

The Scholarship of Teaching: Classroom Research at KU

*Why Students Do and
Do Not Attend Classes*

Fall 1999

A study for the faculty of the University of Kansas
from the Center for Teaching Excellence

Paul Friedman, Associate Professor of Communication Studies
Joe McComb, CTE Technology & Research Assistant
Fred Rodriguez, CTE Director

Cover design & editing by Judy Eddy, CTE Program Assistant

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Foreward

“What everyone wants for students – a wide array of learning opportunities that engage students in experiencing, creating, and solving real problems, using their own experience, and working with others – is for some reason denied to teachers when they are the learners.”

– Ann Lieberman, 1995

The Scholarship of Teaching: Classroom Research at KU is an annual publication that shares with the university community research that examines issues related to instruction. The task was undertaken because we believe that classroom research leads to improved practice. This inaugural issue is devoted to a time-honored question: why students do and do not attend classes. We hope you will find the results of this study informative.

How does scholarship lead to improved practice? First, it creates a climate on campus for the serious discussion of teaching and learning, and it meets the intellectual challenges of teaching through continuing study and investigation. Faculty need more than just awareness of what they and their students should do. They need to assess impacts that will very likely result in challenges leveled against long-standing assumptions and practices. Second, taking a scholarly approach to instruction encourages active inquiry about teaching and learning. When it comes to learning in our disciplines, we thrive. We do what the literature proposes as ideal: take charge of our learning. Studying teaching can help us thrive in our classrooms.

Why do students choose to attend or not attend our classes? During the last quarter of the Fall of 1998, 50 undergraduate students were asked to list their reasons for attending or being absent from class sessions in each course they were taking. These reasons were then incorporated into an instrument completed by 333 students which provided information on 1,633 courses. This study investigated how several characteristics of *students*, their *courses*, and their *reasons* for day-to-day attendance decisions relate to their *attendance behavior*. Teachers who wish to understand their own students' attendance are encouraged to administer the questionnaire in appendix A and compare results with the norms in appendix B.

One of CTE's goals is to continue to encourage and support colleagues who wish to contribute to the scholarship of teaching at KU. I am mindful of the enormous contribution classroom teachers can make to the practice of teaching, especially their own but also that of their colleagues. This publication is one effort to initiate interest in the scholarship of teaching.

Fred Rodriguez, Director
Center for Teaching Excellence

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Abstract

Members of a teaching circle on student attendance suggested that a study be done regarding why University of Kansas students do and do not attend classes. A survey instrument was created, administered, and analyzed to learn how characteristics of students, the courses in which they are enrolled, and reasons they give for day-to-day attendance decisions relate to their attendance behavior. During the last quarter of Fall 1998, 50 undergraduate students were asked to list their reasons for attending or being absent from class sessions in each course they were taking. These reasons were incorporated into an instrument completed by 333 students, who answered several questions about themselves, listed each course they were currently taking, reported the number of class sessions they had missed in each course, answered questions about each course’s characteristics, and rated the reasons for attending and not attending classes in each course. They provided information about 1,633 courses. Data regarding the nature of students, courses, and attendance explanations were related to the number of absences students reported for each of their courses.

The only student characteristic significantly related to attendance was grade point average: the higher the students’ GPA, the fewer absences they had ($p < .001$). (Several other characteristics – e.g. gender, age, work schedule, course load, and distance from school – proved to be unrelated.) A few course characteristics correlated significantly with absences. One was motivation: attendance was better in courses students wanted to take. A second was type of course: students were absent from professional school classes and laboratory courses less than from other classes (humanities, natural sciences, social sciences). They were absent

from natural science courses more than courses in the other two subject areas. A third course characteristic was class size. The larger the class, the more students missed it. A fourth was teacher status: students attended courses taught by GTAs significantly more often than they did classes taught by professors. Further analyses indicated that increased absences in large, natural science, and professor-taught courses could be explained by attendance-taking policies: when students' absences threatened their grade, attendance went up, regardless of the class' size, subject matter, or teacher status.

Most students said they attended simply because they "should," and most referred to illness or other reasons to explain absences. However, some teacher behaviors – i.e. noting or penalizing absences and providing lively, meaningful instruction – significantly influenced attendance.

These findings refer to the entire sample studied. Teachers who wish to understand their own students' attendance are encouraged to administer the questionnaire and compare results with norms in Appendix B.

Introduction

Class attendance is a puzzle. Undergraduate education at the University of Kansas consists primarily of students taking 40–45 appropriately distributed courses in which they receive instruction from faculty members. We go to considerable effort to assure that a qualified teacher meets with enrolled students for a particular number of hours during a semester for each academic credit awarded. Buildings are built, rooms reserved, teaching schedules set, and students enroll with the assumption that faculty–student encounters will occur. Yet, quite often students don't show up.

Sometimes, illness or another calamity makes absence unavoidable. But we know that more students choose not to attend class than could possibly be sick or detained. No authoritative survey of class attendance has been made, but informal conversations with many colleagues, even highly-rated, award-winning teachers, suggest that 25% or more students are likely to be absent from classes on any given day. Tuition fees are increasing, so enrollment in each course is costly. One wonders why all students don't attend as many class sessions as possible to get what they enrolled and paid for. Do certain course characteristics encourage absenteeism? What is the profile of students who attend more regularly? How do students explain why they attend some classes and choose not to attend others?

We have no ready access to information regarding such questions. In K–12 schools, written notes from home explaining absences usually are required. Our students occasionally provide explanations for their absences voluntarily. But most often, we see only empty seats. Thus, most absences are indecipherable messages that reveal nothing about why students are not there. Without additional information, some of us take absences personally. After all, being stood up for an expected meeting usually is demeaning, and in some communities being avoided or

shunned is a repudiation for doing something wrong. Others infer explanations for students' absences from environmental clues. They may look out the window and assume absences are due to good (or bad) weather, look at the clock and assume it's the early (or late) time a class is scheduled, or overhear comments from students present about a social event the night before or an upcoming test in another class and assume that these events caused other students' absences. Such inferences are highly suspect, so we decided to investigate empirically why students choose to attend or choose not to attend classes.

Previous research on this issue provided little help. A large literature indexed under "attendance" concerns why students choose to attend college (rather than enter the work force after high school), why they choose to attend particular types of post-secondary institutions (e.g. vocational, community, or four-year colleges), and why they persist in college (rather

than drop out), but very little attention has been given to why they do and do not attend particular classes once they are enrolled in college. Some studies include absenteeism when examining other educational concerns, such as attrition (Wilder, 1993), grading (Cross, 1993), and learning styles (King, 1995), but they don't address why students do or do not skip classes. Those that do focus on limited populations. For example, McCutcheon (1989) studied absenteeism among community college students and Wyatt (1992) studied freshmen students, but no researcher has addressed reasons for attendance throughout the tenure of students at a comprehensive four-year institution, and none have asked students why they do and do not attend classes, so we sought to achieve these purposes.

Research questions. Student attendance was examined to answer four major questions: 1. How do characteristics of the students relate to their attendance behavior? 2. How do characteristics of the courses in which students are enrolled relate to their attendance behavior? 3. What reasons do students give for their day-to-day attendance decisions? and 4. How do these reasons relate to the number of their absences?

Student characteristics. To understand how student characteristics relate to attendance, the following variables were studied:

Gender: One might conclude from the literature on gender in education (e.g., MacKinnon, 1998) that the college classroom is a less congenial place for females than males. Wyatt (1992) found in a study of first-year students that female students are absent from their classes more than males. Thus, the relationship between gender and attendance seemed worth measuring.

Class standing: The high attrition rate among first-year students, the purported "sophomore slump" (Wilder, 1993), and the well-known "senioritis" syndrome suggested that class standing might be related to attendance.

Age: Older students usually sacrifice more to attend college and so might be more committed to attendance. On the other hand, they might have more competing responsibilities that would keep them away from school.

Grade point average: Wyatt (1992) and others have found that students with a higher grade point average skip class less, perhaps because they like school more, do better in school, are more grade conscious, or are more intrinsically committed to regular attendance.

Employment: Presumably, students who spend more time working have less time and energy for schoolwork, and might attend less regularly.

Residence: Some research shows students who live on campus are better integrated into academic life (Evans, Fortney, & Guido, 1998). Also, travel problems (bad weather or car trouble) may cause off-campus residents and commuters to be absent more than those living on or near the campus.

Funding of education: One might assume class attendance is related to how much tuition is charged for classes and how tuition is paid. Students

who pay out-of-state tuition (which may be three times higher than in-state) might be more motivated to attend class than in-state residents, and students paying their own way for tuition and books might attend more regularly than those whose costs are covered by parents. Also, one might suspect that those going to school on a scholarship would have better attendance, since they have excellent academic records to sustain.

Number of credit hours: The more credit hours in which a student is enrolled, the busier that student is likely to be, and the more prone that student might be to skip classes.

Our ability to assess the relevance of these variables must be considered in the context of the sample who provided data. In Table 1 are summary statistics regarding the 333 students involved.

Table 1: Profile of students surveyed
(n = 333)

Class: Freshmen 9%; sophomores 51%; juniors 16%; seniors 24%

Gender: Female 54%; male 46%

Age: Mean 20.4; minimum 17; maximum 39

Grade point average: Mean 2.95; minimum 1.6; maximum 4.0

Job hours worked: No job 48%; 1–10 hours 13%; 11–20 hours 23%; 21–30 hours 13%; 30 or more hours 3%

Housing: Dormitory 16%; scholarship hall 5%; fraternity/sorority 20%; house/apartment 56%; commuter 3%

Transportation to school: Walk 38%; bus 18%; drive 26%; unreported 18%

Funding of education: Work 8%; loans 16%; scholarships 9%; (others) parents 63%

Tuition type: In-state 60%; out-of-state 40%

Number of classes being taken: Mean 4.9; minimum 2; maximum 7

Number of credits being taken: Mean 14; minimum 6; maximum 21

Absences per student per class (each student's total # absences divided by his/her total # classes): Mean 3.17; minimum 0; maximum 12.25

Course characteristics. Most students reported quite a range of attendance behavior among courses in which they were currently enrolled (sometimes ranging from no absences in one course to 15 absences in another course). This intra-person variation suggested particular elements in course structure influenced attendance, so the following course-related characteristics were studied:

Type of course: Courses were divided into five content categories: social science, humanities, math and natural science, professional school, and laboratory courses. Courses in each domain involve different subject matter and educational experiences, so each might influence student attendance.

Motivation: Choice, or a sense of control over one's environment, has been found to influence behavior (Langer, 1998), so one might assume students would attend an elective class more regularly than a required class. When students pick a course themselves, they may be more intrinsically motivated to be present to learn what the instructor has to offer.

Enrollment size: Students enrolled in smaller classes, where their absence or presence is more likely to be noticed, may attend more regularly.

Time of class: Classes held before 10:00 a.m. and after 3:00 p.m. may have more absences than classes in the middle of the day, since those are times some students might want to sleep in or leave campus early.

Teacher status: If attendance is a sign of respect for (or fear of) a teacher, students might be more likely to attend classes taught by faculty members than those taught by GTAs or staff (part-time teachers, lecturers, or lab technicians). Table 2 summarizes course data for students in this study.

Table 2: Characteristics of courses taken
(n = 1,633)

Type of course: Social science 44.1%; humanities 21.9%; math and natural science 16.4%; professional school 9.7%; laboratory 4.8%

Motivation: Elective classes 51.4%; required classes 48.6%

Enrollment size: 1–10 2.5%; 11–25 33.7%; 26–75 28.8%; 76–200 20.4%; 200+ 14.1%

Time of class: Classes held at or before 9:30 a.m. 30.2%; between 10:00 a.m. and 2:30 p.m. 62.9%; after 2:30 p.m. 6.9%

Teacher status: Regular faculty member 61.2%; graduate teaching assistant 34.9%; staff (e.g., part-time teacher, lecturer, lab technician) 3.9%

Students' reasons for attendance. The third element studied was student-reported reasons for attending and not attending classes. To identify attendance reasons, 50 undergraduate students were asked to list each course they were currently taking, write next to each course a reason they usually decided to attend it, and write a reason they usually did not attend one, if and when they had been absent. Duplications were eliminated from 247 reasons provided for attendance and non-attendance, from which 23 distinct reasons for attendance and 33 for non-attendance were identified.

Reasons ranged widely, indicating that attendance behavior can not be easily explained. The decision to attend may have multiple factors. Students may come to class because they are interested in the content, concerned about the influence of attendance on their grade, and their roommate or friend who also is taking the course is ill and asked them to take notes that day. Moreover, students' stated reasons do not tell the whole story. Each reason must be judged in the context of a particular student-teacher encounter; e.g., "I want to ask questions in class," does not reveal whether the student is a slow note-taker, an avid learner, or puzzled by a confusing teacher. Table 3 shows students' responses about why they attend class.

Table 3: Students' reasons for attendance (in random order)

Personal values

I believe I should attend (not going makes me feel guilty).

Access to course content

I am interested in the course content.

Content is not available another way (text, web, tutor, classmate's notes).

I want to take my own notes and not rely on anyone else.

Course content is available another way, but I prefer getting it in class.

The course content is difficult, so I must attend to learn or review it. I will fall behind if I miss class.

Hearing what's said in class helps me do my homework.

I want to ask questions in class

We work on assignments or projects in class.

Fulfilling grade requirements

Absences above a minimum affect my grade.

Bonus points are offered for attendance.

We might have an activity or pop quiz in class that will affect my grade.

The amount of my class participation affects my grade.

I'd have to make up the classwork if I missed.

Information about course procedures or tests may be announced.

Content is presented that I need to know (e.g., it may be on a test).

I have to turn in an assignment.

Teacher influence

The teacher is especially interesting. (I wouldn't attend as often if someone else were teaching this class.)

I like participating in this class.

The teacher notices and cares when I am there.

Peer influence

I like one or more of my classmates.

Other students expect me to come.

Students' reasons for absences. Table 4 provides reasons students gave for not going to a class.

Table 4: Students' reasons for *not* attending class (in random order)

Unavoidable inability to be present

I was sick.

A needed ride to class wasn't available.

Emergency arose; I met an urgent, unexpected need.

The weather was bad.

Choice of other school activities

I felt tired or overslept because I did schoolwork the night before.

Instead of attending, I did an assignment or studied for a test in another course.

I had a campus-related appointment (e.g., met with advisor, participated in athletic event).

Choice of other non-school-related activities

It was a religious holiday.

I had a personal task to do at that time (e.g., dentist appointment, airport pickup, shopping, etc.).

I had to care for someone else (e.g., a child or sick person).

I was out of town or on my way to (or from) an out-of-town destination.

I had a job-related conflict (an interview, work shift at class time).

Irresponsible leisure pursuits

I felt tired or overslept because I had fun the night before.

Instead of attending, I wanted to take a break during the time class was meeting.

I was recovering from alcohol or drug use (e.g., hangover).

The class was hard to reach (e.g., far from where I live or work, parking is inconvenient).

I went home earlier and didn't want to return to campus.

It's my first or last class of the day.

Avoiding anticipated class experience:

a. Teacher-related avoidance

The teacher doesn't notice or care whether I am there.

I like the subject, but the teacher is boring (I'd attend more if someone else presented the same material).

The teacher digresses, is repetitious, confusing, or goes too quickly, so I don't learn much when I attend class.

The teacher's speech or handwriting is not intelligible.

The teacher is rude or doesn't like me.

b. Avoidance of other class elements

I had not done an assignment for this course due that day.

I didn't want to participate in a class activity scheduled for that day.

I dislike other student(s) in that class.

I dislike the subject matter.

Lack of incentive

Attendance is not taken or does not influence my grade.

The course content is available from another source (e.g., I can get it from the text, the web, a tutor, a classmate's notes).

I did not need to know what was presented (e.g., guest speaker or student presentations).

The course content is easy; I needn't attend to know it.

These reasons reveal how one or more individual students explain their decision to attend or not attend one of their classes. But they don't reveal how common or how important these reasons are. Therefore, this study sought to uncover this information.

Methodology

Data for this study was gathered during the last quarter of the Fall 1998 semester, using an attendance questionnaire completed by 350 undergraduate students (see Appendix A). Most (290) were enrolled in a multi-section basic social science course that includes a research participation requirement, and the rest (60) were enrolled in an upper-level elective course in the same department. (The latter group was added to get more data from upper-level students.) These students were asked to: a) answer several questions about themselves, b) list each of the courses they were currently taking, c) report the number of class sessions they had missed in each course by that point in the semester, d) answer several questions about each course's characteristics, and e) rate their reasons for attending and not attending classes in each course.

For this last part of the questionnaire, they were asked to "think of attendance as a choice or decision you make each day" and to report first *whether*, and then *how much*, each reason (listed in Tables 3 and 4) affected that attendance choice for each

of their current courses. They rated the importance of each reason on a three–point scale: as one of the main reasons they did (or didn’t) attend a class, a moderately important reason, or a minor reason. A total of 333 students completed the questionnaire as directed, and they provided information about 1,633 courses.

To determine the extent to which these potential influences on attendance make a difference, this data regarding the nature of students, courses, and attendance explanations were related to the number of absences students reported for each of their courses.

Results

Relationship between student variables and attendance. To learn which student variables correlate significantly with the number of absences students reported, Pearson product–moment correlations were computed (Table 5). Since a large number of variables were examined, a rigorous standard for significance ($p < .001$) was maintained.

Table 5: Relationship between student variables and attendance behavior

<u>Student variable</u>	<u>Correlation</u>
Class	.011
Gender	.007
Age	.009
Grade point average	–.100*
Job hours worked	.068
Housing	
Dorm	–.003
Scholarship hall	–.011
Apartment	.016
Greek	–.010
Transportation to school	
Walk to class	.023
Drive to class	.025
Take bus	.073
Funding of education	
Work	–.003
Loans	.015
Scholarship	–.022

Employer	-.015
Parent	.003
Number of credits being taken	.014

(* = $p < .001$)

Only one student variable reached the $p < .001$ level of significance: grade point average. The higher the students' GPA, the fewer absences they had ($r = -.100$). Students who received better grades have fewer absences from their classes. This result shows only a relationship; causality might go either way: better attendance might help produce better grades, or the desire for better grades might motivate better attendance, or both.

At least among this group of students, many of the variables purported to influence attendance showed an insignificant relationship. Variables found not significantly related to students' absences were class, gender, age, residence, mode of transportation, method of funding education, work load, and number of credits enrolled. In other words, males and females, older and younger students, students who live on and off campus, students who do and don't have jobs, students with light and heavy course loads, and students who do and don't pay their own way in school attend classes with equivalent frequency. All of these likely explanations for students' attendance behavior were not supported by the data collected.

Relationship between course variables and attendance behavior. Several course-related variables were significantly related to attendance (see Table 6).

Table 6: Relationship between course variables and attendance behavior

<u>Course variable</u>	<u>Correlation</u>
Type of course:	
Social science	.004
Humanities	.008
Math and natural science	.168*
Professional school	-.107*
Laboratory	-.154*
Motivation:	-.127*
Enrollment size:	.183*
Time of class:	.050
Teacher status:	
Faculty	.169*
GTA	-.159*
Staff	.034

(* = $p < .001$)

The following course characteristics correlated negatively with absences; the higher the amount of each one, the fewer absences students reported:

Motivation – The more students said a course was one they definitely or mostly wanted to take (one they did or would have freely chosen), the fewer their absences ($r = -.127$).

Type of course – Students cut professional school classes ($r = -.107$) and laboratory courses ($r = -.154$) less often than they did their other classes (humanities, social sciences, and natural sciences).

Teacher status – Students attended courses taught by GTAs significantly more often than they did classes taught by professors ($r = -.159$). This finding was surprising; we predicted that students would cut professors’ classes less often than classes taught by GTAs or others.

Since this was an unexpected finding, it was explored more deeply. The students’ reasons for attending GTA and faculty taught classes were examined. A “bootstrapping” procedure revealed that the only reason for which significantly more students ($p < .001$) reported that they attended a GTA–taught course than one taught by a professor was “Absences above a minimum affect my grade.” And the only reasons for which significantly more students ($p < .001$) reported they are absent from professor–taught courses were “Attendance is not taken or does not affect my grade,” and “I dislike the subject matter.” Apparently, the difference between the number of absences in professor– and GTA–taught classes is due primarily to their respective attendance–taking policy, as well as the assignment of professors to teach courses with disliked subject matter. Clearly, when students’ absences affect their grade, attendance goes up.

Moreover, the effect of an attendance policy appears to increase as class size increases. Class size was among several course variables that were positively correlated with attendance. The larger the class, the more students cut it ($r = .183$), and the number of absences is significantly higher in the largest classes where there is no penalty for absences (see Table 7).

Table 7: Number of absences in classes of increasing size with and without a penalty for absences

<u>Class size</u>	<u>Mean number of absences in classes with & without penalty</u>	
	<u>Without</u>	<u>With</u>
1 – 10	1.478	0.727
11 – 25	2.631	2.370
26 – 75	3.269	2.785
76 – 200	3.780	1.703*

This finding also was investigated in greater depth. A “bootstrapping” procedure was used: data on reasons for attending large and small classes was randomly sorted 1,000 times and compared. Bonferoni’s protection was used to eliminate possible spurious significant results. Following are reasons indicated significantly more often by students ($p < .001$) for attending smaller classes rather than larger classes:

- The teacher notices or cares that I am there.
- I like participating in this class.
- Other students expect me to come.
- I want to ask questions in class.
- We work on assignments or projects in class.
- The amount of class participation affects my grade.
- Absences above a minimum affect my grade.

Students also indicated several significantly different ($p < .001$) reasons for being absent from large classes:

- Attendance is not taken or does not influence my grade.
- The course content is available from another source (e.g., I can get it from the text, the web, a tutor, a classmate’s notes).
- The teacher doesn’t notice whether I’m there.
- The teacher digresses, is repetitious, confusing, or goes too quickly – so I don’t learn much when I attend class.
- Instead of attending, I did an assignment or studied for a test in another course.
- Instead of attending, I wanted to take a break during the time class was meeting.
- I was out of town or on my way to (or from) an out-of-town destination.
- The weather was bad.

Apparently, students say they attend small classes for the chance to be actively involved in class dialogue and because their presence is noticed and has an impact on their course grade. In contrast, students state that they miss large classes because their attendance isn’t noticed, necessary, or consequential, so they are easily tempted to absent themselves.

Type of course – Students skipped classes in natural science more than any other subject area. This finding probably relates more to the presence of an attendance policy than to teachers or the course’s content. To explain, Table 8 relates class size to absenteeism in three kinds of classes: humanities, natural sciences, and social sciences.

Table 8: Number of absences in subject matter classes of different size

<u>Class size</u>	<u>Type of course with mean number of absences</u>		
	Humanities	Social sciences	Natural sciences
11–25	3.205	2.564	3.558*
26–75	3.059	3.133	4.719*
76–200	3.442	3.492	3.203
200+	3.857	5.086	6.592

(p < .001)

In three of four categories, attendance is lowest in natural science classes. When class size is controlled, natural science courses have significantly more absences in small to medium-sized classes. However, this trend is negated when attendance is taken. Indeed, when comparing only courses with an attendance-checking policy, students report attending natural science classes more often ($r = .164$) than courses in the other two disciplines (Table 9). Apparently, natural science classes have less “pull” on students when attendance isn’t checked than classes in other areas. But students in these classes are more responsive when “pushed” to attend by an attendance-checking policy than they are to attend classes in other disciplines.

Table 9: Number of absences in courses with attendance-checking policy

<u>Type of course</u>	<u>Mean number of absences</u>
Humanities	2.646
Social sciences	2.546
Natural sciences	1.927

To summarize, students attended GTA-taught classes more than faculty-taught courses, larger classes less than smaller classes, and natural science classes less than the others. However, a consistent underlying element in all of these comparisons is the presence of a policy that involves checking for and penalizing absences. When this element exists, the findings are reversed: natural science classes are

attended more often than the other liberal arts and sciences courses.

Why students attend classes. Students assessed 23 reasons for attending class in two ways: 1. They identified their reasons for choosing to attend each course they were taking; and 2. They next rated the importance of each reason for its influence on that decision. Assuming that multiple causes affect attendance on any given day, the latter rating prioritizes them. Reasons students identified most often, and also rated as most important, in determining their attendance are listed in Table 10 in descending order.

Table 10: Reasons for attendance checked most frequently

<u>Reason for attendance</u>	<u>Percent</u>
I believe I should attend (not going makes me feel guilty).	75.4%
Content is presented that I need to know (e.g., may be on a test).	70.4%
Information about course procedures & tests may be announced.	65.7%
I am interested in the course content.	57.4%
I want to take my own notes and not rely on anyone else.	57.0%
Hearing what's said in class helps me do my homework.	55.7%
I have to turn in an assignment.	53.5%

Relation to amount of attendance. Although most students say these are the most important reasons they attend a class, we don't know how well these reasons relate to their actual behavior, to their attendance frequency. In other words, which reasons were checked most often for the classes they actually attend most often (or cut the least)? A correlation measure revealed that the more the reasons in Table 11 were given, the more students came to class.

Table 11: Reasons for attendance most related to attendance behavior

<u>Reason for attendance</u>	<u>Correlation</u>
I believe I should attend (not going makes me feel guilty)	-.187*
The teacher notices and cares when I am there.	-.176*
Absences above a minimum affect my grade.	-.173*
I like participating in this class.	-.153*
I want to ask questions in class.	-.136*
We work on assignments or projects in class.	-.134*
The amount of my class participation affects my grade.	-.130*
I am interested in the course content.	-.128*

* (p < .001)

We see from Table 11 that the primary attendance motivator is internal, a sense of responsibility to be present. However, the remaining reasons can be influenced by teachers. Using Table 11 to infer policies to increase attendance, one might conclude that how much attendance affects a student's grade and the amount of class participation are most influential. Thus, we might reason from these results that a) *taking attendance and penalizing absences* and b) *incorporating active learning strategies in the classroom* will encourage student attendance.

It is interesting to note in Table 12 which reasons were not significantly correlated with the number of absences (these reasons are least likely to make a difference in student attendance). These data suggest that these reasons are irrelevant to how many times students cut class, yet each is believed by some teachers to explain student attendance. These beliefs appear to be myths: these course characteristics do not have a significant impact on attendance.

Table 12: Reasons for attendance least related to attendance behavior

<u>Reason for attendance</u>	<u>Correlation</u>
Course content is presented that I need to know.	-.060
The class is held at a convenient time and place.	-.049
Bonus points are offered for attendance.	-.047
We might have an activity or pop quiz that will affect my grade.	-.043
Information about course procedures & tests may be announced.	-.023

Two reasons, “Course content is presented that I need to know” and “Information about course procedures and tests may be announced,” were checked by students most often to indicate why they attend classes (see Table 10.) Yet they weren't related to students' actual overall attendance behavior, suggesting these reasons aren't compelling to chronic absentees.

Why students do not attend classes. Students next assessed 33 reasons for not attending class (drawn from 50 open-ended questionnaires analyzed in a preliminary study). They were asked to check reasons that applied for each course they were taking and to rate the importance of each one. The most important reasons (which also were the ones checked most often) are listed in Table 13.

Table 13: Reasons for absence checked most frequently

<u>Reason for absence</u>	<u>Percent</u>
I was sick.	38.1%
I felt tired or overslept because I did schoolwork the night before.	32.5%
I felt tired or overslept because I had fun the night before.	32.0%
I had a personal task to do at the time.	22.0%
Attendance is not taken or does not influence my grade.	21.6%
I wanted to take a break during the time class was meeting.	20.7%
I was out of town or on my way out of (or back to) town.	20.1%

Relation to number of absences. Again, it is useful to determine which reasons are associated with frequent absences – which correlate positively with the number of absences students reported. The more the reasons in Table 14 were given, the more students chose not to attend class.

Table 14: Reasons for absences most related to attendance behavior

<u>Reason for absences</u>	<u>Correlation</u>
Attendance is not taken or does not influence my grade.	.357*
The teacher doesn't notice or care whether I am there.	.336*
Course content is available from another source (e.g., I can get it from the text, the web, a tutor, a classmate's notes, etc.)	.313*
I felt tired or overslept because I had fun the night before.	.269*
The teacher digresses, is repetitious, confusing, or goes too quickly – so I don't learn much when I attend.	.261*
I dislike the subject matter.	.256*
I like the subject matter, but the teacher is boring – I'd attend more often if someone else presented the material.	.243*
Instead of attending, I did an assignment or studied for a test in another course.	.233*
Instead of attending, I wanted to take a break during the time class was meeting.	.225*
It's my first or last class of the day.	.215*

* (p < .001)

One may infer from Table 14 that number of absences is affected most by attendance's influence on grades, instructor's effectiveness, and student priorities: not noting/taking attendance, not providing lively, meaningful instruction, and students' alternate activities seem to encourage absences.

Discussion

We sought to discover which student and course characteristics relate to attendance behavior, and why students say they do and do not attend classes. Findings from this study lend support to some common faculty assumptions and findings from previous research, and they challenge some others. The only objective student characteristic associated with better attendance was a higher grade point average. This finding is consistent with previous research (Wyatt, 1992). Thus, one can safely advise college students that better attendance is associated with better grades. The lack of significance for other student characteristics suggests teachers should not assume that students who are female, are younger, have a job, commute, depend upon parents for support, or take a large number of credit hours are more likely to skip class. These inferences were not supported by data from this study.

Students had fewer absences in courses they wanted to take (ones they did or would have freely chosen). Thus, teachers of required courses see more empty seats. This finding may suggest that adding required courses to the core curriculum should be considered carefully. If students tend to cut these more than they do courses they choose to take, some of the benefit of establishing a requirement may be diminished. Perhaps a better policy is creating a menu of acceptable courses from which students may choose ones they prefer. Analogous benefits of choice may extend to the attendance policy within a class. Duffy and Jones (1995) suggest teachers “involve students in setting the attendance policy. Some of our colleagues have found that if students help set the policy, they stick to it” (p. 90).

Students’ lower attendance in large, professor–taught, natural science courses can be explained by whether an absence–checking and penalizing policy exists, so the old saying, “What’s measured gets done,” seems to apply. Teachers who care about attendance would see results from checking it and making it consequential. However, this approach contradicts the often advocated policy that “attendance should not be mandatory or a factor in your grading policy. Grades should be based on students’ mastery of the course content and not on such nonacademic factors as attendance” (Davis 1993). So teachers should insist on attendance only when students’ presence is clearly essential for achieving their academic goals.

When students explain why they attend classes, a strong intrinsic work ethic prevails. Their most frequently checked explanation for class attendance (75.4%) is “I believe I should attend (not going makes me feel guilty).” Yet, the next most–often cited reasons suggest that course content makes a difference: “Course content is presented that I need to know (e.g., it may be on a test)” (70.4%); “Information about course procedures and test expectations may be announced” (65.7%); and “I am interested in the

course content” (57.4%). Clearly, expecting to hear interesting and important course content influences students’ decision to attend.

Another pedagogical practice that encourages attendance seems to be engaging students in activities they must be in class to do: participating in discussion, asking

questions, and working on assignments or projects. The reasons with the second and third highest correlation with absenteeism suggest that students skip class when they feel their attendance is superfluous (“The teacher doesn't notice or care whether I am there” and “The course content is available from another source; e.g., I can get it from the text, the web, a tutor, a classmate's notes, etc.”)

However, students' own choice-making also explains absenteeism. Many elect to cut in order to recover from fatiguing leisure activities (“I felt tired or overslept because I had fun the night before” – 32%); do work for another course (“Instead of attending, I did an assignment or studied for a test in another course” – 29%); pursue recreation (“Instead of attending, I wanted to take a break during the time class was meeting” – 21%); and cut the work day short (“It's my first or last class of the day” – 19%). These choices suggest that class attendance is given low priority by a substantial percentage of students.

Of course, the same choices could also be explained by students' low estimation of the instruction provided in classes they cut, since the following items also correlated significantly with attendance levels: “The teacher digresses, is repetitious, confusing, or goes too quickly – so I don't learn much when I attend” ($r = .261$); “I dislike the subject matter” ($r = .256$); and “I like the subject matter, but the teacher is boring – I'd attend more often if someone else presented the material” ($r = .233$).

We should note that the reason most students gave for not attending a class was illness (38.1%). But when reasons for absences were related to numbers of absences, illness fell from the first to the fourteenth position ($r = .171$). Thus, in a semester nearly 40% of students will be absent at least once due to illness, but students with large numbers of absences are more likely to have other reasons. The one most highly related to attendance is that being absent won't affect their grade ($r = .357$).

Clearly, this study did not isolate a single cause of attendance behavior; instead, it seems to blend teacher- and student-centered reasons. A linear regression analysis, using a stepwise procedure to select variables from among the reasons students say they do and do not attend classes, found that seven reasons account for 29% of the variance: if students believe they should attend class, are not sick, not tired from having fun the night before, and like the subject matter, and if teachers notice when students are there, take their attendance into account for the course grade, and provide information students must be in class to get, attendance will be optimal.

APPENDIX B

Norms for reasons of attendance

One can learn from the preceding material why most students do or do not attend classes. However, for individual teachers, that information is less important

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- MacKinnon, A. (1998). *Education into the 21st century: Dangerous terrain for women?* Bristol: Taylor & Francis.
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- Wyatt, G. (1992). Skipping class: An analysis of absenteeism among first–year college students. *Teaching Sociology*, 20, 201–207.

APPENDIX A – Questionnaire

WHY KU UNDERGRADUATES DO AND DO NOT ATTEND CLASSES

*I am a freshman ____, sophomore ____, junior ____, senior ____.

*I am a male ____, female ____.

* My age is: _____.

*My grade point average is: _____.

*I have a job ____ do not have a job ____ this semester. If you *do* have a job, how much do you work?
 1–10 hours per week ____, 11–20 hours ____, 21–30 hours ____, 31–40 hours ____, 41+ hours ____.

*I live in a: dorm ____, scholarship hall ____, apartment/house in Lawrence ____, fraternity/sorority ____.
 I commute to Lawrence ____.

*To get to school, I usually: drive ____, walk ____, take the bus ____.

*What *percent* of your education is paid by: your work ____%; loan ____%; scholarship ____%; your employer ____%, other (e.g. parents) ____%.

* I pay: in-state ____, out-of-state tuition ____.

*Please write below the name of the *department* and *number of credit hours* for each course you're currently taking (if a course involves a lecture and lab, please list each separately):

	DEPARTMENT	CREDIT HOURS
Course A:	_____	_____
Course B:	_____	_____
Course C:	_____	_____
Course D:	_____	_____
Course E:	_____	_____
Course F:	_____	_____

II. Please provide in the chart at the bottom of this page five additional pieces of information for each course you just listed:

Column 1: ABSENCES – *How many times* (approx.) thus far have you been absent from each class?

Column 2: TEACHER – Indicate (if you know) whether the teacher of each course is:

- a. a regular faculty member (e.g. an assistant, associate or full professor),
- b. a graduate teaching assistant,
- c. other (a part-time/adjunct teacher, lecturer, lab instructor, etc.)

Column 3: MOTIVATION – Rate *your motivation at the start of the semester* to enroll in the course:

- 5 = a course you *definitely wanted* to take, one you *would have freely chosen* (or did choose).
- 4 = a course you *mostly wanted* to take.
- 3 = a course you felt *unsure* about taking, or *knew little about*.
- 2 = a course you *mostly had* to take.
- 1 = a course you *definitely had* to take, one you *would have avoided* if you could.

Column 4: ENROLLMENT – Approximate number of students enrolled in this course.

Column 5: TIME OF CLASS – Time at which the class begins (e.g. 8:30, 11:00, 2:30, etc.).

COURSE	1 ABSENCES	2 TEACHER	3 MOTIVATION	4 ENROLLMENT	5 TIME
A	_____	a b c	5 4 3 2 1	_____	_____
B	_____	a b c	5 4 3 2 1	_____	_____
C	_____	a b c	5 4 3 2 1	_____	_____
D	_____	a b c	5 4 3 2 1	_____	_____
E	_____	a b c	5 4 3 2 1	_____	_____
F	_____	a b c	5 4 3 2 1	_____	_____

REASONS FOR ATTENDING CLASSES

Think of attending class as a choice or decision you make each day. Below are reasons to attend:

*In column **1**, check all reasons you attend each class listed (**A – F**) on the previous page.

*In column **2**, rate the reasons you checked, writing one of the following numbers next to each check: 3 = This has been one of the *main* reasons I have attended this class.

 2 = This has been a *moderately important* reason for attending this class.

 1 = This has been a *minor* reason for attending this class.

Start with Course **A** – *check* the reasons you attend, then *rank* those reasons – next, do Course **B**, then Course **C**, Course **D**, Course **E** and Course **F** (if you have that many).

REASONS FOR ATTENDANCE	COURSES											
	A		B		C		D		E		F	
	1	2	1	2	1	2	1	2	1	2	1	2
a. I believe I should attend (not going makes me feel guilty).	/	/	/	/	/	/	/	/	/	/	/	/
b. I am interested in the course content.	/	/	/	/	/	/	/	/	/	/	/	/
c. Course content is not available in any other way (e.g. the text, the web, a tutor, a classmate's notes).	/	/	/	/	/	/	/	/	/	/	/	/
d. Course content is available another way, but I prefer getting it in class.	/	/	/	/	/	/	/	/	/	/	/	/
e. The course content is difficult, so I must attend to learn or review it. I will fall behind if I miss class.	/	/	/	/	/	/	/	/	/	/	/	/
f. Hearing what's said in class helps me do my homework.	/	/	/	/	/	/	/	/	/	/	/	/
g. I want to take my own notes and not rely on anyone else.	/	/	/	/	/	/	/	/	/	/	/	/
h. I want to ask questions in class.	/	/	/	/	/	/	/	/	/	/	/	/
i. We work on assignments or projects in class.	/	/	/	/	/	/	/	/	/	/	/	/
j. Course content is presented that I need to know (e.g. it may be on a test).	/	/	/	/	/	/	/	/	/	/	/	/
k. The amount of my class participation affects my grade.	/	/	/	/	/	/	/	/	/	/	/	/
l. I have to turn in an assignment.	/	/	/	/	/	/	/	/	/	/	/	/
m. Absences above a minimum affect my grade. (Write the minimum number of absences in parentheses.)	/	/	/	/	/	/	/	/	/	/	/	/
n. Bonus points are offered for attendance.	/	/	/	/	/	/	/	/	/	/	/	/
o. We might have an activity or pop quiz in class that will affect my grade.	/	/	/	/	/	/	/	/	/	/	/	/
p. I'd have to make up the classwork if I missed.	/	/	/	/	/	/	/	/	/	/	/	/
q. Important information about course procedures and test expectations may be announced.	/	/	/	/	/	/	/	/	/	/	/	/
r. I like participating in this class.	/	/	/	/	/	/	/	/	/	/	/	/
s. The teacher is especially interesting. (I wouldn't attend as often if someone else were teaching this class.)	/	/	/	/	/	/	/	/	/	/	/	/
t. The teacher notices and cares when I am there.	/	/	/	/	/	/	/	/	/	/	/	/
v. I like one or more of my classmates.	/	/	/	/	/	/	/	/	/	/	/	/
w. The class is held at a convenient time and place.	/	/	/	/	/	/	/	/	/	/	/	/
x. Other.	/	/	/	/	/	/	/	/	/	/	/	/

REASONS FOR NOT ATTENDING CLASSES

Think of attending class as a choice/decision you make each day. Below are reasons to NOT attend:

*In column 1, check all reasons you have *not* attended each class (A – F) you listed on page one.

*In column 2, rate the reasons you checked, *writing* one of the following numbers next to each check: 3 = This was a *main* reason for my absence(s) from this class.

 2 = This was a *moderately important* reason for my absence(s) this class.

 1 = This was a *minor* reason for my absence(s) from this class.

Start with Course **A** – *check* the reasons you didn't attend, then *rank* those reasons – next, do Course **B**, then Course **C**, Course **D**, Course **E** and Course **F** (if you have that many).

(NOTE: If you *never* missed any class in a course, check only **a**, the first line under that course.)

REASONS FOR ATTENDANCE	COURSES											
	A		B		C		D		E		F	
	1	2	1	2	1	2	1	2	1	2	1	2
a. I have <i>never</i> missed this class.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
b. I was sick.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
c. A needed ride to class wasn't available.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
d. Emergency arose – I met an urgent, unexpected need.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
e. The weather was bad.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
f. I felt tired or overslept because I did schoolwork the night before.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
g. I did an assignment or studied for a test in another course.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
h. I had a campus-related appointment at the time (e.g. to meet with an advisor, to participate in an athletic event).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
i. It was a religious holiday.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
j. I had a personal task to do at that time (e.g. dentist appointment, airport pickup, shopping, etc.).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
k. I had to care for someone else (e.g. child or sick person).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
l. I was out of town or on my way to (or from) an out-of-town destination.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
m. I had a job-related conflict (an interview or work shift).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
n. I had to be at work (at a job) at that time.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
o. I felt tired or overslept because I had fun the night before.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
p. I wanted to take a break when class was meeting.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
q. I was recovering from alcohol or drug use (e.g. hangover).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
r. The class was hard to reach (e.g. far from where I live or work, parking is inconvenient).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
s. It's my first or last class of the day.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
t. I went home earlier and didn't want to return to campus.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
u. I like the subject matter, but the teacher is boring – I'd attend more if someone else presented the same material.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
v. The teacher digresses, is repetitious, confusing, or goes too quickly – so I don't learn much when I attend class.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
w. The teacher's speech or handwriting is not intelligible.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
x. The teacher is rude or doesn't like me.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
y. The teacher doesn't notice or care whether I am there.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
z. I had not done an assignment for this course due that day.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
aa. I didn't want to participate in a scheduled activity.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
bb. I dislike other student(s) in that class.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
cc. I dislike the subject matter.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
dd. Attendance is not taken or does not influence my grade.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
ee. I did not need to know what was presented (e.g., guest speaker or students made presentations).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
ff. The course content is available from another source (e.g. I can get it from the text, web, tutor, classmate's notes).	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
gg. The course content is easy – I needn't attend to know it.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___
hh. Other.	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___	___/___

than knowing why their own students are present or absent from a particular class. So we recommend that teachers concerned about class attendance conduct a comparable survey in their own classes.

As we have seen, class attendance is affected by some reasons that are within a teacher's control and some that are not. For example, the weather, the time a class is scheduled, and how many students need to work are outside a teacher's influence. But teachers can influence reasons for attendance related to their own performance (as reflected in items such as "the teacher is especially interesting," or "the teacher is boring"). Even in the latter category, however, teacher influence is limited. If a class is required, for example, a teacher may never be able to interest every student in the room. If class enrollment is very high, it's nearly impossible for students to feel "the teacher notices and cares when I am here."

Since some attendance-limiting conditions are inevitable, the question becomes how much each of these influences are present in a particular class relative to how much they exist in other classes of the same type. For example, should a teacher of a small, required, natural science class feel pleased or concerned if she learns that 35% of her students say they attend because "I am interested in the class content"? The only way to make this judgment is to compare that score with data from students in comparable classes. (In fact, 28% of students in those classes checked this reason, so her total would be relatively high.)

To allow such comparisons, we have sorted the data from this study into categories based on the factors which seem to influence attendance most: class size (1 – 25 students; 26 – 200 students, and 200+ students), subject areas with the highest enrollment (humanities, natural sciences, and social sciences), and the presence of choice (required or elective course). These norms for particular contexts permit teachers to administer the attendance questionnaire to their classes, then compare their results with the data from comparable classes. (All the norms are student-checked reasons with 95% confidence intervals for the classes listed.)

Should you wish to make this comparison, look up the data from the type of class you're teaching in the table of contents, then note whether your students' scores are higher or lower than the scores of students in other classes like your own.

References

Cross, L. H., et. al. (1993). College grading: Achievement, attitudes, and effort. *College Teaching*, 41, 143–148.

Davis, J. R. (1993). *Better teaching, more learning: Strategies for success in postsecondary settings*. Phoenix: Oryx.

Why students attend HUMANITIES classes:

Item	Required humanities classes			Elective humanities classes		
	Class size: 1 – 10 # crs. sampled: N = 58	11 – 200 N = 49	200 + N = 31	1 – 10 N = 59	11 – 200 N = 51	200 + N = 49
a.	69% ± 12%	82% ± 11%	58% ± 18%	83% ± 10%	82% ± 11%	69% ± 13%
b.	34% ± 12%	39% ± 14%	58% ± 18%	83% ± 10%	75% ± 12%	88% ± 9%
c.	59% ± 13%	51% ± 14%	48% ± 18%	47% ± 13%	49% ± 14%	47% ± 14%
d.	29% ± 12%	41% ± 14%	32% ± 17%	25% ± 11%	49% ± 14%	55% ± 14%
e.	57% ± 13%	55% ± 14%	61% ± 17%	53% ± 13%	55% ± 14%	57% ± 14%
f.	67% ± 12%	63% ± 14%	71% ± 16%	66% ± 12%	76% ± 12%	57% ± 14%
g.	43% ± 13%	55% ± 14%	61% ± 17%	61% ± 13%	65% ± 13%	71% ± 13%
h.	40% ± 13%	24% ± 12%	19% ± 14%	64% ± 12%	41% ± 14%	24% ± 12%
i.	40% ± 13%	18% ± 11%	13% ± 12%	39% ± 13%	27% ± 12%	18% ± 11%
j.	66% ± 12%	63% ± 14%	81% ± 14%	78% ± 11%	82% ± 11%	88% ± 9%
k.	69% ± 12%	47% ± 14%	26% ± 16%	68% ± 12%	61% ± 14%	27% ± 12%
l.	55% ± 13%	57% ± 14%	48% ± 18%	56% ± 13%	55% ± 14%	41% ± 14%
m.	67% ± 12%	43% ± 14%	29% ± 16%	58% ± 13%	57% ± 14%	43% ± 14%
n.	12% ± 8%	18% ± 11%	19% ± 14%	10% ± 8%	18% ± 11%	16% ± 10%
o.	50% ± 13%	43% ± 14%	23% ± 15%	42% ± 13%	61% ± 14%	27% ± 12%
p.	31% ± 12%	18% ± 11%	10% ± 11%	27% ± 11%	25% ± 12%	12% ± 9%
q.	72% ± 12%	78% ± 12%	65% ± 17%	68% ± 12%	61% ± 14%	82% ± 11%
r.	36% ± 12%	16% ± 10%	16% ± 13%	61% ± 13%	45% ± 14%	27% ± 12%
s.	26% ± 11%	35% ± 13%	39% ± 17%	47% ± 13%	43% ± 14%	55% ± 14%
t.	72% ± 12%	53% ± 14%	23% ± 15%	66% ± 12%	49% ± 14%	35% ± 13%
u.	19% ± 10%	20% ± 11%	19% ± 14%	36% ± 12%	18% ± 11%	31% ± 13%
v.	36% ± 12%	33% ± 13%	45% ± 18%	46% ± 13%	43% ± 14%	45% ± 14%
w.	43% ± 13%	43% ± 14%	39% ± 17%	41% ± 13%	47% ± 14%	51% ± 14%
x.	3% ± 5%	2% ± 4%	0% ± 0%	3% ± 5%	6% ± 7%	0% ± 0%

Why students do *not* attend HUMANITIES classes:

a.	12% ± 8%	6% ± 7%	13% ± 12%	10% ± 8%	18% ± 11%	16% ± 10%
b.	47% ± 13%	53% ± 14%	45% ± 18%	37% ± 12%	39% ± 14%	45% ± 14%
c.	3% ± 5%	4% ± 6%	6% ± 9%	2% ± 3%	6% ± 7%	4% ± 6%
d.	12% ± 8%	14% ± 10%	10% ± 11%	12% ± 8%	16% ± 10%	14% ± 10%
e.	5% ± 6%	18% ± 11%	23% ± 15%	8% ± 7%	12% ± 9%	6% ± 7%
f.	34% ± 12%	43% ± 14%	39% ± 17%	46% ± 13%	29% ± 13%	37% ± 14%
g.	28% ± 12%	33% ± 13%	48% ± 18%	31% ± 12%	20% ± 11%	31% ± 13%
h.	16% ± 9%	14% ± 10%	10% ± 11%	10% ± 8%	12% ± 9%	2% ± 4%
i.	10% ± 8%	4% ± 6%	0% ± 0%	8% ± 7%	8% ± 7%	4% ± 6%
j.	28% ± 12%	45% ± 14%	39% ± 17%	20% ± 10%	25% ± 12%	20% ± 11%
k.	3% ± 5%	14% ± 10%	10% ± 11%	10% ± 8%	4% ± 5%	6% ± 7%
l.	26% ± 11%	24% ± 12%	35% ± 17%	12% ± 8%	20% ± 11%	18% ± 11%
m.	5% ± 6%	12% ± 9%	16% ± 13%	7% ± 6%	6% ± 7%	2% ± 4%
n.	3% ± 5%	4% ± 6%	6% ± 9%	8% ± 7%	8% ± 7%	4% ± 6%
o.	41% ± 13%	45% ± 14%	39% ± 17%	41% ± 13%	33% ± 13%	31% ± 13%
p.	29% ± 12%	29% ± 13%	32% ± 17%	20% ± 10%	29% ± 13%	29% ± 13%
q.	21% ± 11%	27% ± 12%	26% ± 16%	12% ± 8%	22% ± 11%	22% ± 12%
r.	0% ± 0%	6% ± 7%	6% ± 9%	10% ± 8%	6% ± 7%	6% ± 7%
s.	19% ± 10%	35% ± 13%	26% ± 16%	19% ± 10%	24% ± 12%	27% ± 12%
t.	5% ± 6%	29% ± 13%	16% ± 13%	8% ± 7%	18% ± 11%	27% ± 12%
u.	10% ± 8%	18% ± 11%	13% ± 12%	10% ± 8%	12% ± 9%	12% ± 9%
v.	12% ± 8%	16% ± 10%	26% ± 16%	8% ± 7%	10% ± 8%	12% ± 9%
w.	5% ± 6%	8% ± 8%	10% ± 11%	3% ± 5%	2% ± 4%	4% ± 6%
x.	10% ± 8%	6% ± 7%	3% ± 6%	3% ± 5%	6% ± 7%	2% ± 4%
y.	2% ± 3%	10% ± 9%	29% ± 16%	7% ± 6%	8% ± 7%	27% ± 12%
z.	24% ± 11%	27% ± 12%	13% ± 12%	15% ± 9%	8% ± 7%	10% ± 9%
aa.	12% ± 8%	14% ± 10%	13% ± 12%	15% ± 9%	4% ± 5%	4% ± 6%
bb.	0% ± 0%	10% ± 9%	3% ± 6%	3% ± 5%	2% ± 4%	2% ± 4%
cc.	17% ± 10%	24% ± 12%	26% ± 16%	7% ± 6%	6% ± 7%	6% ± 7%
dd.	10% ± 8%	22% ± 12%	42% ± 18%	15% ± 9%	18% ± 11%	39% ± 14%
ee.	5% ± 6%	10% ± 9%	19% ± 14%	10% ± 8%	10% ± 8%	16% ± 10%
ff.	14% ± 9%	24% ± 12%	29% ± 16%	3% ± 5%	22% ± 11%	35% ± 13%
gg.	3% ± 5%	12% ± 9%	6% ± 9%	15% ± 9%	16% ± 10%	18% ± 11%
hh.	5% ± 6%	2% ± 4%	0% ± 0%	2% ± 3%	0% ± 0%	0% ± 0%

Why students attend NATURAL SCIENCE classes:

Item	Required natural science classes			Elective natural science classes		
	Class size: 1 – 10	11 – 200	200 +	1 – 10	11 – 200	200 +
	# crs. sampled: N = 29	N = 23	N = 65	N = 9	N = 14	N = 40
a.	76% ± 16%	78% ± 17%	78% ± 10%	79% ± 22%	78% ± 29%	70% ± 14%
b.	28% ± 17%	22% ± 17%	35% ± 12%	86% ± 19%	78% ± 29%	75% ± 14%
c.	28% ± 17%	26% ± 18%	43% ± 12%	57% ± 27%	33% ± 33%	40% ± 15%
d.	34% ± 18%	43% ± 21%	55% ± 12%	43% ± 27%	44% ± 34%	45% ± 16%
e.	79% ± 15%	70% ± 19%	74% ± 11%	57% ± 27%	78% ± 29%	68% ± 15%
f.	79% ± 15%	78% ± 17%	62% ± 12%	71% ± 25%	67% ± 33%	63% ± 15%
g.	59% ± 18%	52% ± 21%	58% ± 12%	79% ± 22%	56% ± 34%	68% ± 15%
h.	59% ± 18%	26% ± 18%	31% ± 11%	50% ± 27%	33% ± 33%	25% ± 14%
i.	34% ± 18%	22% ± 17%	20% ± 10%	57% ± 27%	0% ± 0%	10% ± 9%
j.	66% ± 18%	52% ± 21%	82% ± 10%	93% ± 14%	78% ± 29%	75% ± 14%
k.	31% ± 17%	22% ± 17%	20% ± 10%	21% ± 22%	33% ± 33%	15% ± 11%
l.	83% ± 14%	87% ± 14%	46% ± 12%	79% ± 22%	33% ± 33%	20% ± 13%
m.	38% ± 18%	22% ± 17%	32% ± 11%	7% ± 14%	44% ± 34%	18% ± 12%
n.	24% ± 16%	22% ± 17%	34% ± 12%	29% ± 25%	44% ± 34%	13% ± 10%
o.	59% ± 18%	39% ± 20%	35% ± 12%	36% ± 26%	11% ± 22%	18% ± 12%
p.	34% ± 18%	13% ± 14%	20% ± 10%	43% ± 27%	33% ± 33%	13% ± 10%
q.	79% ± 15%	57% ± 21%	72% ± 11%	57% ± 27%	67% ± 33%	70% ± 14%
r.	31% ± 17%	9% ± 12%	23% ± 10%	36% ± 26%	22% ± 29%	20% ± 13%
s.	28% ± 17%	17% ± 16%	31% ± 11%	50% ± 27%	22% ± 29%	30% ± 14%
t.	45% ± 18%	26% ± 18%	31% ± 11%	64% ± 26%	44% ± 34%	15% ± 11%
u.	21% ± 15%	13% ± 14%	26% ± 11%	57% ± 27%	0% ± 0%	20% ± 13%
v.	38% ± 18%	22% ± 17%	46% ± 12%	64% ± 26%	33% ± 33%	45% ± 16%
w.	34% ± 18%	30% ± 19%	45% ± 12%	43% ± 27%	11% ± 22%	35% ± 15%
x.	7% ± 9%	9% ± 12%	2% ± 3%	0% ± 0%	0% ± 0%	8% ± 8%

Why students do *not* attend NATURAL SCIENCE classes:

a.	10% ± 11%	9% ± 12%	12% ± 8%	36% ± 26%	11% ± 22%	18% ± 12%
b.	41% ± 18%	39% ± 20%	37% ± 12%	36% ± 26%	11% ± 22%	33% ± 15%
c.	14% ± 13%	0% ± 0%	8% ± 7%	7% ± 14%	0% ± 0%	8% ± 8%
d.	24% ± 16%	4% ± 9%	12% ± 8%	14% ± 19%	11% ± 22%	8% ± 8%
e.	10% ± 11%	13% ± 14%	18% ± 10%	0% ± 0%	0% ± 0%	5% ± 7%
f.	41% ± 18%	43% ± 21%	42% ± 12%	29% ± 25%	33% ± 33%	35% ± 15%
g.	45% ± 18%	35% ± 20%	37% ± 12%	14% ± 19%	11% ± 22%	43% ± 16%
h.	7% ± 9%	17% ± 16%	8% ± 7%	29% ± 25%	11% ± 22%	13% ± 10%
i.	17% ± 14%	9% ± 12%	9% ± 7%	0% ± 0%	0% ± 0%	5% ± 7%
j.	34% ± 18%	9% ± 12%	35% ± 12%	7% ± 14%	22% ± 29%	18% ± 12%
k.	14% ± 13%	13% ± 14%	11% ± 8%	0% ± 0%	11% ± 22%	10% ± 9%
l.	31% ± 17%	17% ± 16%	29% ± 11%	7% ± 14%	0% ± 0%	20% ± 13%
m.	3% ± 7%	13% ± 14%	8% ± 7%	7% ± 14%	0% ± 0%	10% ± 9%
n.	3% ± 7%	4% ± 9%	9% ± 7%	14% ± 19%	11% ± 22%	8% ± 8%
o.	48% ± 19%	35% ± 20%	32% ± 11%	14% ± 19%	0% ± 0%	33% ± 15%
p.	24% ± 16%	17% ± 16%	26% ± 11%	14% ± 19%	33% ± 33%	18% ± 12%
q.	28% ± 17%	17% ± 16%	17% ± 9%	0% ± 0%	0% ± 0%	15% ± 11%
r.	10% ± 11%	0% ± 0%	8% ± 7%	0% ± 0%	11% ± 22%	8% ± 8%
s.	31% ± 17%	13% ± 14%	28% ± 11%	21% ± 22%	11% ± 22%	30% ± 14%
t.	7% ± 9%	4% ± 9%	14% ± 8%	0% ± 0%	11% ± 22%	15% ± 11%
u.	21% ± 15%	4% ± 9%	17% ± 9%	0% ± 0%	11% ± 22%	20% ± 13%
v.	21% ± 15%	39% ± 20%	20% ± 10%	0% ± 0%	11% ± 22%	23% ± 13%
w.	14% ± 13%	13% ± 14%	5% ± 5%	7% ± 14%	11% ± 22%	10% ± 9%
x.	10% ± 11%	4% ± 9%	5% ± 5%	0% ± 0%	0% ± 0%	8% ± 8%
y.	17% ± 14%	22% ± 17%	17% ± 9%	0% ± 0%	11% ± 22%	38% ± 15%
z.	24% ± 16%	17% ± 16%	11% ± 8%	14% ± 19%	0% ± 0%	10% ± 9%
aa.	17% ± 14%	4% ± 9%	8% ± 7%	0% ± 0%	0% ± 0%	8% ± 8%
bb.	3% ± 7%	0% ± 0%	5% ± 5%	7% ± 14%	0% ± 0%	5% ± 7%
cc.	28% ± 17%	26% ± 18%	20% ± 10%	7% ± 14%	0% ± 0%	10% ± 9%
dd.	24% ± 16%	26% ± 18%	38% ± 12%	21% ± 22%	33% ± 33%	55% ± 16%
ee.	24% ± 16%	4% ± 9%	9% ± 7%	7% ± 14%	0% ± 0%	13% ± 10%
ff.	34% ± 18%	26% ± 18%	31% ± 11%	21% ± 22%	11% ± 22%	35% ± 15%
gg.	21% ± 15%	9% ± 12%	14% ± 8%	21% ± 22%	22% ± 29%	18% ± 12%
hh.	3% ± 7%	0% ± 0%	8% ± 7%	0% ± 0%	0% ± 0%	5% ± 7%

Why students attend SOCIAL SCIENCE classes:

Item	Required social science classes			Elective social science classes		
	Class size: 1 – 10	11 – 200	200 +	1 – 10	11 – 200	200 +
	# crs. sampled: N = 58	N = 49	N = 31	N = 59	N = 51	N = 49
a.	74% ± 7%	80% ± 8%	65% ± 12%	83% ± 8%	81% ± 7%	76% ± 8%
b.	32% ± 7%	38% ± 10%	47% ± 12%	74% ± 9%	75% ± 8%	71% ± 8%
c.	47% ± 8%	47% ± 10%	29% ± 11%	45% ± 10%	34% ± 9%	27% ± 8%
d.	45% ± 8%	39% ± 10%	41% ± 12%	39% ± 10%	32% ± 9%	41% ± 9%
e.	33% ± 8%	44% ± 10%	50% ± 12%	42% ± 10%	29% ± 8%	35% ± 9%
f.	47% ± 8%	48% ± 10%	44% ± 12%	52% ± 10%	52% ± 9%	51% ± 9%
g.	53% ± 8%	56% ± 10%	59% ± 12%	57% ± 10%	55% ± 9%	57% ± 9%
h.	30% ± 7%	27% ± 9%	15% ± 9%	40% ± 10%	29% ± 8%	17% ± 7%
i.	36% ± 8%	35% ± 9%	14% ± 8%	43% ± 10%	28% ± 8%	17% ± 7%
j.	72% ± 7%	75% ± 9%	73% ± 11%	65% ± 10%	58% ± 9%	63% ± 9%
k.	54% ± 8%	47% ± 10%	26% ± 11%	59% ± 10%	46% ± 9%	25% ± 8%
l.	54% ± 8%	57% ± 10%	45% ± 12%	67% ± 10%	68% ± 9%	49% ± 9%
m.	74% ± 7%	47% ± 10%	36% ± 12%	59% ± 10%	48% ± 9%	39% ± 9%
n.	18% ± 6%	25% ± 9%	15% ± 9%	23% ± 9%	19% ± 7%	18% ± 7%
o.	47% ± 8%	40% ± 10%	20% ± 10%	39% ± 10%	25% ± 8%	23% ± 8%
p.	24% ± 7%	21% ± 8%	12% ± 8%	30% ± 9%	18% ± 7%	14% ± 6%
q.	66% ± 8%	73% ± 9%	59% ± 12%	68% ± 10%	61% ± 9%	58% ± 9%
r.	38% ± 8%	31% ± 9%	24% ± 10%	58% ± 10%	37% ± 9%	24% ± 8%
s.	34% ± 8%	29% ± 9%	27% ± 11%	47% ± 10%	46% ± 9%	52% ± 9%
t.	65% ± 8%	46% ± 10%	35% ± 12%	66% ± 10%	43% ± 9%	26% ± 8%
u.	24% ± 7%	27% ± 9%	27% ± 11%	31% ± 9%	34% ± 9%	32% ± 8%
v.	46% ± 8%	47% ± 10%	39% ± 12%	55% ± 10%	53% ± 9%	54% ± 9%
w.	35% ± 8%	35% ± 9%	35% ± 12%	49% ± 10%	42% ± 9%	41% ± 9%
x.	5% ± 3%	3% ± 3%	5% ± 5%	2% ± 3%	4% ± 4%	3% ± 3%

Why students do *not* attend SOCIAL SCIENCE classes:

a.	17% ± 6%	11% ± 6%	11% ± 7%	24% ± 9%	11% ± 6%	10% ± 5%
b.	40% ± 8%	31% ± 9%	30% ± 11%	37% ± 10%	44% ± 9%	44% ± 9%
c.	4% ± 3%	7% ± 5%	3% ± 4%	3% ± 4%	6% ± 4%	7% ± 5%
d.	7% ± 4%	16% ± 7%	11% ± 7%	11% ± 6%	18% ± 7%	10% ± 5%
e.	9% ± 5%	15% ± 7%	5% ± 5%	4% ± 4%	12% ± 6%	10% ± 5%
f.	32% ± 7%	43% ± 10%	30% ± 11%	32% ± 10%	32% ± 9%	33% ± 8%
g.	24% ± 7%	35% ± 9%	38% ± 12%	24% ± 9%	35% ± 9%	38% ± 9%
h.	11% ± 5%	13% ± 7%	12% ± 8%	11% ± 6%	12% ± 6%	7% ± 5%
i.	6% ± 4%	6% ± 5%	8% ± 6%	4% ± 4%	6% ± 4%	6% ± 4%
j.	21% ± 7%	24% ± 8%	20% ± 10%	16% ± 8%	32% ± 9%	19% ± 7%
k.	8% ± 4%	6% ± 5%	8% ± 6%	4% ± 4%	8% ± 5%	7% ± 5%
l.	15% ± 6%	21% ± 8%	21% ± 10%	19% ± 8%	38% ± 9%	23% ± 8%
m.	4% ± 3%	16% ± 7%	6% ± 6%	3% ± 4%	12% ± 6%	8% ± 5%
n.	5% ± 3%	11% ± 6%	8% ± 6%	3% ± 4%	9% ± 5%	4% ± 4%
o.	32% ± 7%	35% ± 9%	38% ± 12%	32% ± 10%	32% ± 9%	38% ± 9%
p.	14% ± 6%	21% ± 8%	20% ± 10%	15% ± 7%	20% ± 7%	24% ± 8%
q.	17% ± 6%	26% ± 9%	18% ± 9%	10% ± 6%	17% ± 7%	15% ± 6%
r.	5% ± 3%	11% ± 6%	5% ± 5%	2% ± 3%	6% ± 4%	3% ± 3%
s.	15% ± 6%	29% ± 9%	18% ± 9%	11% ± 6%	13% ± 6%	21% ± 7%
t.	11% ± 5%	20% ± 8%	14% ± 8%	5% ± 5%	20% ± 7%	13% ± 6%
u.	6% ± 4%	15% ± 7%	24% ± 10%	6% ± 5%	9% ± 5%	14% ± 6%
v.	7% ± 4%	15% ± 7%	18% ± 9%	5% ± 5%	6% ± 4%	13% ± 6%
w.	5% ± 3%	8% ± 5%	9% ± 7%	4% ± 4%	3% ± 3%	5% ± 4%
x.	5% ± 4%	10% ± 6%	8% ± 6%	2% ± 3%	4% ± 3%	3% ± 3%
y.	4% ± 3%	13% ± 7%	24% ± 10%	3% ± 4%	4% ± 4%	23% ± 8%
z.	11% ± 5%	15% ± 7%	11% ± 7%	11% ± 6%	15% ± 7%	13% ± 6%
aa.	7% ± 4%	8% ± 5%	6% ± 6%	6% ± 5%	7% ± 5%	8% ± 5%
bb.	3% ± 3%	5% ± 4%	6% ± 6%	1% ± 2%	3% ± 3%	3% ± 3%
cc.	12% ± 5%	21% ± 8%	14% ± 8%	6% ± 5%	4% ± 3%	8% ± 5%
dd.	6% ± 4%	24% ± 8%	38% ± 12%	10% ± 6%	16% ± 7%	28% ± 8%
ee.	9% ± 5%	13% ± 7%	8% ± 6%	9% ± 6%	10% ± 5%	4% ± 4%
ff.	13% ± 5%	21% ± 8%	29% ± 11%	6% ± 5%	11% ± 6%	30% ± 8%
gg.	14% ± 6%	19% ± 8%	14% ± 8%	10% ± 6%	10% ± 5%	18% ± 7%
hh.	4% ± 3%	2% ± 3%	3% ± 4%	4% ± 4%	7% ± 5%	3% ± 3%

