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Testing and Student Aggression

Fred C. White and
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Test scores are important to students because these scores are often the major determinant of course grades. There is an implied and generally accepted contract between teachers and students that the tests will be representative of materials reflecting the purposes of the course and that the tests will be developed, administered, and graded fairly. In those cases in which there is an actual or perceived material departure from this implied contract, students may take issue with it (Poppen and Thompson). Since this contract itself is often implied, the procedures to deal with perceived breaches are not well understood; hence, students may react to perceived breaches in an aggressive, even hostile manner.

Student aggression is a frequently observed, but an undesired and unintended outcome of classroom testing. Few, if any, faculty members have ever completed a teaching career, having escaped with no battle scars resulting from attacks by students frustrated with testing procedures and test scores. Young as well as older teachers are potential targets for these frustrated students; none are exempt. While the potential for student aggression exists for all teachers, many experienced teachers have learned through trial and error how to avoid many situations that might result in student frustration and aggression (Bernstein).

The basic premise of this paper is that student aggression related to classroom testing can be reduced if not avoided altogether by properly constructing, administering, and grading tests (Saigh, Shiram). The overall objective of this paper is to address improved testing techniques to avoid student aggression. More specifically, the paper will (a) identify student characteristics that are related to aggression, (b) identify testing situations that are related to aggression, and (c) present basic concepts and operational procedures to improve teaching and testing methods and thereby avoid student aggression.

Conceptual Framework
for Improved Testing

The teaching-learning-evaluation process is an interrelated process involving numerous components. In its simplest form, this process involves (1) setting instructional objectives, (2) assessing student needs,

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(3) offering relevant instruction, (4) testing and evaluating intended outcomes, and (5) using evaluation results to improve instruction and learning (Gronlund). Having identified these basic components, it is clear that difficulties could arise in any of these areas. Several of these components are discussed briefly before turning to testing and evaluation.

Instructional objectives identify the expected learning outcomes, i.e. the intended student performance at the end of the instructional period. The more information contained in the objectives the greater the students' chances of achieving these objectives. The objectives are to be used to direct student learning and testing and evaluation of learning process. Stated objectives should include all important objectives for the course and should be realistically attainable in terms of the students' backgrounds, abilities and overall workloads and the time available for the course.

Validity

The major reason to test students is to evaluate their progress in learning. Learning progress is measured through evaluation techniques by the extent to which students individually achieve instructional objectives. Hence test instruments should be closely related to instructional objectives. A test would be considered valid only if it matched course objectives. Validity can be defined as the accuracy with which the test measures what it is intended to measure (Ebel, p. 444). A test's validity can be evaluated by determining whether the items on a test are related to the topics that should be included, whether they adequately cover the relevant topics, and whether the balance among topics is appropriate (Hills, p. 11).

Validity of the test is influenced by the test itself as well as how the test is administered and scored. The following factors can prevent the test from functioning as intended and reduce its validity: unclear directions, inappropriate level of difficulty of test items, ambiguity, and poorly constructed test items (Gronlund, pp. 79-80). Factors in administration and scoring of a test that would reduce its validity would include providing insufficient time to complete the test, providing unfair help to some students, and inconsistent scoring.

Reliability

Measurement of educational achievement is subject to inevitable errors, related to the sample of questions used, anxiety, fatigue, etc. (Ebel, p. 407).

However, these errors can be reduced through the proper construction of tests. Tests should be designed and administered so that each student would score consistently on equivalent tests. This consistency of measurement is referred to as reliability. If educational achievement is measured precisely with only a small degree of error, then the test scores are said to be reliable (Gronlund, p. 87).

Reliability is related to the quality of a test, although it does not ensure that the test is of high quality. A test is considered to be of high quality and hence useful only to the extent that the test scores are reliable, being measured precisely. However, it is important that the test scores precisely measure what they are intended to measure. Consequently, reliability is a necesssary but not sufficient condition for quality (Ebel, p. 408).

A number of factors including spread of scores, length of test, and difficulty of test, can influence the reliability of test scores. If all the scores are clustered together either as high or low scores, the scores tend to be unreliable. If the exam is too short, it may be unreliable because the questions are less likely to be representative of all possible questions. If the test is too easy or too difficult, the scores may be unreliable.

Sampling Procedures

A questionnaire on testing and student aggression was administered to 143 students in seven classes under three instructors in agricultural economics over a two year period at the University of Georgia. Although the classes were in agricultural economics the students came from numerous majors in the college of agriculture. The questionnaire was designed to measure areas of testing in which students had experienced difficulty and/or frustration. The questionnaire also identified student personality traits and attitudes about testing. Furthermore, the questionnaire asked the students how many times in their college career had they confronted instructors and college administrators about testing and grading problems.

Survey Results

Student Characteristics and Aggression

For every one hundred hours of coursework completed, students in this study averaged 2.9 confrontations with instructors and administrators concerning testing and grading problems. While many students never confront their instructors or administrators with such problems, it is a more frequent occurrence for many others. In this section student characteristics leading to frequent confrontations are analyzed.

Statistical results for confrontations by various groups of students are shown in Table 1. Students with lower grade-point averages have more frequent confrontations. Students with grade-point averages of less than 2.8 had 3.38 confrontations (per 100 hours) in comparison to 2.14 confrontations for students with

Table 1. Student Confrontations with Instructors and Administrators Concerning Testing and Grading Problems

	Distribution of Students (Percent)	Average Confrontations Per 100 Hours of Credit	T-Statistic
Cumulative Grade-Point Average			
Less than 2.8	61.24	3.38	
			2.58*
2.8 or higher	38.76	2.14	
Personality			
Assertive	89.06	2.99	
			2.78*
Non-assertive	10.94	1.47	
Percentage of College Expense Paid for by the Student			
Less than 50%	65.12	2.61	
			-1.43
50% or more	34.88	3.47	
Percentage of Class Periods Attended			
95% or less	82.17	3.05	
			1.47
More than 95%	17.83	2.28	
Overall mean		2.91	

*Significant at the .01 level.

higher grade-point averages. Students with assertive personalities have more frequent confrontations (2.99) than students with non-assertive personalities (1.47). Students who attend class more than 95 percent of the time have fewer confrontations (2.28) than students who attend less frequently (3.05). Students who pay for at least half of their college expenses have more confrontations than those who pay for less than half of their expenses. Calculated t-values indicated these differences were statistically significant at the 1 percent level for grade-point average and personality and at the 15 percent level for attendance and payment of college expenses.

Table 2. Rating of Stressful Situations in Testing and Grading

Potentially Stressful Situations	Distribution of Responses		
	Frequently	Occasionally (Percent)	Seldom
Objective exams	24.11	56.73	19.15
Subjective exams	21.98	57.45	19.65
Time limits on tests	36.88	40.42	22.70
Tests on Fridays	17.02	35.46	47.52
Tests on Mondays	40.42	34.04	25.53
Instructors curving exam grades	4.96	17.73	77.30
Instructors deleting protested questions	3.55	17.02	79.43
Instructors answering questions during exams	7.80	21.98	70.21
Student choice in which questions to answer	6.41	19.23	74.36
Comprehensive exams	50.00	38.46	11.54
Pop quizzes	32.47	44.16	23.38
Take-home exams	11.54	14.10	74.36
Having all test scores count towards final grade (not dropping lowest test scores)	50.00	38.46	11.54

Table 3. Problem Areas in Testing and Grading Encountered by Students

Problem Areas	Distribution of Responses		
	Frequently	Occasionally (Percent)	Seldom
Test questions unclear	14.18	70.21	15.60
Test questions unrelated to subject matter covered in course	2.13	33.33	63.83
Test questions graded improperly	1.42	32.62	65.25
Test grades on individual questions do not reflect students' understanding	24.82	56.32	18.44
Overall course grade does not reflect students' understanding	14.18	48.94	35.46
Inequities in course grades among students	12.76	41.84	43.97
Improper use of make-up exams	3.55	25.53	70.21
Test grades do not reflect attendance and class participation	26.37	34.72	31.91
Course objectives unclear	6.58	33.53	57.88

Problem Areas In Testing

Surveyed students were asked to identify those areas in which they had encountered testing problems. These survey results are reported in Tables 2 and 3. Students indicated that time limits on tests, tests on

Mondays, and pop quizzes frequently created stressful situations. Furthermore, having all tests count toward the grade was stressful. These results support the concept of reliability as being important in administering tests. The reliability concept relates to consistency of grades, and these results indicate that the testing procedure might not yield consistent results if students did not have time to complete the test and did not adequately prepare for the test beforehand.

With respect to validity, 84 percent of the students indicated they occasionally encountered test questions that were unclear (Table 3). Test grades on individual questions which do not reflect students' understanding was indicated to be a problem by 82 percent of the students. Again, this may indicate inappropriate or ambiguous questions. Furthermore, 36 percent of the students occasionally encountered test questions unrelated to subject matter covered in the course.

Improved Testing and Evaluation

Course Objectives and Test Validity

Course objectives need to be made explicit and tests developed to correspond to these objectives. Making the objectives explicit provides guidelines for both teachers and students and avoids unnecessary anxiety on the part of students. The objectives help the teacher develop tests that have an appropriate balance and coverage of topics. This procedure should help ensure validity of the tests. The survey results indicated that students often encountered test questions that were unrelated to the subject matter. This problem could be reduced by checking the test questions against the course objectives.

Test Reliability

Respondents in the survey reported lower levels of stress on subjective exams (Table 3), suggesting that student aggression may be reduced by subjective exams. However, subjective exams tend to be labor intensive, which could threaten their reliability for extensive adoption. A number of strategies can be used for maintaining objectivity and consistency in grading subjective exams. Instructors should use student identification numbers to minimize the bias of prior information. Subjective exams should be graded one question at-a-time and papers should be shuffled after each question.

A number of factors also contribute to test reliability and student response to objective exams. First, exam questions in general, and objective questions in particular, should be appropriate and definite. Second, students should be presented with a large enough number of questions to ensure that the questions are a representative sample of potential questions. The number of questions a student is exposed to can be increased by lengthening a given exam or offering more exams. Students surveyed in this study indicated they would prefer to have from three to four hourly exams in addition to the final exam in a 5 hour course. Third, the test should be given in such a

way that the students' ability is stabilized or consistent. Their ability might vary depending on the conflicts with other exams, length and difficulty of the exam, day of the week, etc. Fourth, a statistical measure of reliability can be calculated for each exam (see Gronlund, 1985). A discrimination index and difficulty factor can be calculated and used to judge the quality of a particular exam and provide a basis for improving future tests.

Grievance Procedures

Since universities generally do not provide grievance procedures related to testing, students with concerns about tests may react in an aggressive manner because they see no other available option. Instructors can implement their own procedures to deal with conflicts over tests. Providing such an outlet to vent frustration can help avoid student aggression aimed at instructors or administrators.

Student Participation

Some students were concerned that test grades do not reflect attendance and class participation, suggesting that tests may be a necessary but not sufficient form of evaluation (Table 3). The ideal distribution of factors contributing to grades was reported by students as follows:

Factors	Percent
Objective tests	34
Subjective tests	24
Projects and assignments	15
Attendance	9
Pop quizzes	9
Class participation	9

Although we are not recommending this particular distribution of factors, these findings are informative. These findings suggest that attendance or student participation when factored into the final grade can be used to reduce student aggression.

Strategies for increased student participation are as follows. First, test diversification can be used to enhance the students' opportunity to demonstrate their understanding of course materials. Second, students can be given a choice of questions to be answered and thus have some input into test design. Third, instructors can reduce student frustration and perhaps aggresson by giving a midterm course and teacher evaluation. In doing so, students can provide input into the direction of the course, and instructors may identify potential problems before they become unmanagable.

Conclusions

This paper has explored the topic of student aggression, the factors associated with aggression and some teaching methods to avoid or reduce student aggression. In general, the paper found that student characteristics, testing and grading do contribute to student stress and that this level of stress can be reduced by improved teaching and evaluation techniques.

The findings of this paper have implications for teacher training and retention and for student learning.

Student frustration, anxiety and aggression are contagious and, if not properly managed, will serve as a disincentive to good teaching. Faculty unable to manage these problems may lose their desire to teach. Therefore, a better understanding of student aggression and its remedies may increase teacher retention rates. Likewise, students who enjoy the learning process without undue frustration and aggression might become better and more productive students.

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Strategies for Integrated Teaching

John Ward and Steve Waller

Introduction

Courses taught in Animal Science or Agronomy at the college and university level have traditionally been discipline and/or species oriented within a department (Schweitzer, 1986). Courses using a team-taught, (Haque and Bradshaw, 1986) integrated approach across discipline, department, and colleges are not common, yet learning styles based on personality type (Barrett et al., 1985; D'Albro, 1983) are very important in the teaching-learning process with students usually reacting favorably to team-taught course offering a variety of learning opportunities. In addition, problem solving (Howell et al., 1982) using case studies is a strategy for integrating several disciplines. This course was developed using a team-taught, problem solving, integrated approach for cow-calf production on rangeland.

Course Description

Livestock Management on Range and Pasture has been taught in the fall semester at the University of Nebraska-Lincoln for the past 26 years. The course is cross listed between the Animal Science Department and the Department of Agronomy. An instructor from each department has teaching and administrative responsibility for 50% of the course. It is a three-credit hour, 400/800 course which can be taken for either undergraduate or graduate credit. Five different instructors have been involved over the life of the course and student enrollment has ranged from 12-32.

The course provides students with first-hand knowledge of the complexity and sophistication of ranching. A case study approach with on-ranch visitation was selected. The course is a planning course with management alternatives serving as the focus for decision making. Problem solving decisions for the cow-calf producer must consider forage production, management and utilization along with animal nutrition, breeding program, and herd health as well as equipment, financing, and marketing. Consequently,

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senior standing and several prerequisites are strongly encouraged. Suggested prerequisite courses include the following: Forage Crop and Range Management or Range Management and Improvement, Feeds and Feeding or Advanced Feeding and Feed Formulation, and Production Economics and Farm Management or Production Economics and Ranch Management.

The course is divided into two sections: a week-long field session in which the students survey the ranch used as the case study and an on-campus, semester-long lecture/discussion. Each student is required to prepare a complete management plan as the major portion of their grade. In addition, some basic field skills such as plant identification and vegetation survey are taught during the field session and evaluated with traditional tested procedures. The course objectives are

1. Develop the skills required to conduct a complete ranch survey including range plant identification, range condition determination, range site classification and degree of plant and pasture utilization.
2. Analyze and interpret the forage, animal, and economic aspects of the ranch unit, including mapping of pastures and physical facilities.
3. Incorporate range and forage improvements such as grazing systems, range seeding, weed control, and hay and supplemental forage management with livestock management such as breeding systems, nutrition, insect and disease control.
4. Develop a comprehensive management plan including marketing strategies and economic analysis for the ranch unit.

The field portion constitutes 25% of the student's grade. During the semester, work sheets are used for selected topics (12%) with the ranch management plan making-up 60% of the total grade. Three percent is allowed for the development of a class notebook.

Characteristics of a Synthesis Course

Agricultural curricula generally include discrete units of instruction in specialized subject matter areas.