



THE OHIO STATE UNIVERSITY

Differences in the Content Knowledge of Those Taught to Teach and Those Taught to Play

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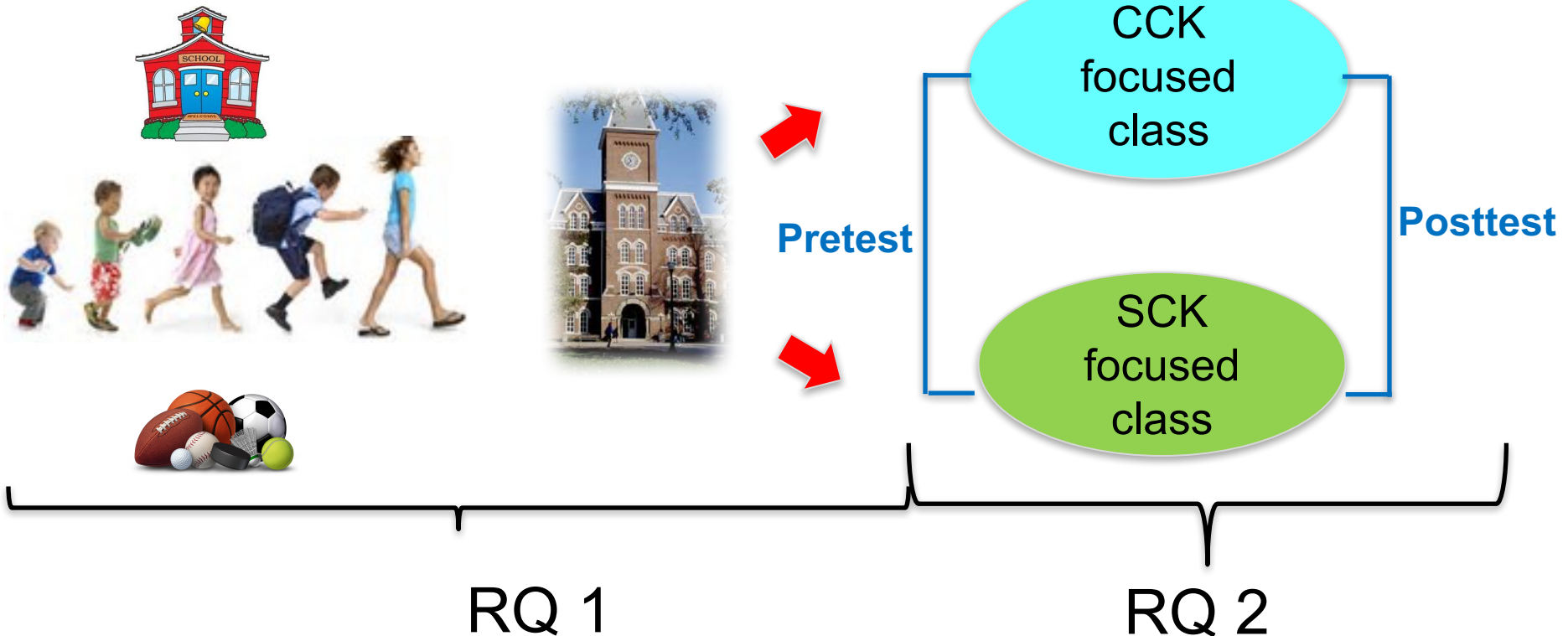
The Learning to Teach Physical Education Research Program

URL: <https://u.osu.edu/ltppe/>



Purpose

To examine the levels of SCK of college students in two groups: the Basic Instruction (CCK focused) group and the PETE (SCK focused) group.





Method

Participants: $N = 191$

- **The CCK focused group:** University PE classes where the focus of the instruction was to improve their own performance.

Badminton = 37, Tennis = 35, Basketball = 23, Volleyball = 24

- **The SCK focused group:** PETE program where the focus of the instruction was on how to teach.

Badminton = 14, Tennis = 17, Basketball = 23, Volleyball = 18

	CCK focused	SCK focused
Frequency & duration	2/w for 55 min	2 or 3/w 55 min to 90 min
Contact hours	26 hours	19 hours
Pedagogical model	Direct Instruction	Play Practice
Location	Gym	Gym and classroom
Content of the class	Performed skills, techniques, tactics, game play, tournament	Learned and demonstrated <ul style="list-style-type: none"> • Task progressions • The student's errors • Corrections/modifications to these errors
Instructor	Skilled performers, experienced and competent college teachers	A very experience content expert who understood CCK and SCK



Dependent Variable

Content map:

A graphic organizer of SCK that defines the content that could be taught to students in an instructional unit of a particular duration. (Lee et al., 2015; Ward et al., 2015).

Content Development Categories: (Rink, 1979)

- a) Informing
- b) Extending/Extending Applying
- c) Refining/Refining Applying
- d) Applying non-game/task-game

$$\frac{E + EA + R + RA + AG + AN}{I}$$

(Ward, Dervent, Lee, Ko, Kim, & Tao, 2017)



Inter-observer agreement

Training - 3 phases (3 coders)

Phase 1. Learned the definition of codes and took a written test with 28 questions. ➡ 100%

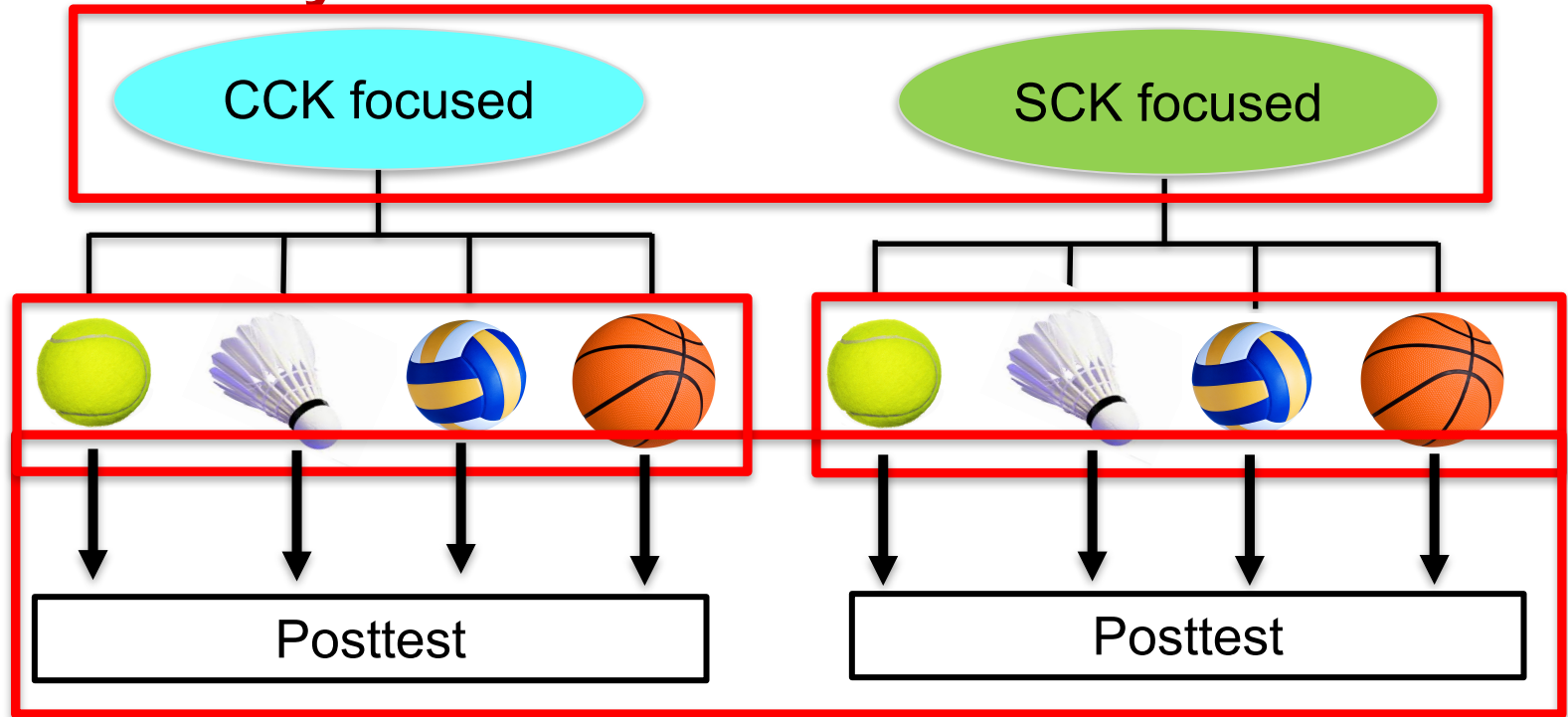
Phase 2. Defined the 26 descriptions of instructional tasks. ➡ 100%

Phase 3. Coded 256 tasks from videos, lesson plans, and content maps. ➡ 95%

IOA: 33% (N = 64/191) of randomly selected content maps were analyzed. Agreement was **97.1%** (range 96.2-99.2%)



Data analyses



Q1: The Mann-Whitney U, ES ($r = \frac{Z}{\sqrt{N}}$ [Rosenthal, 1991])

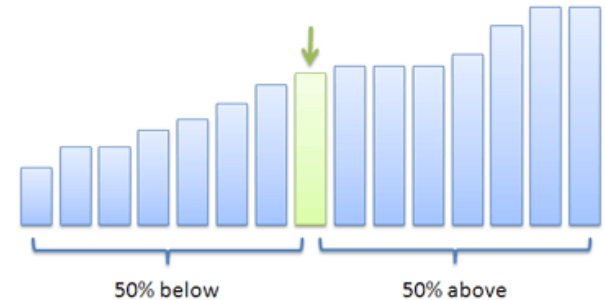
Q2: The Kruskal-Wallis, ES ($r = \frac{Z}{\sqrt{N}}$ [Rosenthal, 1991])

Q3. The Wilcoxon signed-rank, ES ($\eta^2 = \frac{\chi^2}{N-1}$ [Green & Salkind, 2008])



Data Interpretations

1. Non-parametric ➔ Median



2. The SCK score

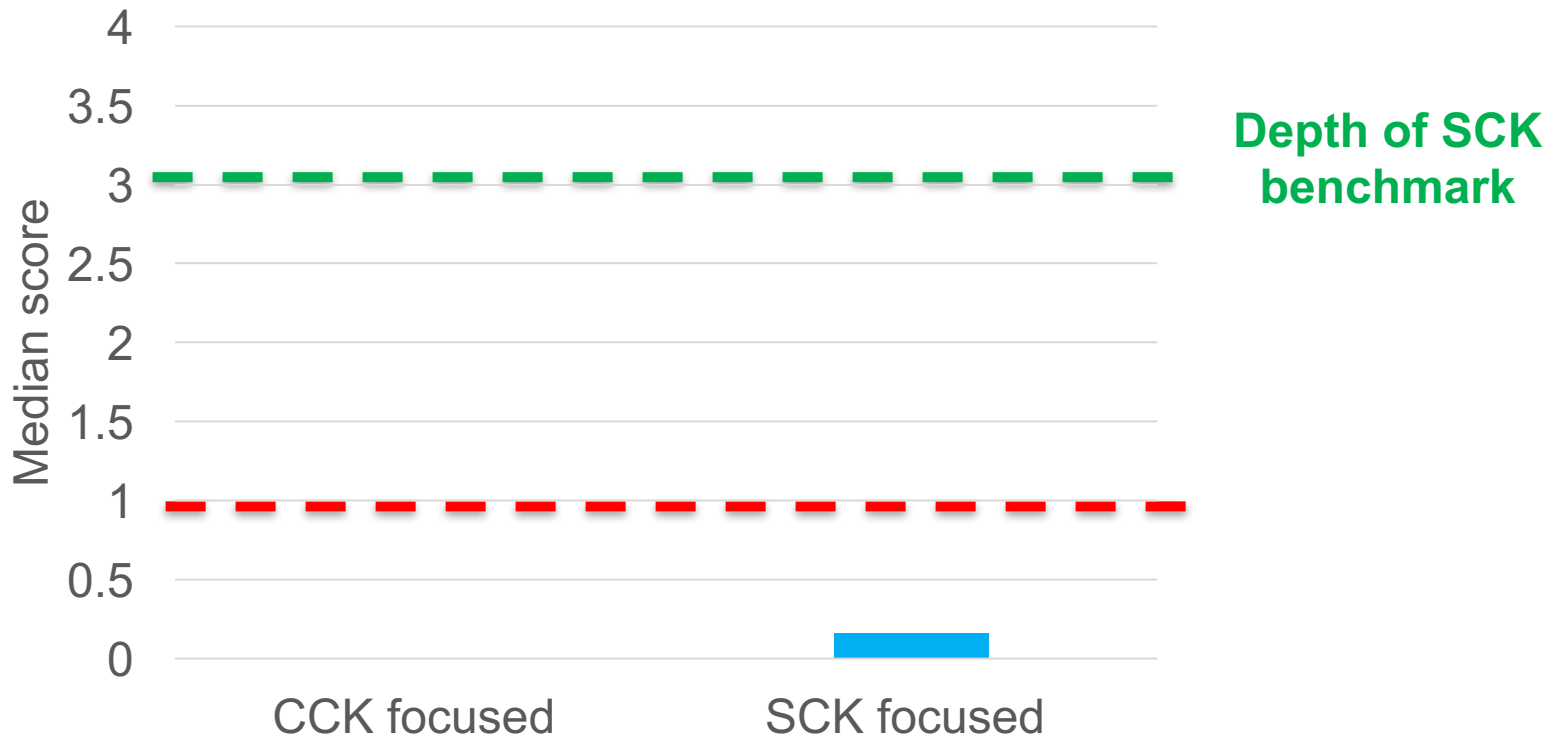
- **Score below 1.0** = Little evidence of the content development.
- **Score above 3.0** = Depth of content development: Bench mark.

3. Statistical vs. Meaningful significance.



Result 1

Pretest between groups



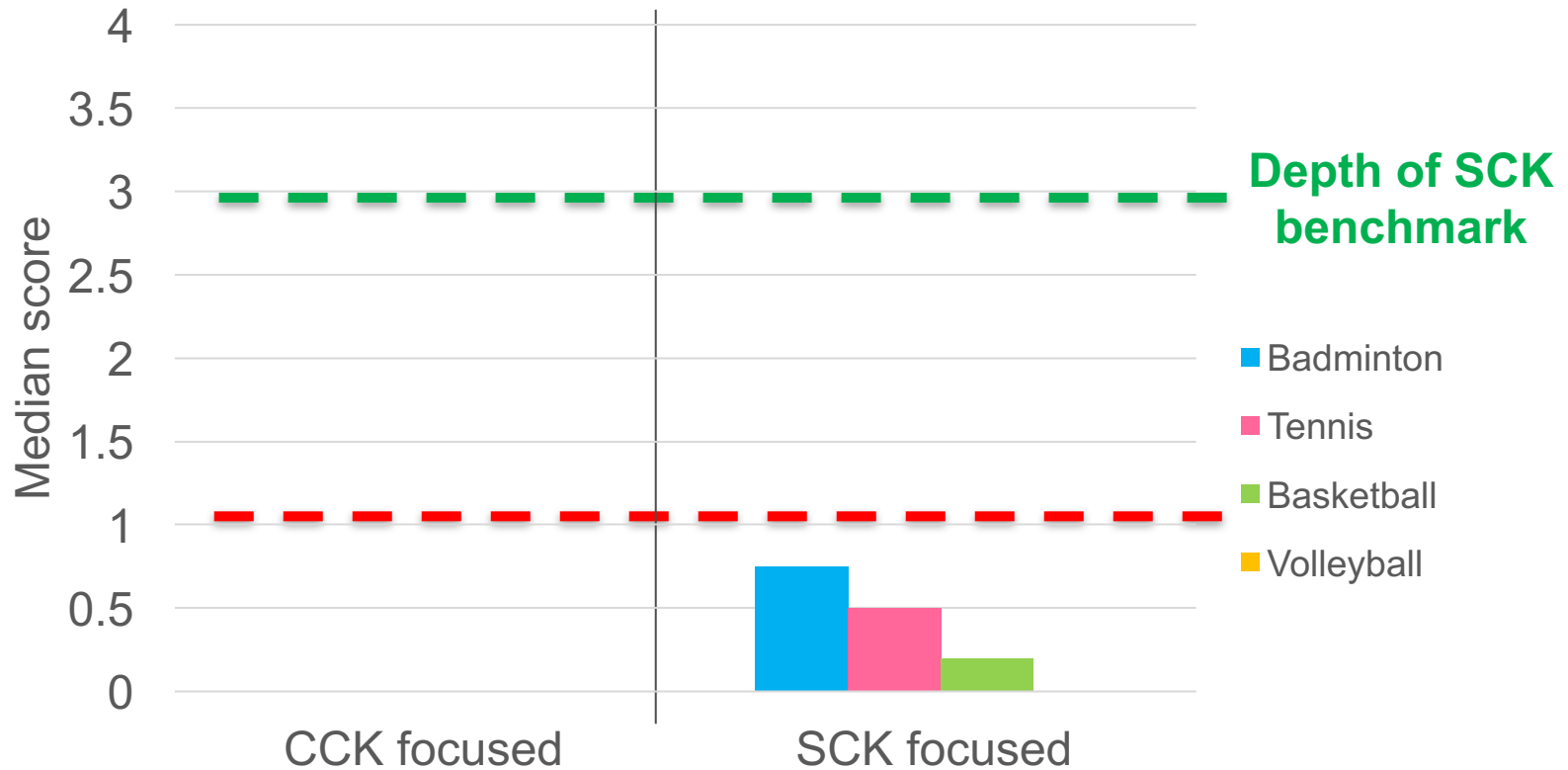
Statistically different: $U=1637.00$ [$Z= -9.059$], $p<.001$, $r=0.66$ [large]

Not meaningfully different.



Result 2

Pretest among sports



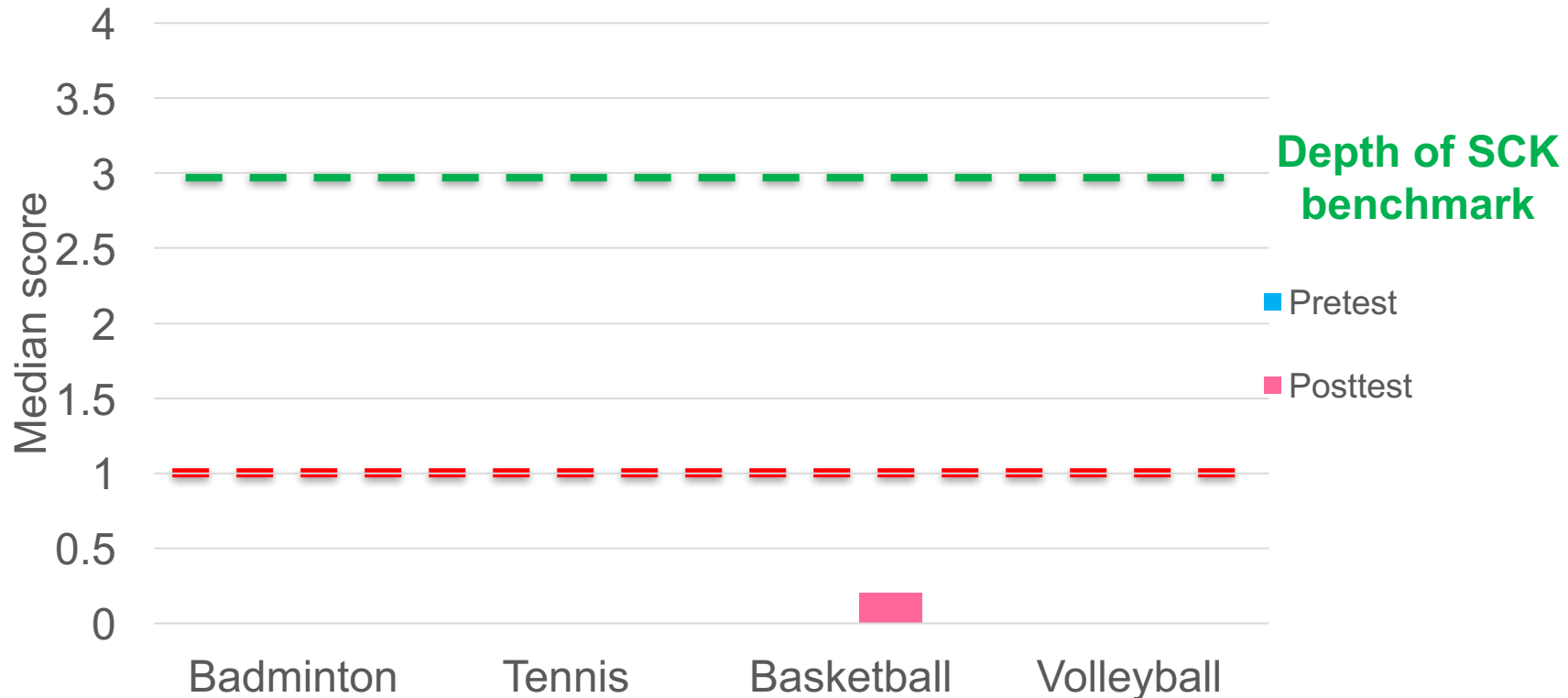
The CCK focused group: ($\chi^2=9.60$, $p=.022$, $\eta^2=0.08$ [medium])

The SCK focused group: ($\chi^2=7.83$, $p=.05$, $\eta^2 = 0.11$ [large]).

⇒ **Not meaningfully different.**



Result 3 Pre-Post Changes in the CCK Focused Group

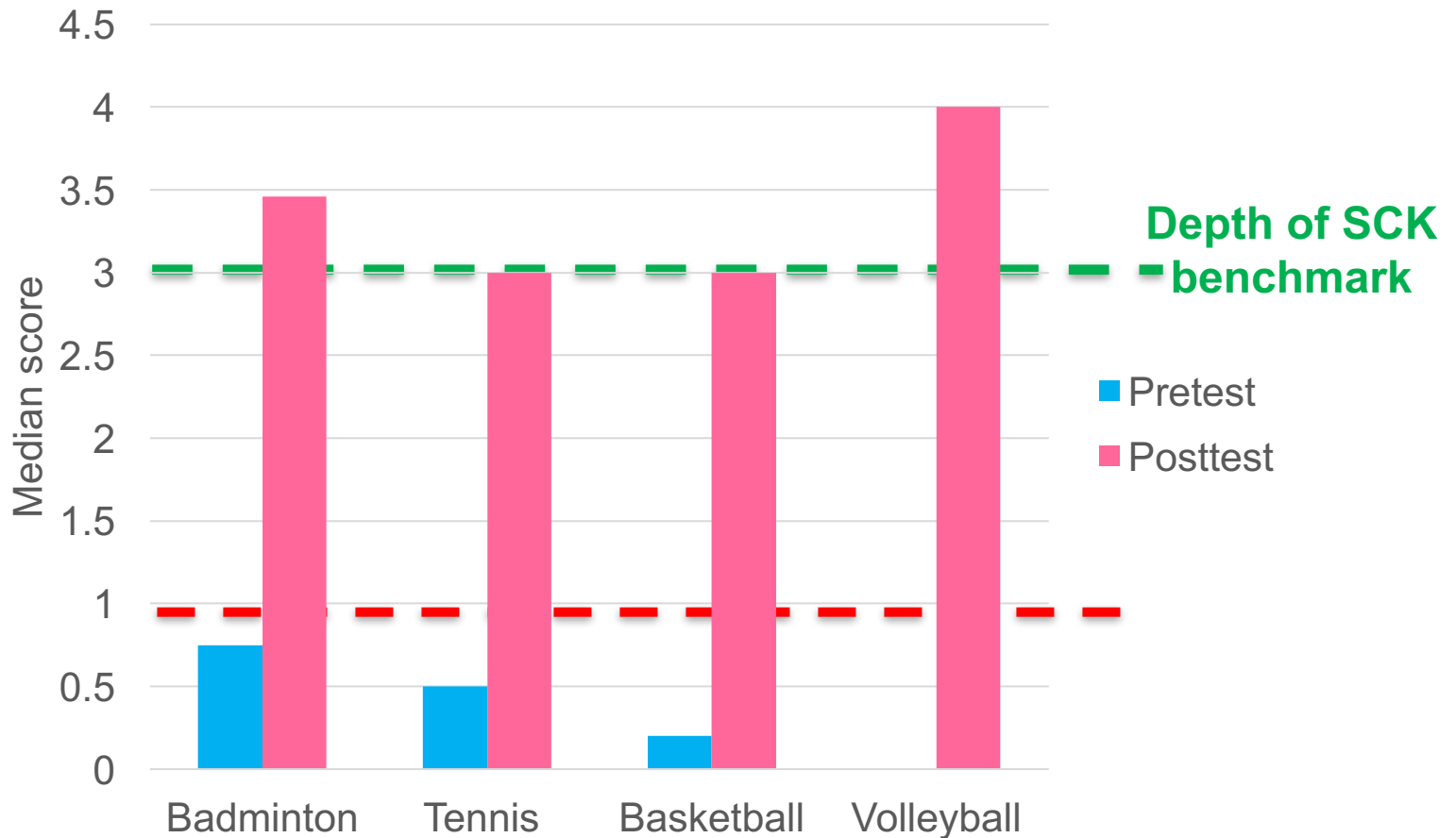


Statistically significant.

➔ However, not meaningful differences.



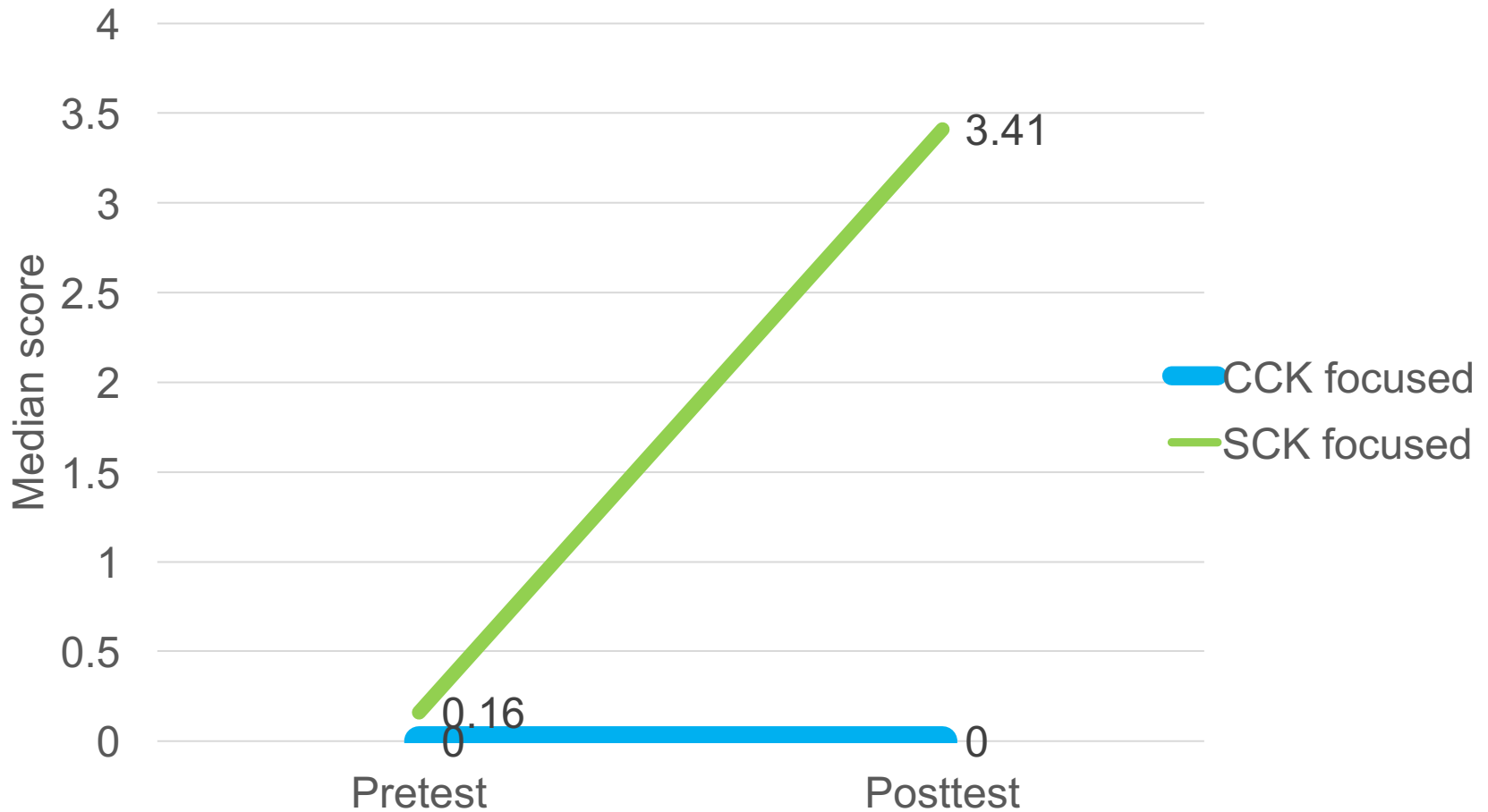
Result 4 Pre-Post Changes in the SCK Focused Group



Statistically significant & meaningful improvement₂



Changes in Two Groups





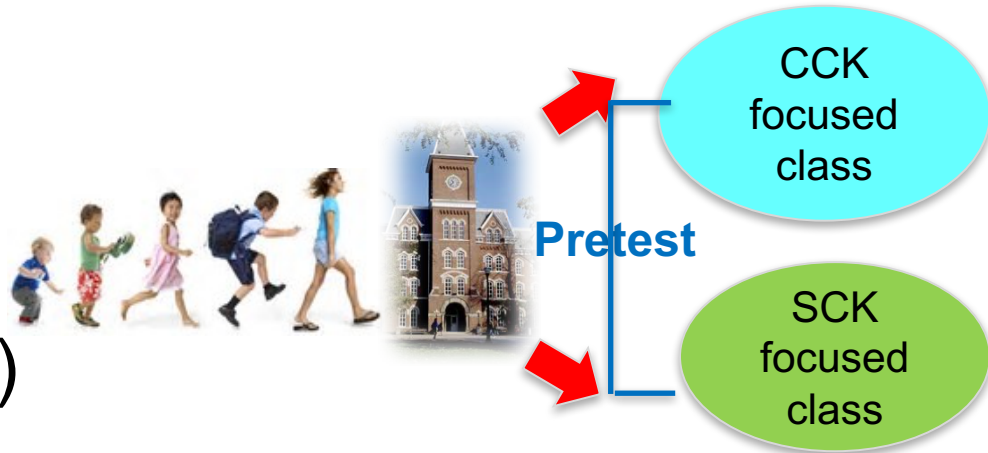
Discussion





Discussion on RQ1

The CCK group (**100%**) and the SCK group (**83%**) scored below 1.0 regardless of the sports.



- No meaningful differences between groups.
- **Students do not learn SCK from K-12 PE and extra curricula activities.**

(Ball, 2008; Ward, 2009)



Discussion on RQ2

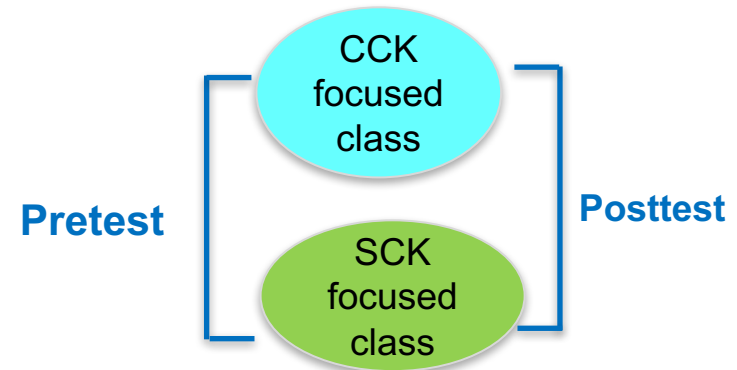
The CCK focused group (26h)

Post: $< 1.0 = 98\%$ & $3.0 \leq = 0\%$

The SCK focused group (19h)

19 contact hours

Post: $< 1.0 = 2.8\%$ & $3.0 \leq = 66.7\%$



Being able to play \neq Knowing how to teach

(Kim et al., 2011)

SCK needs to be taught.



Limitations



1. It was a quasi-experimental study
➔ **Generalizability.**
2. The sample size was small
➔ **Weak power.**
3. CCK and skill levels was not assessed
➔ **Not clear the relationships between SCK.**

A wooden stick is positioned vertically against a background of a blue sky with white clouds. Three signs are attached to the stick. The top sign is a rectangular orange card with the text "now what?" in white. Below it is a green arrow-shaped sign pointing to the right with the text "tomorrow" in white. At the bottom is another green arrow-shaped sign pointing to the left with the text "yesterday" in white.

now
what?

tomorrow

yesterday

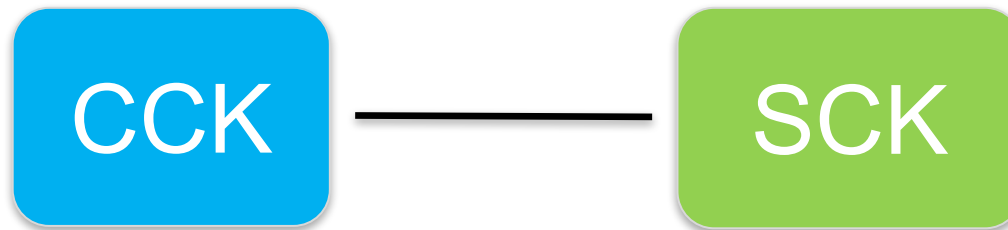


Q1. The levels of CCK of PETE students entering the university.





Q2. What is the relationship between CCK and SCK?





SCK



Q3. What is a reasonable gain in SCK in such classes?



Q4. How can we distinguish quality of the SCK?





Q5. Can SCK be maintained?





Q6. How can we teach SCK effectively?





Conclusion

SCK needs to be taught.

(Ball, 2008; Ward, 2009)



Professional development programs for both pre- and in-service teachers should focus on SCK.

SCK is critical for quality teaching.





Thank you!



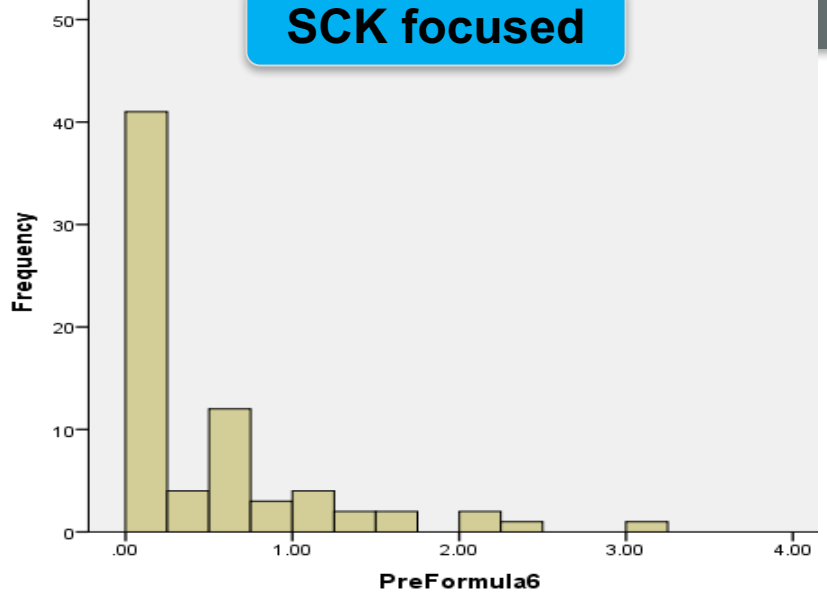
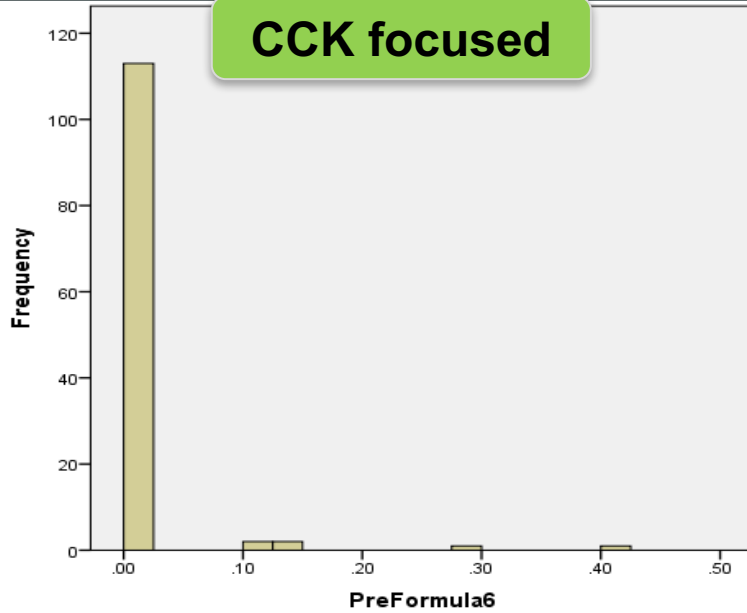
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The Ohio State Learning to Teach Physical Education
Research Program [URL: https://u.osu.edu/ltppe/](https://u.osu.edu/ltppe/)





Pre



Post

