

couraging girls in school to become women in science (Kahle, 1985). Clearly, awareness of the possibilities available in scientific careers is the essential first step in recruiting and retaining women in the agricultural sciences.

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# 7 Strategies for Improving Instruction

James Knight

## Introduction

Colleges of agriculture have had a long standing commitment to the improvement of instruction in their various institutions. In addition, the National Association of College and Teachers of Agriculture (NACTA) has had instructional improvement as one of its major missions. With such strong commitments, the recent and substantive research and literature base which has been developed in the areas of teaching effectiveness and student achievement would appear to provide important information for teachers and administrators with responsibilities for instruction in colleges of agriculture. The purpose of this paper is to present seven strategies for instructional improvement which have grown out of that related research and literature. The items presented in this article do not represent an exhaustive list of strategies but rather a selection of those strategies which appear to have the strongest and most consistent support in the literature.

## Psychological Basis

In reviewing the work of Goodlad (1984), Boyer (1983), Sizer (1984), Adler (1982), Glasser (1986), Rosenshine and Furst (1971), Good, Brophy as well as Purkey (1978), plus most others who have done research and written broadly in the field of teaching effectiveness, it is clear that there are at least two major psychological notions that underpin all that has been identified as enhancing instructional effectiveness. The Pygmalion Effect or self-fulfilling

prophecy and the power of self image or self concept pervades and indeed seems to be inextricably interwoven into the entire fabric of the research and literature in this field.

The Pygmalion Effect or self-fulfilling prophecy basically holds that people tend to live "up to" or "down to" what others expect of them. Rosenthal and Jacobson (1968), social psychologists at Harvard, convinced a number of teachers that a test they would give would predict students who were about to experience a sudden burst in learning without any extra effort on the part of the teachers. After the test was administered, one-fifth of the students were selected at random. The list of names of the randomly selected students were given to the teachers as the "educational bloomers" identified by the test. Eight months later when the students were tested again, it was found that the identified students had actually bloomed. They gained an average of four points in I.Q. above the control group. However, the real difference between the two groups of students rested primarily in the perceptions of the teachers. That is a self-fulfilling prophecy. While Rosenthal and Jacobson's study has been severely challenged because of methodological concerns, succeeding efforts where those flaws were corrected have still found similar results (Purkey 1978, Good and Brophy 1984). It appears that this concept or notion "holds water."

How students perceive (self image) and feel (self esteem) about themselves will influence their behavior as well as their achievement. If students see themselves as productive, valuable and worthwhile, they tend to

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behave accordingly. On the other hand, if students perceive themselves as lazy, incapable and dumb, their actions will reflect that attitude. The research (Purkey 1978, Good and Brophy 1984, Byer 1983, Goodlad 1984, Sizer 1984) in this area would suggest that the self concept a student holds may be as strong an indicator of academic success, if not stronger, than any other variable.

### **Strategies**

Following are seven strategies which are born out of the literature and which appear to be worth considering in improving instruction in colleges of agriculture. Note how all seven points reflect back to the two major psychological notions just discussed.

#### **1. Make students feel important and invited.**

Peters and Waterman (1982) in their research found that the most successful corporations in America considered their clientele important and worked to make them feel invited. They did this by the way they treated them, how they listened to them, and reacted to their suggestions. In research done by Purkey (1978) in North Carolina, students were identified as invited or disinvited by the way they were treated by the teacher as they entered the classroom. If the teacher greeted them pleasantly they were identified as invited. If, however, they were ignored by the teachers, greeted with a frown or other negative behavior, they were identified as disinvited. Test scores and other variables indicated that the two groups, while different in the eyes of the teachers, were really not different in their academic ability. When asked a question they could not answer, the invited students were given an average of 3 seconds to respond before the teachers gave clues, restated the question, redirected the question, or answered the question themselves. On the other hand, the disinvited students who were just as capable, were given an average of .9 seconds to respond to the questions they could not answer before the teachers reentered the picture. Now, teachers do not do these kinds of things to hurt students. In fact, the most common motive is a noble one. They want to save the student embarrassment. However, the message that comes to the student is different than was intended. The message that such students receive is that they are dumb, that the teacher does not like them, or that they are disinvited. In more contemporary terms, the students perceive that teachers have low expectations of their abilities. By giving appropriate responsibility for, listening to, and valuing of the students, teachers will help the students to feel more important and invited.

**2. Deal with needed changes in others from a positive point of view.** Research studies (Rosenshine and Furst 1971, Duncan and Biddle 1974) have reported that positive reinforcement and appropriate praise were positively correlated to learning in a variety of settings. They also found that criticism was negatively correlated to learning. These findings suggest that if teachers are really interested in learning,

they should be looking for and using more positive approaches to evaluation as well as to every day behavior. In other words, teachers should probably be looking for what is right, not what is wrong. When grading papers, for example, teachers may want to consider checking the correct responses and adding points as opposed to checking what is wrong and taking away points. Goodlad (1984) found that less than two percent of the time is generally spent by teachers in positive behaviors such as praise and reinforcement towards students. Research (Purkey 1978) out of the field of psychology further reports that people are more influenced by negative information about others than by positive. In the absence of information, people tend to assume the worst. Therefore, this suggests that teachers will have to consciously work to change their behavior in an overt way if this particular strategy is to be accomplished.

#### **3. Learn to make appropriate nonverbal cues.**

Research (Galloway 1968, Dunning 1971, Birdwhistell 1970) indicates that a large percentage of what we learn comes through our eyes. A smile, a nod, a wink, a pat on the back and/or other nonverbal cues have potentially tremendous power related to enhancing student achievement and thus improving instructional effectiveness. How teachers and students use space, the physical arrangement of the classroom, the tone of the voice, gestures, and even dress are clues which send messages about how teachers feel about the students, the college, their work and themselves (Dunning 1971). The adage, "Your actions speak so loud I can't hear a word you are saying" would seem to hold true for teachers in colleges of agriculture.

**4. Get to know students personally and learn to empathize.** During the tremendous growth years of colleges of agriculture, it became increasingly difficult for teachers to get to know their students on a personal level. However, that did not diminish the importance of doing so. For the student, the personal interest expressed by the teacher is a strong signal as to the value the teacher places upon them. Empathy is the ability to understand the feelings of another person. Of course, the key to empathy for teachers is getting to know the students personally. Researchers (Sizer 1984, Peters and Austin 1985, Goodland 1984, Boyer 1983, Glasser 1986) have found that a personal touch on the part of the teacher will enhance student achievement and teaching effectiveness. In addition, the concept of fairness appears to be extremely important to students. If, then, more productive behavior is sought on the part of students, attention should be given to the issue of fairness. The only way to be fair is to get to know the students personally and learn to empathize. This strategy will move teachers into a position where they are more likely to be able to deal with causes as opposed to symptoms when it comes to the variety of student behaviors with which they must deal. Success is much more likely when such information is used in making necessary decisions about students.

**5. Establish parameters.** It appears that one of the most devastating blows that has ever been dealt to education came in the late 1960's and early 1970's in the name of "Do your own thing." For many students this often meant to do the minimums. People generally have a need for some structure. This structure need not be physical, although that often helps, but must be psychological. Research on student achievement indicates that clarity, task orientation, time on task, letting students learn the criterion material, and structuring comments are all positively correlated to learning (Rosenshine and Furst 1971, Duncan and Biddle 1974). Note how each of these variables is related somehow to the boundaries that exist in a college, in a classroom or on a lesson. To put this strategy into operation would mean the identification of goals and objectives for lessons to be taught by teachers. It would further be appropriate that students would somehow be "let in on" what those goals and objectives are. In addition, by planning and delivering instruction in an organized and clear fashion and utilizing structuring comments during the actual teaching process, the quality of instruction is enhanced.

**6. Use student centered instruction.** Students learn more when they inquire into as opposed to being instructed in (Sizer 1984). Variability is positively correlated to learning (Rosenshine and Furst 1971). The kinds of methods and materials which are student centered tend to allow for more student inquiry and also are viewed as being more variable in nature. Goodlad (1984), Boyer (1983), and Sizer (1984) among others have found in their research a need for instruction that is more student centered. Their research proposes teaching-learning strategies such as problem solving, critical thinking and coaching. By definition and design such strategies make the instruction more student centered. Perhaps one of the most important skills a teacher can teach is not a technical skill at all, for surely such will become obsolete at some future date, but an ability to solve problems. With the current push to improve student achievement and to add rigor to instruction, a negative pressure is being placed upon the value of the individual student. Herein lies a trap for colleges of agriculture. As the colleges move their instructional programs along, if attention is not also given to the importance of the individual student, the failure rate will certainly rise. Colleges may not intend for such to happen but it almost certainly will.

**7. Be enthusiastic about teaching.** The National Commission on Excellence in Education (1983), in *A Nation at Risk*, and a number of other reports (Goodlad 1984, Sizer 1984) on education have described teaching in American classrooms as "lifeless." According to Rosenshine and Furst (1971) enthusiasm is among the most highly correlated variables to student achievement. Students rate teachers as more enthusiastic when they tend to ask more questions, are committed to the tasks and

demonstrate by some behavior that they really believe in the importance of what they are doing. Enthusiasm is defined as intense interest. the more people know about, feel some affinity for, or have more personal experience with something, the more likely they are to be enthusiastic about it. This particular strategy helps to bring into focus that what teachers know is important. In other words, it appears essential that teachers should be experts in what they teach at the college level. It is also clear that they must be just as concerned about their students as they are about the subject matter they teach.

### Conclusion

The current trends in all of education are pushing colleges of agriculture and other educational institutions, as well, to give major focus to the curriculum and the subject matter that is being taught therein. These are appropriate concerns and deserve the recognition and attention of teachers and administrators alike. However, as one reviews the broad research and literature base that exists in the area of teaching effectiveness, certain themes appear to surface again and again. These themes are presented in this article in the form of strategies for teachers and administrators in colleges of agriculture to consider as they try to improve the teaching and learning that goes on in their respective institutions. It becomes clear that if any educational institution wants to improve teaching effectiveness, it must give major attention to how it views, values and works with its clientele the students (Peters and Austin 1985). It is also clear that attention must also be paid to the content of what is taught. In other words, both are important, they are not mutually exclusive ideas but must be developed in concert. However, since curriculum is a more concrete activity and is much simpler with which to deal, educators at every level tend to focus improvement activities in that area. This review of the literature found that a student centered focus upon the teaching process must be given at least equal, if not more attention, if appropriate, real and long term success is to occur in teaching effectiveness in colleges of agriculture.

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## A CASE STUDY

# Time Spent Writing Exam Answers As a Factor Related to Final Course Grade

Craig Marotz and Douglas Young

### Introduction

Several factors are commonly assumed to be associated with superior performance in upper division undergraduate courses. These include strong academic preparation in related courses, employment or other life experience in the subject matter area, natural intelligence, and diligent work habits. Given the predominant weight of written course examinations in determining the final grade in many courses, students are quick to add "exam taking ability" as another crucial skill. Our interest in this report is how one component of "exam taking ability," namely the amount of time spent writing exam answers, correlates with the final course grade compared to more obvious academic background and experience factors.

Most instructors have been surprised by the large variation among students in time allotted to writing answers to examinations. It is not surprising to have some students leave a 2-hour final exam after an hour while others plead for extra time at the end of the period.

Two divergent, but potentially mutually valid, explanations emerge for students finishing exams in much less time than the stated limit: (1) the students have little to say due to a lack of studying the material tested over, or (2) the students have thoroughly mastered the material, require little time to ponder, and quickly write correct answers to the examination questions.

The purpose of this paper is to statistically measure the correlation of examination completion time, among other factors, to the final course grade in a senior farm management course. This study may help shed some light on the relative empirical importance of the two divergent explanations for speedy exam

completion offered above. The authors were unable to uncover prior research on this topic.

### Course and Student Description

The case study is based on an advanced farm management course taught during spring semester 1987 at Washington State University. This senior-level course requires principles of economics and junior-level farm management as a prerequisite. It is the capstone farm and ranch management course in the Department of Agricultural Economics. It emphasizes hands-on solution of farm and ranch management problems using microcomputer software. The course also requires some knowledge of elementary accounting and statistics.

Table 1 describes the 34 students enrolled in the course during spring 1987. The background information was collected from a questionnaire completed by each student at the beginning of the semester and verified, where possible, by the enrollment listing from the Registrar's Office. The eight characteristics included in Table 1 are categorized into academic background factors, experience factors, other, and course performance. The course was split nearly evenly between Agricultural Economics majors and majors in other departments of the College of Agriculture and Home Economics. Approximately a third of the enrollees had taken one, two, or three or more, respectively, specified related courses in agricultural economics. Some 41 percent of the enrolled students ranked low in college computer training and experience, 32 percent moderate, and only 27 percent high or superior. This index was based on the number of computer science courses taken plus the number of composition of other courses taken which required extensive use of microcomputers. The students receiving the highest index of 1.00 had taken four such courses.

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