A Metacognitive-Attributional Approach to Tutoring Student-Athletes: Putting Theory Into Practice At UNLV

G. Franklin Elrod,
Adjunct Academic Tutor
Men's Basketball Program
University of Nevada, Las Vegas

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Abstract

The following article offers a psycho-educational approach to tutoring high risk collegiate student-athletes. A four component approach is detailed. The four components are: 1) a metacognitive reading process, 2) a relationship of this process to athletics, 3) an attributional component to assist in motivation, and 4) a cognitive problem solving component that can be used on a personal computer. When appropriate, the various components are supported by relevant research. A discussion section summarizes the application of each component and suggests areas where further research is needed.

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Problems associated with intercollegiate athletics have been numerous and well documented (Axthelm, 1980; Sanoff, 1980; Underwood, 1980). In

particular, recent research has demonstrated that a distinct proportion of student-athletes competing in major, revenue generating, intercollegiate athletics are ill-prepared to face the rigors of higher education (Mayo, 1982; Purdy, Eitzen, and Hufnagel, 1982). Male student-athletes, particularly in revenue generating sports (e.g. football and basketball) have shown to have significantly lower high school grade point averages (GPA's), significantly lower college GPA's, significantly lower college board examination scores, and significantly lower college graduation rates than the general student population (Purdy, Eitzen, and Hufnagel, 1982). These tendencies may reflect underlying psycho-educational deficits which, in turn, could drastically hinder academic progress. If the psycho-educational deficit theory is accepted, then "high risk" student-athletes may need more than academic counseling to benefit from their college experience.

At the University of Nevada, Las Vegas (UNLV), during the Summer Semester of 1985, an ambitious project was conducted based on a psycho-educational approach. In addition to the academic counseling and guidance afforded student-athletes in the men's basketball program, daily tutoring was provided that reflected major theoretical foundations of education. The tutoring was comprised of a four part approach. First, metacognitive techniques were taught to the student-athletes as they read their course textbooks. Secondly, these techniques were related to athletic concepts. Thirdly, an attributional component was used to motivate the student-athletes to use the techniques in their coursework. Finally, a cognitive, problem solving approach was taught on Apple II computers to enhance the student-athletes' visualization and solution to graphical problems. This article contains a description of each of the four components, followed by a discussion of their application.

The Metacognitive Approach

The metacognitive component advanced in this article focuses on reading comprehension. Reading comprehension was selected because it is a major variable through which success in college curricula can be affected (other variables might include: listening comprehension, note taking, time management, and assessment of task difficulty).

The metacognitive reading process has been termed "reciprocal teaching" (Brown and Palincsar, 1982) and has been shown to be effective in enhancing the reading comprehension of adolescents with reading problems (Elrod, 1984).

Metacognition has been defined as "one's knowledge concerning one's own cognitive processes and products" (Flavell, 1976). As an example,

Flavell offers the following scenario: "...I am engaging in metacognition...if I notice that I am having more trouble learning A than B; if it strikes me that I should doublecheck C before accepting it as fact;...if I sense that I had better make a note of D because I may forget it..."

Therefore, the reading process that follows has a two-fold purpose. First, it provides the student-athlete with a systematic approach to reading content area textbooks. Secondly, and no less importantly, the process gives the student-athlete a means with which to engage in a planning, checking, and monitoring strategy to foster better comprehension. The following steps are an adaptation of the reciprocal, teaching strategy proposed by Brown and Palincsar (1982). Following the nine step process is a section that relates the process, specifically, to student-athletes.

Pre-Reading Activities

STEP 1: *Establishing a Purpose for Reading.*

A key element to being successful in content area classes is the ability to extract important, thematic information from course textbooks. Yet, all students do not utilize this ability. Canney and Winograd (1979) demonstrated that poorer comprehenders viewed reading as solely a decoding, word identification task; while more successful students viewed reading as a process to glean relevant information from a text. It is critical, therefore, that students be directed toward thinking of reading in terms of an information processing medium.

The student-athlete should address the question: "Why do we read?" More relevant questions that may assist in eliciting a response from the student-athletes are: "Why did the author(s) write this text?" or "If you were to write a letter to a friend, why would you write it?" The theme of the responses to these questions focuses on "information." That is, no matter what we read, a letter, a newspaper, or a textbook, there is information contained therein that must be extracted if we are to understand what is written. A first step in tutoring the high-risk student-athlete therefore, is to establish a foundation for the purpose of reading: processing important thematic information.

STEP 2: *Skimming for Contextual Cues.*

Skimming for relevant textual cues has been shown to be a technique that is spontaneously employed by more successful, mature readers (Kobasigawa, Ransom, and Holland, 1980). If we accept the notion that reading is an information processing activity, then it seems logical that to get a "preview" of the content that is contained within a reading assignment could enhance our opportunity to detect important, thematic information.

The student-athlete, therefore, should be instructed to skim the reading assignment for relevant cues, prior to actually reading the assignment. The following list of cues may not be applicable for all texts, depending on the text format:

a) chapter title.
b) major heading.
c) subheadings.
d) minor headings.
e) topic sentences.
f) words printed in italics or bold face type.
g) graphics, such as: illustrations, photos, maps or charts.

If the text format is structured with major headings, subheadings, etc., the student-athlete can be taught to use these cues as a basis for outlining the reading assignment. Otherwise, the cues can be brainstormed and listed on a chalkboard or a sheet of paper. It is important, at least in the initial stages of training, that the contextual cues be transcribed for later reference.

STEP 3: *Making Predictions.*

Sullivan (1978), and Spiro and Tirre (1979), in two separate studies, demonstrated that poor readers at the high school and college level have difficulty in relating prior knowledge to material that they are reading. A key element to this relationship is the ability to hypothesize the possible content of a reading passage, prior to actually reading the passage. If there are suppositions as to the forthcoming content of a passage to be read, then a cognitive memory search can begin to seek out, and retrieve relevant prior knowledge.

Step 3, therefore, involves the student-athlete making a set of predictions based on what he/she thinks will be included in the content of the passage to be read. By making these predictions, the student-athlete takes a step toward being actively involved with the reading material, which is an entirely different cognitive process from passively watching television, or listening to music on tape cassettes. If the student-athlete is to be successful in the classroom, he/she should be actively engaged in information processing, whether that information comes from a text or a lecture. With the constant bombardment of our adolescents from televisions, stereos, video-games, etc., it is sometimes difficult for them to make the transition from a passive *receiver* of information, to an active *seeker* of information.

For student-athletes who have difficulty in forming their own predictions, the academic tutor should model appropriate predictions, always refering to the cues derived in Step 2, from which the predictions are based. An example of this modeling technique might be: "Based on the chapter title, I might

predict..." It might be helpful, in the initial stages of training, to form one prediction for each cue listed in Step 2. As with the previous step, the set of predictions should be transcribed for later use.

STEP 4: *Reading the Assignment.*

With the predictions in mind, the student-athlete would proceed to read the assignment. Student-athletes who have particular decoding or vocabulary deficits may benefit from keeping a running record of unknown words. Please see Figure 1 for a sample of a vocabulary tracking sheet currently used at UNLV.

Post-Reading Activities:

STEP 5: *Altering/Verifying Predictions.*

Following the actual reading of the assigned passage, the student-athlete should be directed toward re-assessing his/her predictions. Were the predictions correct? Did they reflect the actual content of the reading passage? A lack of accuracy in self-assessment is a characteristic that has been shown to be prevalent in poor readers (Brown, Campione, and Barclay, 1979). Therefore, the academic tutor may have to model the assessment of the predictions formulated in Step 3.

Each prediction should be taken, in turn, and analyzed from the standpoint of accuracy. The academic tutor may assist the student-athlete in this assessment by referring to *specific* elements of the passage to confirm or deny the accuracy of the predictions. Each incorrect prediction should be corrected to conform to the actual content of the passage. As the training sessions with the student-athlete continues, the student-athlete should take over more of the responsibility for prediction formation and prediction assessment.

STEP 6: *Clarifying Unclear Points.*

A critical element to successful comprehension is the clarification of unclear points in the assigned passage *before* that passage is considered "completed." With respect to the present process, the predictions altered in Step 5 provide both tutor and student-athlete with "benchmarks" from which to assess comprehension of important, thematic information. Since the predictions were based on relevant, textual cues (and refined according to actual content), they should be reflective of the most salient points of the passage.

At first, the academic tutor may want to simply ask the student-athlete if he/she had any difficulty with any portion of the passage. However, if the student-athlete is reluctant to admit that he/she does not comprehend, the academic tutor may want to model some questions, based on important, thematic information. If such an approach is warranted, the tutor may question the student-athlete by asking: "I was a little unclear about...Can you help me understand this?" It may take some weeks before the student-athlete feels comfortable in admitting that he/she does not fully comprehend the reading passage.

STEP 7: *Forming Questions.*

Readers who employ some form of self-questioning technique tend to be better comprehenders than readers who do not use such a technique (Elrod, 1984). The steps that are discussed above provide the student-athlete with an excellent foundation on which to form questions. A good strategy to use with a student-athlete is to have him/her turn the revised predictions into questions. It might be helpful to provide the student-athlete with a list of question precursor words such as: How, When, Where, Why, What, Who and How many. Using these precursor words, the student-athlete can be prompted to make up his/her own questions from the revised prediction. Student-athletes who have difficulty making questions can be prompted by the tutor in this way: "Make a 'who' question out of the prediction number ____."

Following the formation of the questions, the student-athlete should answer them. As much as possible, the student-athlete should be encouraged to answer the questions from memory. Those questions that could not be answered from memory should be answered from the text.

STEP 8: *Summarizing.*

The next phase in the process is to have the student-athlete paraphrase the content of the reading passage. He/she should be prompted to use the revised predictions and answered questions to assist in the summarization. As with previous sections, the academic tutor may elect to model appropriate summaries by saying, "I might summarize the selection by saying..."

STEP 9: *Executive Control.*

Executive control has been defined as the activity of deciding whether to maintain, modify, or abandon a particular technique in response to the degree of success (or failure) that is provided by feedback. The major functions of exeuctive control are planning, monitoring, and checking (Brown and Palinesar, 1982). These functions of executive control have been

linked to components that make up intelligence (Sternberg, 1980).

In the current process, planning would involve predicting outcomes prior to reading. Monitoring would include the revising of predictions, and self-questioning phases. Checking would be comprised of self-evaluation. To accomplish an overall self-evaluation of whether or not the important material of a reading passage has been learned, the student-athlete should be directed to thinking about various steps in the reading process outlined above. If, on his/her own, the student-athlete could not make predictions on reading content, alter/verify those predictions, form and answer key questions on content, or summarize the contents of the passage, then the student-athlete should be cued that the material was not learned well enough. In this case, alternative techniques must be considered. The student-athlete could engage in one or more of the following:

a) re-read the entire passage.
b) re-read portions of the passage.
c) re-examine contextual cues (Step 2).
d) re-examine predictions (Step 3, Step 5).
e) re-examine self-generated questions (Step 7).
f) consult a dictionary or glossary to get meanings to unknown words.
g) consult with another individual who might provide some assistance (e.g. course instructor, academic tutor, student who had previously taken course).

The purpose of executive control is to systematically turn the responsibility for learning over to the student-athlete. In addition to this responsibility, the student-athlete is provided with a process by which he/she can plan, check, and monitor his/her own learning.

Relating the Metacognitive Process to Athletics

No matter what the academic background of the student-athlete, he/she is gifted in the area of athletics. Therefore, by using athletics as a medium to teach the metacognitive process outlined above, the student-athlete has an immediate, tangible referent with which to make cognitive associations.

The following section demonstrates how the metacognitive process is related to athletics; in this case, basketball: Step 2: Skimming for Contextual Clues and Step 3: Making Predictions. These two steps are related to the act of watching opponents' game films. When players and coaches watch opponents' game films, they are usually looking for cues and tendencies. What cues does the opponent give as to the way they are playing? How can you tell the type of defense the opponent will play? Does their top scorer favor one type of shot? By watching game films, the players and coaching staff are looking for cues on which to base predictions of the opponents' method

of play. These tendencies will permit the team to "play the percentages" in certain game situations.

Likewise, by predicting the outcomes of a reading passage based on contextual clues, the student-athlete is cued into "tendencies" of the textual material. These "tendencies" reflect the important, thematic information of the assigned reading.

Step 7: Forming Questions. This step is referred to as "scrimmage." In a pre-game scrimmage, the players and the coaching staff attempt to practice, under game conditions, the opponent's tendencies that have previously been detected. The team will also practice how to respond to those tendencies.

If a mid-term or final exam is likened to a "game," then forming and answering questions that might be included on that exam could be viewed as a "scrimmage." During this step, the student-athlete has the opportunity to create "game situations" (i.e. form questions), and to practice how to respond to those situations by answering the questions.

Step 9: Executive Control. The student-athlete should picture himself/herself as a player-coach. Not only must the player-coach actively play the game, but he/she must also determine how well the techniques that were worked on during practice are succeeding. If the techniques are not successful, as provided through feedback on the scoreboard (i.e. exam score), then alternative techniques must be employed before the game is "lost."

The Attributional Component

A growing theme in educational and psychological research is related to attribution theory. By "attribution," we usually refer to those variables to which a student attributes his/her successes or failures. Four explanations have primarily been found as being the reasons people account for their successes and failures. These explanations are: the individual's self-perceived ability level, effort (study), task difficulty, and luck (Covington, 1983).

Students who feel that they have some control over their destiny in the classroom, tend to perform better than students who feel as though their achievement is related to more external factors. Perceptions of personal control are necessary for the learner to develop a sense of competence following successful mastery attempts (Stipek and Weisz, 1981). It follows, therefore, that increasing students' perceptions of personal control can increase motivation and academic achievement (Baird and White, 1982; Bandura, 1982; Schunk, 1984; Stipek, 1981; Stipek and Weisz, 1981; Thomas, 1980; Wang, 1983; Weiner, 1979, 1980, 1983).

The metacognitive process outlined above is designed to provide the student-athlete with both immediate and delayed perceptions of personal

control. Research has demonstrated that success, alone, is not sufficient to motivate learning. What is needed is a perception of control over the situation that promoted success (McCombs, 1984).

The student-athlete, therefore, should be "programmed" for success at each step of the metacognitive reading process. The following review of the steps will detail how this can be accomplished.

Step 2: Skimming for Contextual Cues. The goal is to have the student-athlete take the responsibility for picking out relevant cues. At first, the academic tutor may wish to model appropriate cue selection. As the student-athlete takes over more of the responsibility of cue selection, he/she should be immediately praised. The tutor may even want to probe the student-athlete with questions such as: "Why did you select that [heading]?." Following a short discussion relating the cues to the theme of the reading passage, the tutor may wish to have the student-athlete close the text and answer (orally) questions that reflect the specific cues that were selected. The student-athlete will usually get a significant percentage of the questions correct, and it should be pointed out by the tutor that these correct answers, from total recall, were derived because the student-athlete took control of the learning situation by picking out contextual cues.

Step 3: Making Predictions. As with Step 2, when the student-athlete assumes more responsibility for turning contextual cues into predictions, immediate praise should be given. When a set of predictions have been made, the tutor should reinforce the notion that now the student-athlete has created a set of predictions which tell him/her what to look for when reading the selection.

Step 5: Altering/Verifying Predictions. The student-athlete should be praised for accuracy on correct predictions, and made to realize that incorrect predictions are to be expected. The nature of forecasting reading content does not guarantee accuracy. The student-athlete could be probed as to other cues imbedded in the text that may have enhanced accuracy.

Step 6: Clarifying Unclear Points. The student-athlete ahould be encouraged to ask questions on points that he/she does not understand. Furthermore, the tutor may wish to relate how the student-athlete's question is important to the overall understanding of the reading passage.

Step 7: Forming Questions. During the "scrimmage," the student-athlete should be praised for making relevant questions. The tutor should relate how these questions relate to theoretically relevant information. If there are review questions at the end of the passage, for example, the tutor may wish to show the student-athlete how "close" his/her questions are to the ones that the author felt were important.

After the questions are discussed, the student-athlete should be urged to answer the questions from memory. The effort expended on the process (i.e. predictions, question formation, etc.) should be related to the student-athlete's success in answering from memory.

Step 8: Summarizing. Point out to the student-athlete that he/she has controlled his/her ability to summarize important points because of the active involvement in the reading process. In other words, important, thematic material has been selected and rehearsed. This selection and rehearsal has prompted better recall.

Step 9: Executive Control. The student-athlete should be made to realize that he/she controls his/her success in the classroom. If the aforementioned process is undertaken, and the results are poor, then the student-athlete should analyze: 1) his/her effort in activating the metacognitive process, or 2) alternative methods to achieving comprehension success.

The Cognitive Problem Solving Component

To promote the activation of cognitive problem solving skills, and to receive an introduction to computer interaction, one day per week is spent in the University computer lab, in lieu of conducting reading tutoring. The key to a model of motivated learning is the amount, and kind, of cognitive engagement brought to the learning situation by the student (Corno and Mandinach, 1983). Examples of the engagement would include: alertness, selectivity, and connecting. Thus, at UNLV, the computer is used as a teaching tool to encourage the activation of cognitive processes.

The student-athletes are introduced to the Terrapin Logo program (Terrapin, Inc., 1983), and are given basic commands with which to manipulate the "turtle." The Logo program affords the student-athlete with an immediate, visual referent from which to base self-evaluations of success or failure.

Once the student-athletes have acquired the basic commands of the Logo program, they are introduced to simple programming that can be used to complete designs, figures, or drawings. An example of this programming would be a series of commands that are repeated (a loop) to form a particular figure. Once the basic idea of programming is obtained, the student-athletes move on to more complex programming, and editing programs. Problem sets are given to the student-athletes where they can work in pairs or individually to create a program to form a drawing or solve a problem (such as changing the dimension on a drawing or figure).

Summary and Discussion

This article has presented an alternative method of teaching reading

comprehension and problem solving to student-athletes. The underlying philosophy of the method presented above is that academic counseling, alone, may not be sufficient to ensure the successful completion of college-level curricula by student-athletes. The approach offered in this article is designed to assist student-athletes in a specific educational activity: reading comprehension. A boost in reading comprehension ability, along with academic counseling may be one step to upgrading the services provided to student-athletes by colleges and universities. Thus, the current approach may be viewed as psycho-educational in nature, rather than eminating from a counseling or guidance origin.

Four facets to the approach are offered, all of which should be done simultaneously. The basic foundation of the current method is a metacognitive approach to reading. This approach is designed to: 1) provide student-athletes with a systematic method of reading textual material, and 2) give student-athletes a framework within which they can plan, monitor, check, and alter their approach to reading.

Secondly, a relationship is made between the metacognitive process and athletics. This "translation" may facilitate the acquisition of the procedure by student-athletes by relating the metacognitive process to an already known tangible referant. Thirdly, the need for motivational training is recognized through the adoption of an attributional approach. A motivational (attributional) component is necessary to increase the likelihood that student-athletes will apply the metacognitive approach to their coursework.

Finally, a cognitive, problem solving component is discussed. This component can be viewed as being motivational and relevant to cognitive skills needed at the higher education level. The approach offered in this article should be viewed by athletic, academic coordinators as an alternative method of enhancing athletes' chances of success. Use of the methodology could take the form of pre-service training that can be provided to prospective academic tutors. Academic advisors may wish to teach the process to a group of student-athletes, especially if they are enrolled in the same class. Finally, the methods offered in this article could be viewed as the foundation of a course to be offered to high-risk students (including high-risk student-athletes).

Future research is essential in a number of areas. First, it would appear that a population profile is needed. Although there have been many descriptive studies on the make-up of intercollegiate student-athletes, there still needs to be an analysis of the psycho-educational composition of this group, and possibly sub-groups. For example, success/failure attributions of student-athletes in specific content areas should be analyzed. It is possible that

educational variables that predict student-athletes attributions can be detected.

Secondly, test batteries must be identified or created that measure more than mere academic levels. Tests that measure underlying causes of academic problems should be sought. These tests could assess a student-athlete's memory capacity, language ability, or metacognitive skill level.

Finally, future research needs to be directed to theoretically based interventions, which may be reflective of the testing mentioned above, and are designed to enhance the ability of the high-risk student-athlete to compete at the higher education level. These interventions, in concert with appropriate counseling techniques, could provide all student-athletes with an opportunity to fulfill requirements for a college education and add some credibility to the nation's intercollegiate athletic programs.

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Figure 1

Sample Vocabulary Tracking Sheet

Name: _____

Text: _____

Course: _____

Semester/Quarter: _____

Word	Page	Word	Page