IOWA STATE UNIVERSITY

Department of Agricultural Education & Studies

STUDENT ENGAGEMENT IN A TEAM-BASED CAPSTONE COURSE: A COMPARISON OF WHAT STUDENTS DO AND WHAT INSTRUCTORS VALUE

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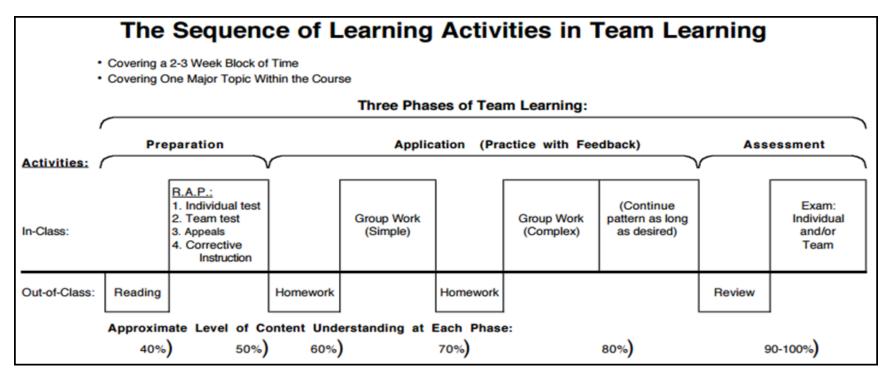
Team-Based Learning

 Relies on small group work, focuses on improving student's ability to apply course content, and is designed to improve learning (Michaelsen, Sweet, & Parmalee, 2011).

Team-Based Learning

- Four elements
 - 1) Properly formed and managed groups,
 - 2) Student accountability for individual and group work,
 - 3) Frequent immediate student feedback,
 - 4) Assignments that promote both learning and team development (Michaelsen et al., 2011).

Team-Based Learning



The Sequence of Learning Activities in Team-Based Learning. From "Team-Based Learning: A Transformative Use of Small Groups," by L. K. Michaelsen, A. B. Knight, L. D. Fink, 2004, p. 11. Sterling, VA: Stylus Publishing. Copyright 2004 by Stylus Publishing. Reprinted with permission.

Capstone Course

- "A planned learning experience that requires students to synthesize previously learned subject matter content and to integrate new information into their knowledge base for solving simulated or real world problems" (Crunkilton, Cepica, & Fluker, 1997, p. 3).
- Should provide meaningful closure to students' academic experiences and focus on integrating their fragmented disciplinary knowledge.

Capstone Course

- Expected Educational Outcomes
 - 1) problem solving,
 - 2) decision making,
 - 3) critical thinking,
 - 4) collaborative/ professional relationships (teamwork),
 - 5) oral communications,
 - 6) written communications (Crunkilton et al., p. 4).

Capstone Course

- Required Learning Activities
 - 1) projects, case studies, or issue analysis,
 - 2) small group work,
 - 3) oral communication activities,
 - 4) intensive writing,
 - 5) industry involvement (Crunkilton et al., p. 6-7).

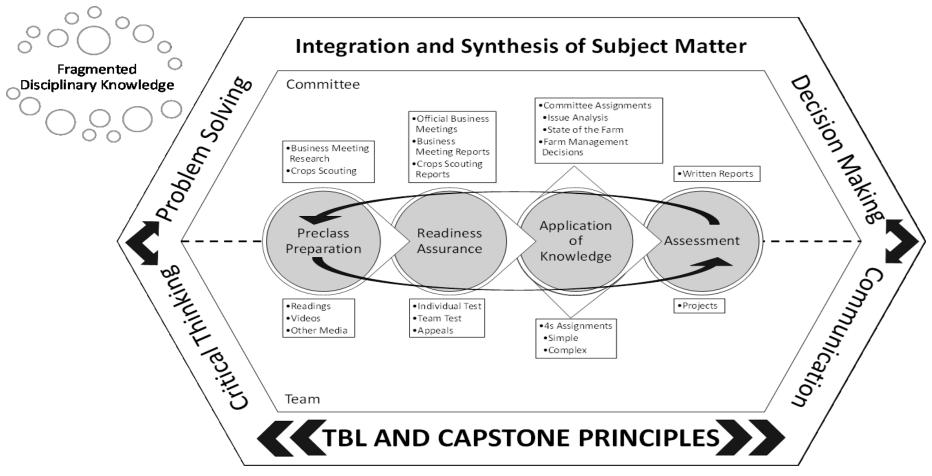
AgEdS 450: Farm Management & Operation

- Originally, farm management was taught through the use of local farms (Murray, 1945).
- Absence of a dedicated teaching farm provided "...no opportunity for the students to make management decisions themselves" (Murray, 1945, p. 186).
- Dedicated teaching farm provided in 1942 and the class officially began in 1943 (Murray, 1945).

AgEdS 450

- Murray (1945, p. 186) contended that a student graduating from college with hopes of operating a farm should be well versed in four fields:
 - 1) farm practices of his area,
 - 2) scientific principles of crop and animal production including the use of power and equipment,
 - 3) business principles of farming, and
 - 4) making management decisions

AgEdS 450-TBL-Capstone Course



Model of the integration of Team-Based Learning and the capstone course framework. Adapted from "Handbook on Implementing Capstone Courses in Colleges of Agriculture," by J. R. Crunkilton, M. J. Cepica, and P. L. Fluker, 1997; "Team-Based Learning Instructional Activity Sequence," by L. K. Michaelsen, A. B. Knight, and L. D. Fink, 2004, Team-Based Learning: A Transformative Use of Small Groups in College Teaching, p. 37. Copyright 2004 by Stylus Publishing.

Introduction

- Interest in student engagement has experienced considerable growth in recent years (Barkley, 2010; Bowen, 2005; Korobova & Starobin, 2015; Mandernach, 2015).
- Driven by a mission of higher education to improve student learning (Reschly & Christenson, 2012).
- Can be a useful tool to understand or improve various student outcomes as well (Finn & Zimmer, 2012).

Student Engagement

- "...definitional clarity has been elusive" (Appleton, Christenson, & Furlong, 2008, p. 370).
- Possibly due to a shifted focus several times in the last few decades (Kuh, 2009; McCormick, Kinzie, & Gonyea, 2013).

Student Engagement

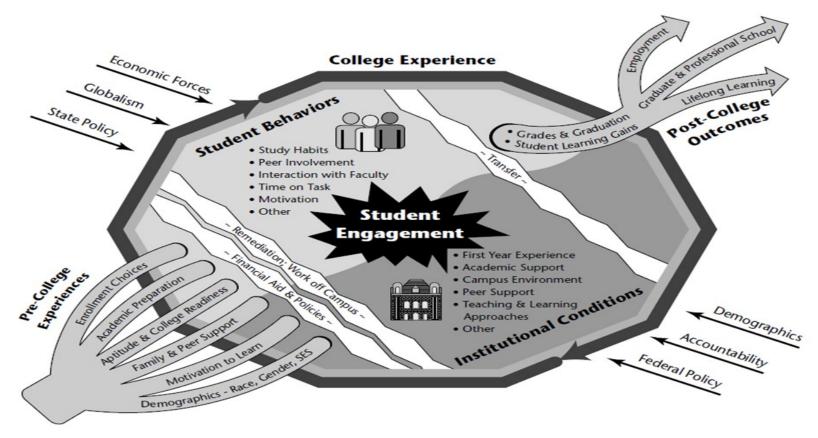
- "The engagement premise is deceptively simple, even self-evident. The more students study a subject the more they learn about it" (Kuh, 2003, p. 25).
- Adoption of a narrow definition—one that focused on student involvement in the learning process—would result in the utilization of student involvement data for immediate program improvement decisions (Axelson & Flick, 2011).

Theoretical Framework

- Student Involvement Theory (Astin, 1999).
- "...quantity and quality of the physical and psychological energy students invest in the college experience" (Astin, 1999, p. 528).
- Student lack of involvement is often signaled by passivity.

Conceptual Framework

What Matters to Student Success



What matters to student success. From "Piecing Together the Student Success Puzzle: Research, Propositions, and Recommendations," by G. D. Kuh, J. Kinzie, J. A. Buckley, and J. C. Hayek, 2007, *ASHE Higher Education Report*, 32(5), p. 11. Reprinted with permission.

Objectives

- Determine the importance of engagement-specific activities within the AgEdS 450 course as reported by the instructional team—instructor, teaching assistant, and the farm operator.
- Determine the frequency of student participation in engagement-specific activities within the AgEdS 450 course.
- Determine correlations between importance and frequency of engagement-specific activities within the AgEdS 450 course.

Methods & Procedures

- Employed a non-experimental, descriptive research design, to measure student engagement in a TBL formatted capstone course.
- All students enrolled in the AgEdS 450 (N = 121)
 course for the fall 2015 (n = 61) semester were
 identified as the target population.

CLASSE

 The Classroom Level Survey of Student Engagement (CLASSE) is a two-part instrument "that compares faculty expectations with what students report experiencing in a class" (Ouimet & Smallwood, 2005, p. 13).

derived from the National Survey of Student Engagement (NSSE) (Kuh, 2004)

CLASSE focuses on classroom-level engagement.
 CLASSE is also not grade specific, whereas the NSSE is typically targeted to first-year and senior students (Ouimet, 2011).

CLASSE

- Items focused around Chickering and Gamson's (1987) 'good practices' (Ouimet, 2011).
- CLASSE Student

indicate frequency of participation in specific activities that were classified as indicators of engagement.

CLASSE Faculty

rate the value placed on the same engagement-related activities.

CLASSE

- 41 items among five constructs:
 - 1) engagement activities (n = 19)
 - 2) cognitive skills (n = 5)
 - 3) other educational practices (n = 10)
 - 4) class atmosphere (n = 4)
 - 5) demographics (n = 3).

Response Rate

Faculty

• Fall 2015: 100% (N = 1)

Student

• Fall 2015: 88.5% (n = 54) response rate

Results

- Majority of respondents were male (78.3%) in their senior year (73.6%).
- All of the respondents were pursuing an Agricultural Studies degree (100%), with six (5.7%) and one (0.9%) pursuing minors in Agronomy and Agricultural Education, respectively.

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Importance (Faculty)

Q1

Faculty: Very important/ important (x > 2.5)

Students: Below average frequency ($\bar{x} < 2.5$)

Q2

Faculty: Very important/ important ($\bar{x} > 2.5$)

Students: Above average frequency ($\bar{x} > 2.5$)

Q3

Faculty: Somewhat important/ not important (\bar{x} < 2.5)

Student: Below average frequency ($\bar{x} < 2.5$)

Q4

Faculty: Somewhat important/ not important (x < 2.5)

Student: Above average frequency ($\dot{x} > 2.5$)

Frequency (Student)

Quadrant 1

Faculty Rating: Very important/ important ($\bar{x} > 2.5$) Student Report: Below average frequency ($\bar{x} < 2.5$)

Prepared two or more drafts of a paper or assignment in your AgEdS 450 class before turning it in

Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments in your AgEdS 450 class

Tutored or taught other students in your AgEdS 450 class

Discussed grades or assignments with the instructor of your AgEdS 450 class

Participated in a community-based project (e.g., service learning) as part of your AgEdS 450 class

In a typical week, how often do you spend more than 3 hours preparing for your AgEdS 450 class (studying, reading, doing homework or lab work, analyzing data, rehearsing, and other academic matters)?

How frequently do you take notes in your AgEdS 450 class?

How often do you review your notes prior to the next scheduled meeting in your AgEdS 450 class?

How often have you participated in a study partnership with a classmate in your AgEdS 450 class to prepare for a quiz or a test?

How difficult is the course material in your AgEdS 450 class?

26.3%

Quadrant 2

Faculty Rating: Very important/important ($\bar{x} > 2.5$) Student Report: Above average frequency ($\bar{x} > 2.5$)

Asked questions during your AgEdS 450 class

Contributed to a class discussion that occurred during AgEdS 450 class

Worked on a paper or a project in your AgEdS 450 class that required integrating ideas or information from various sources

Came to your AgEdS 450 class without having completed readings or assignments

Worked with other students on projects during your AgEdS 450 class

Worked with classmates outside of your AgEdS 450 class to prepare class assignments

Put together ideas or concepts from different courses when completing assignments or during class discussions in your AgEdS 450 class Used an electronic medium (list-serv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment in your AgEdS

450 class

Used email to communicate with the instructor of your AgEdS 450 class

Discussed ideas from your AgEdS 450 with others outside of class (students, family members, coworkers, etc.)

Made a class presentation in your AgEdS 450 class

Received prompt written or oral feedback on your academic performance from your AgEdS 450 instructor

Worked harder than you thought you could to meet your AgEdS 450 instructor's standards or expectations

Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components

Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships

Making Judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions

Applying theories or concepts to practical problems or in new situations

How often in your AgEdS 450 class have you been required to prepare written papers or reports of more than 5 pages in length?

To what extent do the examinations in your AgEdS 450 class challenge you to do your best work?

How many times have you been absent so far this semester in your AgEdS 450 class?

How interested are you in learning the AgEdS 450 course material?

How comfortable are you talking with the instructor of your AgEdS 450 class?

How much do you enjoy group work with your classmates in your AgEdS 450 class?

How easy is it to follow the lectures in your AgEdS 450 class?

63.2%

Quadrant 3

Faculty Rating: Somewhat important/not important (\bar{x} < 2.5) Student Report: Below average frequency (\bar{x} < 2.5)

Discussed ideas from your readings or classes with your AgEdS 450 instructor outside of class Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form

In a typical week in your AgEdS 450 class, how many homework assignments take you more than one hour each to complete?

How often have you attended a review session or help session to enhance your understanding of the content of your AgEdS 450 class?

10.5%

Quadrant 4

Faculty Rating: Somewhat important/not important (\bar{x} < 2.5) Student Report: Above average frequency (\bar{x} > 2.5)

Conclusions

- Students:
 - worked collaboratively to apply theories or concepts to practical problems
 - utilized technology to complete coursework
 - asked questions during class
 - interested in learning the course content
 - aligned with the outcomes and required learning activities recommended for inclusion in capstone courses according to Crunkilton et al. (1997).
- Student responses indicated an emphasis on the utilization of higher order cognitive skills.

Conclusions

- Findings support previous literature which found high levels of student engagement in active, TBL formatted courses (Lightner et al., 2007; Tucker, 2012).
- In this TBL-formatted capstone course, students engaged in the learning process at high levels—both physically and psychologically—which leads to student development in several areas (Astin, 1999).

Recommendations

- CLASSE- useful in determining the benefits of new pedagogies highlighting various instructional innovations employed by instructors within colleges of agriculture (Maxwell, Vincent, & Ball, 2011).
- Longitudinal studies to examine long-term outcomes of TBL-formatted course.
 - Data would be beneficial for colleges of agriculture in the promotion of and recruiting for various degree programs.

Recommendations

- Unified effort within Agricultural Education to develop a valid instrument for measuring student engagement at the local (classroom) level.
- Faculty members should work to ensure students are involved in the learning process.
 - strategic course revisions/targeted professional development programs (Balschweid et al., 2013; Blickenstaff et al., 2015).

Recommendations

 Meaningful, engaged learning in all environments can become a reality across the discipline with the adoption of student-centered teaching methods

Questions

Full Tables

Objective One

Importance of Engagement Activities by Instructors in AgEdS 450 (N = 3)

			Ra	nge
Engagement Indicators	M	SD	Min	Max
Work on a paper or a project in your AgEdS 450 class that requires integrating ideas or information from various sources	4.00	0.00	4.00	4.00
Come to your AgEdS 450 class having completed readings or assignments	4.00	0.00	4.00	4.00
Work with other students on projects during your AgEdS 450 class	4.00	0.00	4.00	4.00
Put together ideas or concepts from different courses when completing assignments or during class discussions in your AgEdS 450 class	4.00	0.00	4.00	4.00
Make a class presentation in your AgEdS 450 class	4.00	0.00	4.00	4.00
Receive prompt written or oral feedback from you on their academic performance in your AgEdS 450 class	4.00	0.00	4.00	4.00
Ask questions during your AgEdS 450 class	3.67	0.57	3.00	4.00
Contribute to class discussions that occur during your AgEdS 450 class	3.67	0.57	3.00	4.00
Discuss grades or assignments with you as the instructor of your AgEdS 450 class	3.67	0.57	3.00	3.00
Prepare two or more drafts of a paper or assignment in your AgEdS 450 class before turning it in	3.33	0.57	3.00	4.00
Tutor or teach other students in your AgEdS 450 class	3.33	0.57	3.00	4.00
Use email to communicate with you as the instructor of your AgEdS 450 class	3.33	1.15	2.00	4.00
Work harder than they think they can to meet your standards or expectations in your AgEdS 450 class	3.33	0.57	3.00	4.00
Work with classmates outside of your AgEdS 450 class to prepare class assignments	3.00	1.00	2.00	4.00
Use an electronic medium (list-serv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment in your AgEdS 450 class	3.00	1.00	2.00	4.00
Discuss ideas from your AgEdS 450 with others outside of class (students, family members, coworkers, etc.)	3.00	1.00	2.00	4.00
Include diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments in your AgEdS 450 class	2.67	0.57	2.00	3.00
Participate in a community-based project (e.g., service learning) as part of your AgEdS 450 class	2.67	1.15	2.00	4.00
Discuss ideas from your AgEdS 450 readings or classes with you outside of class	2.00	1.00	1.00	4.00

Importance of Cognitive Skills by Instructors in AgEdS 450 (N = 3)

			Rai	nge
Engagement Indicators	M	SD	Min	Max
Applying theories or concepts to practical problems or in new situations	4.00	0.00	4.00	4.00
Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	3.67	0.57	3.00	4.00
Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	3.67	0.57	3.00	4.00
Making Judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	3.67	0.57	3.00	4.00
Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	2.00	1.00	1.00	3.00

Importance of Other Educational Practices by Instructors in AgEdS 450 (N = 3)

			Ra	nge
Engagement Indicators	M	SD	Min	Max
Attend your AgEdS 450 class?	4.00	0.00	4.00	4.00
Are interested in learning the AgEdS 450 course material?	4.00	0.00	4.00	4.00
Are challenged to do their best work on the examinations they have in your AgEdS 450 class	3.67	0.57	3.00	4.00
Prepare written papers or reports of more than 5 pages in length in your AgEdS 450 class?	3.33	0.57	3.00	4.00
Participate in a study partnership with a classmate in your AgEdS 450 class to prepare for a quiz or a test?	3.33	1.15	2.00	4.00
Take notes in your AgEdS 450 class?	3.00	1.00	2.00	4.00
Review notes prior to the next scheduled meeting of your AgEdS 450 class?	3.00	1.00	2.00	4.00
Spend more than 3 hours during a typical week preparing for your AgEdS 450 class (studying, reading, doing homework or lab work, analyzing data, rehearsing, and other academic matters)?	2.67	0.57	2.00	3.00
Have homework assignments during a typical week in your AgEdS 450 class that take more than one hour each to complete?	2.00	1.73	1.00	4.00
Attend a review session or help session to enhance their understanding of the content of your AgEdS 450 class?	1.67	0.57	1.00	2.00

Importance of Classroom Atmosphere by Instructors in AgEdS 450 (N = 3)

			Range	
Engagement Indicators	M	SD	Min	Max
Being comfortable talking with you as the instructor of the AgEdS 450 class	4.00	0.00	4.00	4.00
Enjoying group work with their classmates in your AgEdS 450 class	4.00	0.00	4.00	4.00
Finding the course material in your AgEdS 450 class to be difficult?	3.33	0.57	3.00	4.00
Finding the lectures easy to follow in your AgEdS 450 class?	3.00	1.00	2.00	4.00

Objective Two

Frequency of Student Participation in Engagement Activities (n = 106)

			Rai	nge
Engagement Indicators	M	SD	Min	Max
Worked with other students on projects during your AgEdS 450 class ^a	3.87	0.36	2.00	4.00
Used an electronic medium (list-serv, chat group, Internet, instant messaging,	3.58	0.70	1.00	4.00
etc.) to discuss or complete an assignment in your AgEdS 450 class ^a				
Asked questions during your AgEdS 450 class ^a	3.56	0.71	1.00	4.00
Made a class presentation in your AgEdS 450 class ^b	3.50	0.70	1.00	4.00
Received prompt written or oral feedback on your academic performance from	3.41	0.37	1.00	4.00
your AgEdS 450 instructor ^c				
Worked on a paper or a project in your AgEdS 450 class that required integrating	3.39	0.68	2.00	4.00
ideas or information from various sources ^a				
Put together ideas or concepts from different courses when completing	3.32	0.79	1.00	4.00
assignments or during class discussions in your AgEdS 450 class ^a				
Contributed to a class discussion that occurred during AgEdS 450 class ^a	3.29	0.80	1.00	4.00
Worked harder than you thought you could to meet your AgEdS 450 instructor's	3.13	0.84	1.00	4.00
standards or expectations ^c				
Discussed ideas from your AgEdS 450 with others outside of class (students,	3.00	0.89	1.00	4.00
family members, coworkers, etc.) ^a				
Used email to communicate with the instructor of your AgEdS 450 class ^a	2.83	0.87	1.00	4.00
Worked with classmates outside of your AgEdS 450 class to prepare class	2.76	0.94	1.00	4.00
assignments ^a				
Participated in a community-based project (e.g., service learning) as part of your	2.49	1.10	1.00	4.00
AgEdS 450 class ^b				
Prepared two or more drafts of a paper or assignment in your AgEdS 450 class	2.47	0.73	1.00	4.00
before turning it in ^a				
Discussed grades or assignments with the instructor of your AgEdS 450 class ^a	2.46	0.85	1.00	4.00
Tutored or taught other students in your AgEdS 450 class ^a	2.32	0.91	1.00	4.00
Included diverse perspectives (different races, religions, genders, political beliefs,	2.31	0.84	1.00	4.00
etc.) in class discussions or writing assignments in your AgEdS 450 class ^a				
Discussed ideas from your readings or classes with your AgEdS 450 instructor	2.25	1.05	1.00	4.00
outside of class ^b				
Came to your AgEdS 450 class without having completed readings or	2.10	0.79	1.00	4.00
assignments ^a				
Note The CLASSE Student Engagement Activities section utilized a veriety of four				

Note. The CLASSE Student Engagement Activities section utilized a variety of four point scales in order to appropriately address each item.

^a1 (never), 2 (one or two times), 3 (three to five times), and 4 (more than five times). ^b1 (never), 2 (once), 3 (two times), and 4 (more than two times).

Frequency of Student Use of Cognitive Skills (n = 106)

			Range	
Engagement Indicators	M	SD	Min	Max
Applying theories or concepts to practical problems or in new situations	3.37	0.84	1.00	1.00
Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	3.35	0.82	1.00	1.00
Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	3.03	0.66	1.00	1.00
Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	3.02	0.76	1.00	1.00
Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	2.29	0.88	1.00	4.00

Note. CLASSE Student Cognitive Skills section used a four point scale: 1 (never), 2 (one or two times), 3 (three to five times), and 4 (more than five times)

			Ra	nge
Engagement Indicators	M	SD	Min	Max
How often in your AgEdS 450 class have you been required to prepare written papers	3.58	0.63	2.00	4.00
or reports of more than 5 pages in length?a				
How interested are you in learning the AgEdS 450 course material? ^f	3.39	0.59	1.00	4.00
To what extent do the examinations in your AgEdS 450 class challenge you to do your	2.69	0.73	1.00	4.00
best work? ^b				
How often have you participated in a study partnership with a classmate in your AgEdS	1.94	0.97	1.00	4.00
450 class to prepare for a quiz or a test? ^a				
In a typical week in your AgEdS 450 class, how many homework assignments take	1.92	0.51	1.00	4.00
you more than one hour each to complete?c				
In a typical week, how often do you spend more than 3 hours preparing for your	1.63	0.77	1.00	4.00
AgEdS 450 class (studying, reading, doing homework or lab work, analyzing data,				
rehearsing, and other academic matters)?d				
How frequently do you take notes in your AgEdS 450 class?d	1.59	0.80	1.00	3.00
How often do you review your notes prior to the next scheduled meeting in your AgEdS	1.53	0.60	1.00	3.00
450 class? ^d				
How many times have you been absent so far this semester in your AgEdS 450	1.38	0.52	1.00	3.00
class?e				
How often have you attended a review session or help session to enhance your	1.16	0.43	1.00	3.00
understanding of the content of your AgEdS 450 class?a				
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Note. The CLASSE Student Other Educational Practices section utilized a variety of four point scales in order to appropriately address each item.

^a1 (never), 2 (once), 3 (two times), and 4 (three or more times). ^b1 (very little), 2 (some), 3 (quite a bit), and 4 (very much). ^c1 (none), 2 (one or two), 3 (three or four), and 4 (five or more). ^d1 (never/rarely), 2 (sometimes), 3 (often), and (very often). ^e1 (none), 2 (one to two absences), 3 (three to four absences), and 4 (five or more absences). ^f1 (very uninterested), 2 (uninterested), 3 (interested), and 4 (very interested).

Frequency of Student Participation in Activities Contributing to the Classroom Atmosphere (n = 106)

			Range	
Engagement Indicators	M	SD	Min	Max
How comfortable are you talking with the instructor of your AgEdS	3.59	0.61	2.00	4.00
450 class? ^a				
How much do you enjoy group work with your classmates in your	3.35	0.73	1.00	4.00
AgEdS 450 class? ^b				
How easy is it to follow the lectures in your AgEdS 450 class?d	2.70	0.83	1.00	4.00
How difficult is the course material in your AgEdS 450 class?c	2.32	0.62	1.00	3.00

Note. The CLASSE Student Other Educational Practices section utilized a variety of four point scales in order to appropriately address each item.

^a1 (uncomfortable), 2 (somewhat uncomfortable), 3 (comfortable), and 4 (very comfortable). ^b1 (very little), 2 (some), 3 (quite a bit), and 4 (very much). ^c1 (easy), 2 (somewhat difficult), 3 (difficult), and 4 (very difficult). ^d1 (difficult), 2 (somewhat easy), 3 (easy), and 4 (very easy).