

Content Knowledge in Physical Education

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Agenda

- Brief introduction about myself.
- Acknowledgement.
- My research line.
- What we know and what we do not know about content knowledge.
- Future directions.



Acknowledgement

Content Knowledge

Consider....

- Consider any types of movements you know well. Are you confident teaching that to someone?
- Now, consider any types of movements you do not know well. How confident are you teaching it?



Content knowledge matters!

What is Content Knowledge?

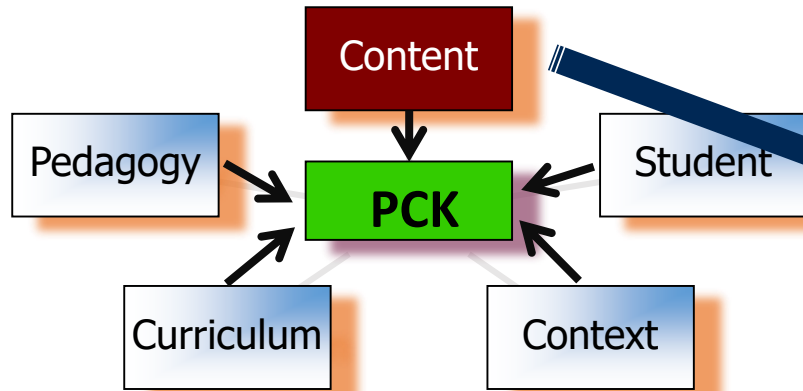


PCK



A special knowledge that teachers use to help students learn the subject matter and is fundamental to quality teaching.

(Shulman, 1986, 1987)



(Shulman, 1987; Rovegno, 1995; Ward, 2009)

CCK & SCK

(Chang, 2014; Iserbyt, Ward, & Martens, 2015; Sinelnikov, Kim, Ward, Curtner-Smith, & Li, 2015; Ward, Kim, Ko, & Li, 2014)

What are CCK and SCK?

Common Content Knowledge

Rules, safety, etiquette, techniques,
and tactics

Specialized Content Knowledge

Tasks, task progression, common
student errors, and task presentation

Research Shows the Importance of CCK and SCK

Intervention studies showed:

Teachers' **teaching effectiveness** and **student learning** improved after enhancing teachers' content knowledge in a workshop.

(Chang, 2014; Iserbyt, Ward, & Martens, 2015; Iserbyt, Ward, & Li, 2015; Kim, 2015; Sinelnikov et al., 2015; Tsuda, 2017)



Appropriateness
of task selections

Maturity of task
presentations

Task adaptation

SHAPE America (2017) Initial Teacher Standards



Candidates will:

- Standard 1a. Describe and apply **CCK** for teaching preK-12 physical education.
- Standard 1b. Describe and apply **SCK** for teaching preK-12 physical education.

The importance of developing CK among preservice teachers is evident!

A Line of Inquiries

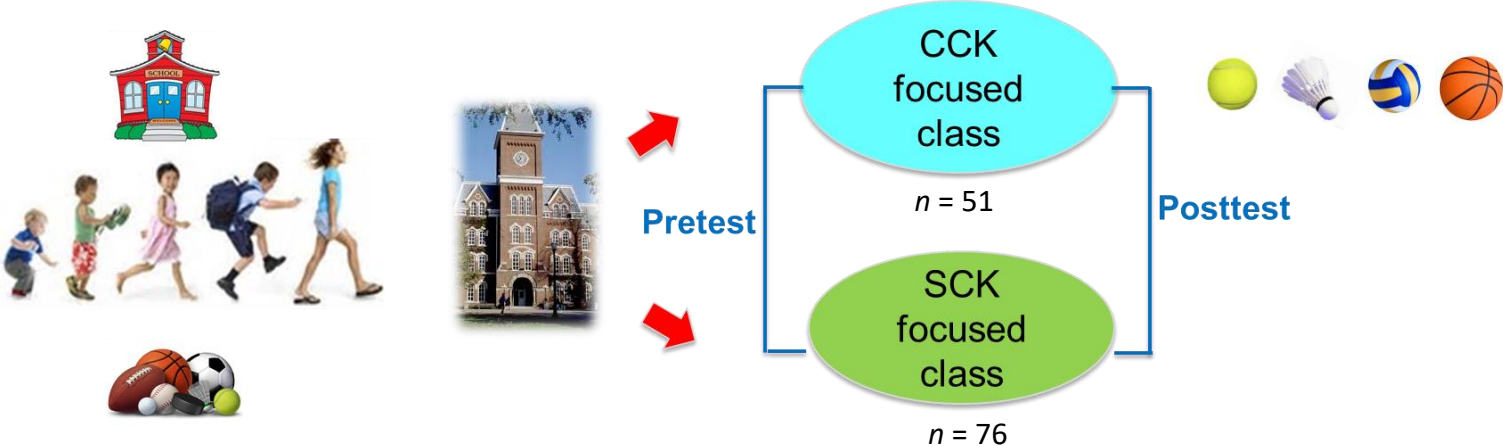
How much do PSTs improve their CK in content courses?

How much do PSTs improve their CK across PETE programs?

Need valid and reliable assessments

How much do PSTs Improve their CK in Content Courses?

(Tsuda, Ward et al., 2019)



CCK
10 items

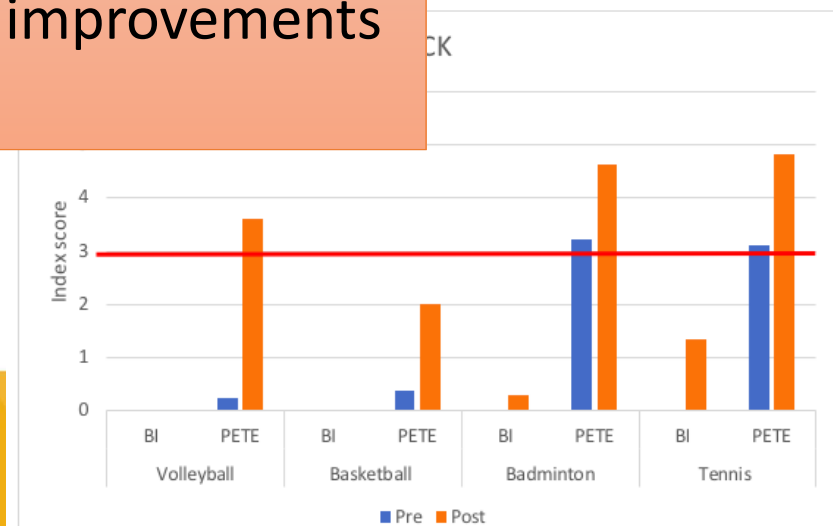
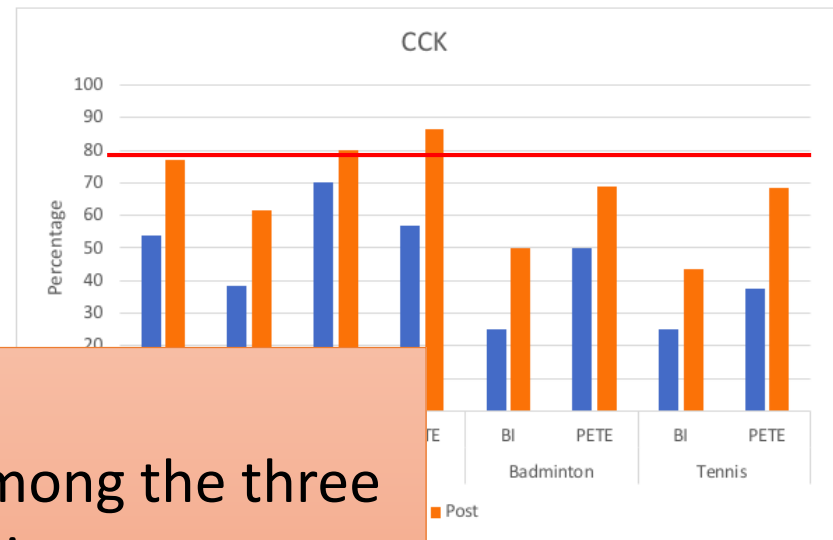
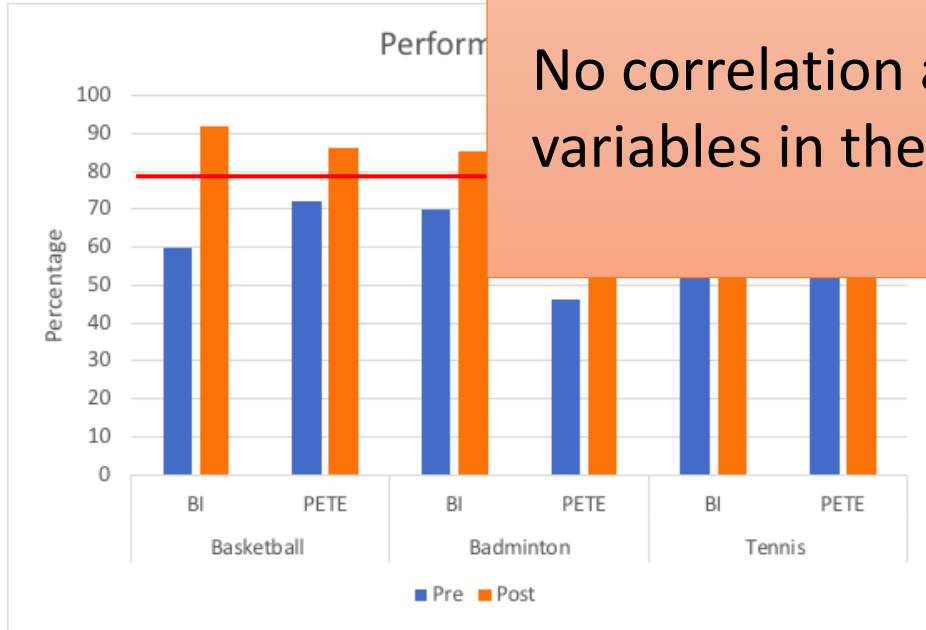
SCK
Content Map

CCK-P
Performance test

How much do PSTs Improve their CK in Content Courses? Cont'

(Tsuda, Ward et al., 2019)

No correlation among the three variables in their improvements



Conclusion and Next Step

Improving one area of CK does not lead to improving other areas of CK. Each area needs to be specifically taught.



We have a valid and reliable SCK measure for tasks and task sequences but not for CCK.

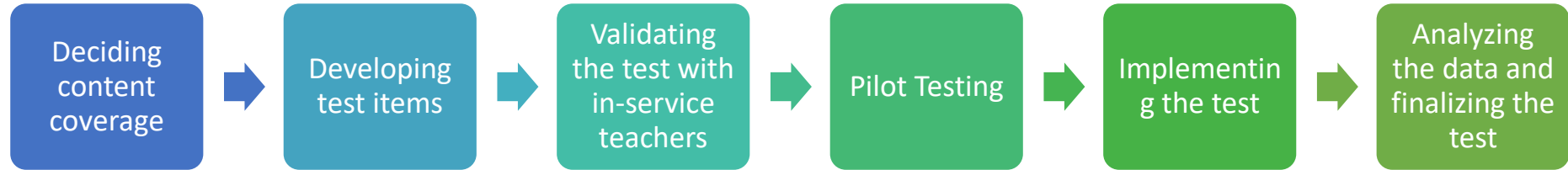
CCK Assessment Development

- A total of 10 scholars, 50 in-service teachers, and more than 1,000 pre-service teachers contributed this project.
- Developed more than 10 assessments for different content areas.

- Tsuda, E., Ward, P. & He, Y. (2021). *Test questions for pre-service teachers and students in physical education content*. Biblio-Publishing.
- Tsuda, E., Ward, P., Atkinson, O. J., He, Y., & Sazama, D. (2023). Establishing the validity of a test of common content knowledge for soccer. *International Journal of Kinesiology in Higher Education*, 7(1), 48-60.
- Tsuda, E., Ward, P., Ressler, J., Wyant, J., He, Y., Kim, I., & Santiago, J. (2023). Basketball common content knowledge instrument validation. *International Journal of Kinesiology in Higher Education*, 7(1), 35-47.
- Tsuda, E., Ward, P., Sazama, D., He, Y., Ko, B., Santiago, J., & Xie, X. (2022). Validating the volleyball common content knowledge test. *The Physical Educator*, 79(5), 569-585.
- Tsuda, E., Ward, P., Kim, J., He, Y., Sazama, D., & Brian, A. (2021). The tennis common content knowledge measure validation. *European Physical Education Review*, 27(3), 654-665.



CCK Assessment Development Procedures



CCK Assessment Rasch Analysis Results

	Badminton	Basketball	Flag football	Soccer	Softball	Tennis	Volleyball	Locomotor skills	Ball skills	Gymnastics
Participants	61	76	71	129	93	117	73	107	73	102
# of Questions	40	36	36	41	35	41	40	31	28	29
Unidimensionality	<p>We successfully developed valid and reliable CCK assessments for seven secondary PE and three elementary PE content areas</p>									
Person Fit – Infit M (SD)										1.00 (.13)
Person Fit – Outfit M (SD)										1.01 (.23)
Item Fit (infit & outfit)										
Separation Index and Reliability - Person (Reliability)										1.23 (.60)
Separation Index and Reliability – Item (Reliability)										2.88 (.89)
Wright Map	The wright map confirmed that the items and respondents are distributed across the different levels									

Conclusions and Next Step

Valid and Reliable Assessments



How much do PSTs improve their CK across PETE programs?

How much do PSTs improve their CK across PETE programs?

(Tsuda et al., 2022, in works)

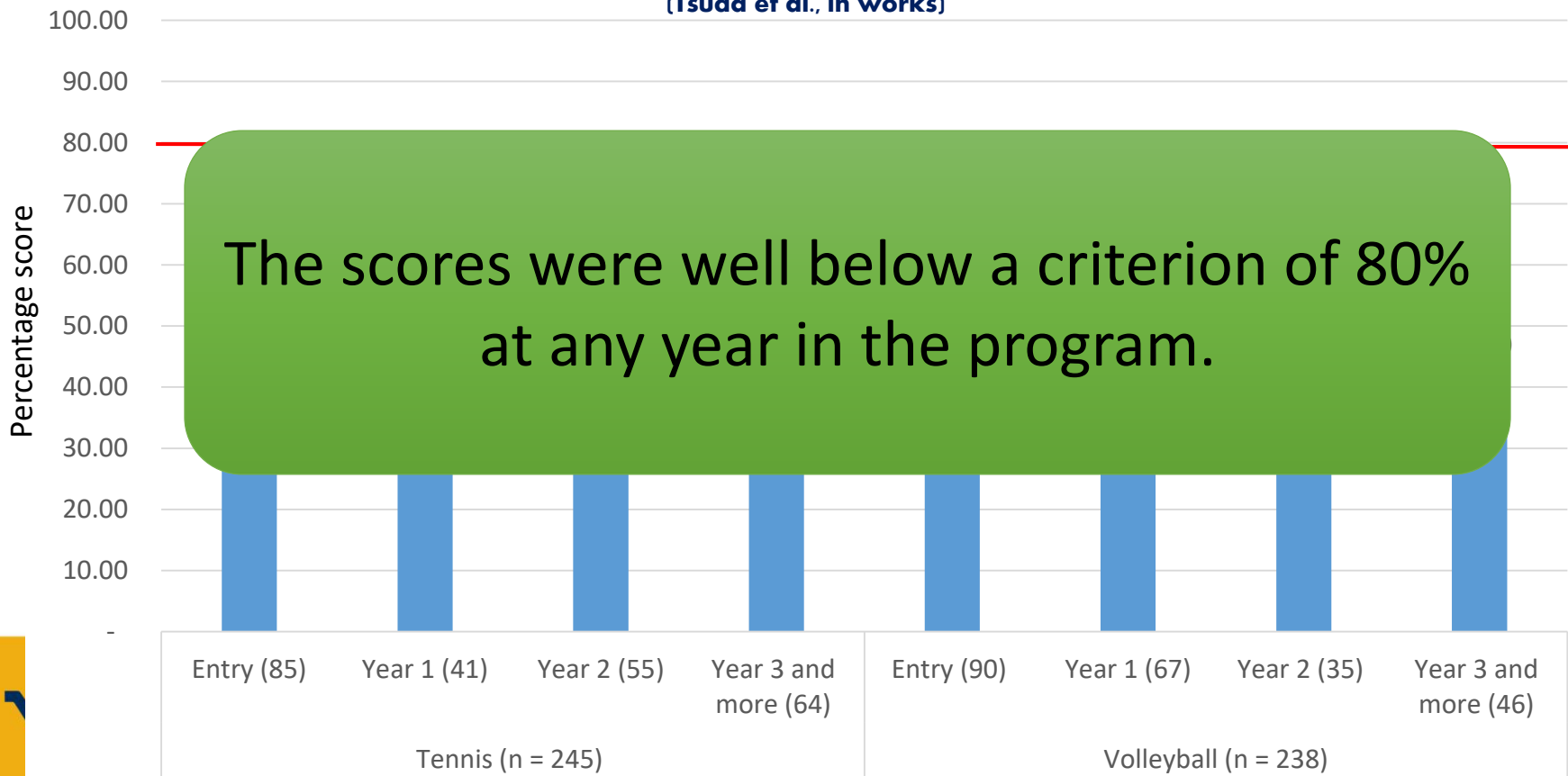
Settings: 6 and 5 PETE programs for volleyball and tennis

Participants: Volleyball $n = 238$ (female $n = 37$); Tennis $n = 245$ (female $n = 44$)

Procedures: Collected CCK of volleyball and tennis from sophomores, juniors, and seniors

Changes in PSTs' Tennis and Volleyball CCK Median Percentage Scores

(Tsuda et al., in works)



Conclusion

PSTs are far from meeting the criterion level of CCK in both volleyball and tennis.



Reconsidering how to teach content courses is essential.

Future Directions

This line of inquiries showed that PSTs acquire minimal CCK when they enter and during the PETE programs.



- How about SCK?
- Exploring how to best improve CCK among PSTs

Thank you!

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