Imagery use and web based interventions for advanced learning in soccer

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Abstract

The purpose of this paper is to explore the relationship between student's imagery use and their ability to create authentic soccer simulations using web based hypermedia resource materials. The results of the study indicate no relationship between the level of cognitive-general imagery and the group's abilities to visualize and create soccer simulations. The expert assessment for each of the imagery groups did not follow the expected pattern. Qualitative feedback revealed that the mixed abilities (soccer, leadership and creative) of the groups confounded the simulation data. The experts concluded that this project needs to be repeated with groups of soccer players who have similar skills and higher level abilities.

Introduction

Paivio (1985) contends that imagery serves two functions: a cognitive function and a motivational function. While research has attempted to examine both of these functions of imagery, most has been directed towards examining the cognitive function (Hall, 2001). This component of imagery is concerned with the use of imagery to rehearse either general strategies of play or specific skills. There have been a number of imagery studies using soccer players and on the whole it would appear that imagery use positively influenced soccer performance (Blair et al 1993, Munroe et al, 1998, Salmon et al, 1994). In an unpublished study of a controlled intervention to improve cognitive-general imagery (C-G imagery) in young soccer players Munroe, Hall, Fishburne & Shannon (2003) used C-G imagery interventions of attacking direct free kicks, defending free kicks and defending at a corner. Results indicated an increase in C-G imagery use from baseline to post intervention and a slight improvement in at least one strategy.

Statement of the Problem

The purpose of this project is to determine if the SIQ C-G imagery scale could be used to predict an ability to create authentic solutions to problems in team play in soccer.

Research setting

Sixteen Junior College students (n=16) aged 17 and 18 years attended a university orientation session in Physical Education and Sport Science at the undergraduate level. They were invited to participate in a pilot project on C-G imagery use and computer applications in physical education. Their completion of the SIQ (Hall et al, 1998) confirmed there participation in the study and all subjects were guaranteed confidentiality and anonymity.

Research Procedures

Cognitive-imagery group selection

At an introductory meeting at the beginning of the three-day orientation the students were introduced to the project and asked to complete the Sport Imagery Questionnaire (SIQ). Exploratory and confirmatory factor analysis of the SIQ supported its internal structure with inter-scale correlations being low to moderate (-.45 to -.32) suggesting related yet independent imagery types. Internal consistency was deemed adequate (alpha coefficients were all >.70). On the whole the SIQ would appear to be an instrument that could distinguish between the five types of imagery use (Martin et al 1999).

The subjects then participated in other orientation activities arranged for them as part of their program. The SIQ data was analysed with particular attention to the cognitive-general sub scale. Mean scores on this sub-scale were recorded and the students were ranked from high to low. The top four scores were placed in one group, the next four in the second group and so on to form four groups from high to low based on their cognitive – general imagery profile.

Hypermedia based imagery intervention

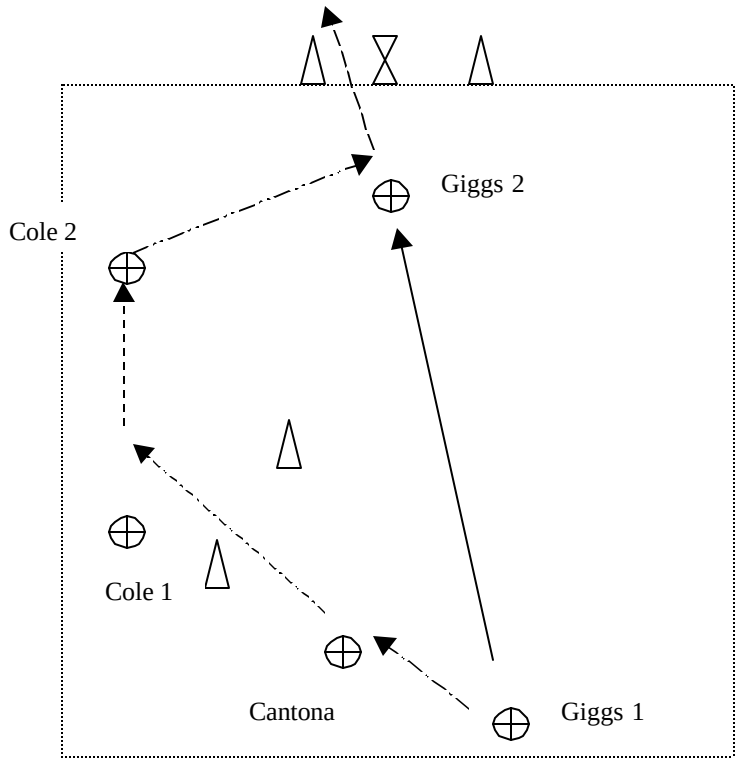
On the day of the computer applications to physical education session the 16 students assembled in the computer lab and were informed of their groupings without any details of their imagery scores. In short, the groups did not know whether they were seen as high, medium or low cognitive-general imagers. A brief introduction to the use of computers for homework in physical education was provided and was followed by an explanation of the hypermedia-soccer example (Haslam, 1999). A web generated lesson for senior students was located on the University server. The students accessed the URL to view the lesson. The text described a soccer problem which they had to solve in their groups. The problem asked the question, ‘how do top class teams create space in front of the

opposition's goal so that a scoring opportunity might be taken?' Linked to the page they were reading were four hyper-linked video examples of the passing patterns and defensive responses to 4 different space creating situations that resulted in goals being scored. The procedure can be summarised in this fashion:

1. In their group of four they were to select a solution that they felt they could simulate in class.
2. They were of briefed that the examples involved very high levels of skill and so the group had to be creative with their attempt to simulate the pattern.
3. They were to use cones, scale everything down to fit into a 30 x 40 yard area and be prepared to deploy people in the group as they needed to effect the simulation.
4. An example of tactical simulation was given to them (see Figure 1)

Figure 1

Creative simulation of a goal from a fast break



Directions

- Giggs flicks the ball to Cantona
- Cantona splits two defenders (cones) and sets Cole away
- Cole dribbles down the flank at speed
- Giggs runs straight down the middle of the playing area
- Cole crosses to Giggs
- Giggs scores to the right of the GK

Having selected and designed the simulation the students move to the soccer field set up the cones and implement their simulation. They had half an hour to practice, make changes, rehearse and perfect their simulation. At the end of the half-hour period they were to demonstrate their simulation to the rest of the group and to three independent expert soccer teacher/coaches. The experts were to determine which group was able to come up with the most creative simulation activity.

Expert Assessment.

There were three experts who were all soccer teachers, coaches and ex players in the local school and community system. They were fully briefed on the nature of the hypermedia intervention and had reviewed the video solutions to the problem on the web. They were then given the following criteria to be used in their assessment. The key features were:

- Was the simulation recognizable as one of the hypermedia examples?
- Did the simulation flow as an attacking move would?
- The degree of creativity in the simulation (this came about when the skills were beyond the level of the group).

- Were all the students in the group fully engaged throughout the movement?
- Was there good timing and cooperation among all the members?

Each assessor made independent observations and each group were given three opportunities to show their simulation. The assessors took the best group example and assessed each performance on a 5 point likert scale where: 5 was excellent, 4 was very good 3 was satisfactory, 2 was unsatisfactory and 1 was weak.

Findings

The results of the study suggest no relationship between level of cognitive-general imagery use as measured by the SIQ and the group's abilities to visualise and create soccer simulations. The expert assessment for each of the imagery groups did not follow the expected pattern. We hypothesized that the high cognitive-general imagery group would create better soccer simulations than the lower groups. As can be seen in Table 1 the quantitative data (these are means scores) averaged out across the three experts suggested that in fact the 3-CG Imagery group were able to create more authentic simulations based on the criteria used in the assessment.

Table 1 CG-Imagery mean scores for each assessment criteria

	Recognizable	Flow	Creativity	Engaged	Cooperation
1-CGImagers, (13/25)	4	3	1	2	3
2-CGImagers, (17/25)	4	2	2	3	4
3-CGImagers, (18/25)	4	5	3	2	4
4-CGImagers (10/25)	3	1	2	3	1

Feedback from the three experts was helpful in revealing the possible reasons for this anomaly. In relations to each of the criteria used for the assessment the experts revealed the following:

1. Was the simulation recognizable as one of the hypermedia examples?

   On the whole the experts felt they could discern the particular passing pattern the students were attempting to simulate. Obviously they could recognize the movement patterns from the hypermedia video they too reviewed. At times it was awkward though and certainly the speed at which the action took place was much slower than the real thing. Part of the problem was the ***varied soccer abilities*** *of the group. Some subjects had played more than others and in fact some subjects had hardly played at all.*

2. Did the simulation flow as an attacking move would?

   3 CG-Imagers had the most fluid simulation although they picked an ***uncomplicated simulation*** *that required fewer passes than the other groups. It was clear on the one hand that they recognized their limitations as a group and used the less skilled players as* ***defensive obstacles*** *or goalkeeper. Due to the difficulty of the technical features of the simulation the other groups' simulations would break down.*

3. The degree of creativity in the simulation (this came about when the skills were beyond the level of the group).

   All the groups need work in the area of ***creative approaches*** *to simulation design. They could not yet see where they needed help and tried to pass, cross or shoot as the pros did. As a result there was a technical breakdown which could have been avoided had the students considered creative alternatives. One example was the headed goal. The groups that*

tried this simulation could not get a good enough cross in from the flank and/or could not control the head. If the group had used a server with a volleyball just off the field then the header would have been guaranteed every time and the problem solved.

4. Were all the students in the group fully engaged throughout the movement?

The soccer players in the group took a much more active role in the simulations. The non-soccer players looked like spare parts at times. Again with ***practice and imagination*** *the less active people could have been more gainfully employed in the simulation.*

5. Was there good timing and cooperation among all the members?

There was a genuine effort to refine the timing of runs, passes and shots but on the whole it was evident that the skill levels were limiting this factor. When this is limited and the creative solutions were problematic then the timing and cooperation between the subjects looked problematic. The more experienced players generally took a leadership role although one sensed that this was new to the entire group. That is it seemed as though they had ***not*** *been* ***encouraged to be creative in physical activity settings*** *before so this was new to them all.*

Summary

This was an exploratory project involving sixteen subjects between the ages of 17 and 18 years. Experts were used to assess the creative simulations generated by students who were pre-screened for cognitive general imagery abilities and used a web based hypermedia soccer lesson. A consistent thread throughout the discussion hinged on the mixed abilities of the groups and the relationship between their ability in soccer and leadership in the simulated practices. The experts concluded that this project needs to be repeated with groups of soccer players who

have similar skills and higher level abilities. Only in this way might their imagery use be a factor in the study. The second feature was the element of creativity in the physical activity setting generally and in the soccer setting specifically. The group of experts who were all practicing teachers argued that being creative in lessons in Singapore was not commonly practiced. As a result student were lacking in ideas as well as confidence in experimenting with alternative solutions to this type of lesson. There recommendation is that students are given lessons that encourage them to take ownership of the class and to be creative with standard drills and activities before tackling advanced hypermedia lessons. The final point the experts made was that designing instructional materials around problems and conceptual aspects rather than specific skills had the potential to make for an exciting curriculum.

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