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Utilizing Cultural Dimensions Theory to Assess Singaporean Student Attitude Toward Online Course Assignments in an Aeronautical University

Nicole Bier
nguye9fc, nguye9fc@erau.edu
John "Keith" Wilson
Embry Riddle Aeronautical University, WILSOJ15@erau.edu
Cheryl Kam Jia Ying
Embry Riddle Aeronautical University, KAMC@my.erau.edu
Bettina M. Mrusek
Embry Riddle Aeronautical University, mrusekb@erau.edu

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The aviation/aeronautical industry was affected during COVID-19. "…airlines hemorrhaged $168 billion in economic losses in 2020…The IATA estimates that even though global revenues for airlines rose by 27 percent [in 2021] compared to 2020, they were still 44 percent less than what they were in 2019" (Bouwer et al., 2022, para. 2-10). COVID-19 impacted students worldwide, to include those in the aviation/aeronautical fields of study. Domestic as well as international students earning degrees and building careers are vital to the future of global transportation. The United States has a key role educating those in the aviation/aeronautical industry.

According to Israel and Batalova (2021), the university system within the United States has traditionally been a sought-after destination for international students for several reasons: quality of the education, post-graduation job opportunities, and perceived value. There is an emergent body of research regarding the effects of online learning on students. Some topics include the effectiveness of online learning, the impact of reduced learning time, and contingency planning during emergencies (Garcia & Weiss, 2020). Articles and books for designing online courses were and continue to be published for instructors.

Challenges associated with a virtual learning environment were identified by Gupta et al. (2021) and include faculty training in pedagogy and, perhaps more importantly, creating learning content that is accepted and useful to various student populations, regardless of nationality. Common learning points from recently published and readily available literature on the transition from brick and mortar to online education focus on the basic framework of developing an effective online learning environment. Different types of learning management systems, course structure, discussion boards, collaboration tools, and various activities for student engagement were explored (Camacho & Legare, 2020; Conceição & Howles, 2020).

The cultural challenges associated with developing course content have been exacerbated. This paper seeks to identify, quantify, and understand student perception regarding online learning assignments. An Analysis of Variance (ANOVA) was used to answer the research question: Is there a statistically significant difference in Singaporean student attitude toward individual, group, discussion, and presentation assignments? Utilizing Hofstede's Theory of Cultural Dimensions as a theoretical framework, the researchers investigated the experiences of Singaporean students who were enrolled in an online degree program from an aeronautical university based in the United States. To appreciate cultural differences, it is important to understand the U.S. education system and how it differs from other education systems.

The U.S. Education System—the American Dream

National defense, civil rights, poverty, and national competitiveness are just a few factors that have influenced federal education initiatives in the United States (Ferguson, 2015) such as the introduction of the GI Bill in 1944 (Princeton - Brookings, 2013), Head Start, Elementary, and Secondary Education programs in the 1960s (Vinovskis, 2015). Compulsory education in the United States begins between the ages of five and eight and ends between the ages of sixteen and eighteen, depending on the state (National Center for Education Statistics, 2021). The grading scale is A through F, with A as the best grade and F as a failing grade. Standardized tests are required in U.S. public schools to ensure minimum education is offered to every student based on the *No Child Left Behind Act of 2001* which also requires that students and schools demonstrate sufficient annual progress (U.S. Department of Education, 2001). Many U.S. schools, from K-12 as well as colleges, use the A, B, C, D, and F grading scale (Schneider &Hutt, 2014). Depending on the level of education and institution, a C or D could be the lowest passing grade. By 2012,

approximately 56% of institutions reported using a plus/minus grading scale as well (Brumfield, 2005).

In the United States, there is also the Scholastic Aptitude Test (SAT) and the American College Testing (ACT)—standardized tests for high school students, primarily those in 11th grade, depending on the post-secondary institution they wish to attend after 12th grade. The SAT score range is 400–1,600 while the ACT score range is 1–36 (Zhang, 2021). Scores that students receive on both the SAT and/or ACT place them in various categories or percentiles when they apply for acceptance into post-secondary institutions. Scoring a 1,050 on the SAT is average and puts students in the top 50% while scoring 1,425 puts students in the top 5% of test-takers and scoring a 21 on the ACT is average and puts students in the top 50% while scoring a 31+ puts students in the top 5% of test-takers (Zhang, 2021). Along with a competitive Grade Point Average (GPA), students who wish to attend prestigious universities typically aim for a higher score—to be in the top 5% of test-takers.

U.S. postsecondary institutions serve a diverse group, those who have done well and those who have not done well in elementary and secondary schools (Princeton - Brookings, 2013). Postsecondary education prepares students for college and trade school. There is a growing trend of postsecondary (and college) students who are older and from lower-income families (Princeton - Brookings, 2013). Currently, there are numerous options for different types of students and students of almost any age. There are selective universities and colleges to attend as well as community colleges and institutions with online offerings (Princeton - Brookings, 2013). There is also an increase in the number of college students working full-time, sometimes raising children and putting their own children through the U.S. education system.

Although online learning may accommodate nontraditional U.S. students who are older with several life responsibilities, online learning also provides opportunities to international students. Integrating students from several different cultures into an online classroom must be done methodically. It is important to understand that the U.S. education system is different compared to other countries.

Singapore's Education System

Primary education is the first level of formal education in Singapore which culminates in a national examination, the Primary School Leaving Examination (PSLE) (Singapore Examinations and Assessment Board (SEAB), n.d.). Primary education is mandatory and six years for all Singaporean children older than six years old according to the Compulsory Education Act (2001). Subject-Based Banding (SBB) allows students to take subjects examinable for the PSLE, namely English, their Native Language, Mathematics and Science, at the standard or foundational level (Ministry of Education, n.d.b). PSLE scores are the total sum of the student's four subjects' Achievement Level (AL), ranging from 4 to 32, and will determine the stream the student takes in secondary education (Government of Singapore, 2021). To qualify for the Express course, a PSLE score of 4-22 is required, while the PSLE score required for the Normal (Academic) course is 21-25, and 25-30 is required for the Normal (Technical) course with an AL score of 7 or better in both English and Mathematics (Ministry of Education, n.d.a).

There are many stream options for a student during secondary education—the Integrated Programme (IP), Express course, Normal (Academic) course, Normal (Technical) course, as well as specialized schools (Ministry of Education, 2021c). All selections require between four to six years to complete (Ministry of Education, 2021c).

If students do not meet the requirement of a certain stream based on their PSLE results, there are opportunities in the first three years of secondary education for students to transfer to a

different stream based on their academic abilities in secondary school (Ministry of Education, 2021c). Specialized schools provide secondary education for students who are ineligible for the aforementioned programs based on their PSLE score (Ministry of Education, 2021c). There are specialized independent schools that offer a greater focus on developing students' strengths in other disciplines during secondary education (Ministry of Education, 2021c).

Examinations

After taking the General Certification of Education (GCE) O-Level examinations, students will get a grade for each subject that has a corresponding number and alphabet (SEAB, 2021). To qualify for Junior College, the sum of the student's numerical grades in their first language and five other subjects (L1R5) must be 20 or less (Ministry of Education, 2021b). To qualify for the Millennia Institute, the sum of the student's numerical grades in their first language and four other subjects (L1R4) must be 20 or less (Ministry of Education, 2021b). Admission to a Polytechnic depends on the individual Polytechnic courses' grade requirements. However, to qualify to a Polytechnic, in general, the sum of the student's numerical grades in English and four other subjects (ELR2B2) must be 26 or less (Ministry of Education, 2021a). Admission to the Institute of Technical Education (ITE) also depends on the individual ITE courses' grade requirements. However, to qualify, the student must have been tested for at least five O-Level subjects (Ministry of Education, 2021a).

For students who take the GCE N(A)-Level examinations, their grades are numerical, with 1 being the highest and 5 being the lowest passing grade (SEAB, 2021). The Polytechnic Foundation Programme (PFP) is a year of foundational studies that students complete to advance to formal studies in a Polytechnic. To qualify, the sum of the student's grades in English, Mathematics and three other subjects (ELMAB3) must be 12 or less. The sum of the student's grades in English, Mathematics and three other subjects (ELMAB3) must be 12 or less. The Direct-Entry-Scheme to Polytechnic Programme (DPP) allows students to study in a course of their choice at the ITE for two years before they matriculate to a Polytechnic course, under the condition that they meet a certain GPA in the ITE (Ministry of Education, 2021b). To qualify for the DPP, the sum of the student's ELMAB3 must be 19 points or less (Institute of Technical Education, 2021a).

For students who take the GCE N(T)-Level examinations, their grades are alphabetical, with A being the highest and D being the lowest passing grade (SEAB, 2021). For most courses at the ITE, students need to pass at least three subjects, with one of the subjects being English, Mathematics or Science, depending on the nature of the course they are applying to, to qualify (Institute of Technical Education, 2021b). There are courses available in which completion of the N(T)-Level examination is a sufficient qualification (Institute of Technical Education, 2021b).

Pre-University/Post-Secondary Education

At the end of Junior College, which offers a two-year program, or the Millennia Institute which offers a three-year program, students will test for the GCE A-Level or IB examinations (Ministry of Education, 2021c). The qualifications obtained will allow them to apply for a university in Singapore or overseas (Ministry of Education, 2021b). Polytechnics provide students with practical learning experiences in their respective courses to prepare them to enter the workforce, and students graduate with a Polytechnic diploma (Ministry of Education, 2021b). Polytechnic diplomas also allow students to apply for a university in Singapore or overseas (Ministry of Education, 2021b). The ITE provides students with specialized learning experiences to prepare them to be well-equipped for the workforce in the two-year National ITE Certificate (Nitec) course or the three-year Higher National ITE Certificate (Higher Nitec) course (Institute of Technical Education, 2021b). Upon graduation from ITE, students will be able to enter the

workforce or continue their studies at a Polytechnic (Ministry of Education, 2021b). Similar to U.S. colleges, some Singapore Polytechnics offer traditional in class and online classes. Nonetheless, differences within the U.S. and Singapore educational processes are evident. Educators and administrators involved with online courses should consider the diverse educational backgrounds of international students.

Online Learning

As technology evolves, so does education and accessibility to education (Galyon et al., 2016). Online courses are delivered in multiple formats—each with different key elements that impact student performance. There are several factors when it comes to student performance in online classrooms. Student participation and engagement, technological competence, social support, time management abilities, course objectives, course structure, course difficulty, and course length may contribute to student outcome (Galyon et al., 2016). Students' educational, social, and cultural background may impact student performance. Instructors' engagement and manner of assignment feedback as well as instructors' educational, social, and cultural background may also impact student performance. Various aspects that define a student likely impact performance.

Online learning includes various assignments. Individual and group work, presentations, discussions, short essays, research projects and papers, planning activities, experiments, and exams are a few examples. Research comparing student performance in conventional classrooms and hybrid or online classrooms is prevalent. Results from one research indicated that students in an educational psychology course favored a conventional classroom over hybrid classroom with respect to exams and group projects (Galyon et al., 2016). Findings as such may have additional implications. If studying with peers over potential exam questions and group cohesion are critical to student success in a conventional classroom (2016), academic institutions should assess whether their online courses incorporate and facilitate comfort and trust between students and instructors from different parts of the world. A critical aspect of effective online learning is the course development process and the variables included to improve student success.

It is possible that required course content may be different for American versus Asian students from China, Hong Kong, Singapore, and other Southeast Asian countries. Cultural diversity can lead to misunderstandings in traditional and online classrooms. Instructors who are capable of teaching to different types of learners may be more effective. Accommodating various student learning styles may impact student persistence in a course. Gerard Hendrik Hofstede, known for his study on six dimensions of culture, indicated that people from different countries distinguish themselves from other groups based on their intrinsic values (Hofstede, 1980). These standards may impact how different groups of people learn in a traditional and online class.

Hofstede's Theory of Cultural Dimensions

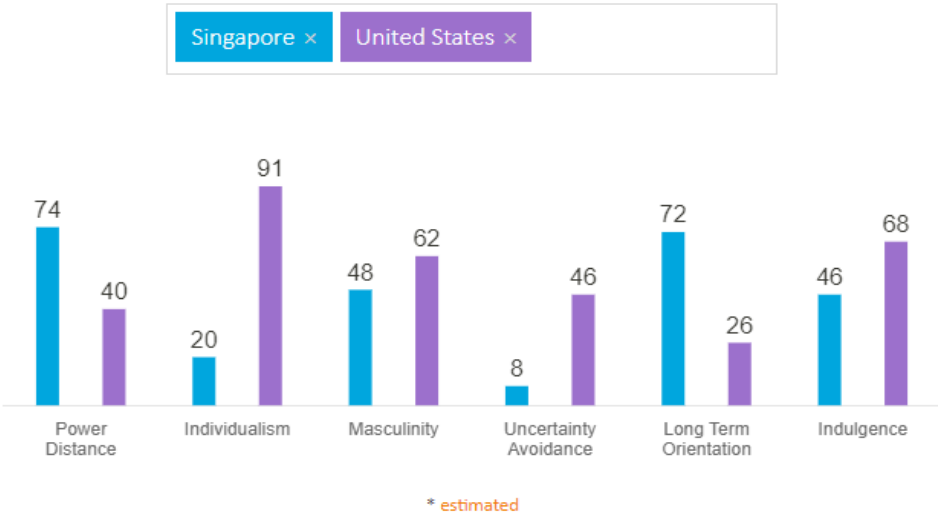
There are clear differences apparent in the education systems of the United States and Singapore. These differences may be grounded in the fact that each country's national culture has influenced the design of the education system. Hofstede's Theory of Cultural Dimensions identified six dimensions that define a national culture:

1) Power distance,
2) Individualism versus Collectivism,
3) Masculinity versus Femininity,
4) Uncertainty Avoidance,
5) Long Term versus Short Term Orientation, and
6) Indulgence versus Restraint. (Hofstede, 2019)

If one must assign meaning to the information presented in curriculum for knowledge transfer to occur, the consideration of the educator's and learner's national culture becomes a decision factor for curriculum development and delivery. Hofstede's Theory of Cultural Dimensions has been extensively used by researchers in education to examine classroom relationships and the impact of national culture on course design (e.g. Chang et al., 2017; Cortina et al., 2017; Frisby et al., 2017). Utilizing Hofstede's Cultural Comparison Tool, it is possible to determine the similarities, and differences, between the national cultures of Singaporean students when compared to U.S. students. Figure 1, adopted from Hofstede's Cultural Comparison Tool (2019), depicts Singapore and U.S. scores on Hofstede's Cultural Dimensions Index.

Figure 1

Singapore and U.S. scores on Hofstede's Cultural Dimensions Index



Note. Hofstede's six cultural dimensions comparison between Singapore and the United States. Adapted from "The Country Comparison Tool" by G. Hofstede, 2019. Retrieved from https://www.hofstede-insights.com/country-comparison/singapore,the-usa/

Power Distance Index

The disparity between the countries has several implications in education. Singapore scoring higher on the Power Distance Index indicates that, in education settings, students would expect to be told exactly what to do and that communication would typically be vertical moving from the instructor downward to the student when compared to U.S. students (Hofstede, 2019).

Individualism versus Collectivism Index

The very high score (91) on the Individualism versus Collectivism Index for Americans supports that students from the United States are expected to function as individuals in the classroom, where one takes responsibility for their own success. Singaporeans scored at the opposite end of this index (20) indicating that students in the classroom would tend to work together to ensure everyone succeeds, with success being determined by the collective achievements of the entire class versus the individual (Hofstede, 2019).

Uncertainty Avoidance Index

There is a large disparity seen on the Uncertainty Avoidance Index as well, with Americans scoring 46 and Singaporeans scoring 8. In the classroom, this would translate to students from the United States being more willing to accept change and innovation while students from Singapore prefer clear authoritative guidance and concrete rules (Hofstede, 2019).

Long-Term versus Short-Term Orientation Index

A final key difference between the countries scores is evident in the Long-Term versus Short-Term Orientation Index. Singapore's score of 72, when compared to the United States' score of 26, indicates that students from Singapore are more focused on long-term success in the classroom versus students from the United States who tend to focus on near-term success and goals (Hofstede, 2019).

Collaboration through Education

Singaporean and American education systems, culture, and language differ. Existence of the International Civil Aviation Organization indicates the need for the aviation/aeronautical industry to collaborate on a global scale. Worldwide cooperation starts with education: learning with other students and working harmoniously with peers from diverse backgrounds. Based on Hofstede's Cultural Comparison Tool (2019), Singaporeans view Power Distance, Individualism versus Collectivism, Uncertainty Avoidance, and Long-Term versus Short-Term Orientation considerably different compared to Americans. As a result, it is the responsibility of aviation/aeronautics academic institutions and educators to identify and implement course assignments that domestic and international online learners can relate to and understand.

Research Method

For the purpose of this research, student satisfaction is defined as the level of agreement students have with each statement in this research survey questionnaire. Singaporean students enrolled in a U.S. private university accredited in aviation and aerospace degree programs participated in the survey for this research (Please see Appendix A for the survey). The university has almost 140 resident and satellite campuses as well as several online degree programs. The research included the aforementioned online survey questions distributed to students from the Singaporean campus of this U.S. private university.

Population/Sample

The target population was Singaporean students enrolled in this university's online Bachelor of Science in Aeronautics degree program. 22 Students answered the survey questions.

Research Question Hypotheses Testing

The research question for this study is as follows: Is there a statistically significant difference in Singaporean student attitude toward individual, group, discussion, and presentation assignments?

An Analysis of Variance (ANOVA) was used to test the following hypotheses.

Hypothesis 1: Singaporean student attitude toward online individual assignments is significantly less positive than online group assignments.

Null 1: Singaporean student attitude toward online individual assignments is not significantly less positive than online group assignments.

Hypothesis 2: Singaporean student attitude toward online individual assignments is significantly less positive than online presentation assignments.

Null 2: Singaporean student attitude toward online individual assignments is not significantly less positive than online presentation assignments.

Hypothesis 3: Singaporean student attitude toward online individual assignments is significantly less positive than online discussion assignments.

Null 3: Singaporean student attitude toward online individual assignments is not significantly less positive than online discussion assignments.

Results

Hypothesis 1 was accepted: Singaporean student attitude toward online individual assignments is significantly less positive than online group assignments. This aligns with the results of Hofstede's Cultural Comparison Tool when analyzing Singaporean and American attitude in the Individualism versus Collectivism Index. Singaporeans scored lower (20) than Americans, indicating that the success of the group versus the individual is priority whereas American scored much higher (91) in the Individualism versus Collectivism Index.

Hypotheses 2 and 3 were not accepted due to a lack of statistical significance. However, other questions regarding student interaction resulted in higher scores.

Interestingly, there was a statistical significance of 0.01693 in response to survey Question #9: I prefer individual assignments to group assignments. The overall response to Question #9 received the lowest score—score of 1, indicating strongly disagree with this statement. A p-value of 0.000295 ($p < .05$) indicates that there is a statistically significant difference or interaction effect (Lund & Lund, 2018) of various types of assignments on student respondents in this research.

There lacked statistical significance for Hypothesis 2: Singaporean student attitude toward online individual assignments is significantly less positive than online presentation assignments. This was also the case with Hypothesis 3: Singaporean student attitude toward online individual assignments is significantly less positive than online discussion assignments. However, results of other questions in the survey pointed to higher scores and more positive feelings for the following aspects in an online class: teams, presentations, participation in group work, and engagement with an instructor in an open discussion forum—which align with Singapore and U.S. scores on Hofstede's Cultural Dimensions Index regarding Individualism versus Collectivism (Hofstede, 2019). Based on the Hofstede's Cultural Dimensions Index, the group's accomplishments are prioritized over an individual's accomplishments.

Table 1

ANOVA Tests to Determine Statistically Significant Differences Between Groups

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	59.49838	27	2.203644	2.274139	0.000295	1.50475
Within Groups	569.7727	588	0.969001			
Total	629.2711	615				

Table 2

Q9. I Prefer Individual Assignments to Group Assignments – Lowest/ Statistically Significant

ANOVA: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
GPA Cat 1	8	21	2.625	1.982143
GPA Cat 2	7	32	4.571429	0.619048
GPA Cat 3-4	7	20	2.857143	2.142857

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	16.3263	2	8.163149	5.094188	0.01693	3.521893
Within Groups	30.44643	19	1.602444			
Total	46.77273	21				

Note. GPA Categories are defined as such: GPA Cat 1 = 4.00, GPA Cat 2 = 3.75 to 3.99, GPA Cat 3 = 3.50 to 3.75, and GPA Cat 4 = 3.49 to 2.50

Table 3

Q12. I Work Well in Teams - Tied Highest

ANOVA: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
5	7	32	4.571429	0.619048
4	6	27	4.5	0.3
5	6	25	4.166667	0.966667

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.58396	2	0.29198	0.464954	0.63639	3.633723
Within Groups	10.04762	16	0.627976			
Total	10.63158	18				

Table 4

Q25. I am Comfortable Using Technology to Complete Presentation Assignments – Tied Highest

ANOVA: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
5	7	33	4.714286	0.238095
4	6	25	4.166667	0.566667
4	6	27	4.5	0.7

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.974937	2	0.487469	1.004843	0.38807	3.633723
Within Groups	7.761905	16	0.485119			
Total	8.736842	18				

Results of this study align with Hofstede's Cultural Dimension comparison between Singapore and the United States. Singaporeans value oneself differently than Western cultures. Based on Hofstede's Cultural Dimension Index, power distance is ranked higher, and individualism is ranked lower in Singapore than in the United States. Online classes may influence Singaporean students as much as traditional resident courses. Students may feel a need to impress an authoritative figure, such as an instructor, while having meaningful interaction with peers in a traditional and/or online class.

Based on Hofstede's Cultural Dimensions Index, collectivism is inherently a priority over individualism in Singapore. Some Asian cultures are identified as collectivistic, in which the needs of the group and/or community are priority over the needs of oneself (Triandis, 1989). East Asian cultures value loyalty toward the group and cooperation toward group goals (Putnam, 1993; Vinken, 2006). Online communication may be acceptable for those seeking indirect communication and harmony of the group. Conflicts may be avoided with online communication being more indirect. It is possible that students from certain backgrounds prioritize academic relationships over individualism in person and/or online.

Discussion/ Conclusion

The results of this study indicate a need for course developers as well as faculty members to understand the impact that national culture exercises over student performance in an online classroom, particularly in the aviation/aeronautical fields of study. Student success should be the overarching goal of all stakeholders functioning in the education marketplace. Findings from this study suggest that instructors should reinforce their role in an online classroom as well as place extra care ensuring that every student is engaged, feels included, and can be proactive in an online classroom setting.

This task is made more challenging given the multi-cultural classroom and requires deliberate planning. It is also imperative that online course developers create a template that fosters high engagement via assignments that facilitate teamwork as well as professional presentations, meaningful conversations, and interesting activities. When creating online course content, consider the cultural differences between students—and between students and the instructor.

Integrating relatable assignment design, instruction, and communication methods could lead to an increase in student satisfaction and success. Online course developers and instructors could integrate social media platforms and Artificial Intelligence (AI) powered chatbots into online classrooms in a meaningful way. Social media and AI regularly bring people from diverse backgrounds together and have fewer barriers than traditional languages. Creating an exciting online learning environment in which classroom interaction is high, regardless of login location, may provide students a more rewarding experience. Applying Hofstede's Cultural Dimensions Indices during course development for aviation/aeronautics online classes may facilitate effective and positive learning attitudes for domestic and international students.

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Appendix A

1. Which nationality do you most closely associate with?
   A. U.S.
   B. Singaporean
   C. Other

2. Currently, your overall GPA is: _____

3. My favorite assignments include (circle all that apply): Tests/Quizzes, Essays, Research Papers, Major Projects, Group Projects, Presentations, and Open Discussion Forums.
Other/s:
_____

Please rank your favorite assignments, starting with your most favorite up top and your least favorite at the bottom.

_____
_____
_____
_____
_____
_____
_____

Please rate your level of agreement with each statement.

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

4. I am comfortable asking my course instructor for assistance.
1 2 3 4 5
5. I am comfortable asking my classmates for assistance.
1 2 3 4 5
6. I am comfortable asking for assistance with classwork.
1 2 3 4 5
7. I am comfortable mentioning a problem or issue with a course to my instructor.
1 2 3 4 5
8. I am comfortable mentioning a problem or issue with a course to my classmates.
1 2 3 4 5
9. I prefer individual assignments to group assignments.
1 2 3 4 5
10. I am comfortable with individual assignments.
1 2 3 4 5
11. I am comfortable with group assignments.

1 2 3 4 5

12. I work well in teams.

1 2 3 4 5

13. I am comfortable working with classmates for a group assignment.

1 2 3 4 5

14. I regularly correspond with my classmates in each course.

1 2 3 4 5

15. I stay in contact with some classmates after a course ends.

1 2 3 4 5

16. I feel that members in a group assignment do work equally.

1 2 3 4 5

17. It is my responsibility that every member in my group does well.

1 2 3 4 5

18. I am comfortable participating in and interacting with my classmates for group assignments.

1 2 3 4 5

19. I am comfortable using technology to complete assignments.

1 2 3 4 5

20. I prefer individual assignments to presentation assignments.

1 2 3 4 5

21. I am comfortable with presentation assignments.

1 2 3 4 5

22. I am comfortable presenting my work to an audience.

1 2 3 4 5

23. I am comfortable presenting my work to my instructor.

1 2 3 4 5

24. I am comfortable presenting my work to my classmates.

1 2 3 4 5

25. I am comfortable using technology to complete presentation assignments.

1 2 3 4 5

26. I prefer individual assignments to discussion assignments.

1 2 3 4 5

27. I am comfortable with discussion assignments.

1 2 3 4 5

28. I am comfortable sharing my ideas to an audience in an open discussion forum.

1 2 3 4 5

29. I am comfortable sharing my ideas with my instructor in an open discussion forum.

1 2 3 4 5

30. I am comfortable sharing my ideas with my classmates in an open discussion forum.

1 2 3 4 5

31. I am comfortable using technology to complete discussion assignments.

1 2 3 4 5