CAP II – ARTICLE SUBMISSION – DECEMBER 2012 CLASS

Volleyball Game-Based Teaching-Why?

By: Ovid Prosilis, CAP II Student

Endeavour Academy Volleyball Club, Head Coach

The Macquarie Dictionary defines the word "**coach**" as:

> *"…a person who trains athletes for games…"*[1]

Volleyball is first and foremost a 'game.' As coaches we are always faced with forming judgments about whether we structure our training sessions as 'drills' or as 'games.' Recently there has been a significant focus on coaches considering the manner in which they deliver the information to learners as 'game' based or 'game' like. This article will consider some of the propositions advanced on this topic. We will propose a rationale for advancing the framework and volleyball literacy of coaches in support of 'game-based' methodologies in training athletes in the 'game' of volleyball.

Drills - A Species of Reductionism?

Drills seek to break down the game of volleyball into sub parts. The rationale for this approach we argue is based on the theory of 'Reductionism.' Reductionism can mean either (a) an approach to understanding the nature of complex things by reducing them to the interactions of their parts, or to simpler or more fundamental things or (b) a philosophical position that a complex system is nothing but the sum of its parts, and that an account of it can be reduced to accounts of individual constituents.[2] Breaking down the game of volleyball into its sub-parts of serving, serve receive, passing, setting, attack, defense and blocking amongst others is based on this reductionist rationale. It is suggested that one of the key considerations for the coach is to be aware that in 'reducing' or 'breaking down' into 'puzzle pieces' the components of the game into sub parts, players are at risk of losing an overall perspective of how these skills blend into the game and missing the overarching connections that link the sub-parts to the whole.

Put differently, by reducing the motor skill of say, bump passing, to a drill involving a linear direction between two players in a non-serve receive 'game-like' context, these players fail to gain the overall insight of how this type of passing effectively enables them to transfer these motions into the real 'game-like' situation. It quickly becomes apparent to an observer (and to the player) that the velocity of the ball and the players' athletic speed and agility required to successfully execute a reliable serve receive task has not transferred effectively from such a drill. Critically, the drill exercise has not properly simulated the velocity, angles, power absorption, positional play, timing, reading, transitional options, competitor analysis and other key variables that are required in the game context.

Game based training - Why?

In philosophy, systems theory, science and art, 'emergence' is the way complex systems and patterns arise out of a multiplicity of relatively simple interactions. It is proposed that games offer the opportunity for players to participate in such a 'complex system' and do so as part of a very

[1] Macquarie Dictionary page 147, numbered item 5.

[2] See e.g. Reductionism in the Interdisciplinary Encyclopaedia of Religion and Science.

effective learning process. Skills developed from games include comprehension, decision making, multitasking, collaboration, concentration, leadership and communication.[3]

Dopamine Motivation

The human brain has hardwired physiological responses that had survival value at some point in evolutionary progression. One of these physiological responses is the production of the chemical 'Dopamine' in the brain. The dopamine-reward system is fuelled by the brain's recognition of making a successful prediction, choice or behavioural response. Dopamine is a neurotransmitter that, when released in higher than usual amounts, goes beyond the synapse and flows to other regions of the brain producing a powerful pleasure response. After making a prediction, choice or action, and receiving feedback that it was correct, the reward from the release of dopamine prompts the brain to seek future opportunities to repeat the action. The survival benefit of the dopamine-reward system is building skills and adaptive responses. [4]

The dopamine reward response that promotes pleasure and motivation also requires that players are aware that they solved a problem, figured out a puzzle, correctly answered a challenging question, or achieved the sequence of movements needed to play the game. This is why learners need to use what they learn in authentic ways that allow them to recognize their progress. To progress in a game is to learn; when we are actively engaged with a game, our minds are experiencing the pleasure of grappling with (and coming to understand) a new system.[5]

Movement based learning

While it is not known how movement affects academic achievement, there are many theories available. One of these is Gardner's (1993) theory of multiple intelligences that suggests there are eight core intelligences: linguistic, logical, mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, intrapersonal and naturalistic intelligence. She argues that the students with bodily-kinaesthetic intelligence remember things through their body, rather than through words or images. She states that these people are adept at being athletes, craftsmen and surgeons where skills and dexterity for fine motor movements are required. She suggests that 'kinaesthetic' learners require body movement and action for optimal results; they need to move around and use their muscles'.[6] Within an effective game-based learning environment, we work toward a goal, choosing actions and experiencing the consequences of those actions along the way. We make mistakes in a risk-free setting, and through experimentation, we actively learn and practice the right way to do things. This keeps us highly engaged in practicing behaviours and thought processes that we can easily transfer from the simulated environment to the real game.[7]

There are many examples of learners in other environments, picking up skills without any formal coaching or teacher training them. In English language learning for example, this is called '*immersion*.' These learners seem to pick up a language just by living and communicating in a place where the language is used. Another example is the 'Hole in the Wall' project (Mitra and Rana, 2001). Here, computers were set up across India in locations that had never seen any type of technology before. No training or tuition was provided, yet these children were surfing the internet within hours, downloading movies, using drawing software, playing video games, and even taught themselves how to cut, paste and save their files. They collaborated with each other and worked in

[3] http://www.theage.com.au/news/digital-life/games/articles/games-valuable-learning-tool/2009/04/08/1238869978049.html
[4] http://www.edutopia.org/blog/video-games-learning-student-engagement-judy-willis
[5] http://www.newmedia.org/game-based-learning--what-it-is-why-it-works-and-where-its-going.html
[6] http://archive.teachfind.com/becta/emergingtechnologies.becta.org.uk/upload-dir/downloads/page_documents/research/emerging_technologies/game_based_learning.pdf
[7] http://www.newmedia.org/game-based-learning--what-it-is-why-it-works-and-where-its-going.html

groups, they formed social groupings and became highly motivated to continue to use this new available technology, all without supervision. Another example is the poverty alleviation project in Peru, set up by Dr. Logan Muller (Muller, 2004). The task of this project was to install computers in remote locations high in the Andes to provide access to market information. These locations had no electricity and had never seen technology of any kind. Yet the local children were quick to utilise the computers and often assisted the older generation in how to use them. They collaborated, preferred multimedia applications, appeared to be goal orientated, and as with the 'Hole in the Wall' project, they displayed all the traits of children who have grown up in a digital world and spent countless hours playing computer games.[8]

Games as Learning and Teaching Tools

Games have long been advocated for assisting learning. Here are some research conclusions as to why:

- Games add interest to what students might not find very interesting. Sustaining interest can mean sustaining effort (Thiagarajan, 1999; Wright, Betteridge, & Buckby, 2005). Learning to play volleyball will require long-term effort.
- Games provide a context for meaningful communication. Players seek to understand how to play the game and as they communicate about the game: before, during and after the game (Wright, Betteridge, & Buckby, 2005).
- This meaningful communication provides the basis for comprehensible input (Krashen, 1985), i.e., what students understand as they listen and read, interaction to enhance comprehensibility, e.g., asking for repetition or giving examples (Long, 1991), and comprehensible output, speaking and writing so that others can understand (Swain, 1993).
- The emotions aroused when playing games add variety to the sometimes dry, serious process of drills (Bransford, Brown, & Cocking, 2000; Ersoz, 2000; Lee, 1995).
- The variety and intensity that games offer may lower anxiety (Richard-Amato, 1988) and encourage shyer learners to take part (Uberman, 1998), especially when games are played in small groups.
- Games can involve all the basic volleyball skills and a number of skills are often involved in the same game (Lee, 1995).
- Games are student-centred in that students are active in playing the games, and games are organized such that students have the leading roles, with teachers as facilitators.
- Many games can be played in small groups, thereby providing a venue for students to develop their skills in working with others, such as the skill of disagreeing politely and the skill of asking for help (Jacobs & Kline Liu, 1996).

Coaches as Teachers

The act of coaching involves the process of teaching. The act of teaching is essentially a constant process of options. At every point in each lesson, a teacher has a number of options available; they can decide to do something, or to do something else or not to do anything at all. In order to be a better teacher it seems important to be aware of as many options as possible. This will assist all of us to individually assess what works for us and what doesn't. All of us probably find that our basic image of what a teacher's job is and how a teacher should behave is drawn largely from what we have seen our own teacher's doing. These internal images are quite deeply held and quite hard to challenge. All of us as coaches especially if just commencing our careers need to check if we have inbuilt assumptions about teaching from this exposure to hours and hours of observing our own teachers at work. We have experienced a lot of teaching and this can remain a subtle and deep-

[8] http://archive.teachfind.com/becta/emergingtechnologies.becta.org.uk/upload-dir/downloads/page_documents/research/emerging_technologies/game_based_learning.pdf

seated influence. Whether we acknowledge it or not, much of our view of what a teacher is and what a teacher should do can often be traced back to these many years of lesson observation from the pupil's seat.[9] It is submitted that it is important that we grow and evolve as coaches and despite our own past experiences as pupils, our role and responsibility now as coaches and teachers is to assist our players with the newfound approaches to learning and effective skill acquisition. In pursuit of that goal, game-based learning becomes the most appropriate method for us to use as coaches.

Conclusion

We realise as Coaches we should now aim to deliver the information to learners as 'game' based or in 'game' like scenarios. The case for a game like method of teaching volleyball skills is supported by the proposition that the effective way for players to learn complex systems and techniques involving movement patterns is through game-like teaching strategies. This approach engages the method by which the brain associates biochemical reactions and functions of the brain such as the release of Dopamine with pleasure and leads to increased positive outcomes in the areas of player comprehension, decision making, multitasking, collaboration, concentration, leadership and communication.

[9] Learning Teaching – Third Edition - Jim Scrivener – Macmillan Books 1994

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