Tasmania Health and Physical Education Conference
University of Tasmania, Launceston
September 9\textsuperscript{th} 2016

Critical Thinking and Problem Solving in Physical Education

\textbf{Shane Pill}
Flinders University, Adelaide, SA.
Contact: Shane.pill@flinders.edu.au
Include a critical inquiry approach
- researching, analysing, applying and appraising knowledge in health and movement fields.

Critical inquiry and critical thinking are different
ACHPE - Cross Curriculum Priorities: Critical and Creative Thinking

Learn to generate and evaluate knowledge, clarify concepts and ideas, seek possibilities, consider alternatives and solve problems. Critical and creative thinking involves students thinking broadly and deeply using skills, behaviours and dispositions such as reason, logic, resourcefulness, imagination and innovation in all learning areas at school and in their lives beyond school.
Critical thinking – definitions in the PE literature:

Learning to question and what questions to ask

Reflective thinking used to make reasoned and reasonable (defensible) decisions

Developing decision-making, problem solving, and personal and social skills
Our Challenge –
(Health and) Physical education, to share meaningfully in the education of the learner, must provide experiences that improve his (and hers) ability to move, that engage his (and hers) thought processes

Critical thinking can be learned and is not reliant on intelligence

**Expert ‘thinkers’ (and decision makers)**

- Decide more quickly
- Decide more creatively
- Spend more time analysing content and/or structures of problems
  - more flexible: willing to alter decisions based on new information
- More effectively explain, defend and transfer thinking to other situations

It is the student-centred teaching styles that are emphasised for fostering critical thinking. The learner must be taken across the ‘discovery barrier’ and into the critical thinking zone


Reproduction/Production

Teacher initiation → Student response
→ Teacher follow up
(Teacher has full control - directive)

Teacher initiation → Student response
→ Student follow up
(Teacher acts as facilitator/knowledge navigator)
Big Ideas:
1. Reflect on the use of specialised Australian Football skills to modify and improve performance
2. Develop skills for working effectively in a football team

Remember – Rules of AFL9s
Remember – Principles of play of Invasion games
Comprehend – The spirit of the rules and play
Comprehend – The positional requirements of forwards, midfielders, and backs/defenders
Application – Performance of the specialised skills of AF in structured situations, such as warm-ups and drill practices
Application – Respond to self reflection, peer and teacher feedback to improve skill performance
Application – Apply the rules of AF9s as goal, boundary and field umpire
Analysis – How have the offensive, defensive and transitional play on-the-ball and off-the-ball of Association Football impacted AF tactics and strategies?
Creativity – Develop strategies and tactics for your team to provide tactical advantages against the other teams
Creativity – Successfully demonstrate tactical and technical skill (game sense) in game situations for successful team outcomes
Evaluate – Reflect on your ability to work cooperatively and collaboratively as a team member using the reflection questions provided
Evaluate – Reflect on your use of the specialised skills and game understanding of AF using a game performance instrument during review of your matches.
### Grow Model – Goal setting and problem solving

Landsberg, M (1997). *The tao of coaching: boost your effectiveness at work by inspiring and developing those around you.* Lon: Profile Books

<table>
<thead>
<tr>
<th>Goal</th>
<th>Establish the goal of the activity (Understanding)</th>
<th>What is the aim of the game?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reality</td>
<td>Examine current reality (Comprehension)</td>
<td>What is working? How is it effective?</td>
</tr>
<tr>
<td>Obstacles</td>
<td>Explore the obstacles (Analysis)</td>
<td>What is not working? How can we be better?</td>
</tr>
<tr>
<td>Way Forward</td>
<td>Establish a way forward (Create)</td>
<td>What are the action steps to achieve our improvement goal?</td>
</tr>
</tbody>
</table>
Provide Choices

For example – extension activities as choices

Visual
Create a poster to advertise your AFL9 team that also expresses the values and culture of your AFL9 team.
Create a presentation to use at a local football club to explain to junior players the principals of play for Australian Football.

Verbal
Create a team song that expresses the values and culture of your AFL9 team, and teach it to your team.

Kinaesthetic
Design a practice session for the class that teaches a specific technical or tactical aspect of Australian Football and then teach that session to the class.

Technological
Using the Dartfish Easy Tag app develop a coding tool for analysis of player performance in AFL9 games and demonstrate its use by tagging game performance of one game.
Using coaches eye provide feedback to a peer on how to improve a specialised Australian Football skill.
Critical Thinking and Problem Solving in Physical Education

- Use teaching styles that promote inquiry
- Engage students in activities designed to foster the dispositions that support thinking processes
- Ask questions, require students to defend ideas and movement solutions, set up problems
- Involve students in debriefing the learning intentions of the session
- Employ feedback that utilises questioning


Designing questions


Time
Space
Force
Flow-Momentum
Consistency/Control

Pill, S. (2013). *Play with Purpose: Game sense to sport literacy*. Hindmarsh, SA: ACHPER Australia
Critical Thinking and Problem Solving in Physical Education

Visible Thinking Routines
A routine for exploring works of art and other interesting things
What do you see? What do you think? What do you wonder?

Sarah G_H
@GHSaysRockChalk

Game-based learning and using Visible Thinking Routines - asking meaningful questions. Active and Healthy Magazine, 22(2/3), 7-12

Mel Hamada (2015)

Nathan Horne @PENathan

Claim, Support, Question #1
- Space, Predict, Recall, Anticipate, Rapid, Plan, Sense, Strategies, Thinking, Analyses, Mean, Dodge, Fast, Speed, Flow, Change, Space, Speed, Turn, Divide, Include, Balance, Height, Pace, Change Move, Lift, Move, Technique, Agilities, Movement, Vision, Effective, Shaping, Defining, Creating Spaces, Marking, Tagging, Sharpening, Write, Move, Flip, Make, Fix, Fixing your Mistake, Communicating, Observing, Share

How can the OFFENSIVE team use Game Sense to best effect in this game?
1. Make a CLAIM about the topic
2. Identify SUPPORT for your claim
3. Ask a QUESTION related to your claim

Claim, Support, Question #2
- Space, Predict, Answer, Anticipate, Rapid, Plan, Sense, Strategies, Thinking, Analyses, Mean, Dodge, Fast, Speed, Flow, Change, Space, Speed, Turn, Divide, Include, Balance, Height, Pace, Change Move, Lift, Move, Technique, Agilities, Movement, Vision, Effective, Shaping, Defining, Creating Spaces, Marking, Tagging, Sharpening, Write, Move, Fix, Fixing your Mistake, Communicating, Observing, Share

How do you know when your DEFENSIVE game play is effective?
1. Make a CLAIM about the topic
2. Identify SUPPORT for your claim
3. Ask a QUESTION related to your claim

Claim, Support, Question #3
- Space, Predict, Answer, Anticipate, Rapid, Plan, Sense, Strategies, Thinking, Analyses, Mean, Dodge, Fast, Speed, Flow, Change, Space, Speed, Turn, Divide, Include, Balance, Height, Pace, Change Move, Lift, Move, Technique, Agilities, Movement, Vision, Effective, Shaping, Defining, Creating Spaces, Marking, Tagging, Sharpening, Write, Move, Fix, Fixing your Mistake, Communicating, Observing, Share

What LEARNING will you TRANSFER to ANOTHER INVASION GAME? (Challenge a more CHALLENGING, more COMPLEX topic)
1. Make a CLAIM about the topic
2. Identify SUPPORT for your claim
3. Ask a QUESTION related to your claim
Critical Inquiry

Essential questions

‘Throughline approach’ - structuring the inquiry around particular issues of concern in the communities in which students live.

Critical Thinking and Problem Solving in Physical Education

Sketching a Unit of Work

➢ What is the student outcome/achievement standard?
➢ What is the big idea?
➢ What are the essential concepts?
➢ What are the inquiry questions?
➢ What is the assessment evidence?
➢ What are the learning events (content and learning context)?

Enriched Learning Environments


- Involves choice
- Contrasts what occurs in daily life
- Challenging and meaningful
- Supportive social interaction
- Coherent complexity
- Manageable levels of stress/zone of development
- Sufficient time for learning
- Good nutrition
Questions?