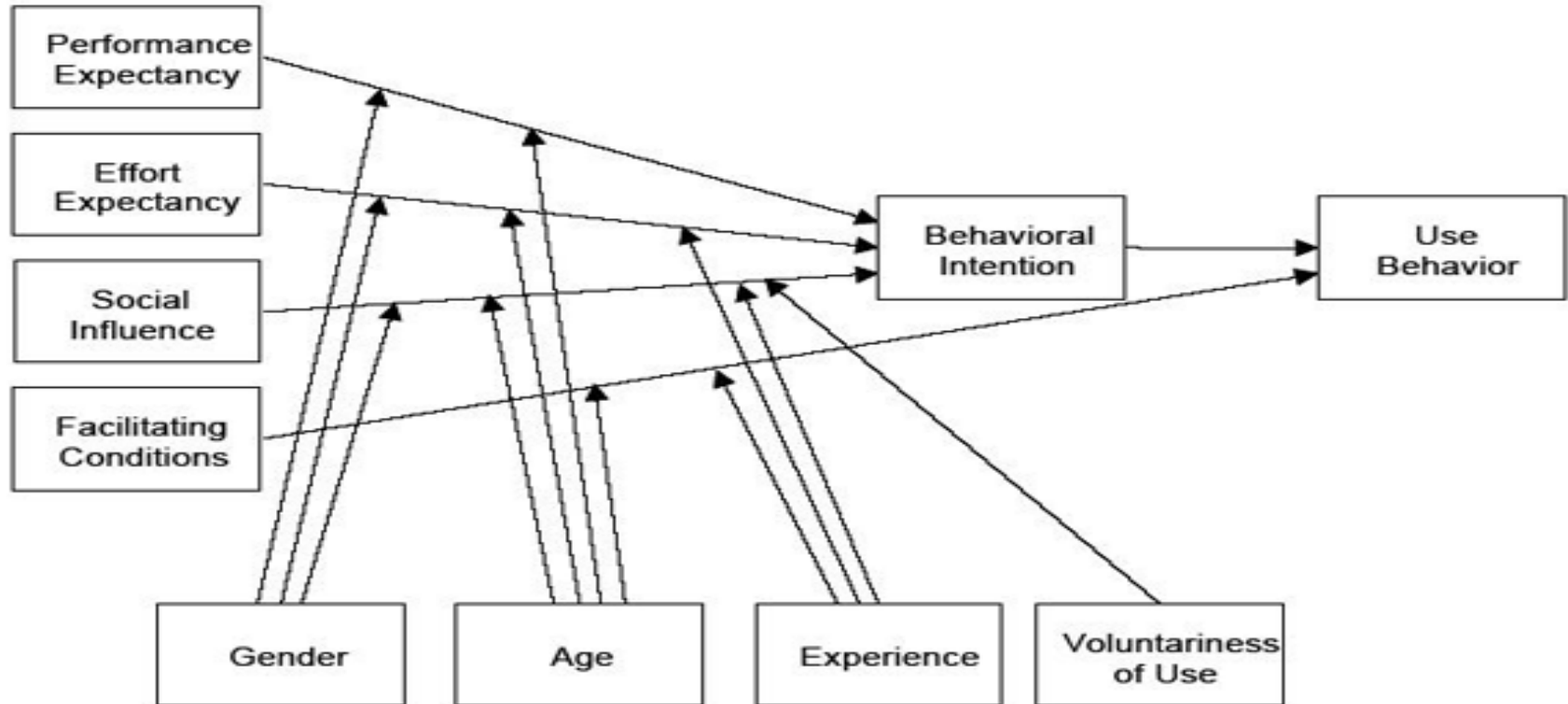
Theory of change

Based on theory of planned behavior (Icek Ajzen, 2006)



Theory of change

Unified theory on technology acceptance and use, Venkatesh , 2003



PICOCS - improved

- Population
- Intervention
- Comparison
- Outcomes
- Context
- Study designs

Teachers, K-12

Increase the four critical perceptions

-

Use of ICT in the classroom

-

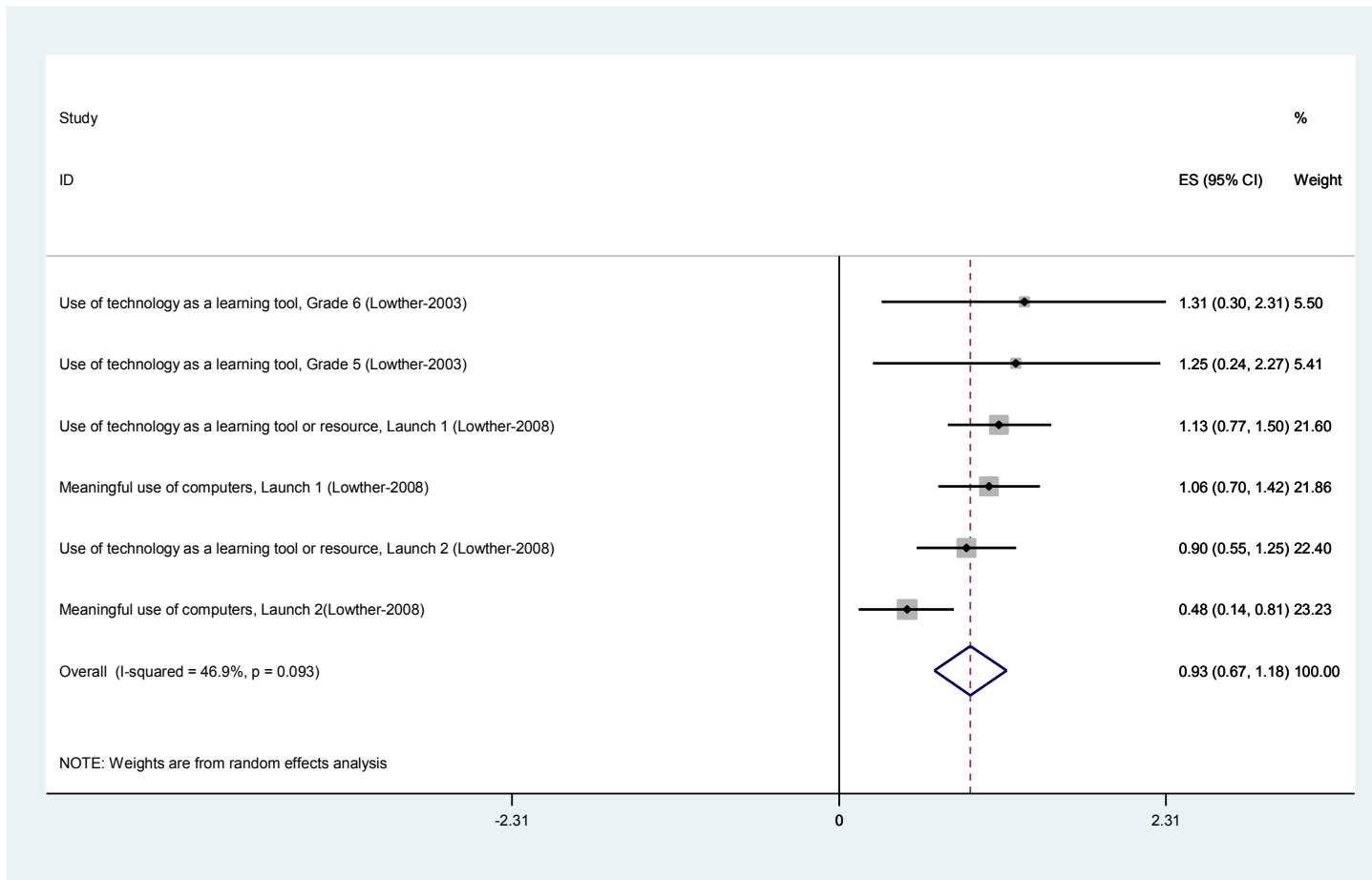
Exptl/Quasi-Exptl

Results

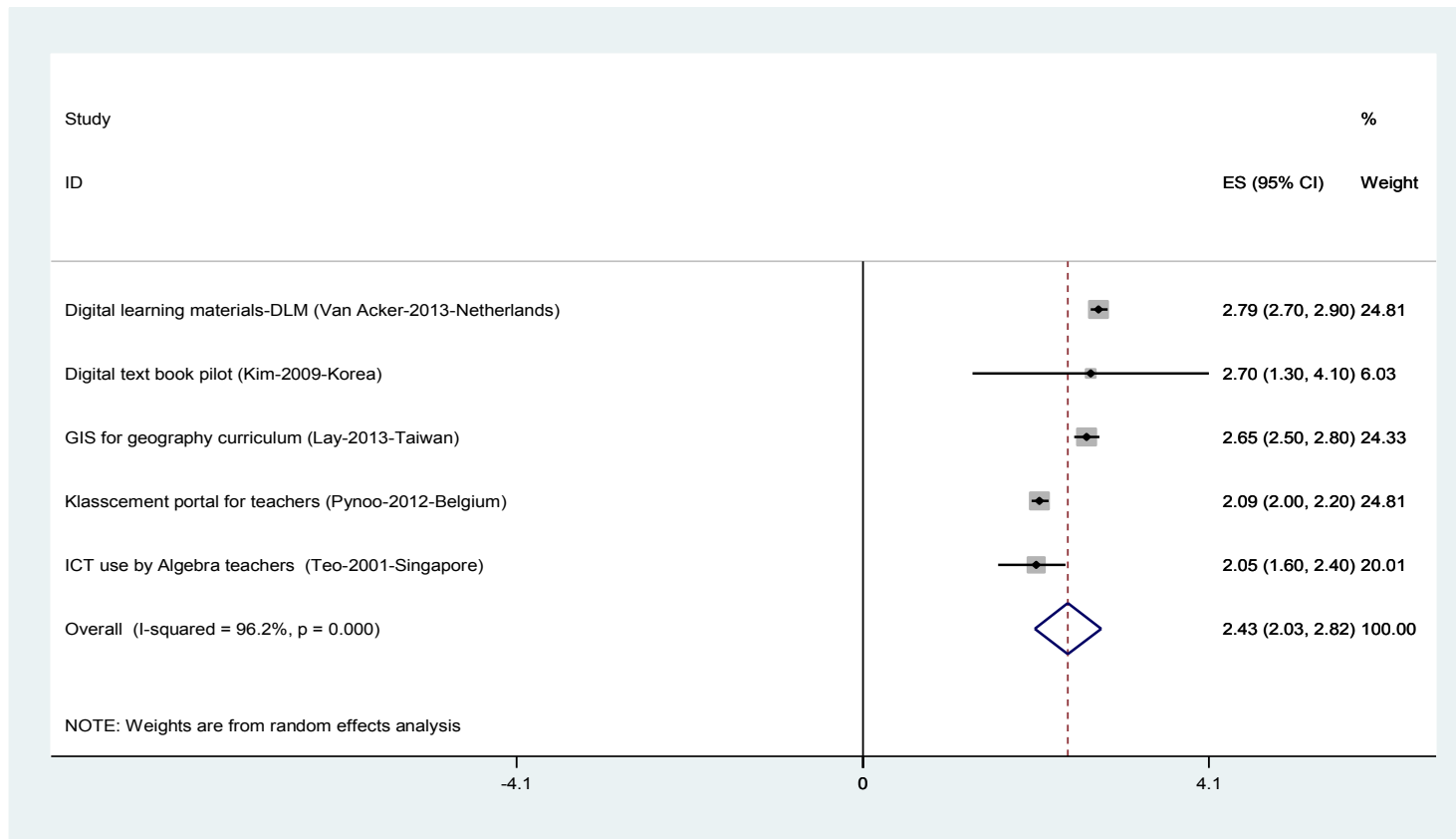
<input type="checkbox"/> SEARCH	11,419 Reports	
<input type="checkbox"/> SCREEN	12 Reports	(Impact, 4; Cause, 8)
<input type="checkbox"/> ASSESS	9 Studies	(Impact, 2; Cause, 7)
<input type="checkbox"/> SYNTHESIZE	9 Studies	(x Effect sizes)

- Professional development + OLPC
- Professional development + on-site coaches for teachers

7 effect sizes from two interventions



Relative effect of two causal factors



Result in words

- ❑ Given enough resources and hand-holding teachers will use ICTs in the classroom
- ❑ Teacher factors need to be considered in procuring ICT equipment or software because teachers' 'perception of usefulness' is twice as important as 'perceptions of ease of use'

How can our results lead to changes in the black box

- Link to other findings and take to policymakers
 - Expert forum on ICTs in Classroom yielded an invitation but interest evaporated for some reason
- Wait for the next policy window while keeping the findings visible
 - ESCAP project
 - TADHACK

Thank you