



KU LEUVEN

Content and Pedagogical Content Knowledge in Physical Education: An International Overview



Bomna Ko – Fatih Dervent – Tom Madou – Peter Iserbyt



Where do we conduct research?

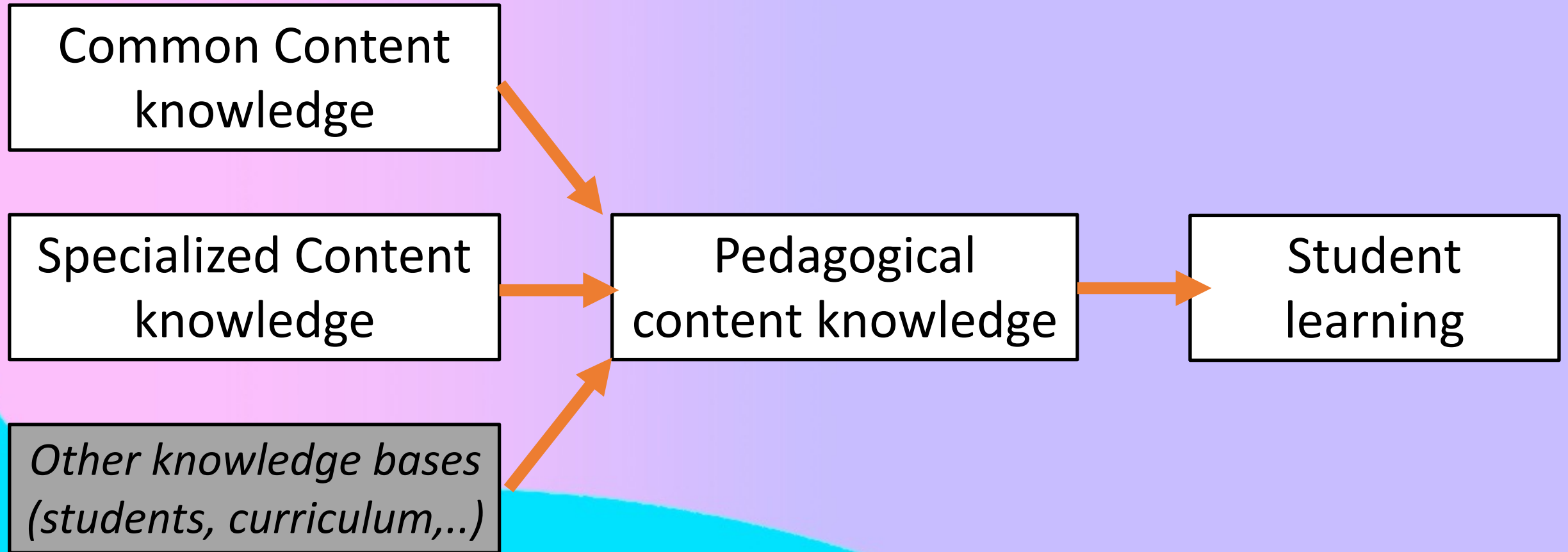


Content Knowledge in Phys Ed

Common Content Knowledge	Specialised Content knowledge
Knowledge of rules and etiquette	Knowledge of task representations
Knowledge of technique and tactics	Knowledge of tasks
	Knowledge of student errors

(Ward, 2009)

Pedagogical Content Knowledge



(Ward & Ayvazo, 2016)

Outcomes of the work on CK

- Research on CCK, SCK, and PCK has been conducted across six countries with over 16 000 pre- and in-service teachers
 - Majority of undergrads arrive with little knowledge about the content they will teach in schools (e.g., Dervent et al., 2020)
 - PETE instruction has limited to no impact on CCK and SCK (e.g., Kim & Ko, 2017)
 - Instruction focused on SCK can significantly improve teachers' understanding (e.g., Iserbyt et al., 2020; Ward et al., 2016)
- Increasing a teacher's CK, especially SCK, has led to ES of 2.0 and higher (e.g., Kim et al., 2018)



There is much work left to do

1. How does PST's content development based on lesson plans look like?
 - Dr. Peter Iserbyt
2. What soccer CCK do freshmen PETE students have when they enter the program and how does PETE program help PST's development of CCK?
 - Dr. Bomna Ko
3. Does a PETE instructor's CCK and SCK of the sport they teach predict students' CCK and SCK?
 - Dr. Fatih Dervent
4. What is the effect of an online CCK training on students' verbal interactions and learning during reciprocal peer learning?
 - Tom Madou, PhD researcher

Want to stay updated?

- Follow us on Researchgate – authors and research projects
 - E.g., <https://www.researchgate.net/project/Teacher-Education-Content-Knowledge-Study-TECKS>
- Check the Learning to Teach Physical Education Research Program
 - <https://u.osu.edu/ltp/>

ResearchGate



Analysis of Preservice Teachers' Pedagogical Content Knowledge in Lesson Plans

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Preservice Teachers' Lesson Plans

- What students learn is determined by the tasks that are selected, sequenced, and presented by the teacher (Doyle, 1986; Iserbyt et al., 2015)
- In a lesson plan, PST's select tasks to teach a particular group
 - Represents Pedagogical Content Knowledge (Ward & Ayvazo, 2016)

Developing Content

Types of tasks (Rink, 1994; Ward, et al., 2017)

- Informing task = start of learning sequence
- Extending (applying) = more difficult/easier
- Refining (applying) = Improving quality
- Applying – game (no focus)
- Applying non-game (assessment)



Methods



171 Preservice Teachers
in PETE program

171 lesson units

770 Lesson Plans

Methods

- The PETE curriculum was predominantly CCK-focused
- A standardized template was used
- Lesson plans were written during school placement in secondary schools
- Lesson plans were coded by trained observers – 33% IOA (89%)

Results – Sample Overview

Content domain	Amount of units	Mean lessons/unit (range)	Mean Intertasks per unit (range)
Individual sports	56 (33%)	4.5 (4-7)	35.9 ^a (10 – 67)
Invasion games	64 (38%)	4.5 (4-8)	21.0 ^b (9 – 41)
Net/wall games	51 (29%)	4.5 (4-7)	24.7 ^b (9 – 65)

- In Flanders there is a ‘Multi-activity’ curriculum: a broad curriculum lacking in depth
- Significantly more tasks planned in individual sports compared to other domains ($p < .05$)

Results (prelim) – Types of tasks

	Informing	Extending	Extending applying	Refining	Refining applying	Applying Game	Applying non-game
Individual	25% ^a	61% ^a	0% ^a	0%	0%	2% ^a	0%
Invasion	10% ^b	25% ^b	29% ^b	0%	0%	22% ^b	0%
Net/wall	12% ^b	36% ^c	13% ^c	0%	0%	11% ^c	8%

Medians are reported – column values with a different letter in superscript differ at $p < .05$

- More Informing tasks in individual vs other content domains ($p < .05$)
- More EXT tasks in individual vs invasion vs net/wall games ($p < .05$)
- More EXT APPL tasks in invasion vs individual and net/wall games ($p < .05$)

Results (prelim) – Types of tasks

	Informing	Extending	Extending applying	Refining	Refining applying	Applying Game	Applying non-game
Individual	25% ^a	61% ^a	0% ^a	0%	0%	2% ^a	0%
Invasion	10% ^b	25% ^b	29% ^b	0%	0%	22% ^b	0%
Net/wall	12% ^b	36% ^c	13% ^c	0%	0%	11% ^c	8%

Medians are reported – column values with a different letter in superscript differ at $p < .05$

- PST plan to teach progressively
- Our preservice Teachers do not plan for refinement
- Content development of net/wall games does not reflect game-based approach
 - Lack of extending applying tasks

Results – INTRA tasks

	Median INTRA tasks per lesson
Individual sports	0
Invasion games	0
Net/wall games	0

- PST's do not plan tasks for individuals / groups of students (INTRA tasks)

Limitations & future work

- PST's plan to teach progressively, but is it appropriate and effective?
 - Developmentally and sequentially appropriate
 - Have students learned?
- PST's do not plan refinement or intra task adaptations
 - Although this is critical for effective teaching (see e.g., Iserbyt et al., 2020)
 - Should we add this to the lesson plan template?
- We have no idea whether what was planned, was taught



References – Peter Iserbyt

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Thank you –
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