What Agriculture Students Say Motivates Them to Learn

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Abstract

A major shift in higher education is underway from a focus on teaching to a focus on learning. Thus, understanding what motivates students to learn may provide teachers insights into elements of the learning process over which the teacher may have some control. Students in the College of Agriculture, Kansas State University, were asked to identify specific teaching styles, classroom environments, grading methods, and assignment types that motivated them to learn. Overall, the most motivating characteristics in each category were an enthusiastic and interesting teaching style, an interactive classroom environment, fair grading methods, and assignment types that provided experience relevant to the profession. The most-cited factor reducing motivation was a long, boring lecture. Students with higher GPAs tended to be more goal-oriented and intrinsically motivated; they preferred more interaction and discussion, a clear grading system with high expectations, and frequent assignments. In contrast, students with lower GPAs were motivated more by extrinsic factors, such as the instructor's enthusiastic presentation, small classes, and hands-on assignments. Clearly, no single method can be used to motivate all students. However, this study identified many approaches an instructor can take to motivate students to learn.

Introduction

Institutions of higher education are challenged now more than ever to focus on the needs of clients, especially its students (Jones, 2003). While teaching has been a strong emphasis, the focus has shifted to learning (Levine, 2000). This shifting focus in higher education illustrates the need to understand what motivates students to learn. Motivation is central to student learning but has always been a challenge for teachers, because students enter the classroom with diverse backgrounds, interests, experiences, and learning styles. Certain motivational factors are at least partially under teacher control, while others rest solely with the student or are out of the control of both, such as physical facilities. For this paper, the authors concentrated on the areas over which teachers have some control.

Teacher characteristics have been found in previous research to be related to student motivation. Brophy (1987) writes that teachers who are energetic and excited about the subject motivate students by spreading that enthusiasm and interest to them. In addition, teachers who motivate are respectful and positive with students, challenge them, make students feel welcome and valued, and state their expectations clearly (Damico and Roth, 1994; McKeachie, 1994; Ornstein, 1993). Clarity, structure, enthusiasm, interaction, and variety are considered strong teaching principles (Rosenshine and Furst, 1971). In science classrooms, additional criteria such as the availability of the instructor and concern for the students exhibited by the instructor have been cited as important motivators (Druger, 2000).

Some of the intrinsic factors motivating students are a sense of competence and achievement (McKeachie, 1994). Students perform best when they can develop their own unique strengths (Ornstein, 1993). These factors demonstrate the need for activities to be located at the appropriate academic level so that the student is challenged and concurrently has the opportunity to be successful (Meece, 1991; Rosenshine and Furst, 1971), which relates to a need to feel competent (Deci and Ryan, 1991). Other intrinsic needs identified as motivational factors include the needs for sense of belonging and sense of control (Deci and Ryan, 1991).

Other sensory issues related to motivation include safety and security. Students who feel free to be creative and to take risks without being punished, like those who are willing to interact in the classroom discussion even if their answer is wrong, are more motivated to learn (Deci and Ryan, 1991). In addition to safety, students find motivation through a sense of fair treatment (Wankat and Oreovicz, 1993).

Both teacher and student characteristics interact to create a motivational learning environment. From a review of the literature on motivation, McCombs

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(1996) suggests that motivation to learn arises from both external supports and internal processes. Internal processes include the need to feel in control, competent, and connected to others. Additional internal processes are finding the activities of the course to be personally interesting, fun, meaningful, and relevant. The external supports are teachers who help the students see the relevancy of activities, give students choice and control; provide them with the personal skills or resources needed to be successful; and give them support including help, respect, and encouragement (McCombs, 1996). Several authors echo the need for students to feel that they have a voice in their own learning process (Damico and Roth, 1994; Farges, 1993; Wiggins, 1992; Ornstein, 1993).

Although general information about motivating students is known from the literature, little information is available about specific attributes found as motivational. Thus, this study was conducted to identify, from the student perspective, specific characteristics and activities that motivate students to learn in the College of Agriculture at Kansas State University. The objectives were to determine 1) what teaching styles, classroom environments, grading methods, and assignments best motivate these students to learn, and 2) whether or not these results differed by student grade point average (GPA) or year of study.

Materials and Methods

This study used qualitative data collection and analysis methods. The goal of qualitative studies is not to be generalizable to a larger population, which is often a goal of quantitative studies. Instead, the emphasis is on understanding the phenomena through collecting richer data that are poorly represented by numeric interpretations (Patton, 1990). With input from faculty and students, a qualitative questionnaire was prepared to solicit responses from students regarding attributes that motivate their learning. Questions related to the areas of teaching style, classroom environment, grading method, and assignment type. For each of these areas, students were asked to identify a teacher at Kansas State University who motivated them and to specify the attributes that motivated them. For example, the question on teaching style stated the following: "Fill in the blank with the name of an instructor at KSU whose teaching style encourages you to learn. Describe this teaching style." Two additional questions asked students to identify other factors they found to be motivational and specify classroom experiences that did not motivate them. The students self reported year in school and GPA. The questionnaire was field tested with a group of college students who were then ineligible to participate in the study. Based on feedback from the

Table 1. Thematic Conceptual Matrix of Motivators related to In-Class Factors

In-Class Factor	Theme	Illustrative Quotes
Teaching Style	1. Enthusiastic, interesting	"They are excited and extremely knowledgeable about their field."
	2. Helpful, caring, interested in students	"She cares about student's learning, knows when the class is ready to move on."
	3. Explains well, teaches to different learning styles	"She takes time to thoroughly explain information and is good at figuring out when students don't understand."
	4. Uses real-life examples	"She uses lots of examples and real-life applications, so you will know the info and be comfortable with its use."
	5. Organized	"Well-organized on PowerPoint"
	6. Interactive, promotes discussion	"He has a lot of group activities that are conducive to learning."
Classroom Environment	1. Interactive with discussion	"Interaction – students as leaders."
	2. Small classes	"The instructor can look everyone in the eye and make them part of the discussion."
	3. Relaxed, laid-back, comfortable	"Instructor creates a relaxed environment yet requires individual participation."
	4. Hands-on	"You are more into the class if you are applying what you are learning."
	5. Humorous, fun	"They are always fun and positive, full of energy that rubs off on the students."

Table 2. Thematic Conceptual Matrix of Motivators related to Out-of-Class Factors

Out-of-Class Factor	Theme	Illustrative Quotes
Assignment Type	1. Real-life assignments, relevant to profession	"We had the toughest problem imaginable. When we handed it in, we knew we could do it in industry."
	2. Hands-on	"His assignments are hands-on, where we do independent team research of a corporation."
	3. Challenging	"(Assignments) are challenging, yet let the students decide how and what to do."
	4. Fits material, applies to class	"Assignments back up what is taught in class."
	5. Prepares for exam	"Assignments go hand-in-hand with tests."
	6. Frequent assignments	"The weekly assignments motivate me to keep up."
Grading Method	1. Fair	"Tests and assignments representative of what was learned."
	2. Partial and extra credit, reworks	"Has extra credit that helps you correct earlier errors."
	3. Higher grading scale	"Higher expectations than normal, i.e.[sic], 92% for an A."
	4. More often or weekly quizzes	"Tests every Friday to keep you on track."
	5. High expectations, challenging	"Higher expectations than normal make you study more."
	6. Variety of graded work	"Variety of assignments, not just tests because you may not be a good test taker."
	7. Clear grading system	"Structure so students know exactly where the grade comes from with good spread of points."
	8. Optional final exam	"Optional final if student is satisfied with grade prior to final."

field test, the questionnaire was modified to improve clarity of the questions.

Faculty from each of ten departments and undergraduate programs in the College of Agriculture administered the questionnaire in one or more classes. Classes with a diverse group of students from different disciplines, ages, years in school, and GPAs were chosen. In total, 606 students completed and returned the questionnaire: 189 seniors, 97 juniors, 53 sophomores, and 267 freshmen. For comparison, enrollment in the College of Agriculture was 2,074 students at the time of the study.

Data from the responses were coded by themes as they emerged from the data, a coding concept from grounded theory methodology (Glaser and Strauss, 1967). Keywords, phrases, and concepts were first identified among the data. The authors then formed themes. Following appropriate methods of analysis for qualitative data (Miles and Huberman, 1994), thematic conceptual matrices were developed and are presented in the tables in this paper.

Data also were analyzed based on GPA and year in school (student rank: senior, junior, sophomore, or freshman). Role-ordered matrices (Miles and Huberman, 1994) were used to analyze these data.

The authors note that, because the data were collected in Fall Semester 1998, most of the freshmen surveyed reported that they did not have a GPA yet. Therefore, they were omitted from any analysis based on GPA, resulting in a pool of 167 students with GPA >3.0 and 172 students with GPA <3.0. Analyzed data were shared with a student panel during the Spring Semester in 1999 for a member check to validate the findings (Lincoln and Guba, 1985). A member checks is a method of validating qualitative findings by having a member(s) of a target population review the results.

Results and Discussion

Students identified many specific motivational in-class factors related to teaching style and classroom environment (Table 1) and out-of-class factors regarding assignment type and grading method (Table 2) that were consistent with published works, as previously discussed. However, analysis of student responses by student rank and GPA category (Tables 3 and 4) revealed differences in motivating factors that can be related to these two common student demographics.

Teaching Style

Enthusiastic and interesting teaching styles were important to almost all of the students (Table 1). The instructor's ability to "explain well and teach to different learning styles" was generally viewed as important as well. The teacher's ability to be "organized" and use "real-life examples" to make the material relevant also were important. The willingness of the teacher to be "helpful, caring, and interested" in the student was important to nearly all of the students questioned. Enthusiasm was particularly important to lower-GPA (<3.0) students (Table 3). "Interactive" and "promotes discussion" were important to seniors with higher GPAs (>3.0).

Overall, the teaching attributes that motivated students seemed to apply across student categories. However, the preference toward interaction and discussion was stronger for students of higher rank and higher GPA, who perhaps

Table 3. In-Class Motivators Grouped by Student Characteristics		
Teaching Style		
Rank	GPA Category >3.0	GPA Category <3.0
Seniors	1. Enthusiastic, interesting 2. Helpful, caring, student focused 3. Explains well, teaches to different learning styles 4. Uses real-life examples 5. Organized 6. Interactive, promotes discussion	1. Enthusiastic, interesting 2. Helpful, caring, student focused 3. Explains well, teaches to different learning styles 4. Uses real-life examples 5. Organized
Juniors	1. Enthusiastic, interesting 2. Helpful, caring, student focused 3. Explains well, teaches to different learning styles 4. Uses real-life examples 5. Organized	1. Enthusiastic, interesting 2. Helpful, caring, student focused 4. Uses real-life examples 5. Organized
Sophomores	2. Helpful, caring, student focused 3. Explains well, teaches to different learning styles 4. Uses real-life examples	1. Enthusiastic, interesting 3. Explains well, teaches to different learning styles 4. Uses real-life examples 5. Organized
Freshmen (no GPA)	1. Enthusiastic, interesting 2. Helpful, caring, student focused 3. Explains well, teaches to different learning styles 4. Uses real-life examples 5. Organized	
Classroom Environment		
	GPA Category >3.0	GPA Category <3.0
Seniors	1. Interactive with discussion 3. Relaxed, laid-back, comfortable	2. Small classes 3. Relaxed, laid-back, comfortable 4. Hands-on 5. Humor, fun
Juniors	1. Interactive with discussion 3. Relaxed, laid-back, comfortable	2. Small classes 3. Relaxed, laid-back, comfortable 4. Hands-on 5. Humor, fun
Sophomores	1. Interactive with discussion 5. Humor, fun	1. Interactive with discussion 2. Small classes 3. Relaxed, laid-back, comfortable
Freshmen (no GPA)	1. Interactive with discussion 2. Small classes 3. Relaxed, laid-back, comfortable 5. Humor, fun	

have more self-confidence in their knowledge and feel their contributions are valuable in the classroom; lower rank, lower GPA students were less motivated by this mode of teaching. Also, lower-GPA students tended to place more importance on teachers' enthusiasm and ability to make the subject interesting to the students. This supports Brophy (1987), but also qualifies that students of lower rank and lower GPA tended to place a higher premium on teacher enthusiasm. Both these trends revealed that the higher-GPA students tended to be more intrinsically motivated and the lower-GPA students tended to rely more heavily on extrinsic motivation from the instructor.

Classroom Environment

The most common responses are summarized in Table 1. The areas of classroom environment commonly noted among respondents were interactive with discussion, small class size, relaxed atmosphere, hands-on, and use of humor. Although these categories support the conclusions of many authors, as discussed above, differences among students were also found. Students with higher GPAs (>3.0) more often identified an "interactive" classroom environment as motivating, though all groups did note the importance of interactivity (Table

3). More lower-GPA students (<3.0) identified "small classes" and a "hands-on" classroom environment as motivating. In addition, "small classes" were identified by freshmen as motivating, perhaps because they help with the transition from the high-school environment. An environment most often referred to as "relaxed" or "laid-back" was identified consistently as motivating. Finally "humor" was cited more often by lower-GPA students.

Although responses to this question did not show trends within the student-rank categories, trends often were exhibited in the GPA categories. Most often these trends seemed to indicate that environments encouraging student participation, discussion, and interaction motivated the higher-GPA students. By contrast, the lower-GPA students were motivated by environments that were hands-on with more entertainment and had fewer numbers of students in the class.

Assignment Type

In general respondents indicated preferences for assignments that were relevant to the profession, hands-on, challenging, with a clear application to the class, helpful in preparing for exams, and frequent. The most common response themes are summarized in Table 2. Factors associated with GPA and student rank are presented in Table 4. Students clearly identified assignment types with "real-life" application and "relevance to the profession" as the most important motivating factors, and this was particularly evident among lower-GPA students (GPA <3.0). "Hands-on" and "challenging" assignments were cited uniformly across student rank but more frequently among lower-GPA students. Assignments that "fit the class material" and "prepare for exams" were found to motivate higher-GPA students. "Frequent assignments" were preferred by more juniors and seniors and higher-GPA students.

The students preferred assignments that provided real-life experiences. Instruction that clearly related the work to realistic situations was valued by the students. The students indicated that they were motivated by frequent and

Table 4. Out-of-Class Motivators Grouped by Student Characteristics		
Assignment Type		
	GPA Category	GPA Category
Rank	>3.0	<3.0
Seniors	1. Real-life assignments, relevant to profession 2. Hands-on 4. Fits material, applies to class 5. Prepares for exam 6. Frequent assignments	1. Real-life assignments, relevant to profession 2. Hands-on 3. Challenging
Juniors	1. Real-life assignments, relevant to profession 2. Hands-on 4. Fits material, applies to class 5. Prepares for exam 6. Frequent assignments	1. Real-life assignments, relevant to profession 2. Hands-on 3. Challenging
Sophomores	1. Real-life assignments, relevant to profession 4. Fits material, applies to class 5. Prepares for exam	1. Real-life assignments, relevant to profession 2. Hands-on 3. Challenging
Freshmen (no GPA)	1. Real-life assignments, relevant to profession 2. Hands-on 3. Challenging	
Grading Method		
	GPA Category	GPA Category
Rank	>3.0	<3.0
Seniors	1. Fair 4. More often or weekly quizzes 5. High expectations, challenging 7. Clear grading system 8. Optional final exam	1. Fair 2. Partial and extra credit, reworks 4. More often or weekly quizzes 5. High expectations, challenging
Juniors	1. Fair 4. More often or weekly quizzes 5. High expectations, challenging 7. Clear grading system 8. Optional final exam	1. Fair 2. Partial and extra credit, reworks 4. More often or weekly quizzes 5. High expectations, challenging
Sophomores	1. Fair 4. More often or weekly quizzes 6. Variety of graded work 7. Clear grading system 8. Optional final exam	1. Fair 2. Partial and extra credit, reworks 3. Higher grading scale 4. More often or weekly quizzes 6. Variety of graded work
Freshmen (no GPA)	1. Fair 2. Partial and extra credit, reworks 3. Higher grading scale 4. More often or weekly quizzes	

challenging assignments that help them do well in the class and prepare them for careers.

Grading Method

The most commonly cited characteristics are summarized in Table 2 and include descriptors such as fair, extra credit offered, higher and clear grading scale, more frequent quizzes, higher expectations, variety of assignments, and optional final. Many motivating concepts were described here, reflecting the great diversity in both instructor grading options and student preferences. A "fair" grading system was found to be important to all students. Lower-GPA students identified "partial and extra credit or reworking assignments" as motivating (Table 4). A "higher grading scale" was found to be important to freshmen and sophomores but was not very important to other juniors and seniors. In contrast, a grading method that has "high expectations" and is "challenging" was mentioned as motivating to juniors and seniors but was not mentioned at all by freshmen and sophomores. "More frequent or weekly quizzes" was cited as motivating by all categories of students. A "clear grading system" increased in importance to higher-GPA students. A "variety of graded work" was the motivating factor most commonly cited by the sophomores questioned. An "optional final exam" for students with an A or who are satisfied with their cumulative grade was cited as being motivating by higher-GPA students. Freshmen generally preferred a "curve" over "no curve," although neither method was identified as motivating by other class ranks. When these students used the term "curve," they were not referring to a statistical bell-shaped curve to distribute grades but to the use of additional points to increase the class average. This point was clarified by the student panel that reviewed the findings.

Throughout many of the responses, a common theme emerged that students wanted to be treated, as they see it, fairly. This was reflected directly by responses in the "fair" category and indirectly in many of the others. A "clear grading system" sets expectations up front in a fair way; and an "optional final exam" appears fair particularly to students who have met expectations throughout the course (i.e., higher-GPA students). Students also were motivated by being given choice and control. This was reflected in an "optional final exam," which gives students some choice in their education, as well as in the "variety of graded work," which provided them with a measure of control over their grades. Finally, juniors and seniors seemed to be motivated by "high expectations," whereas lower-rank students preferred "higher grading scales." Comments by respondents indicated that both of these factors motivate by encouraging students to study harder.

Experiences not motivating to students

To a degree, the students' responses about classroom experiences that do not motivate them reinforced the comments to other questions. "Long, boring lectures" was an overwhelming response as something that was not motivational, regardless of GPA or class rank, but notably for freshmen and sophomores, who tend to have more large-lecture classes. "No interaction or discussion" was cited as not motivating by higher-GPA students (>3.0), but it also appeared as not motivating for freshmen as well. "Lecturing straight from the book or overheads" also was mentioned as not motivating by most student categories. "Unfair grading" was mentioned by most student categories, reinforcing the comments about fair grading in an earlier question, but seemed slightly more important to higher-GPA and juniors and seniors.

Conclusions

As a qualitative study, numerous factors were identified in this study that would not have emerged with a strictly quantitative approach, but additional quantitative work would much more clearly identify the contribution of variables to motivational factors. Follow-up studies would be helpful in this arena.

The preference toward interaction and discussion was stronger for students of higher rank and higher GPA, who perhaps have more self-confidence in their knowledge and feel their contributions are valuable in the classroom; lower-rank, lower-GPA students were less motivated by this mode of teaching. This distinction should be considered in adoption of any teaching method that increases student participation, such as the cooperative learning methods.

Interestingly, the lower-GPA students were motivated by hands-on environments with more entertainment. This finding reinforces the idea that lower-GPA students are more extrinsically motivated in the classroom environment. The finding that lower-GPA students expressed preference for classes with fewer numbers of students may also relate to confidence.

Clearly, these students wanted assignments that provide real-life experiences and for instructors to help them see the tie between their assignments and professions. This may be even more critical for lower-GPA students, who may have more difficulty making connections between theory and practice. Hands-on activities may also help build this tie for the lower-GPA students. Higher-GPA students were motivated by class material that related to assignments and exams that resulted in grades. These students may be more results oriented, and grades are the most easily identified results. Fairness in grading, choice, and control all were cited heavily by the students in this study as motivational factors.

By acknowledging and addressing the factors that motivate students, as well as specific groups of students, an instructor can enhance learning by creating environments and opportunities that are

inherently motivational for the range of student types found in typical agriculture classes. Clearly, no single teaching style, classroom environment, grading method, or assignment type motivates all students. However, students can be motivated or not by some decisions directly under the instructor's control. The results summarized in this paper may help instructors focus on the motivational impacts of specific teaching, classroom, grading, and assignment techniques on different types of students. In essence, one method to help us become more motivational teachers of agriculture may be to ask students directly.

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