



THE OHIO STATE UNIVERSITY

*Conceptualizing and Teaching Content
Knowledge in Physical Education*

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Preparing HPE Professionals
for 21st Century Schools



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Conference 2015

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THE OHIO STATE UNIVERSITY

THE LEARNING TO TEACH PHYSICAL EDUCATION RESEARCH PROGRAM AT OHIO STATE

Our research goals:

Helping teachers to teach better,
and teacher educators to train future teachers.





Today's agenda

- Introduction to concepts, principles and scope of the problem.
- Introduction to the teaching tools
 - The Content Map
 - The Knowledge Packet
- Using Content Maps and Knowledge Packets in teaching & teacher education.

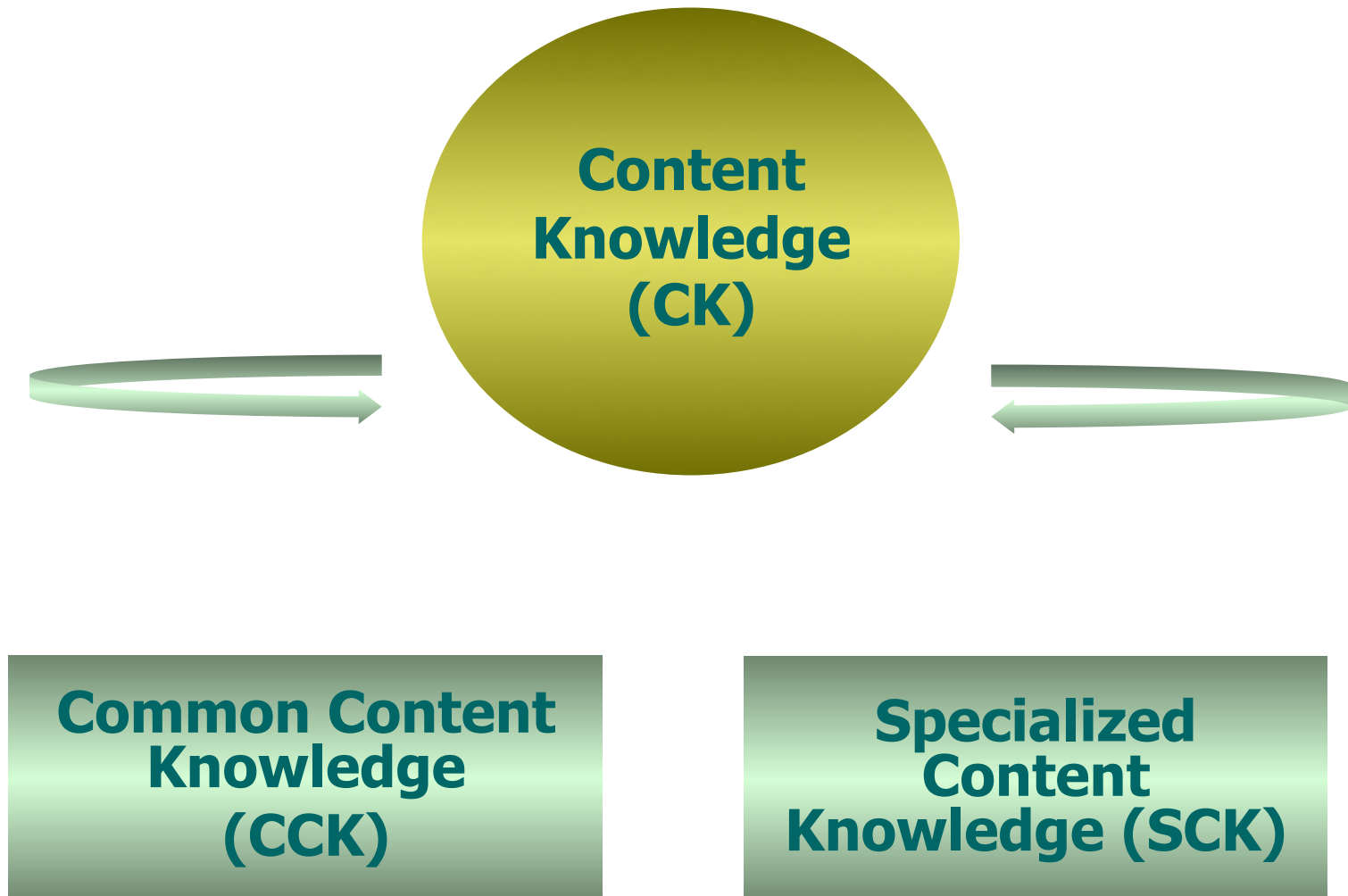
An introductory task...

WORKBOOK TASK 1

1. Describe the technique of the sit up.
2. List a sequence to learn the sit up starting with a simple abdominal exercise like chin to chest and finishing with a rather challenging one like an inclined sit up with your head below your feet!
3. Which task progressions would you exclude if you were teaching 8th graders who were quite fit?
4. Which task progressions would you exclude if you were teaching 1st graders who may not have performed a sit up before?



What kinds of knowledge did you just use?





CCK

SCK

Rules & Etiquette



Technique & Tactics



Error Detection



Tasks & Representations





Checking for understanding..

The technique of the sit up!

Think about the sequence of task progressions for the teaching the sit up!

Which task progressions would you exclude if you were teaching 8th graders?

Which task progressions would you exclude if you were teaching 1st graders who little experience

**Common
Content
Knowledge
(CCK)**

**Specialized
Content
Knowledge
(SCK)**

**Pedagogical
Content
Knowledge
(PCK)**



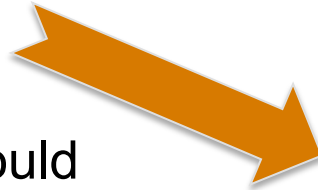
Checking for understanding..

The technique of the sit up!



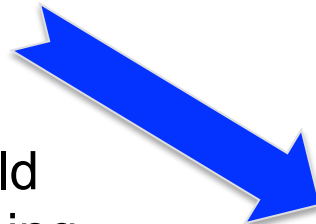
**Common
Content
Knowledge
(CCK)**

Think about the sequence of task progressions for the teaching the sit up!



**Specialized
Content
Knowledge
(SCK)**

Which task progressions would you exclude if you were teaching 8th graders?

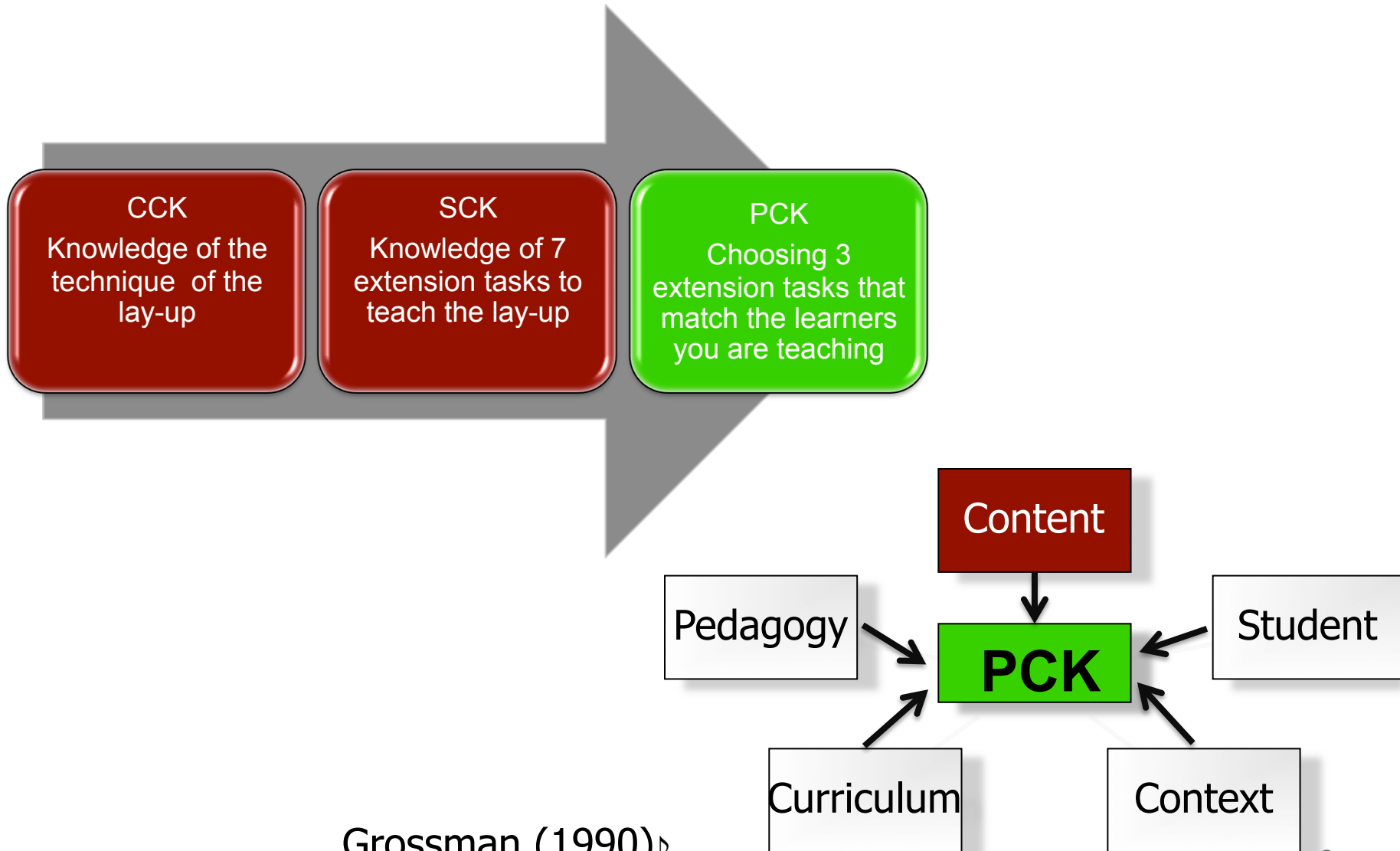


**Pedagogical
Content
Knowledge
(PCK)**

Which task progressions would you exclude if you were teaching 1st graders who little experience



Pedagogical Content Knowledge (PCK) Informed by:



Grossman (1990)



Pedagogical Content Knowledge

Is **context** specific

- Teaching beginners gymnastics in a well equipped gymnasium versus teaching them in a less equipped gymnasium

Is **content** specific

- Teaching tennis versus teaching soccer

Is **developmentally** specific

- Teaching middle school youth to pitch versus teaching children in grade one to throw

Is **child** specific

- What works for one child may not work for another

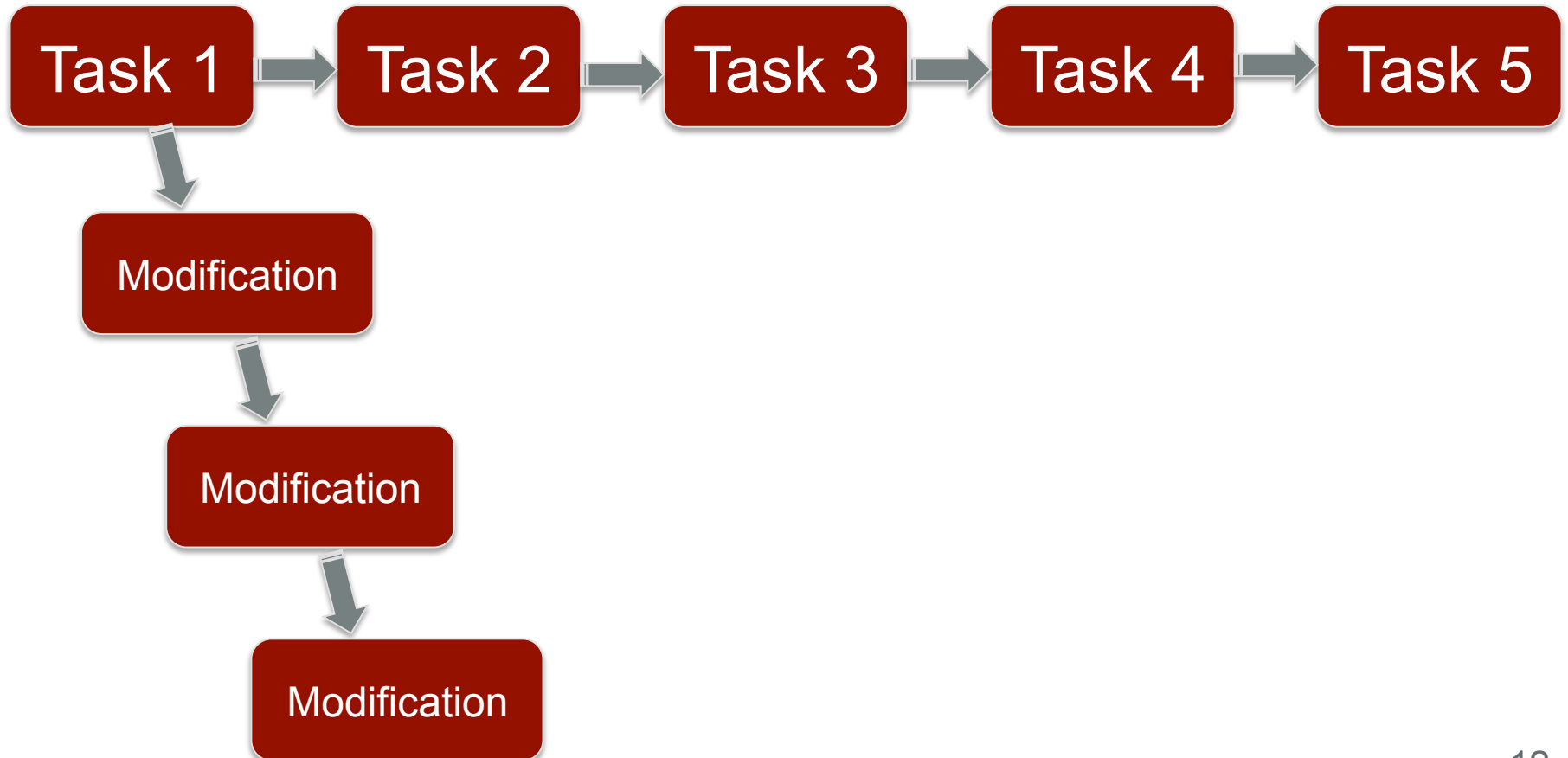


Pedagogical Content Knowledge

- **Representations of content** (e.g., demonstrations, instructions, concepts) that teachers provide to students
- **Instructional tasks** (e.g., What the teacher asks students to do).



Viewing the PCK as a series of inter and intra lesson tasks





Common CK

Lie on your back on the floor, bend your knees 90 degrees, and plant your feet flat. Tuck your chin slightly toward your chest.....

Specialized CK



Pedagogical Content Knowledge





Tennis Serve

Common Content Knowledge

Tossing up to the best hitting point, changing the swing for spin, slice, and flange serve, using a snap of the wrist

Specialized Content Knowledge

1. Throw overhand a ball as far as possible
2. Self-toss
3. Hit a ball by starting from L-shape arm
4. Keep left arm as long as possible
5. Going back to the base line
6. Work on hitting point and left-arm
7. Emphasize bending knees before hitting a ball
8. Aim at different targets

Pedagogical Content Knowledge

Never served



Basic Serve



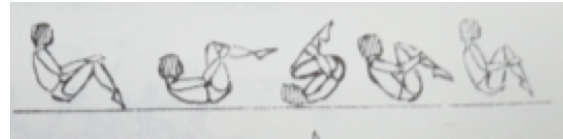
The Forward Roll

Common Content Knowledge

Specialized Content Knowledge

Pedagogical Content Knowledge

- Hands close to feet,
- Chin tucked
- Stay in a ball
- Roll like a ball



Kindergarten /first grade



Kindergarten /first grade



2-4th grade



2-4th grade



Common Content Knowledge

Specialized Content Knowledge

Problem

B.E.E.F.'
Balance, Elbow,
Eyes, and Follow
through ...

Imagine a wall don't
hit the wall.

Lie on back self toss

Elbow out to the
side in shot

“Hand in the cookie Jar” → Poor follow-through

Walk through,
add dribble

→ Wrong arm for
Non dominant hand
lay-up



How Big a Problem is Poor Content Knowledge?



Miller and Housner (1998)

Health-related fitness knowledge among in-service teachers ($n = 23$), preservice teachers ($n = 54$), and graduate students ($n = 21$) in physical education and exercise physiology.

Both in-service and pre-service teachers scored poorly on the 40-item knowledge test with mean scores below 66%.



Castelli and Williams (2007)

Studied 73 middle school physical education teachers who reported being very confident in their knowledge of health-related fitness.

62% of the teachers did not meet the standards expected of ninth grade students.

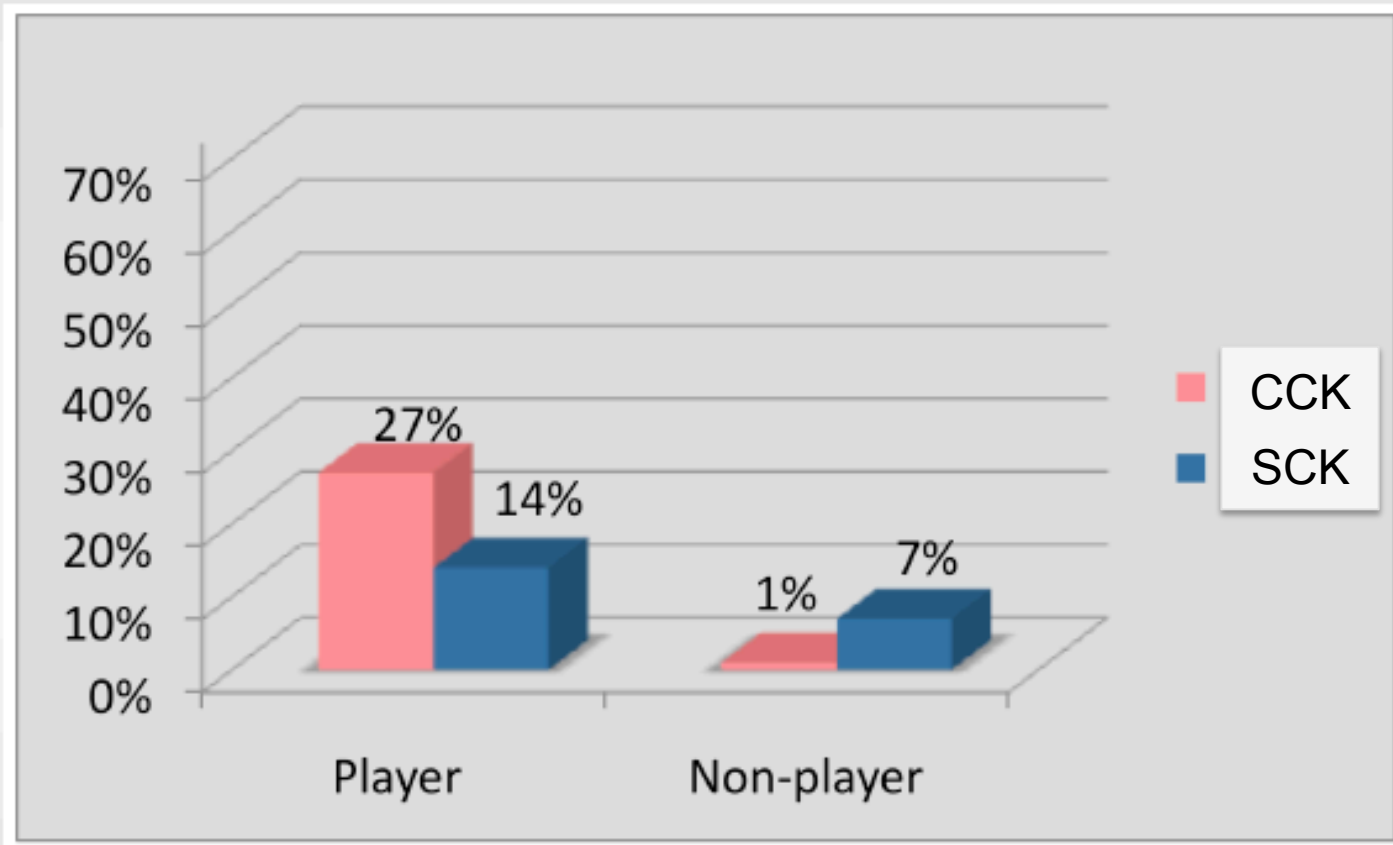


Disch, Santiago, and Morales (2012)

- 40-item health-related fitness knowledge instrument.
- Pre-service (n=89) and in-service (n=61) teachers
- Scores of 54.8% and 57.5% respectively

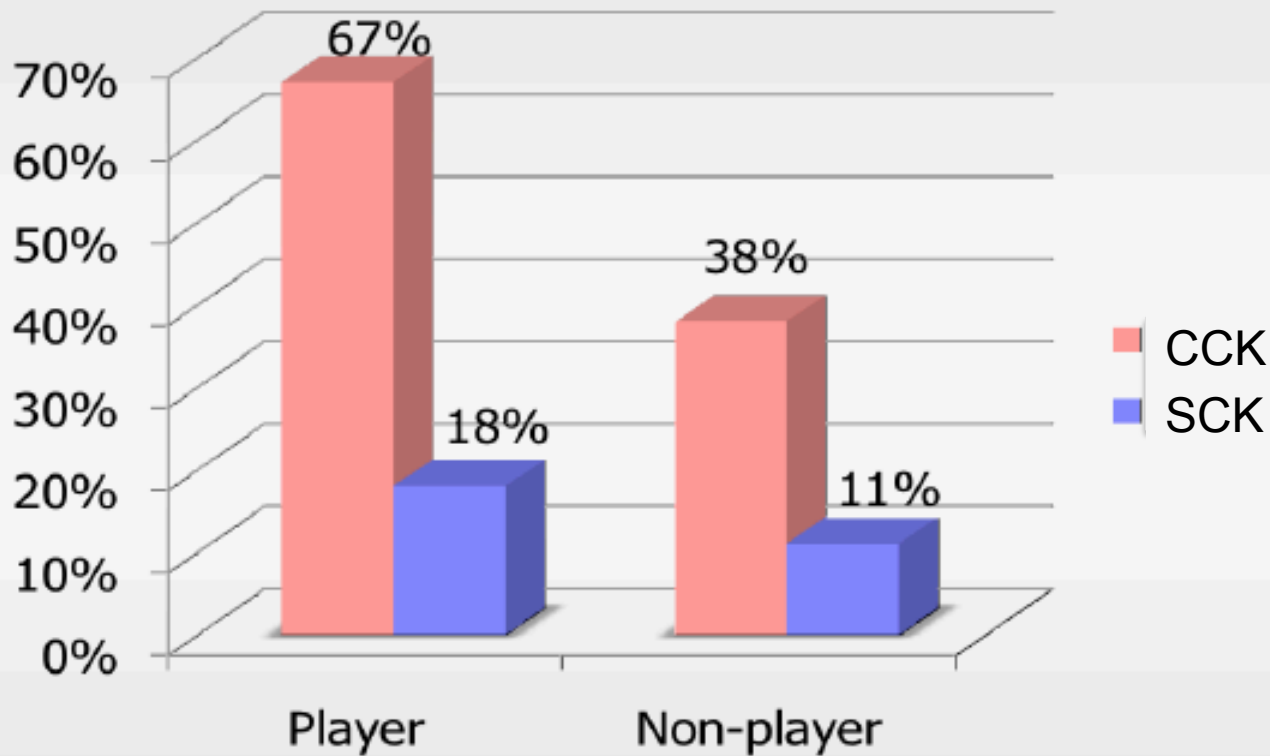


Soccer Knowledge Comparison





Basketball Knowledge Comparison



Stuhr (2009)

116 Physical Education Teachers. 24 item MC test



How Well Do Teacher Education Programs teach Content Knowledge?

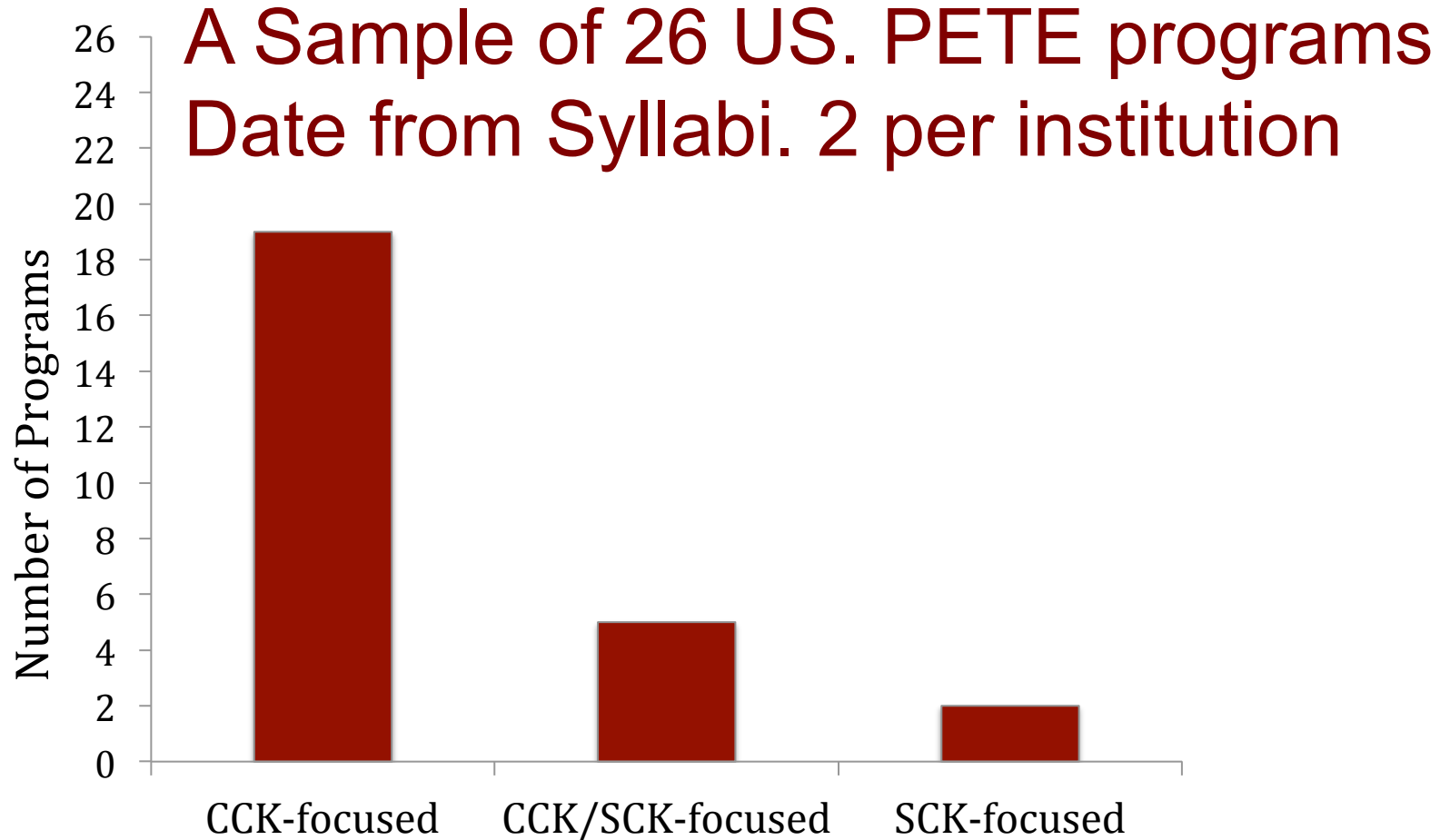


All Teacher Education Programs in the State of Ohio and South Korea

- All universities in South Korea with a PE program (N=28).
- All universities in Ohio with a PE program (N=24)
- Examined course content using syllabi
- Predominate focus in both settings:
 - Mostly CCK, little SCK
 - Korean universities (17 CCK courses) much more CCK than Ohio universities (1-7 CCK courses)



(Ward, Li, Kim & Lee, 2012)



Kim, I., Lee, Y. S. Ward, P., & Li, W. (2015). A critical examination of content knowledge courses in physical education teacher education programs. *Journal of Teaching in Physical Education*. 34, 59-75.

Our Study Locations

USA

WALES

ENGLAND

BELGIUM

TURKEY

CHINA



Ward, Ince Iserbyt, Kim, Lee, Li., & Lui (2013)

Li, Ward, Sutherland, Foster, Cho (2012)

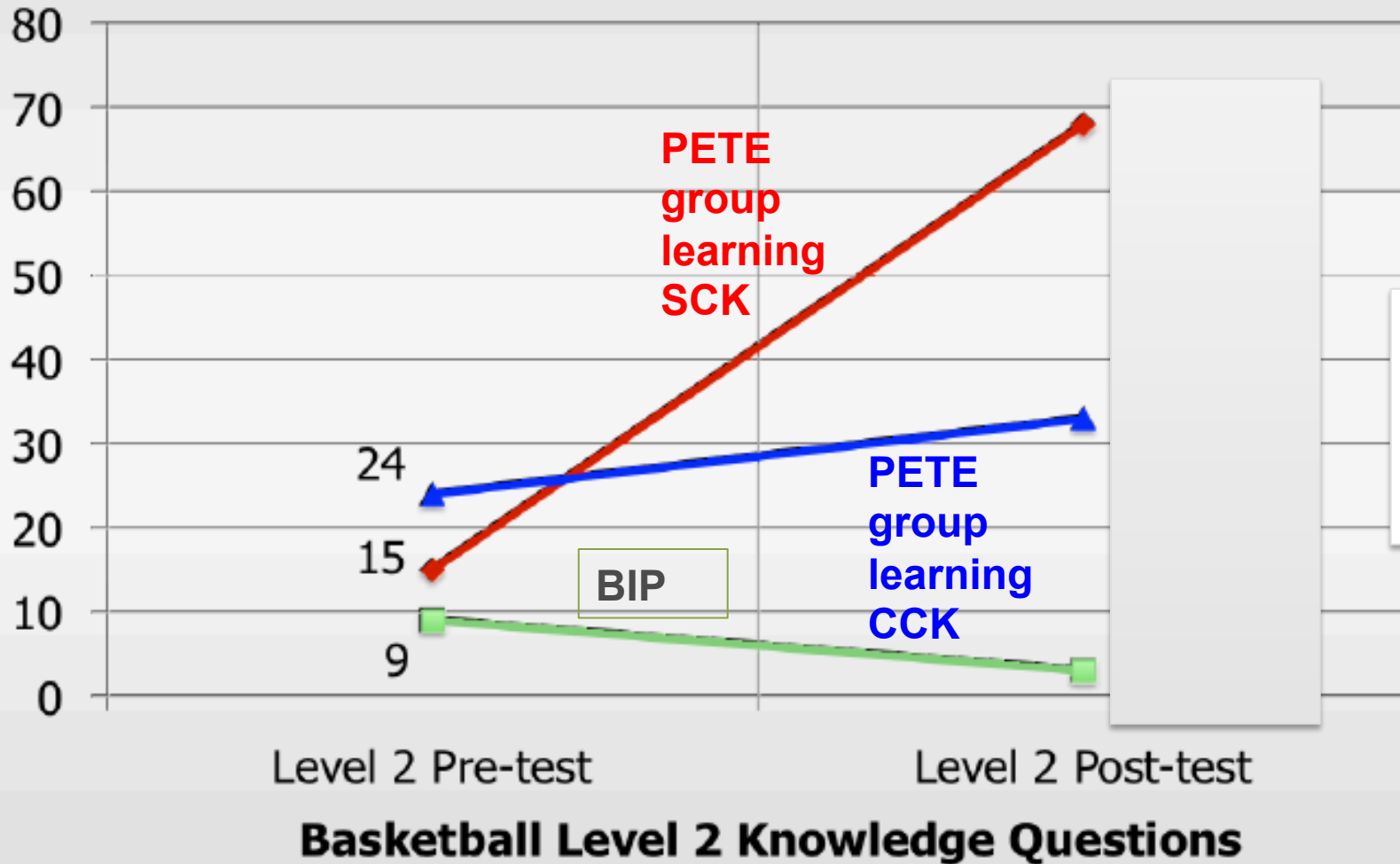


Can Content Knowledge be Improved?

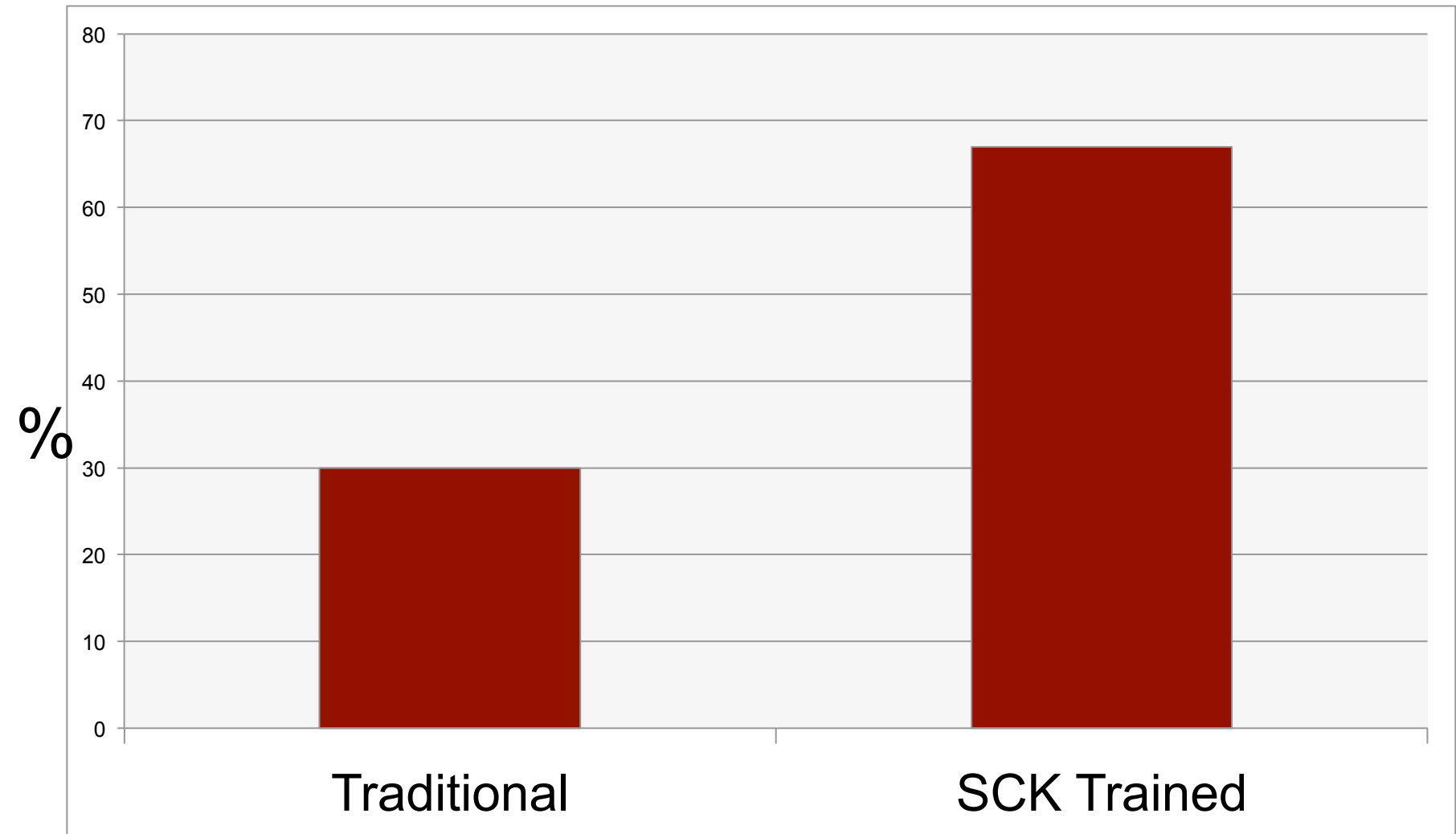


Teaching teachers SCK, to impact PCK

Basketball Group Comparison



Percent Correct Performance- Badminton



- Iserbyt, Ward, & Li, (in Press).
- Sinelnikov, Kim, Ward, Curtner-Smith, & Li, (2015)
- Ward, Kim, Ko, & Li (2015)



Tools to Teach Content Knowledge?

- The Content Map
- The Knowledge packet



WORKBOOK

TASK # 2

**Design an
instructional
sequence**



Follow up task

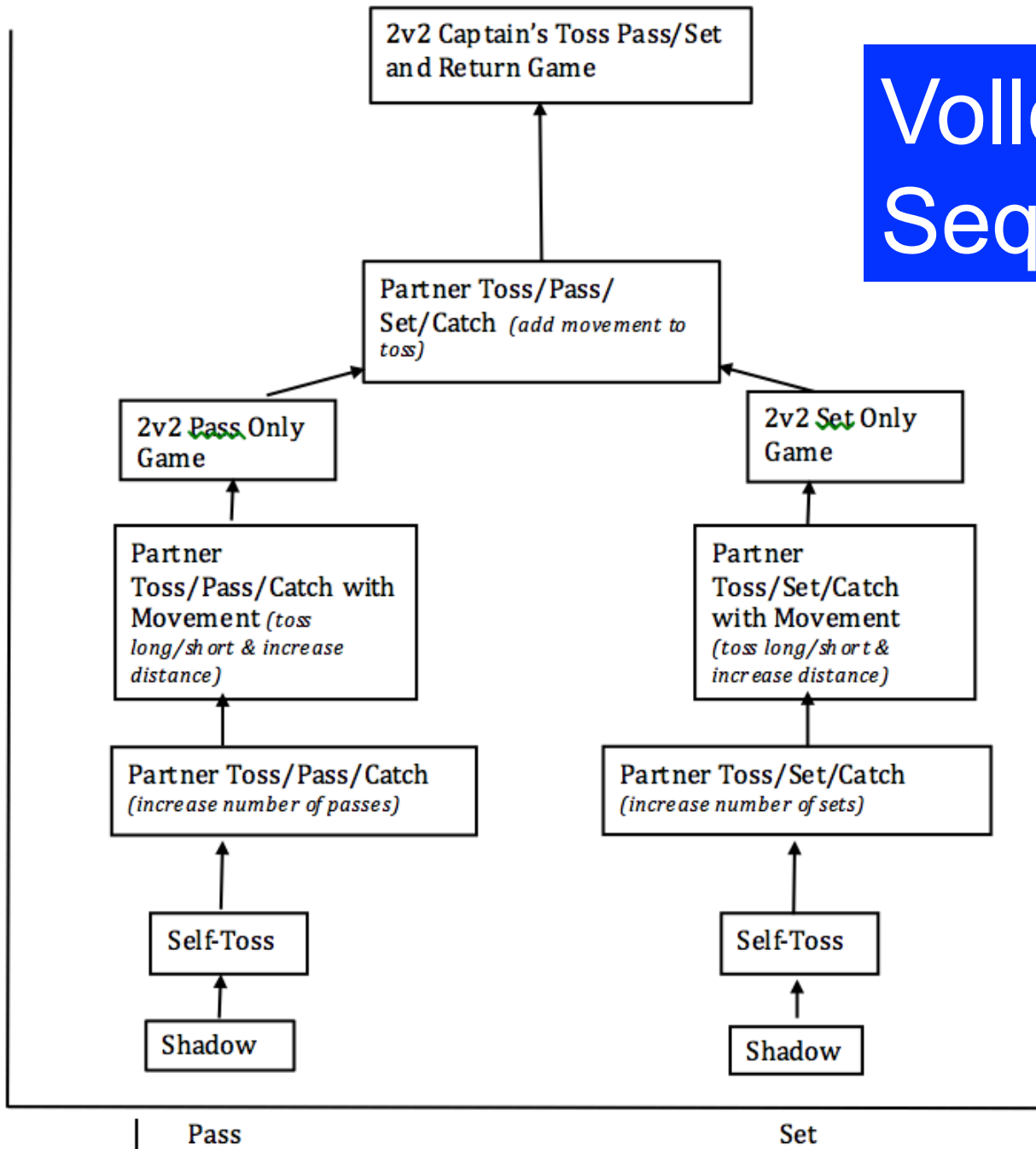
**How you would connect
that task sequence to
another task sequence?**



Tool # 1 The Content Map

A content map is a diagram that **describes the SCK to be taught** and its **relationship** to other SCK. It's a blueprint of what might be called a scope and sequence but is different in the way it shows relationships.

Volleyball Sequences





Relational Knowledge in the Content Map

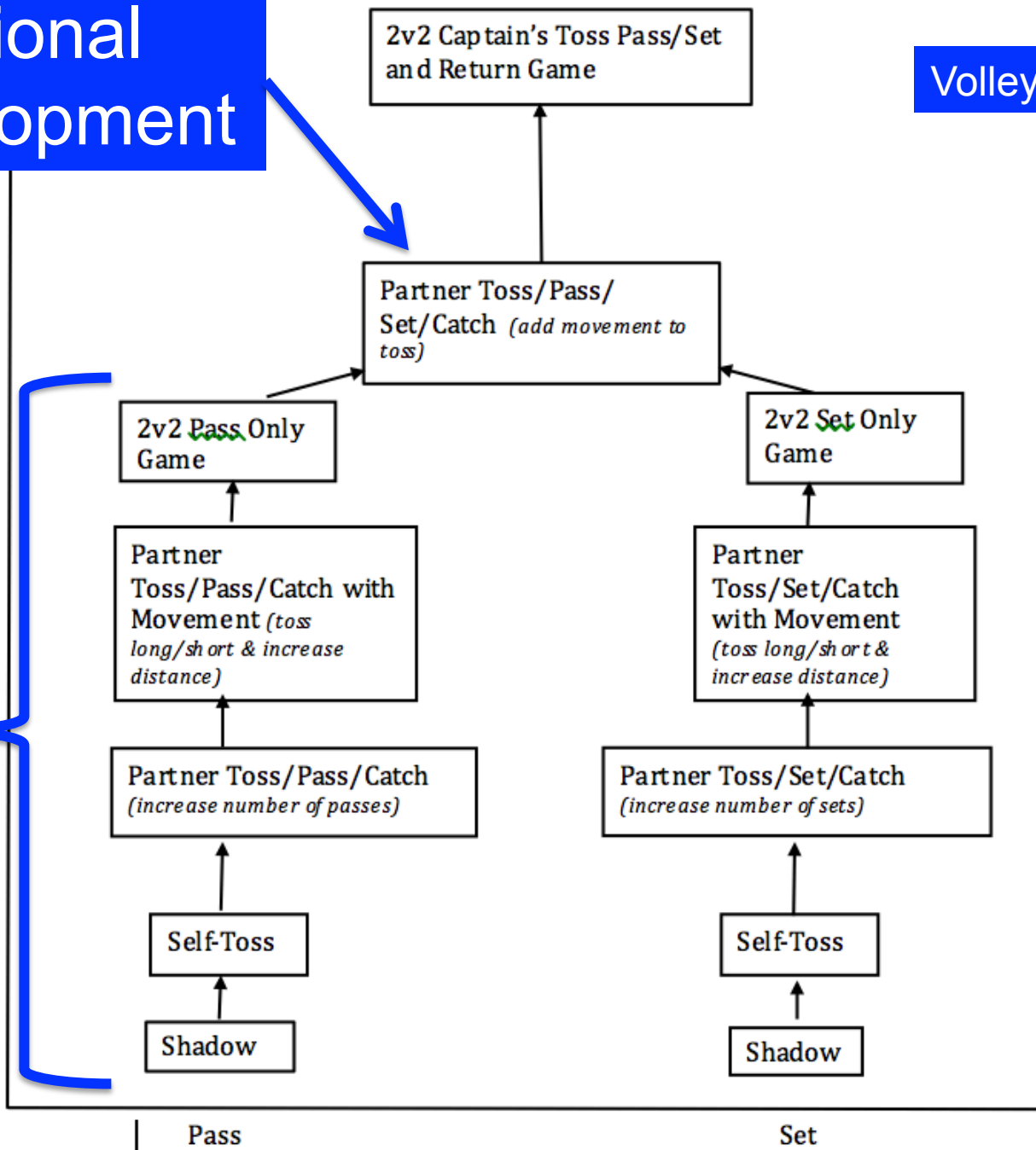
Relational knowledge involves a teacher's use of a set of fundamental principles to organize the content.

In your groups could you talk about when you would begin to combine or integrate the skills and tactics for the skills of your subject area.

Relational development

Volleyball Sequences

Sequential development



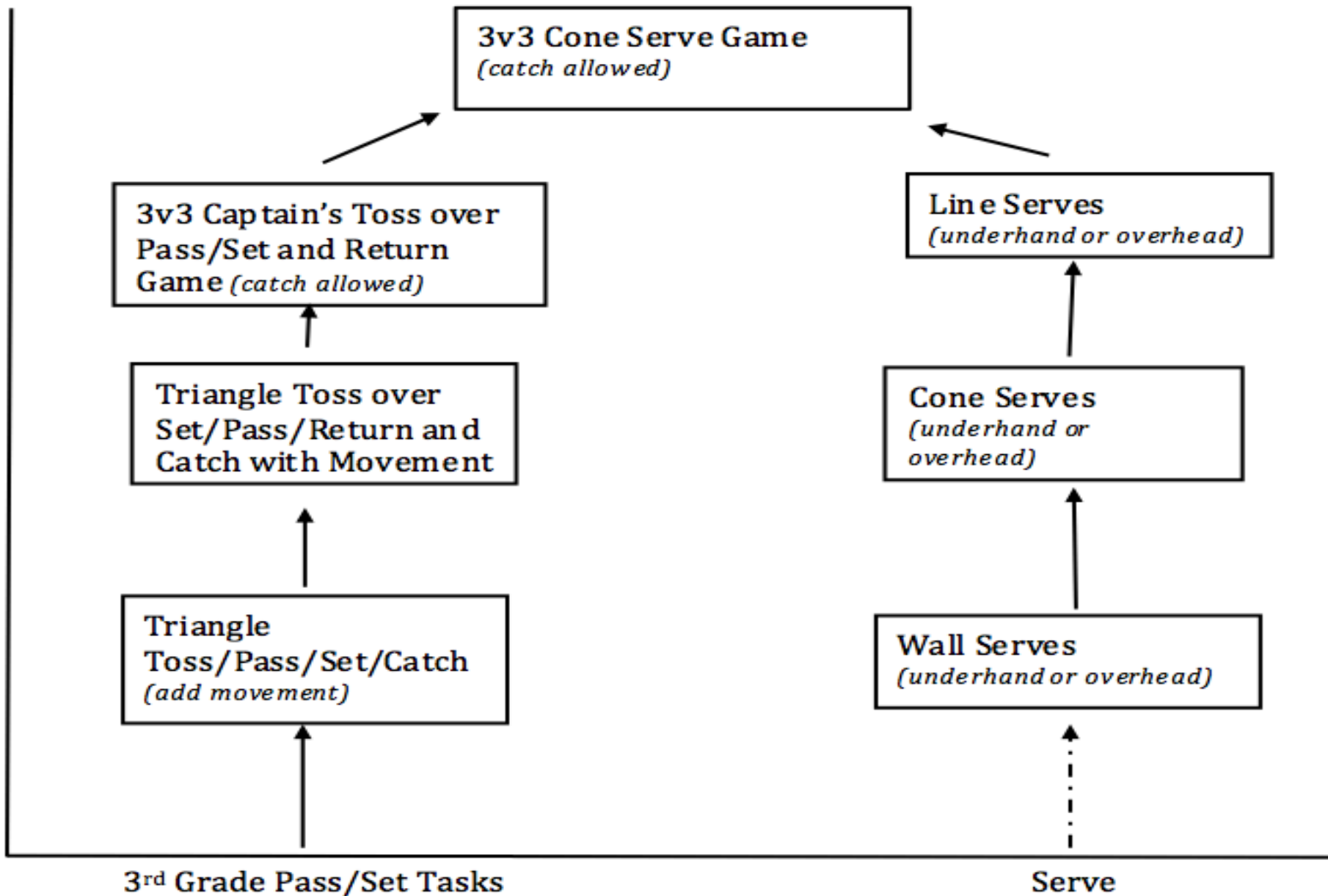


Figure 2. 4th grade volleyball content map

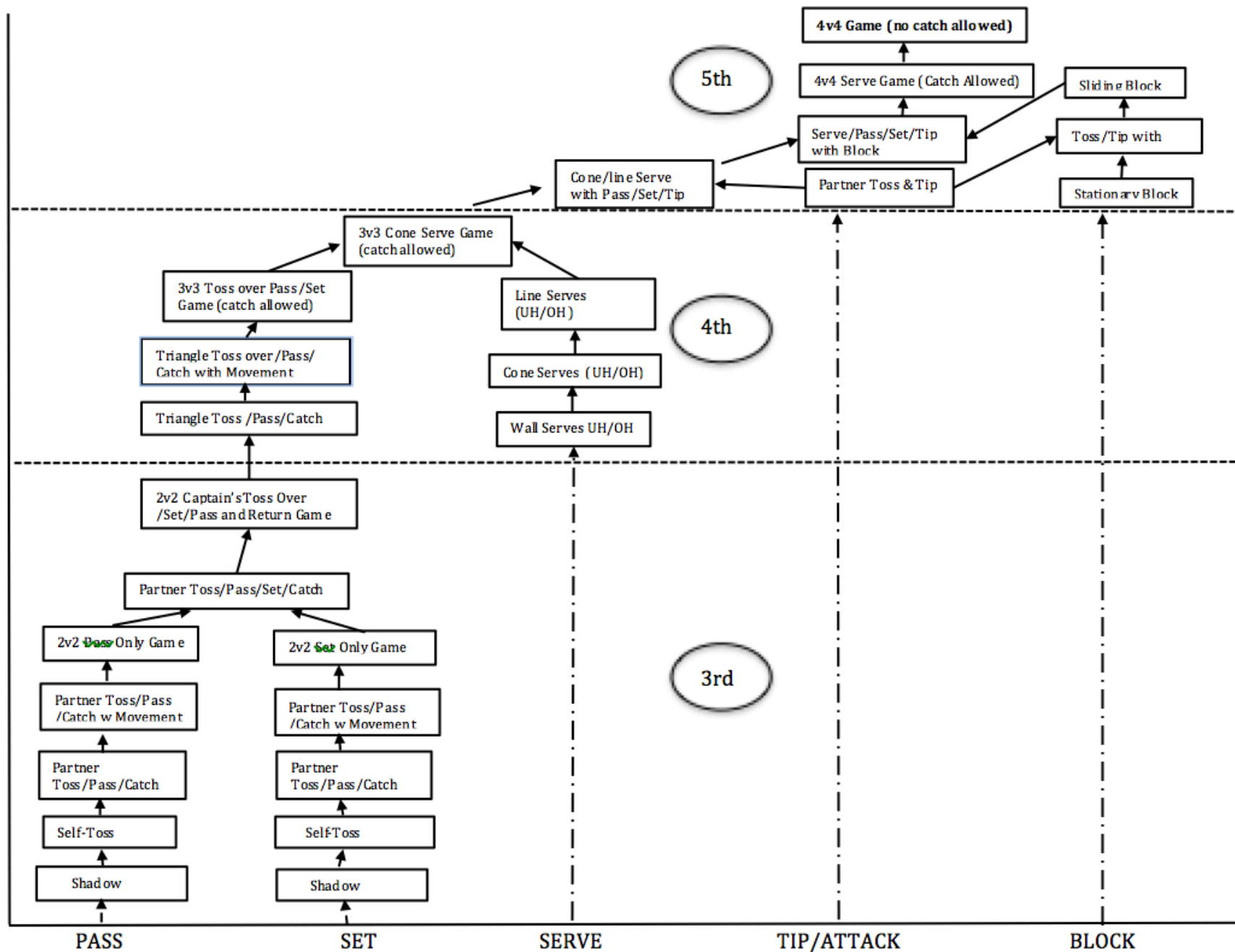


Figure 4. Elementary volleyball content map

Content Maps

**Workbook examples:
not by grade,
but by ability**

Using Content Maps to Assess Knowledge

Workbook Examples

Other Assessments

1. Written critical element tests – PT's provide the cues and an explanation of the cues.
2. PT's verbally present the CE's of some of the skills. PT's need to know all of the CE's of the skills, but are asked to explain a randomly selected set.
3. There is a performance aspect where PT's are observed playing the game and they are assessed on how well they perform the CE's of skills (see Rubric).
4. The traditional sport information is covered in the weekly on-line quizzes that cover the material in the textbook (Human Kinetics Steps to Success series).



Our goal to develop deep understanding

Some Elements of Deep Understanding

- Specialized Content Knowledge (SCK)
- Relational nature of the SCK
- Use of SCK for error correction



The Problem: How to help PT's acquire knowledge?



Tool #2 We Use Knowledge packets

Knowledge Packets

- Features of KP's
- Who creates them?
- How to use them



Thank You!

Contact information and resources are in your packet.

We would also appreciate any feedback you have either in person or via email.