



**V C S U**  
VALLEY CITY STATE UNIVERSITY

# THE X FACTOR

a pilot study

Final Report for the Faculty Development Committee

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# The X Factor - a pilot study

## Introduction

My original grant application, TORQUE V (Technologies Offer Reform of Quality Undergraduate Education), included the following information:

### PURPOSE OF GRANT APPLICATION:

The applicant seeks funding to conduct institutional research on the impact of using notebook computers/learner centered education and to disseminate results. The project builds on previously Bush-funded research and may represent final use of the current survey.

### HOW IS THIS PROPOSAL LINKED TO BUSH GRANT GOALS, OBJECTIVES AND VCSU MISSION?

Bush Grant Goals: To support and understand best practices within a technology rich environment; to document and assess student learning to confirm and improve the quality of instruction.

Bush Grant Objective: Supports assessment and research efforts by faculty.

VCSU Mission: The proposal relates to the following language - learner centered community, innovative culture, technologically enhanced environment, and leader in the effective use of instructional technologies.

The Faculty Development Committee proposed funding a modified version of my proposal, to which I agreed, that involved developing and pilot testing a new research instrument. I began this project in early November 2000 and completed it mid April 2001.

Over the past several years, I have offered my courses partially online, more recently using Blackboard CourseInfo. Because data reveal that a hybrid learning environment holds several advantages for students, I am interested in learning more about its impact and finding ways to maximize its benefits for students.

## The Project

In an effort to construct a survey instrument based on sound theoretical principles, I spent a great deal of time consulting with others, reviewing literature, and drafting documents. After what seemed like an endless process, The X Factor pilot instrument came into being. One resource in particular bears relationship to the survey items: "Applying the Seven Principles for Good Practice in Undergraduate Education" edited by Arthur W. Chickering and Zelda F. Gamson, published in New Directions for Teaching and Learning, Number 47, Fall 1991, Jossey-Bass Inc., Publishers. According to that research-based document, good practice in undergraduate education:

1. Encourages Contacts Between Students and Faculty.
2. Develops Reciprocity and Cooperation Among Students.
3. Uses Active Learning Techniques.
4. Gives Prompt Feedback.
5. Emphasizes Time on Task.
6. Communicates High Expectations.
7. Respects Diverse Talents and Ways of Learning.

Mary Deane Sorcinelli wrote the second chapter, *Research Findings on the Seven Principles*, of this book. In it, she makes the point that the connections between the second and third principles are unmistakable. "In many ways, the cooperative learning practices described in the second principle can be seen as a large and important subset of the active learning practices described in the third" (page 16). This is a significant statement, in that I had already begun to frame The X Factor survey items with those same two principles in mind. While cooperative and active learning do have distinguishing features according to Sorcinelli, she writes that "Despite the range of labels, meanings, and techniques, the Principles share one crucial variable: the active involvement of students as opposed to their passive exposure to a learning task" (page 16).

Sorcinelli cites many research findings related to each of the Seven Principles, but I was particularly interested in reading about those that related to Principles 2 and 3. She confirms the choice I made in focusing on these two Principles to frame The X Factor items. She writes "research indicates that teaching methods that encourage student activity and involvement, especially student-to-student interaction, are likely to be superior to more passive methods when higher-level cognitive or affective learning is the goal" (page 18). Since the faculty member responsible for the learning environment, he or she could be the X factor. On the other hand, the impact of the online environment on student learning is the focal point of the study and probably is more directly the X factor. To be determined...

I pilot tested The X Factor in PSYC 111 Introduction to Psychology and PSYC 450 Personality Theories and Measurement during class on Thursday, February 8, 2001. The remaining pages of this report serve to document the results. Included are the survey items; an overview of the results; percentages in graphic form; student feedback, obtained in April as a follow-up to The X Factor, that relates to certain survey findings; and statistical analysis of the data.

### **Some Major Findings of the Project and The Impact on Student Learning**

The X Factor survey data reveal that student interaction in an online learning environment appears to have some advantages over the traditional classroom. Students tended to agree with each of these seven statements:

1. Students experience a higher degree of student interaction in the online environment.
2. Online group discussions are more comfortable for students.
3. Students have more meaningful interaction with each other in an online environment.
4. Students are more likely to share their own opinions on a given course topic in an online environment.
5. Students are more likely to share their ideas in an online environment.
6. Students are more likely to discover what other students think about a given course topic in an online environment.
7. Students gain a wider perspective when discussing course topics with other students online.

In the survey follow-up exercise in April, when asked to explain the impact each of these statements had on learning, students consistently made several points related to student interaction in an online learning environment compared to that in a traditional classroom. Among them were these, in brief:

- More comfortable and positive experience.
- More honest and fuller expression of ideas, equal opportunity for input.
- Less pressure, overcoming shyness, more confidence, fewer inhibitions.
- Freedom from fear, less stress, less intimidating.
- Expanded points of view, broader spectrum of ideas, remember more.

- More productive, input quality improves, worthwhile feedback.
- More free and open communication.
- Time for reflective communication.
- More in depth communication.
- More open, reciprocal sharing.
- Value differing points of view.

The evidence mounts. Using technology effectively contributes to best practices in education. To expand knowledge on how the online environment impacts students and their learning, further research is both essential and desirable. The X Factor pilot may well move toward this end.

### **Acknowledgements**

Faith Lueck, student, assisted me in compiling the raw survey data and determining preliminary statistics. Dr. Miriam Fultz, President of DesertFrost Consulting Group, completed more formal statistical analyses of The X Factor and put together the Abstract that concludes this report. Her work will prove useful for modification and use of the instrument in the future. In addition to Fultz, Drs. Therese Corwin and Leslie Wong provided critical review and feedback during the drafting period. I am indebted to each one of these individuals for their genuine interest, consistent support, and sound advice throughout the project.

### **Comment for the Faculty Development Committee**

I take this opportunity to thank the Faculty Development Committee for agreeing to fund this research project. I appreciate being able to begin this new effort and am grateful for Bush Grant support. With further analysis and refining, The X Factor pilot survey will yield yet another instrument to help measure effective practices related to teaching and learning at Valley City State University.

# Preliminary Average Results and List of Pilot Items

AVERAGES for Spring 2001 Pilot - The X Factor

Administered in PSYC 111 and PSYC 450. Sixty students voluntarily participated.

1. 2.42
2. 2.95
3. 4.33
4. 3.70
5. 3.48
6. 3.55
7. 4.32
8. 4.18
9. 4.03
10. 3.13
11. 4.12
12. 3.93
13. 4.55
14. 3.87
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17. 3.70
18. 3.32
19. 3.80
20. 3.82
21. 3.95
22. 3.67

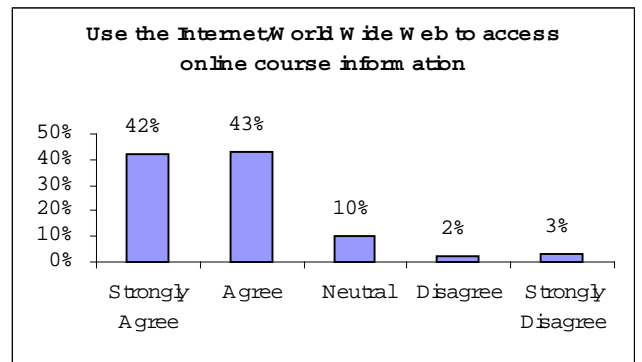
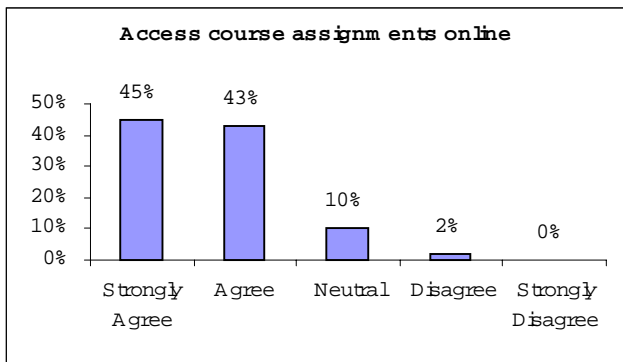
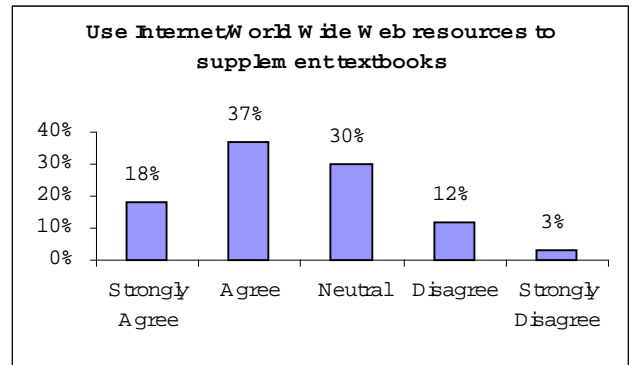
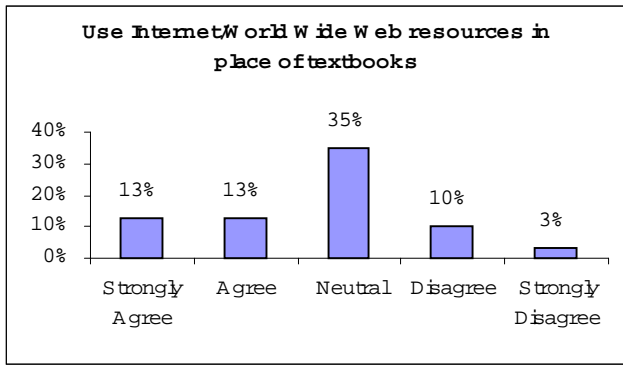
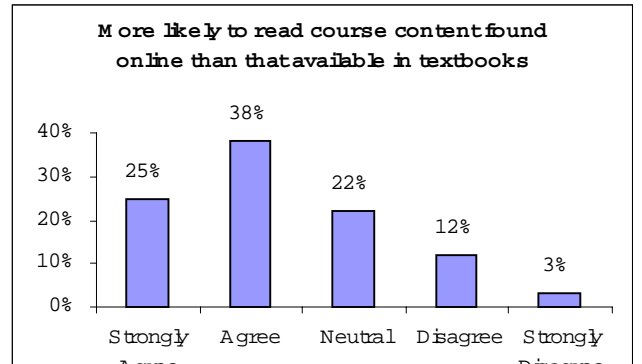
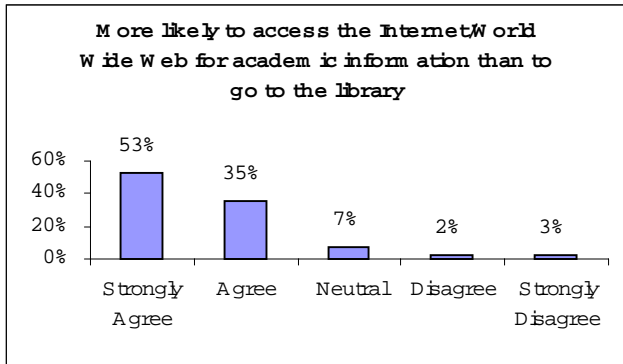
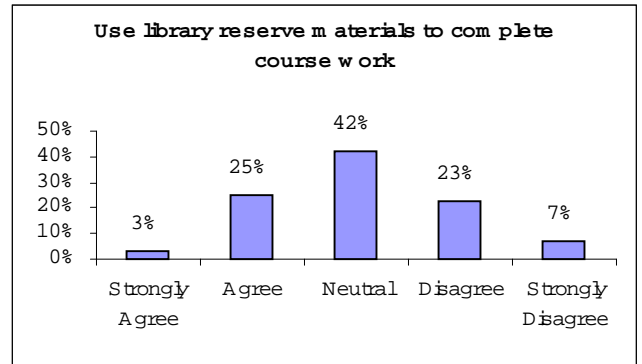
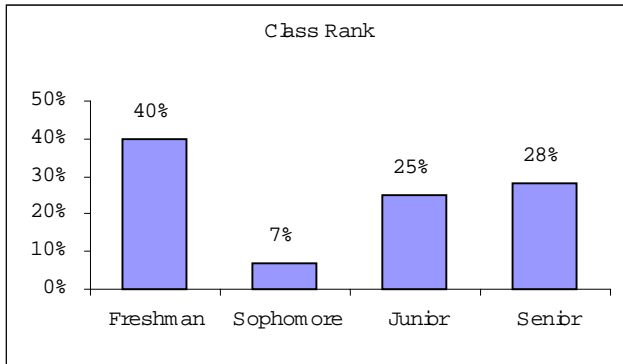
## The X Factor Items

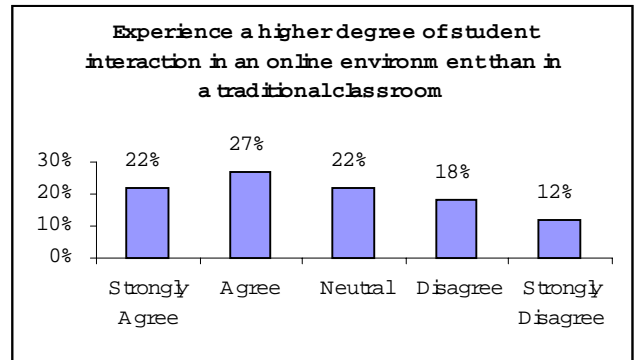
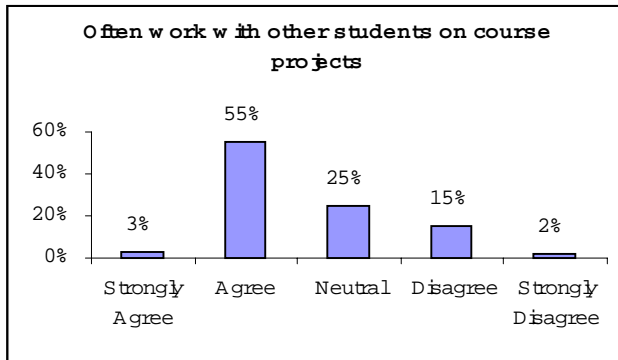
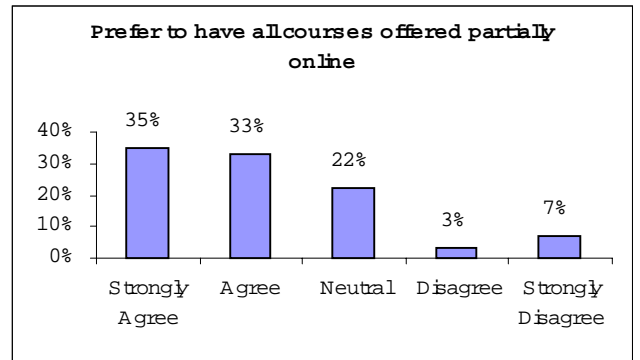
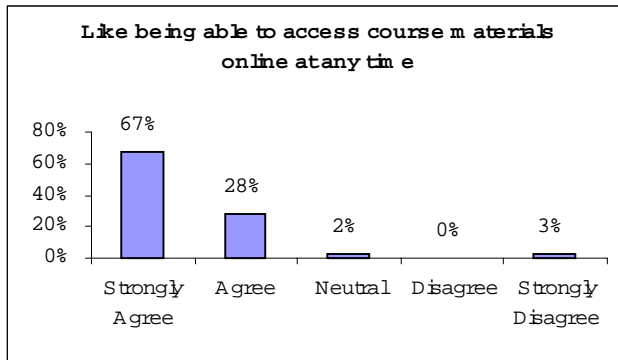
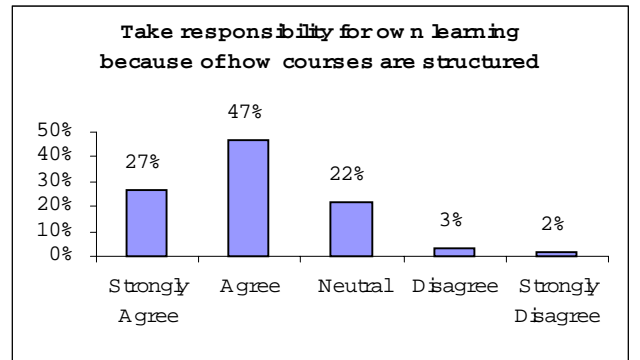
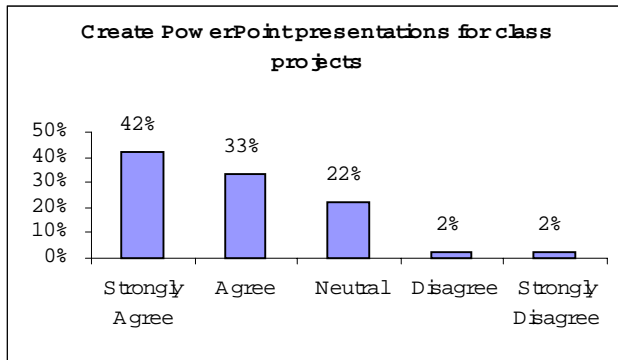
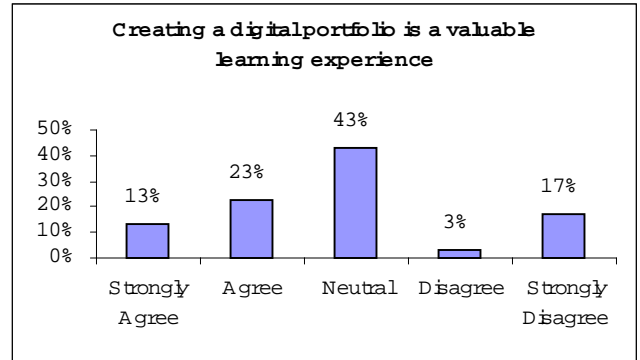
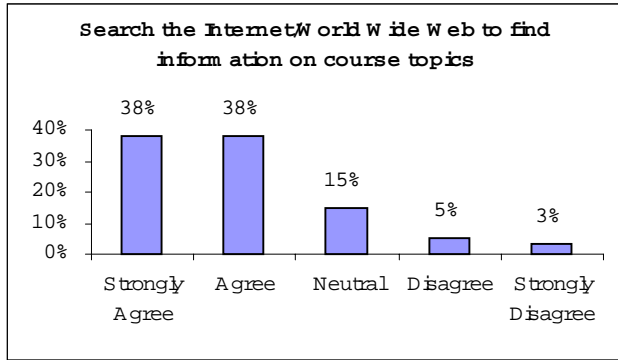
Using this five-point scale, 5 for Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, and 1 Strongly Disagree, students indicated the extent to which they agreed the statements were true for them.

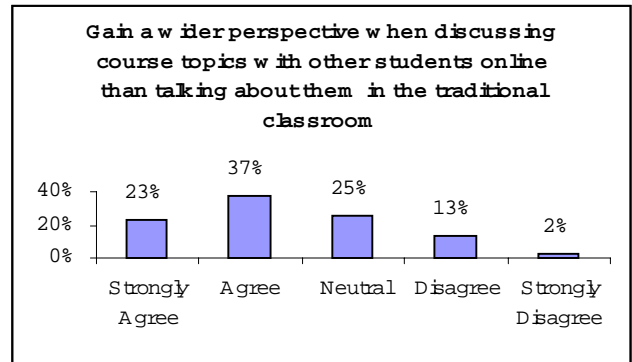
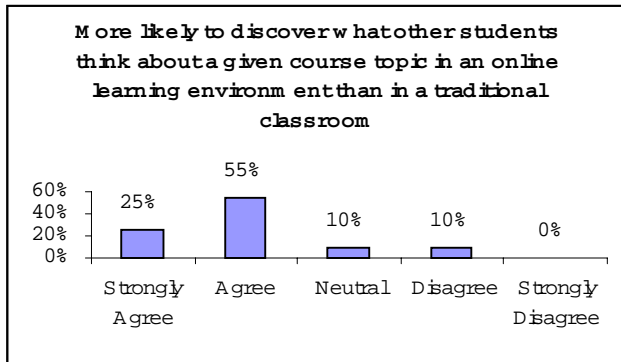
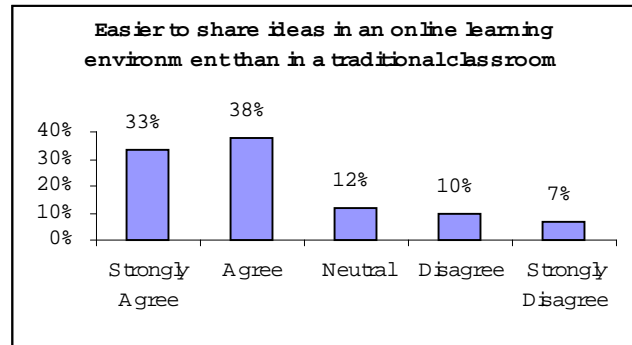
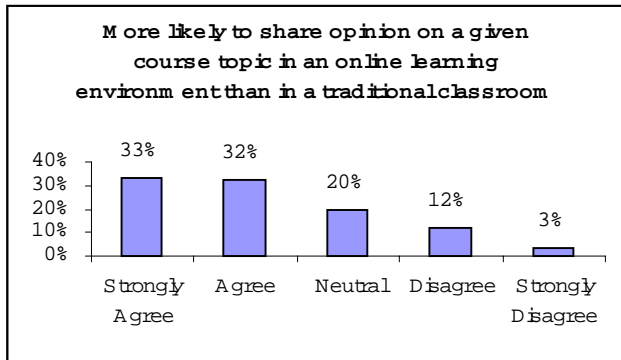
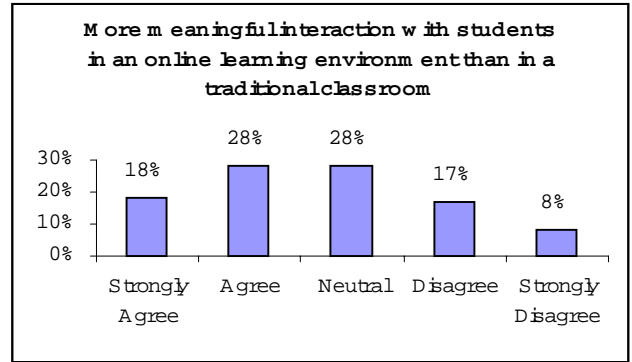
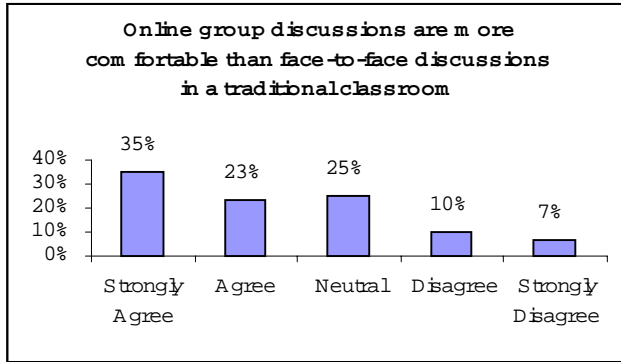
1. What is your class rank?      Freshman    Sophomore    Junior    Senior
2. I use materials on reserve in the library to complete course work.
3. I am more likely to access the Internet/World Wide Web for academic information than to go to the library.
4. I am more likely to read course content found online than that available in textbooks.
5. I use Internet/World Wide Web resources in place of textbooks.
6. I use Internet/World Wide Web resources to supplement my textbooks.
7. I access course assignments online.
8. I use the Internet/World Wide Web to access online course information.
9. I search the Internet/World Wide Web to find information on course topics.
10. Creating a digital portfolio is a valuable learning experience for me.
11. I create PowerPoint presentations for class projects.
12. I can take responsibility for my own learning because of how courses are structured.
13. I like being able to access course materials online at any time.
14. I would prefer to have all my courses offered partially online.
15. I often work with other students on course projects.
16. I experience a higher degree of student interaction in an online environment than in a traditional classroom.
17. Online group discussions are more comfortable for me than face-to-face discussions in a traditional classroom.
18. I have more meaningful interaction with students in an online learning environment than in a traditional classroom.
19. I am more likely to share my own opinion on a given course topic in an online learning environment than in a traditional classroom.
20. I find it easier to share my ideas in an online learning environment than in a traditional classroom.
21. I am more likely to discover what other students think about a given course topic in an online learning environment than in a traditional classroom.
22. I gain a wider perspective when discussing course topics with other students online than I do talking about them in the traditional classroom.

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**PRELIMINARY STUDENT SURVEY RESULTS\* CHARTED PERCENTAGES - THE X FACTOR**







\*Percentages in the previous charts may not sum to 100 due to rounding.

## Follow-up Student Feedback Related to Certain Survey Items, April 2001

Instructions to students: The X Factor Survey data reveal that compared to a traditional classroom, student interaction in an online learning environment appears to have some advantages. Students tended to agree with each of the seven statements that follow. Please reflect on them and explain how each impacts learning. In other words, what does each statement do to your learning? What is the result? How does it benefit your learning? Providing concrete examples would be helpful.

### 1. Students experience a higher degree of student interaction in the online environment.

From PSYC 450 Students:

1. You are able to see what your peers got out of the information read. Everyone sees things in a different way and using the interaction online we are able to see and pick out different things.
2. *No Response*
3. At times I feel that there is much more interaction, especially with a class this large. It is much more comfortable writing responses to questions than speaking up in class...also you are able to get on one-to-one response from a peer.
4. I think that learning on-line was more helpful to me because it enabled me to spend as much time as I needed looking up and researching material online. The sites that were listed were helpful as were sites I found on my own. Learning in the online environment is easier for me because I can take as much time as needed to fully understand the material
5. I think that students do interact more in the online environment. Sometimes I feel more comfortable typing or writing my thoughts than speaking them.
6. Yes. When students are forced into group discussions they will do so, however are more reluctant to speak freely if they are face-to-face with others. They are more apt to be open and speak more if they can do it online.
7. Communicating with the use of the online environment gives students the ability to take advantage of the today's technology. Things that can be accomplished through technology these days is unbelievable, I feel that being able to work with it during our classes allows us to have a better understanding of how to improve our communication process.
8. I think that it does depend on the course and the student. In my case, it was a great experience. I did learn by having interaction among students online. Also from the quantity of writings I have seen from the other students, the interaction seems to be positive.
9. Having a sense of anonymity in the beginning of the course allows a student to be more open with his or her responses. This results in more interaction between students.
10. I think they do interact with the other students, but since they don't get to actually meet the people they are talking to and sharing their thoughts with they may hold back a bit. Maybe a meeting with the students in your group may help, to know someone better.
11. When discussing on the online classes, I feel that students are more willing to interact and fully express their thoughts in writing than in actual vocal class discussions.
12. I believe that students really get a hands on experience of responsibility. With having to come to class and talk amongst each other, we can interact a lot. We rely on each other a lot more for information to understand the course.
13. I would have to agree. In the group discussion board we interact more personally. I felt more free to express my ideas and thoughts

14. 1. I disagree with this idea. I feel more comfortable in the traditional classroom settings. I feel I learn more when I have someone in front of me reminding weekly what is expected and required of me. I feel that is a motivator in how I learn.
15. I agree because it is easier for the student to work at home and not be under pressure of speaking in front of people whenever they have a question to answer or something to ask. Blackboard allows the student to do a assignment in their leisure time.
16. You always know that there will be some sort of response to your questions. You also know that the questions will have a positive response and that no one will give you any negative comment about what you are saying. In other words, you are more able to speak what you actually feel without fear of having a negative comment made.
17. Sometimes I think that's right because the student doesn't have to worry about other people looking at them because they maybe said a dumb question. Also I think that it gives the student the time he/she needs to answer each question at his/her own rate. By taking their time the student can think about how well he/she will answer a question.
18. I feel that it is easier to open up online to some more personal information that I would never share in a traditional class environment.
19. I think that the nature of blackboard (groups) encourages student interaction
20. Yes I do think that students get a higher degree of interaction from being online. For me it is a lot easier to go online and go on decision board and talk to the people in my class instead of trying to find them. Also all the assignments are on online so if you forget it all you have to do is look online.
21. Yes, because we are able to talk to more people with out ever really leaving the comfort of a regular setting of a classroom or our home. Because we are able to talk to people from all over the campus and state it allows us to interact with just about anybody that we want too.
22. I believe they do as long as they are using the discussion board and responding to others.
23. I feel that we get to know more about the people in my group.
24. I have always thought that I get a higher level of student interaction when I am involved in an online class. In most of my classes I associate with the same people, I feel that when I interact with other online that I communicate with a variety of people and not the same people all the time. I also feel that I develop new friendships overtime especially with the members in my group when I am involved in an online class.
25. I agree with this statement because I think when completing an assignment over the Internet, more people tend to do their assignment. So there is that many more people to communicate with.
26. I believe that students do experience a higher degree of student interaction through an online community, because there isn't the stress of face-to-face interactions. I think this allows us to be more open and honest, without the social pressure.
27. I think we are "forced" to speak in the online communication since it is an assignment and therefore everyone participates unlike in class, but I don't think there is too much discussion back and forth and no one really backs-up their statement as they would in a regular hour long class discussion. People just fill out their opinions and then react to their six others and that is it.
28. I think this is true because if you're submitting your answers on line and not in person to someone else you feel more comfortable and more at ease because you are not embarrassed or shy to tell people your real answers. Also you are interacting with others almost weekly when you do assignments so it is good for learning purposes.

From PSYC 111 Students:

1. *No Response*

2. I feel by writing our ideas on-line is more beneficial than discussing them as a group. I think that we discussed our ideas more fully on-line, and if we were in a group physically discussing them.
3. I think that students have a higher degree because some people are shy and they don't like to talk in public and with this the person is able to state his or her opinion and not be afraid. With the group discussion and the class discussion, people are able to associate with everyone in the class.
4. I FEEL THAT IN AN ONLINE INVIRONMENT, PEOPLE TEND INTERACT MORE, EVEN ON A PERSONAL LEVEL AND IN ALL ASPECTS. FROM SCHOOL WORK AND ONLINE COURSES TO DATING AND MEETING NEW PEOPLE. I ALSO FEEL IT WIDENS YOUR VOCABULARY AND HELPS BETTER BAD SPELLING.
5. I think so because I feel more open when I type on a computer instead of saying it to some person that I really don't that well.
6. Yes, they do because we learn more about technology and it is also easier to get websites of information to help with homework.
7. It depends on how you mean that. You interact more with them by talking but as far as getting to know anyone and really interacting with them. That doesn't happen.
8. I agree in some way, however, I find it hard to learn and remember information from doing assignments online. I would rather come to class and take notes from the professor. I feel that I would learn more by doing it that way.
9. Yes, I think that the student interaction is very good with the online course. We get to talk to one another by blackboard and it is really neat to see what some people have to say.
10. I think that the online environment is a good thing and people can learn from it.
11. Yes, I do think more students interact in an online environment but I don't think that it helps any in the degree of learning that is acquired.
12. It is a lot easier to participate in class discussions.
13. I was able to receive more that one outlook on each subject. This led to a better understanding of the subjects. This helps me to better remember what I am learning.
14. There is some interaction among students, but it is somewhat limited by the fact that not everyone is active in the assignments and group activities. This can have a negative effect on our learning. It is hard to control and monitor the amount of interaction online.
15. I think that the interaction is greater in an online situation. I think that there is less pressure.
16. I think in a way for some students the online environment will have students experiencing a higher degree of interaction but then for some students they might have a better interaction period in the classroom. Some people learn better by being in the classroom around people. I think I'm more of an interactive person online.
17. I am definitely more apt to interact with other students about the subject matter of the class online. There is just something that is easier about inputting your ideas on the computer than it is face to face.
18. I think this is true because people can write what they feel better than they could just talking to each other.
19. I am able to receive information on what others are really feeling other than them being shy talking about what they are feeling.
20. In the group discussion forms, students can say their piece in their own time, whereas actual 'live' group discussion can be more intimidating and less productive. I find myself less likely to say all that I want to in 'live' group discussions, and oftentimes one doesn't have the opportunity to say everything they would like as the other members of the group must have their say also which ends up driving the conversation off the path on which you wanted to explore further.
21. I really got to know the people in my group, not necessarily by face. I don't have any other class where I shared my opinion so much.
22. With the online environment. each student can interact with each of the other

- students in the class and read what their thoughts on the different topics are.
23. It is easier to respond to other students' opinions and answers over a format like this. It's also nice to hear their responses to yours.
  24. I disagree with this statement. I think that students are missing a lot in the online environment. By not having a teacher to listen to as often students get to choose what they will look at for research and learn and most of the time this is the least work possible.
  25. Students today are more likely to talk on the computer. By talking they will learn more than by not talking in a normal classroom.
  26. I feel that being in a group discussion on line is much easier to open up than if you were to be sitting in front of each other.
  27. I like online classes and think they are good. I still though like the in classroom experience cause then I get to see my fellow students and teacher. Partially online courses are the way to go, you get some of both worlds and that is a good experience. I would definitely take another online course again. This course wasn't bad at all and I liked it.
  28. I believe that it's a good way to learn, with today and the use of technology, and the use of computers. It is has been a valuable source of learning for me over this semester.
  29. *No Response*
  30. Since our assignments require us to reply to each other, we can always find out what other people think about what we have written
  31. I agree with the above statement I think the fact that their is no face to face meetings and discussions people tend to let it flow and are less reserved when typing on a keyboard I feel it has helped my learning and my interacting
  32. I think students do experience at higher interaction with an online environment, because if I were in a normal classroom setting, I wouldn't speak my mind. While in an online course, I am not nervous while speaking, so I can be more open.
  33. I totally agree with this statement. I'm going to answer basically all of these questions in one. When I am not face to face with people and I don't have to be put on the spot to discuss something out loud I can better think through what I have to say about a subject, making the content of what I say more important giving a clearer answer to the questions. When we are in class and we are to share with each other everyone kind of just sits around and doesn't really discuss anything and I think it's because we are all to shy or embarrassed of being wrong or looking stupid where as online we don't have that pressure. It's more comfortable for everyone I think. Not only that, in class we still don't hear what everyone has to say you only hear the people in your group which is usually 3-4 people but online you have everyone in the class's answers and you can look and read what everyone thinks about topics giving you a better base on the subject. So instead of 3-4 you have now 50 different ideas and new aspects to look at. That alone benefits my learning because there is so much more information available.
  34. People sometimes feel more comfortable interacting through an online course rather than meeting face to face.
  35. It is easier to relate to others and reply to others through writing than in person.
  36. When I interact with students online I will participate a lot more just for the simple reason that I am a shy person and I can say whatever I want and not worry about getting those weird looks people tend to give when you give an answer that's wrong, or they just don't agree with. I think it has helped me learn a lot about other people in this class because they will be more honest in the end if they don't have to say how they think out loud.
  37. Absolutely true and it also lets you express what you want with no interruptions and you get a lot of time to respond.

## 2. Online group discussions are more comfortable for students.

From PSYC 450 Students:

1. Some people don't like to talk in class because they are worried about what their peers will think of their answers. This way there is a little more privacy when stating your opinion about things.
2. *No Response*
3. I think they are much more comfortable for me. I am able to think about what I want to say before I say it...there is not the involvement of nerves that happens when I speak out in class. You are able to review what you have "said" before anyone else reads it.
4. Online group discussions are a lot more comfortable for me than in classroom discussions. In the online setting I am more likely to speak my mind and to tell others what I think and feel. In class I tend to keep quiet and leave my thinking to me. Online discussions tend to leave me thinking I am learning more and I am learning right.
5. Sharing your personal thoughts with an online group is a lot more comfortable than sharing them with the whole class.
6. Yes. People don't like confrontation. When they can speak freely without looking at others, they are more comfortable. They are more apt to speak more, and use more intimate details relating to the subject matter.
7. For me personally, online discussions are more comfortable. I am a fairly shy person and hardly ever voice my opinion out loud in front of other students, but being able to talk online allows me to feel more comfortable and helps me to share my own thoughts and feelings.
8. Online group discussions are more comfortable for students. It enables those students who do not participate in class an opportunity to express themselves. I think that more effort is put out this way.
9. Absolutely! We can all work from home and not have to make a trip to campus and there is a tendency to be more honest online.
10. They may be more comfortable for students because it is easier for some people to write their answers and thoughts better than to express them out loud in a group setting.
11. Students are more willing to freely express their thoughts and ideas in writing rather than vocally with a class looking at them.
12. I think that the online discussions are more comfortable because the students are able to speak their minds without being verbally put down. With discussing online with each other, we can also value each other's opinion too. Everybody can speak their minds, which they might not verbally in the class. It lets everybody speak their personal minds.
13. I agree. Sometimes it is easier to relate to people on-line rather than face to face
14. I do agree with this idea. Sometimes I may be too shy to respond in a classroom situation, but I would be more willing over the computer. I feel having the opportunity in this class to explain how I feel and give feedback has been beneficial in communicating my ideas with people.
15. I agree because only a few people are going to be looking at and analyzing your responses, as opposed to a whole classroom.
16. Being able to say what you want without fear of any negative comments and not facing the students straight up is definitely more comfortable!
17. Yes, because you don't have to look at the other students and see their reaction to your reply. This enables the student to answer each question honestly.
18. For sure. Like I shared in question 1, I find it much easier to share my personal experiences online.

19. I think so, because we are able to write our feelings, rather than talk about them. This is easier for many students.
20. I think that the reason why online discussions are more comfortable for students is because you don't have the fear of rejection. This way you can say how you feel. I am one of those people that don't like to talk in front of people. But on discussion board I am free to say what I want.
21. Yes, it is more comfortable because we don't have the down time with waiting for others to speak about the topic instead we are able to write our thoughts and see what other have to say.
22. I believe they are.
23. I feel that for my self I feel more comfortable talking about things that we learned in class on discussion board then face to face.
24. I agree strongly with this statement. For me especially it is much easier and more comfortable to communicate with people that I am not acquainted with to have a discussion with them over the computer rather than face to face. It makes things easier at first until I'm at the point where I feel like I can have a meaningful conversation with other individuals.
25. I agree with this statement because I myself feel that communicating over the computer is easier and more comfortable than face to face. When a person is comfortable I think they open up more and are more honest about their feelings.
26. There is a certain degree of anonymity in an online forum. For myself, I can speak more freely through the computer than I can in the "traditional" classroom setting. The ability to think responses through before submitting them also leads to a higher degree of comfort.
27. I think that are in some ways. I know I have been a little open in some of my submissions. I still don't spill everything. I think it is a more comfortable setting to be sitting in your room typing your response than have everyone be looking at you in class while you speak.
28. I think that they are more comfortable because people say how they really feel because it isn't a face-to-face conversation and they want to be honest so it is easier for them. Also, sometimes people don't know everyone in their group and it is easier to get to know them by replies in the on line environment and this takes the shyness away from everything, and I think this is a positive factor.

From PSYC 111 Students:

1. *No Response*
2. Yes they are because we are not as pressured and shy to answer the questions.
3. I think that this is true because many people are scared and they don't like to state their opinion in public. With online work, you can say what you want and you don't have to face anyone to say it.
4. I FEEL THAT IT OPENED DOORS TO COMMUNICATE WITH PEOPLE THAT MAY HVE THE SAME INTERST AND LIFE ORIENTATION AS YOU. I LEARNED ALOT OF PERSONAL FEELING AND IDEAS ABOUT EACH CHARACTER. I FEEL IT IS A GOOD SOURCE OF OPENING AND COMMUNICATING.
5. I think so because it is easier to type something than say it face to face.
6. Yes, because students are less apt to discuss things with people they do not know because they fear rejection of others.
7. I find them more comfortable because I am a shy person and this way I don't have to speak face to face. This way you can say what you want and feel more comfortable.
8. I do like talking online to students that way because I am to shy to say anything in class.
9. Yes, This way you can express yourself without having to be embarrassed as to what you are going to say. You can express yourself a lot more in group discussions online

- than with regular group discussion. Also people participate more.
10. Definitely, it is much more easier to talk in a discussion that is done online rather than if it is done in class.
  11. Yes, I feel a lot more comfortable doing my work online and discussing it that way than I do standing up in front of the class and speaking to everyone.
  12. If a student is shy about participating in class they have the opportunity to get their input in.
  13. It is easier for some people to express them selves when they don't have to look anyone in the eye. This frees them to say how they truly feel instead of going along with the group so as not to make anyone angry. I was able to talk to more students then I would have otherwise.
  14. Yes they are, and this can have a positive effect on our learning. It gives the student the freedom to speak his or her mind without the added stress of not being accepted by their peers. Which in turn makes the student think more about their assignment, and learn more.
  15. I agree with this in the fact that if it is online, I am not afraid that people will judge me wrongly for my opinions. I am more confident in myself online.
  16. I think online group discussions are more comfortable because I think that means that people might be able to express themselves more. I know I'm better in online discussions than in classroom discussions because I am a very shy person and in class I tend to not express my point of views.
  17. Definitely, it is a much less formal and relaxed environment when you are online, and for me I learn just as much online as I do in the classroom.
  18. Same thing here people are more comfortable writing to people. And people can tell each other how they feel.
  19. This has helped me because I am one of those shy people and it is made it easier for me to relate what I am thinking.
  20. Yes, it closer approximates anonymity, because you are not face to face, just a name on a screen
  21. Yes you do not see their face, so there were times that I did not agree with people and I told them that and did not feel bad about it.
  22. Being able to type in your opinion in your room or by yourself somewhere is easier because you are not afraid to say what you feel and you will not get embarrassed by what other kids think of your answer.
  23. It's definitely easier to discuss things when you don't have to see that persons' reaction to what you say. You feel more free to say what's on your mind.
  24. I think this is probably true. If students don't have to face one another they are more likely to express their opinion openly and aren't shy about it.
  25. Students don't like to talk in class. If a teacher asks a question, most students won't respond. They will, however, answer in an online version.
  26. Yes because you get to know the people in your group yet you aren't sure who they are in your class and they open up much quicker than normal
  27. I think this is true because the students can discuss and not have the pressure of actually having the other students there face to face. I like it like this. But then again, I have mixed feelings on the whole thing, I still like it in class, seem to get more feeling.
  28. I feel that they are, because some students don't feel comfortable talking in person to groups. So in doing online it lets students really say what they feel, without maybe nerves being involved. It's a very good way to get feedback from your peers.
  29. *No Response*
  30. I agree with that because it's a lot easier to be honest about your opinion on a computer than in person with somebody that you might not know very well
  31. It is much more relaxed to discuss topics online and I feel has a much greater impact on my learning
  32. I personallv eniov online group discussions. Yes. they make it verv comfortable to

32. speak my mind.
33. *No Response*
34. When students don't know everyone in their groups, this is a better way to discuss the topics in this class.
35. It is easier to write my opinion and not have to face the class. It avoids being embarrassed if I answer a question wrongly
36. Guess it is kind of like what I said in question 1, people in general are just more comfortable answering/discussing online when they don't have to speak out loud in front of a classroom full of people. This way everyone kind of wins, we do our work honestly, and it's more comfortable.
37. I definitely share more in this class than any other. It is a very comfortable format.

### 3. Students have more meaningful interaction with each other in an online environment.

From PSYC 450 Students:

1. I do not totally agree with this. I know that some students don't even read the course documents, but rather just read what other people have written and go by that. So I don't think this is all together true.
2. *No Response*
3. I think that more opinions are shared and in more the depth, but I hope that online classes never completely replace face-to-face discussions. I like people and like a personal approach.
4. I think I have a more meaningful interaction online mainly because I exchange a lot more with online students than in the classroom setting. I often feel in the classroom that my opinion is stupid or not important. Online other students agree with me and think similar to me.
5. I think a more meaningful interaction would be conducted face to face. However, the interaction online is what the students make of it.
6. Yes. You get to know students in a way that you wouldn't normally get to know them. By the avoidance of confrontation, people speak more freely, and you get to know them better, and more intimately than you would in a regular classroom setting.
7. Again, since I feel that students are more comfortable talking online, I feel that they do express their own thoughts and feelings more.
8. The interaction among students online tends to be meaningful. Students are comfortable enough to write what they feel and in return, they receive replies from other students commenting. I feel as though students relate to each other in someway and we find that out online.
9. If you do not really know who you are conversing with other than what they have shared with you online. It can make the introvert more of an extrovert and allow them to feel that they have control when in a face-to-face meeting they may not.
10. It may be more meaningful, but like I stated before if they can meet the people first it may help them. Since the class is big, it may make them feel more relaxed.
11. Students can freely respond and support their classmates, whereas in a class setting there may not be time or opportunity to express feelings and reactions regarding a classmate's ideas.
12. I think that it is very meaningful. Throughout this course, I have learned a lot from working with other students. But asking each other questions on what they wrote in the assignments, it really has opened my point of view on a few issues. It has broadened my horizons in a sort of way.
13. I got to know more about a person who I may not have talked to in a regular classroom, but in the classroom I still have very meaningful interactions with my classmates
14. 3. I disagree with that idea. I feel the idea to interact meaningfully with someone there has to be two people who are in the same room with each other. I feel that to understand completely what this person is trying to communicate I need to see that person standing in front of me with their eyes and body, because there is so much meaning without even saying a word.
15. I agree because students may be afraid to voice an opinion in front of people, but not to type it for someone else to read. Online classes eliminate the fear of talking in front of others.
16. Definitely! Students can think about what they want to say before typing it or while they are typing it, thus making what they say more thoughtful.
17. No, I think not because the only thing you are interacting is with the computer. This sometimes can be a problem. a student can become comfortable with taking threw the

- computer and this can hurt him/her with regular person-to-person contact. That students social skills can be hurting in the long run.
18. I find it much easier to give input to others online than in a traditional setting.
  19. Yes, I believe so because we are more willing to share in a written response than orally.
  20. Yes because they are not afraid of rejection they just say what and how they feel. This way they can tell that person constructive criticism and not look at them face to face. For me I write better than I talk!!
  21. I don't think that students have a more meaningful interaction with students online because sometimes talking to people and seeing their facial expression can tell you how they really feel about the topic at hand.
  22. The contact is just as meaningful as in classroom group contact.
  23. I feel that some people open up more if they do not have to be seeing the person that they are talking to.
  24. I find that in my group I am able to open up more to them over the semester and have had many meaningful interactions with them. I find it much easier to discuss with members of my group through the online environment rather than finding a time to meet with all the members of my group and discuss the studies that we have been doing.
  25. I agree with this statement because like I said above students feel more comfortable being honest, and honesty in communications makes for better communication.
  26. When given time to think through responses, the message becomes more meaningful. The online community allows us to communicate with each other more freely without the concern that someone will judge us.
  27. There really is no "interaction" as I see the word as. I see interacting as a face to face conversation and grouping. In the online community you are just interacting with the computer generated response, not the actual person. I don't think that could be considered meaningful.
  28. I believe that some people are honest in meaningful when they are involved with the online environment, but also some people just rush to get their work done and don't take time to tell people how they really feel about something. I guess sometimes we might not know who is being honest and who isn't.

From PSYC 111 Students:

1. *No Response*
2. Yes, because I feel that I can say whatever I want, because I can write how I feel instead of saying it which in this case is more meaningful
3. This is another good reason why the group and class discussions are important. I think that people are more open when they don't have to state their opinion in front of a lot of people.
4. YES, FOR THE MOST PART, PEOPLE TEND TO SAY THINGS IN WRITING THAT WOULD NOT SAY IN PERSON.
5. I think so at least I tend to open up more and say some things I would not usually say.
6. Yes, because this way they get to know things about people that otherwise wouldn't have the opportunity to find out.
7. I think that people are more likely to say what they are really thinking online rather than if we did the discussions in class.
8. I agree. It impacts me as I stated in the second question is that I am too shy to say anything in class, so I can now say what I want to say on line and I won't hesitate to do so.
9. Yes, because they get to say what they want to say and express themselves without people judging them.
10. I think that we do. If a person wanted to go see what a person said about this

- particular thing you can always go back and read what they wrote.
11. I feel students can speak their feelings openly without having to worry about someone having a problem with what they say. Most people do not know everyone in this class so they do not need to be ashamed of what they believe.
  12. We are able to communicate with different people than we normally chat with.
  13. I believe that it is easier for some individuals to write what they are thinking down, this way they are less likely to forget what it is they want to say. They are not as easily to change their minds and go along with the crowd. I found that I thought more about what I wanted to say instead of just saying what popped into my head.
  14. Yes, again because of the "anonymous" aspect of an online environment. The freedom to speak your mind comes much easier when you are not face to face with the opposition so to speak. But on the other hand there is no substitution for interaction with others.
  15. It is more meaningful, but maybe some might just be making things up.
  16. I don't know if they have a more meaningful interaction because when your online and replying to peoples answers that cannot see how you are reacting towards their answer.
  17. I think I can be more honest online because there isn't the nervousness associated with being face to face in discussion with someone you don't know.
  18. This is true too. People can just open up to each other and really tell how they feel.
  19. This is true because they are able to relate their feelings instead of not sharing them.
  20. Anonymity factor comes into play with having time to state you piece fully, uninterrupted. People are less inhibited online.
  21. I tend to have better things to say when I take time to think about it. I would not have had enough time if it wasn't an online course to formulate good opinions and reasons why I believe it. I was also able to think about how the subject effected my life and put that in the statements.
  22. The online environment allows each student to get into the discussion which gives a better view or beliefs on the topics.
  23. I believe that the interaction in the online environment is purely for educational purposes. Other than that, I don't think it's meaningful.
  24. I think this is somewhat good because they are more likely to be truthful and honest if they are not looking directly at someone. I also think that some students would just like to finish their assignments so they don't put a lot of time or effort into them.
  25. Students don't always learn by books, or from teachers. Instead, they learn from talking to each other.
  26. Yes, because you are not afraid of being embarrassed
  27. I don't know about this one. How can they get a better interaction when they can't see their fellow classmates?? I like to see who I'm talking to or arguing with, but it is nice to say things and not have people yell at you to your face :)
  28. I agree that students interact well in an on-line environment, but not sure if its is more meaningful than in person.
  29. *No Response*
  30. I think people are more likely to be honest on-line and it's easier to not get distracted by talking about other things
  31. Personally it does for me but early on in the course I noticed some responses were kind of short probably mine included and it seemed to improve further along
  32. I think students do have very meaningful interactions online, much more so than in a normal classroom setting.
  33. *No Response*
  34. I think students say whatever they want when they are online instead of saying it to someone's face. They don't really have to worry about the person's reaction.
  35. It is easier to say what you think without having to worry about what they will think of you.
  36. I agree. they will be more honest in the end if it is online. People don't have to worry

about what people are thinking when they are speaking and end up freezing up and forget what they are saying.

37. There seems to be a certain anonymity that lends itself to more intimacy in sharing your feelings. I am amazed at the things that people have shared very openly.

#### 4. Students are more likely to share their own opinions on a given course topic in an online environment.

From PSYC 450 Students:

1. This is true. Just as stated before, some students don't like to talk in class for some reasons. They are able to share their own opinions without trying to agree with other people just to fit in.
2. *No Response*
3. I think that people are more willing to share opinions in an online discussion.... there isn't the risk of an immediate disagreement or not saying exactly what you want to say. People are given time to think about responses as well. I do miss the back and forth nature of a classroom discussion sometimes.
4. I share my opinion more freely online. In class I am typically really quiet. Online I feel I express myself and thoughts better.
5. I think students are more likely to share their own opinions on a topic online. However, it also depends to the topic that is being covered.
6. Yes. In a classroom setting sometimes it seems that the same students are the ones involved in class discussion. There are frequently students that like to be quiet and not get noticed, or there are those that like to goof around. In the online environment, all students are allowed/forced to share their opinion.
7. Yes because they aren't as worried about the response that they will receive because they are talking online opposed to verbal. They don't have to worry about the other students' verbal and nonverbal reactions.
8. Yes, students are more likely to share their own opinions online because they feel secure that how they feel matters. Also, it is a great way to express one self without having judgments of others.
9. Yes, I believe so. If you do not like the response that someone gives to your suggestion that delete button really gives a person power.
10. I think it really depends on the person, some like talking better and others like writing better. It also may depend on the topic at hand. Since others may feel scared because someone might shoot down their idea, they may like to express their opinions on-line.
11. I am more likely to freely express my feelings when I do not need to worry about people looking at me and judging me.
12. Yes, as I stated before, they really do share their opinions. I felt really confident when replying and submitting my opinions and felt very comfortable doing so. It is very beneficial to be able to do this too. Like I stated above, some people are not able to verbally state things, but when on paper/computer, they are able to speak their minds. I know from experience that it is a lot more comfortable to talk on the computer sometimes and say things that I wouldn't rather say in person. For instance, I probably wouldn't have spoke out about how I really felt about some of the theorists in class on how I wrote it in my submitted assignments. I would be too shy or just not strong enough all the time to share my opinion, especially if it is going against one of my peers' beliefs.
13. That is true you aren't criticized for your opinion. If someone disagrees it doesn't seem as personal
14. Being allowed to share ideas with other people without getting harassed or questioned is an ideal environment. The blackboard in many ways provides this. Yet, I feel shy to expose my thoughts on a wall where people can read them and develop their own judgments.
15. I agree because if you have time to stop and think about a topic the answer you give can be more in depth rather in having to answer a question as they come at you.
16. Students have a better notion to say what they feel on an online environment because

- they don't have to look at everyone and are able to think out what they want to say before saying it.
17. Yes, I think this is true. You don't have to worry about looking at the other students and seeing the facial expressions or body language. I know when I see those things that will change response, because I maybe don't won't to hurt someone's feeling.
  18. Guaranteed. I know from personal experience that it is much easier.
  19. I think so, because some people have difficulty with confrontation. This way we do not really experience any direct confrontation
  20. Yes I think this is true because they are not influenced by other people around them. Like me when I do my homework I am at work so when I share my opinions they are my own. No one else's in the classroom. That is what I like about the online environment the truthfulness.
  21. I think students are more likely to share their own opinions because they don't have to worry about people making comments to you that you don't care for. Its not that people won't make those comments its just easier to deal with them when you don't have to see them face to face.
  22. I believe so.
  23. I agree with this because some people are not comfortable with writing instead of talking
  24. I feel that students are more likely to voice their opinion through the online environment rather than in front of others. I think that if you are not a very confident person, or you don't feel comfortable voicing your opinion in front of others, that it is much easier to write what you feel instead of saying it in front of others.
  25. I agree with this statement because when you don't have to watch other people's reactions to what you say, than you feel more comfortable sharing your opinions because you don't feel judged.
  26. I am more likely to share my opinion knowing that a classmate isn't sitting next to me and could potentially humiliate me in front of the whole class. The online environment allows us to express ourselves as well as being responded to and give our own responses to someone else's opinion.
  27. I think they share their opinions, but do not back them up. More people are expressing themselves I think an some of them do go into a little but of detail, but then there are those that just say the one liners or repeat the same response over for each person just to get the assignment over with. I think that it does help some people though to do it online because they are very bottled up when it comes to having to speak about themselves in class.
  28. I think that if someone has a strong opinion on something that they will share it no matter where they are. I am the type of person that will not say something out loud because I will feel dumb, but yet I have very strong opinions about things, so on line work makes me feel more at ease.

From PSYC 111 Students:

1. *No Response*
2. Yes because we don't have that one person that makes them timid or scared to voice their opinion
3. Yes, I felt like I could say what I wanted to say on the computer. I think that it is easier to write down your opinions than to just say them out loud.
4. TRUE, EXACTLY WHAT I STATED BEFORE. THEY TEND TO OPEN UP MORE WEN THE CONTACT IS NOT DIRECT.
5. Yes, because some students are afraid of feeling embarrassed but when you type this you are in your room by your self.
6. Yes, because they are less likely to be scared to put down what they think or feel than if they were in a class environment or group situation.

7. I think that this is true because it is for me if you are a shy person.
8. I agree as well. I believe that a lot of the students don't participate in class because they are too scared to say anything in front of others. (like me)
9. Yes, because they don't have to worry about what people say. They can express themselves better.
10. I think so cause it seems easier and more comfortable online rather than in the classroom.
11. Yes, I feel more open to voice my opinion in the online environment because most of the other students don't know who I am so if they have a problem with something I said they don't know who I am.
12. Again it is easier when you are not exactly face to face with someone.
13. By Not having to face someone who might not agree with you it is easier to tell them what you really think
14. Yes, it is easier to type your opinion rather than trying to speak it.
15. Yes, I agree with this.
16. I think students are more likely to share their own opinions. I know I am. Like I said before I am really shy and don't like to speak up in front of people.
17. I feel a lot more open when I am on blackboard instead of when I am in class. On blackboard, people get a chance to learn more about each other's ideas
18. Students are afraid to say things in a regular discussion because they are scared of what someone might say to them. Online that doesn't totally eliminate that but it helps them a lot.
19. Yes because no one can put them down verbally for what they think of if they are shy to talk about them.
20. *No Response*
21. I am very outspoken, but it was easy to give my opinions online. Maybe because you don't have someone interrupting and disagreeing with you all the time.
22. Students can give their opinion with out having to fear what others think of it.
23. It is easier to give your opinion without fear of scorn from fellow students.
24. Yes, this is somewhat true. Like I said earlier, if you are not looking directly into someone else's face it is much easier to express your opinion without being afraid that you will sound "dumb" or make a fool of yourself.
25. Students hardly ever volunteer their opinions, afraid they might be wrong. An online environment gives the student the opportunity to share their opinions without that threat of being wrong.
26. I feel this is true because you don't actually know which person is which
27. I agree w/ this one. I am like that. I don't say much in classroom discussions because I don't feel that comfortable but online I can pretty much say what I am feeling and it don't bother me at all.
28. I definitely agree that this statement is very true. I feel that you have more ideas in your mind when you can sit down and really think what you want to say.
29. *No Response*
30. Sometimes when people are with other people in a group for a class, they just agree with whatever the other people say, because they just want to get it done
31. I agree and it helps in the learning process
32. I think this is true for myself; I wouldn't have to courage to give out opinions in a normal classroom setting.
33. *No Response*
34. Students don't have to worry about what other people think when they don't say it to their face.
35. IT is easier to voice your opinion, because you don't feel like others are staring at you or making fun of what you say.
36. I think they will be more likely to give out opinions online rather than in a classroom. That way they cannot see how their peers or even their teacher is reacting to what they had just said.

37. In a large class I would be very unlikely to share my views. The course topics in an online environment lend themselves to sharing those opinions especially in your own small group discussions.

## 5. Students are more likely to share their ideas in an online environment.

From PSYC 450 Students:

1. This is true, for the same reasons as stated above.
2. *No Response*
3. I think that people share ideas because the audience is smaller and much more controlled. They have time to generate ideas and can share them at any time.
4. I share a lot more of my ideas in an online environment than in the classroom. I feel more comfortable online than in the classroom.
5. Most students will build ideas off others, so if other ideas are shared online I think students will share ideas.
6. Yes, in a classroom setting sometimes it seems that the same students are the ones involved in class discussion. There are frequently students that like to be quiet and not get noticed, or there are those that like to goof around. In the online environment, all students are allowed/forced to share their opinion.
7. It is much easier for students to open up and share their ideas online because in a way it's like expressing their feelings through writing and for many people that's how they express themselves. A lot of people have a hard time talking in front of their peers and this is another alternative for them, which allows them to open up.
8. In my opinion, I am more likely to share my ideas online than in class. I feel as though I have a sense of anonymity. Besides, I usually share my thoughts through writing anyway.
9. I think they are less inhibited and to throw out a wild idea may be easier in an online environment.
10. Like I said before it depends on the person whether they like talking, or writing.
11. I think that students are more likely to share their ideas because there is not pressure to go with the norm and support the majority. It is also easy to gain insight by reading and responding to fellow classmates.
12. Yes, students are able to speak freely and opening about what they believe is true. I know that with my opinions that I have submitted are my deepest feelings about each area. I don't think that I kept back anything that I felt. I like sharing ideas online because then there are no right or wrong answers really. Everyone should value everybody's' ideas. And I felt that it was complete that way.
13. That is true you have the time all to yourself to make your opinion on a subject. You won't be interrupted by someone else.
14. 5. Yes, I do feel that people are willing to share ideas with others on an online environment. For example look how the Internet has grown; everyone has ideas they want to share with the world.
15. I agree because some students do not like to take place in classroom discussions, whereas online discussions are no big deal because they are less stressful.
16. I think so! They don't have to worry about being ridiculed by the other students and can think about what they want to write first
17. Yes, because they can reply at their own time and maybe they want to look up some information to back up their ideal. And then they don't have to act shy when responding to the question half way through their answer because someone cracked a joke or something.

18. Yes. I have had experienced times where I had ideas, but was afraid to share them in a traditional setting.
19. Yes because there will not be any direct negative feedback
20. I am more likely to share my ideas this way because I don't like to talk in front of the classroom. I am a better writer than speaker so this is perfect for me. I still keep my involvement in the classroom without feeling the anxiety of the classroom.
21. Yes, because there is more chance that you will get more feedback on your idea.
22. I believe they are.
23. I am not sure if everyone likes to share their ideas online.
24. Like the statement above, I basically feel the same way. That there is something about saying more about how you really feel through writing instead of speaking in front of others. I guess most of us just like to be in our comfort zone and the online environment allows for most of us to stay in our zone.
25. I agree with this statement because I think when someone doesn't feel pressured or under scrutiny it is easier to come up with ideas, therefore easier to share.
26. There is always the fear of someone rejecting our ideas, but in the online environment, we can share our ideas and not have them openly rejected to our face!
27. I don't think that would work very well because if you are sharing ideas to try and come up with something or a solution, there is not that chance to speak up as often or as much as you want. If you are one of those types of people who likes to share your ideas and come up with something better and talks all the time, I do not see an online discussion being able to help those people out. There is too much time between initial responses.
28. I think students share their ideas more on line, because it isn't a real conversation that is being talked about out loud. But like I said before, sometimes we don't know what the truth is or not because some people just rush through their homework just to get it all done. But I think if a student really does have strong ideas about something that of course they will share it on line, because I don't think that any of their on line group members are going to talk to them person to person, unless it is a close friend or if they are really interested in talking more about whatever the subject may be.

From PSYC 111 Students:

1. *No Response*
2. Yes, because we can write whatever and not care, but saying them out loud tends to make people more shy including me.
3. I have learned that this is true because you don't have to be embarrassed about anything that you have to say because no one can see you. You are more willing to give your opinion if you don't have to do it in front of a lot of people.
4. THAT AS WELL IS TRUE. THEY MAY TEND TO OPEN UP NEW CONCEPTS AS TO WHAT THEY MAY FEEL CAN OR SHOULD TAKE PLACE OR HAPPEND.
5. Yes, because they don't have to worry what other people think.
6. Yes, because they will put their ideas down instead of keeping them to themselves.
7. I think they will because online you write you thoughts and later on someone will reply so it is not like having a real conversation back forth with someone.
8. Same answer in question 4
9. Yes, because they don't have to worry about what other people say. And it is easier to type what you want to let people know than say it sometimes.
10. I agree to this too. It just seems more comfortable online rather than in the classroom.
11. Yes, It is easier to share ideas and beliefs in the online environment
12. Students will tend to be a lot more open about their feelings online.
13. You can take your time in answering some one online. You are able to reread what was said and then answer truthfully.
14. There is more room for difference of opinion online.

15. *No Response*
16. I think students would be more likely to share their ideas in an online environment.
17. Online has a lot more open discussion than class does.
18. I shared ideas online that I would probably not have shared in a class discussion.
19. I have found it easier because I am one of those types of people that is kind of shy to voice my opinion and I have found that it is much more helpful to share them with everyone that is online.
20. *No Response*
21. I don't have very many off the wall ideas, so I did not have so many problems sharing them.
22. In a traditional classroom when the class gets in a discussion it usually involves the loudest most out spoken person and a few others that share their same opinion. The online allows each student to share his or her opinion.
23. Again, the online environment gives you freedom to say what is on your mind. You don't have to hold your tongue for fear of stepping on others' toes.
24. Yes, I think that it is good to give students a chance to be protected behind a computer screen, but I also believe that the classroom environment and discussion will get the most ideas flowing.
25. *No Response*
26. Yes, it is much easier to write it down then it is to speak it.
27. I think this one is true also because I do that. Occasionally I can share my ideas in class but it seems that online there isn't as much pressure and judging. This class is the perfect class. A little bit of both things going.
28. Yes I think so, because it's easier for them to share their ideas on-line than they might if they shared ideas in person.
29. *No Response*
30. Sometimes students don't want to share their opinion with a group because they don't know if anyone will agree with them - for on-line classes, you don't know what anybody else will say until after you've done your work, so students are more likely to say what they really think
31. I do and there is less feeling of being laughed at to some of the responses that one submits.
32. I think students are more likely to share their own ideas online also, because they feel more comfortable talking to people online.
33. *No Response*
34. Since they don't have to worry about what other people say or think about their ideas, students are more likely to share their true feelings about the topic.
35. *No Response*
36. I agree with that too. I know I will share my ideas a lot more than I would in a classroom just because I would be more comfortable.
37. I have received many ideas on items that I have questioned or have a problem with.

#### **6. Students are more likely to discover what other students think about a given course topic in an online environment.**

From PSYC 450 Students:

1. I agree with this because this way each person has to state his or her ideas. With an in class discussion, not everyone talks and then you don't hear what they are thinking.
2. *No Response*
3. In my group alone, there are a few members that would never be heard aloud in class. I've learned a lot more about them in a semester than if a few years of college.

4. In my group discussions I feel that I understood more of what the other students were thinking than in most classrooms. When you read what other students write you better understand what they are thinking.
5. In an online environment students learn as much as they put into it. If others share their opinions and ideas the more likely I am to open up and share also.
6. Yes. Because students are more likely to share their opinions online (questions 4 &5) others are more likely to read that and are able to realize how others view a topic.
7. Students do become more aware of how others feel about certain topics and probably even a better understanding of just where they stand on an issue and why.
8. This statement is true. As I read the entries of others, I discovered a lot about how other students feel and think about certain things. I realized how much I have in common with most students. However, with the ones that I don't, I still maintain a respect for them.
9. I think that in a private chat room this would be true. In a forum where the instructor is able to observe this may not be so.
10. Yes, more people are probably more apt to share ideas; they may get to learn more.
11. If other students feel that they can be open, then those reading the ideas can gain a better insight into one's feelings and thoughts. We can respond to each other and learn more about others by reading their responses.
12. Yes, students are going to be more likely to discover what other students think about a give topic. It is more likely that they will be open and more communicative with it also. I believe that with the assignments that we have done in this online course have been very open and many people have been discussing topics back and forth. It opens the door to new ideas and thoughts. I know that when in previous assignments there have been a discussions that have been brought up in during the class meeting. With the people that I sat around, we elaborated more on the areas of interesting topics.
13. That is true because all of their opinions are out there on the discussion board.
14. 6. I feel that where any trusted environment is developed people will be willing to share ideas and discovery things about others. An online environment can provide that. On the group discussion boards I feel I am able to learn things about others and about myself.
15. I strongly agree because they can freely communicate back and forth as much as they want without disturbing the class or the people around them. It also gives each student a chance to interact with someone they may not know or talk to before.
16. They sure will! Just as they are more open, the other students are just as open in an online environment thus allowing the student to see what everyone else is thinking
17. Most of the time yes. When a student has enough time to answer that question then yes but when the student doesn't have enough time then that is when the false replies come out.
18. True. Some topics are a little controversial and corresponding online is much easier to share views.
19. Yes, because I think people are more willing to express their feelings and opinions in an online environment
20. Yes because students are more likely to tell the truth in an online environment because they don't have to worry about what people are going to say. Just as long as they don't have to say it in class. Some people have an anxiety about public speaking.
21. Yes, because students are more likely to say exactly what they feel knowing that only certain people will reply or read it.
22. I believe so.
23. I love to find out what other people think about things and this is a good way for me to find it out.
24. If students put the time into the online course and actually read and think about what another individual has written, I feel that students are more likely to understand other student's point of view on a certain topic. I also think that responding to others is a good way to get more out of what other students are thinking so we can relate to

- them.
25. I feel this statement is correct because a lot of times in class there are many distractions. When I do my homework I tend to be more focused on what I am doing, so I think I pay more attention to what other people have written because sometimes it helps me to put my thoughts together.
  26. There are some students who are too shy to speak their opinion in a traditional classroom setting. I think the computer allows them to become more open and allow other students the opportunity to discover what they are thinking, when normally they wouldn't speak up.
  27. I think that is somewhat true. As I mentioned before, there are those types of people who do not like to share their ideas or have people look at them while they talk or something. Especially when it is response to someone else's opinions. I think some people are more apt to respond to what someone else submitted when they can go over what they wrote and make sure it sounds just the way they want.
  28. I think this is true because people will talk more on line then if they were in a classroom setting. Sometimes shy people will have great ideas and opinions but they never speak up in class, on line gives these people a chance to talk about whatever and state how they feel and they won't feel so much pressure.

From PSYC 111 Students:

1. *No Response*
2. Yes, because we don't have to face everyone and we just have to write it instead of saying it.
3. I think that students are more likely to discover what others think because everyone can give their opinion on the computer. Whereas in class, you don't always have enough time to let everyone speak and this lets everyone say what he or she want to say.
4. YES, IT HELPS GET TO UNDERSTAND WHAT YOUR FELLOW CLASS MATE IS FEELING AND DEALING WITH.
5. Yes, because you can listen to a lot more opinions on the computer in a shorter period of time.
6. Yes, because they are more apt to talk about it in their discussion assignments than if they were in a class.
7. I believe so because people will voice their opinion.
8. *No Response*
9. Yes because others will express themselves more as well and you can communicate with them.
10. Yeah, it is interesting to see what another student thought about a particular topic.
11. Yes, More students will participate in the online community so other students will here their opinions on certain subjects.
12. It is easier to read what the student said and analyze it rather than hearing it one time in class.
13. I think it is more fun to read something and mowt usually so this in the evening when they aren't as active. This way they can better concentrate
14. This can be a positive aspect to learning, getting to see what others think in a neutral sort of territory.
15. Yes, in the online environment it gives us a chance to know what others think about the subject.
16. I think they would more likely discover what other students have to say and think.
17. Again online is a much more open environment than regular classes are.
18. This is true
19. I believe this is true because in class not everyone is able to voice their opinion and when they are online you are able to read and take in what everyone has to say.
20. *No Response*

21. Yes, I remember talking to a girl about how she would never spank a child. I disagreed with her because I was spanked and I know I deserved it because some things kids do are so bad. She also told that she would take away the TV, but sometimes that doesn't work.
22. With the online you can read what every other person in the class thinks about the given topic.
23. It is easy to see just exactly what another student thinks about a certain topic.
24. Sometimes it is hard to say what you think if you are scared to express your opinion, so some students are more likely to discover what other students think in an online environment.
25. Students talk to each other online, whereas in class, they can't talk unless spoken to. They open up more, and gather ideas from different people.
26. Yes, because a person will open up more when not faced with having to speak in front of a crowd.
27. I know I do. Those who may be afraid to say something in a classroom say what they think online and it is neat. There seems to be security online. I like that. I never am one to say much in a classroom but online I'm good to go.
28. I totally agree that students will find out what students really do think about a given topic. It gives students ideas of what their peers think, it also lets them know what your ideas are to.
29. *No Response*
30. Since everybody is sharing their own ideas instead of just agreeing with everyone else, it is easier to find out what people really think about the topics
31. I agree totally with being able to share ideas and information on line with other students and that makes learning more desirable and interesting to know what others input on a subject is.
32. I think this is true. When I'm online, I can understand what people are saying a lot easier, because I can actually sit down and think about what they are saying.
33. *No Response*
34. Since they say whatever they want to, we are more likely to learn a lot more from different kids in the class that we don't know.
35. This is true since it is easier to voice your opinion without worrying about what others think.
36. I agree, I have learned a lot about what people are thinking online than I ever have in a classroom.
37. Being an older than average student I was pleasantly surprised to discover the maturity in young college students. It is amazing how many difficulties they have been through in their short lives. I go back and reread responses of people and have learned a great deal.

## 7. Students gain a wider perspective when discussing course topics with other students online.

From PSYC 450 Students:

1. I agree with this. Like I said before, everyone picks up on different aspects of information read. They are able to share this with the other students.
2. *No Response*
3. People get to hear more details and are more likely to read with an open mind than listen with an open mind. There are too many distracting factors in a classroom for the true message to be relayed exactly.
4. I feel that I gained a wider perspective when I discuss the topics online. I think that

- students share more of their learning online than in the classroom. Online everyone MUST give a response in a classroom only those who feel comfortable speak up.
5. I don't think students gain a wider perspective when discussing topics online. I think face-to-face discussion offers a wider perspective.
  6. Yes. In a classroom setting it seems that students interact with the same person...the one sitting next to them...their friend. With the online community, students are interacting with others that they may not normally converse with in the classroom. So I think that by mixing students together in a discussion group, they are more apt to have a wider perspective.
  7. Yes because I think that it is easier for students to express their feelings and their reasons for them.
  8. I think that students can gain a perspective while discussing course topics with other students online. At times, it depends on the willingness of the students to share their thoughts and how interested they are of the topics. Even if topics are not interesting at times, it is nice to know from others on what makes them uninterested. We all can learn from each other and learn something out of it.
  9. Depending in your group members and how much effort they put into the course. With little group participation and without much thought put into the discussions there is less of a perspective that is gained through online discussions. If you have a great group and lots of participation the experience will be invaluable.
  10. I think so; they can learn other viewpoints and the other classmates' viewpoints for why they think this way.
  11. Many students learn from interaction with others. Therefore when one idea is expressed, other ideas can evolve from those ideas. We learn about life through interaction with others and their ideas. Seeing someone else's point of view is a learning experience and may open my eyes to something new.
  12. Yes, students do gain a wider perspective on discussing course topics with other students. As I have stated throughout all these questions, students gain knowledge of other students. We get to see many different points and perspectives of how people think. It has been so interesting on how statistics works and in our groups around where we sit and online also with our groups, we have gained a better understanding on this area. When we talk online about our thoughts, it just let our minds explore different routes of thinking. We gain something, never lose anything. It is always going to mainly an experience that will either persuade or become a stronger individual on your own opinion. Overall, it has been a great experience that I would do again.
  13. Sometimes it seemed like a lot of the students had the same opinion. There wasn't as much variation as I expected
  14. 7. I feel that a student is able to gain the same perspective if it is an online class or not. I look back at some of the classes I have taken and I feel that I have learned and gained a deeper love for learning in a class where I have had an opportunity to express my opinion and ideas in a fashion where they were not going to be judged. Yet, at the same time understanding that there are different opinions and some may not be the same as mine. Yet I learned by hearing what others think I am able to grasp a new view of the world.
  15. I agree because when something is discussed with a professor, the conversation has a tendency to be one sided and the professor knows more then the student. When two or more students are engaged in a conversation, they both have a understanding of what the topic is without it being so one-sided.
  16. They do because not only do they have the links and material that is suggested in the course links, but they can search for themselves for other information on the topics.
  17. Sometimes, there are some students that can voice their opinion better through verbal than then writing on the computer. But through time those students will be able to adjust and then be more comfortable and give their opinion better.
  18. For sure, seeing ideas that other students might not share in a classroom, shared online has opened my mind to different thoughts and concepts.

19. Yes because when students are more willing to communicate, others will learn more.
20. Yes because they get a chance to see what other students have to say about a certain topic. I think that is very important because you have other points of view from other students who may have had that experience already.
21. Yes, and no. Students sometimes are not able to express how they feel about the topic. It's not to say they won't try but because of this you sometimes never know what they feel about things.
22. I believe so because everyone has to respond and no one can sit back and just listen.
23. In taken a online class I can find out different ways to look at things with talking to other students in the class
24. I feel that this is very true, because students are not only gaining their own knowledge about the topic but also seeing how others feel about the topic, which then adds more information to that knowledge that they have already picked up on.
25. Like I said above, when you actually pay attention to what other people have written, it helps to confirm what you are already thinking or it brings up points that you may not have even thought about.
26. All of the above statements aid in gaining a wider perspective in discussing course topics. The online community provides an alternative medium for discussion. The culmination of the above 6 statements all work together to provide a solid learning and communicative environment.
27. I don't think that is true. When I read some of what other people wrote, a lot of it is the same thing over and over. I think that if we were in class discussing, we would get to hear many ideas and comments because people will give their opinions and the way they say it may be different because they do not want to be continuously repeating what everyone else had just said.
28. I think that sometimes it depends on the topic that is being discussed and how major it is. Because sometimes certain topics can get "heated" in a classroom setting and others may get defensive at people's opinions, but on line normally people say how they really feel.

From PSYC 111 Students:

1. *No Response*
2. Yes they do, I think it is more beneficial and I think their perspective wider than if we would discuss them in class
3. Yes, because you have many different people stating their opinion and so you have many different ideas to think about when talking about a certain topic.
4. THEY MAY ALSO GET A BETTER UNDERSTANDING BY READING WHAT OTHERS SAY OR REASPOOND TO AND REALIZE THAT THEY TO CAN SPEAK UPAND RELATE
5. Yes, because you will be able to understand where people are coming from because they tend to open up more.
6. Yes, because they get other peoples ideas and thoughts on different subjects.
7. I think so because this way people can say what they are thinking and feeling about different subjects.
8. *No Response*
9. Yes because they can see what other students want to share therefore they see the perspective of others.
10. Yeah they do, you can go back to see what everybody said about something. And seeing everybody's opinion and being able to go back and read it is good.
11. Yes, Students get more out of it because they here more ideas than just their own or from more than just one or two people.
12. I heard a lot of different sides to the questions that I don't think I would have heard in class.
13. Manv opinions are given and these are discussed by those that know each other outside

- of the classroom this leads to a wider variety of opinions and give one more angles to view a problem.
14. Yes because there is a broader spectrum of ideas, this is a good influence on our learning.
  15. Yes, because no two people are the same and you get to chat with several people from many different aspects of life.
  16. I agree that students would gain a wider perspective somewhat in an online discussion form.
  17. You have the chance to interact with many more students when you are online rather than in class.
  18. Students can really find out what people are thinking because they can really tell how they feel online.
  19. Yes just as I have answered above in question number 6.
  20. Other students' responses are there in entirety for one to see and review in their own leisure. If you get the entire view of many persons, others' views are likely to differ from your own so you get more exposure to differences of opinion.
  21. Yes, I agree. The important sense thing I completely forgot about hearing importance. Reading one girls opinion brought that back up into prospective, and I almost felt like changing mine sight to hearing.
  22. When every student enters their opinion, you get a wide range of perspective on the topic.
  23. Online, you can see what a lot of students, who don't normally discuss things, have to say. You definitely gain a wider perspective.
  24. I agree with this because online I don't think that students are as inhibited as to who they limit their discussions with. IF you sit in the same spot at each class, you are always talking to the same person.
  25. Students talk to every other student in an online version, and so they gain a much wider perspective. Each student has a different opinion.
  26. Yes, because people will share more when not faced with telling their story out loud.
  27. I don't really know about this? I think in this case that face-to-face would work better so you can get more feeling. I am not really picky but I like how this class works and what it asks. You do a very good job teaching. I hope I can take another class from you! :)
  28. Yes, because everyone may have a different idea on a topic, but there maybe no wrong answer. Everyone doesn't think the same, thus enabling student a wider range of learning. I feel that learning online is a valuable way to learn.
  29. *No Response*
  30. Sometimes somebody will have an idea that you hadn't thought of before, but they might not have shared that idea if they were sitting with a group in person
  31. Again I totally agree with being able to read others feelings about subjects that help to broaden ones understanding of a topic.
  32. I think students gain a wider perspective, because online courses bring out peoples inner thoughts more.
  33. *No Response*
  34. Since students say what they really what to online, they could learn more about the topics or a student's perspective about the topic.
  35. This I can agree to somewhat, but I personally learn more in a classroom setting where things are taught.
  36. Students do gain a wider perspective when they discuss online because more people are likely to speak up, so you get opinions from every direction than just a few people that usually speak in classroom discussion.
  37. There are many issues that I hadn't even thought of until reading the students answers and responses. I wouldn't have this opportunity in a large classroom setting. People

seem to be far less inhibited.

## Analytical Abstract on The X Factor Received from Dr. Miriam Fultz

Given that the “X Factor” questionnaire is a new instrument, further refinement is necessary prior to full-scale and continued administration. Hence, two types of analyses were conducted in order to determine whether the items fell into predetermined groups or constructs (principal components analysis) and to estimate the reliability of the instrument (internal consistency reliability analysis). As discussed below, the small sample size in the current research is a concern. General rules call for at least 100 participants or at least a ratio of five participants per variable. With subsequent administrations of the “X Factor” questionnaire, both analyses should be conducted in order to confirm the preliminary analyses reflected in this document.

### Principal Components Analysis

In an exploratory fashion, principal components analysis (PCA) was employed in order to determine the degree to which the items fell into pre-determined groupings or dimensions, i.e., active learning (items 2 - 14) and student-to-student interaction (items 15-22). Note that while PCA is similar to exploratory factor analysis, the two are not the same. According to Tabachnick and Fidell (1989), differences rest primarily in the goals of the analyses, that is, PCA:

- σ Analyzes variance while factor analysis employs covariance;
- σ Extracts the greatest amount of variance via the smallest set of orthogonal components while factor analysis reproduces the correlation matrix with the smallest set of orthogonal factors
- σ Represents a unique mathematical solution while factor analysis does not.

Essentially, PCA is designed to reduce a large number of items into a small number of “principal components” that will explain the total variance across the items (Bryant & Yarnold, 1995). Alternatively, PCA “transforms a set of variables (items) into a set of uncorrelated variables (principal components or factors)” (Norusis, 1990). The choice of PCA is based upon the scale development goal of the current research.

In the case of the current instrument, the question is whether the empirical data supports the grouping of the items as described above and that these groupings of items (dimensions) are independent of each other. Similarly, what is the relationship among the 21 items?

Data Screening. Prior to the conduct of the PCA, individual item distributions were examined for normality, linearity, and homoscedasticity (variability of scores for an item are similar to all values of another item), all of which can significantly impact of the analysis if departures are significant. Further, if one assumes normality, then linearity is implied (Tabachnik & Fidell, 1989). The normality of each item was examined via the skewness statistic. Four items exhibited substantial skewness (9, 11, 14, 20) while three items reflected severe skewness (3, 8, 13). Significance tests for skewness were applied in order to classify items as substantially or severely skewed (alpha = .001). Per the recommendations of Tabachnik and Fidell, appropriate transformations were applied to these items in order to reduce the severity of the skewness. For all seven items, the transformation reduced skewness levels to acceptable levels:

Skewness Prior to Transformation	After Transformation
Q3 = -1.892	Q3 = -.334
Q8 = -1.559	Q8 = .116
Q9 = -1.144	Q9 = .247
Q11 = -.909	Q11 = .172
Q13 = -2.812	Q13 = -.902

Q14 = -1.002  
Q20 = -.973

Q14 = .131  
Q20 = .182

Given the small sample size in the current research, the determination of linearity between all pairs of items is problematic. Nonetheless, bivariate scatterplots were employed to determine the degree of linearity and homoscedasticity between all pairs of items. As expected, the small amount of data makes the determination of linearity and homoscedasticity a difficult procedure. Both linearity and homoscedasticity were more clearly evident in pairs such as questions two and six.

Screening for normality, linearity, and homoscedasticity is critical to the effectiveness of both the PCA and reliability analyses. When more "X Factor" questionnaire data becomes available, these screening procedures should be re-employed.

Results. Data were analyzed via SPSS For Windows (Version 10) using the FACTOR procedure. Specific analysis parameters include the use of the principal components extraction technique and an orthogonal rotation technique (Varimax). The criterion for component retention was Kaiser's rule of only including Eigen values greater than 1.00.

Bartlett's Test of Sphericity, which tests the hypothesis that all diagonal terms are 1.00 while other terms are 0.00, was performed. Alternatively, this procedure tests the hypothesis that the correlation is an identity matrix (Norusis, 1990). In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was also employed. This measure compares the observed correlation coefficients with the observed partial correlation coefficients. If the sum of all partial correlation coefficients is large when compared to the squared correlation coefficients, then the KMO value will be small and PCA should not proceed (Norusis, p. 316). Fortunately, this is not the case with the current dataset.

Table one displays the results of these procedures:

**Table One: KMO and Bartlett's Test Results**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.782
Bartlett's Test of Sphericity	Approx. Chi-Square	734.91
	df	210
	Sig.	.000

For the current research, the hypothesis that the correlation matrix is the identify matrix was rejected. The KMO value of .782 can be described as "middling" (.80 is considered meritorious while .9 is most desirable)(Norusis, 1990). Hence, it was determined that the PCA could proceed.

Results of the principal components analysis are described below. Table two illustrates the communality values for each variable (item), which describe the strength of the linear association among the 21 items of the X Factor questionnaire. More technically, Norusis (1990) defines communality as the "squared multiple correlation coefficient between a variable and all other variables...[illustrates] the strength of linear association among all variables." Hence, communality values range from 0 to 1.

Table Two: Community Values

	Initial	Extraction
Q2	1.00	.591
Q3	1.00	.765
Q4	1.00	.694
Q5	1.00	.745
Q6	1.00	.709
Q7	1.00	.743
Q8	1.00	.817
Q9	1.00	.726
Q10	1.00	.765
Q11	1.00	.683
Q12	1.00	.657
Q13	1.00	.591
Q14	1.00	.716
Q15	1.00	.752
Q16	1.00	.510
Q17	1.00	.768
Q18	1.00	.780
Q19	1.00	.817
Q20	1.00	.864
Q21	1.00	.609
Q22	1.00	.816

Overall, the magnitude of the communality values (multiple  $R^2$ ) is acceptable and hence, all items are retained at this point in the analysis.

Extraction of the factors using the Principal Components method resulted in the reduction of 21 items into six components explaining 72% of the total variance (see Table Three).

**Table Three: Total Variance Explained**

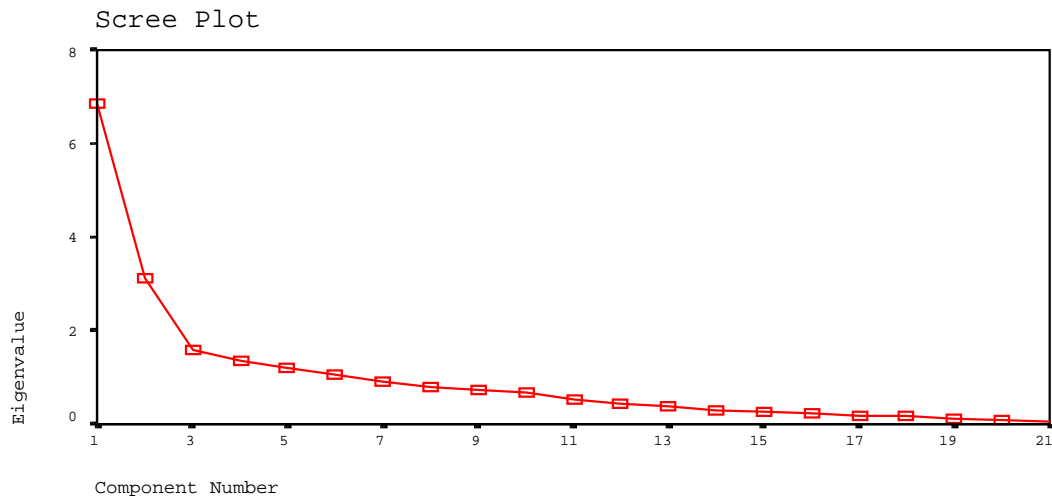
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.843	32.588	32.588	6.843	32.588	32.588	5.525	26.311	26.311
2	3.107	14.797	47.385	3.107	14.797	47.385	3.123	14.873	41.183
3	1.576	7.507	54.892	1.576	7.507	54.892	1.743	8.302	49.485
4	1.345	6.403	61.295	1.345	6.403	61.295	1.633	7.777	57.262
5	1.198	5.705	67.000	1.198	5.705	67.000	1.553	7.393	64.655
6	1.048	4.991	71.991	1.048	4.991	71.991	1.541	7.336	71.991
7	.908	4.323	76.314						
8	.786	3.745	80.059						
9	.744	3.542	83.601						
10	.666	3.172	86.773						
11	.540	2.571	89.344						
12	.443	2.108	91.451						
13	.385	1.835	93.286						
14	.304	1.446	94.733						
15	.251	1.194	95.927						
16	.240	1.143	97.071						
17	.189	.900	97.971						
18	.164	.783	98.753						
19	.115	.545	99.298						
20	9.826E-02	.468	99.766						
21	4.907E-02	.234	100.000						

Extraction Method: Principal Component Analysis.

The Eigenvalue represents the total variance explained by each component (factor). Note the impact of the Kaiser Criterion in Table three, i.e., only components with Eigenvalues greater than 1.00 are retained. At this point in the analysis, it appears that six components are needed to represent the initial data obtained from the sixty participants.

Another way to confirm the retention of the six components is through the use of the Scree Plot (see Figure One). Total variance (the eigen values) are plotted against the components (factors). The point at which the curve begins to level off (Eigenvalues are equal to one) is known as the scree (Norusis, 1990). Looking at the intersection of the vertical axis (where the eigenvalues equal one) and the horizontal axis validates the selection of six components as indicated by Table Three.

Figure One: Scree Plot



In summary, the factor extraction phase of the analysis resulted in the identification of six potential components.

Rotation and Interpretation of the Factor Solution. Rotation of the components using the Varimax Procedure resulted in the following rotated component matrix, which is comprised of factor loadings(the correlation between the component and the variable)(see Table Four). The loadings are used to interpret a factor; hence, they must be significant at some level.

Due to the small sample size for the current research, the standard error was not used to determine whether the factor loadings are significant as the standard error typically underestimates the magnitude of actual error in the loadings (Stevens, 1996). Instead, per the recommendation of Stevens, the critical values for correlation coefficients at an alpha level of .01 (two tailed test) for a sample size of 60 were doubled ( $.336 \times 2 = .672$ ). Hence, all factors loadings less than .672 not considered statistically significant. A brief review of Table 4 shows that while some loadings are not statistically significant, some are practically significant. Hence, any loading with at least 15% of the variance accounted for in a factor is also included in order to aid the interpretation of the factors.

**Table Four**

	Component					
	1	2	3	4	5	6
Q2						-.687
Q3		.798				
Q4	.475	.641				
Q5		.602				
Q6						.821
Q7					.835	
Q8			.563	.465	.521	
Q9				.830		
Q10			.537	.419	-.437	
Q11		.725				
Q12			.752			
Q13	.404	.492				
Q14	.562	.393				
Q15		.718		.398		
Q16	.676					
Q17	.841					
Q18	.864					
Q19	.858					
Q20	.877					
Q21	.723					
Q22	.740			.451		

Given the small sample size, factors were considered reliable if four or more of the loadings exceeded .60 (Stevens, 1996). Hence, only factor one was judged reliable and potentially, factor two. Factors with one or two loadings should be judged with extreme caution and further study is recommended once adequate samples sizes are attained (although a ratio of five participants per variable is a general rule, 150 - 200 participants is recommended).

Optimally, this analysis would have resulted in two factors with items two through 14 comprising one factor and items 15 through 22 as the second factor. However, social science research is rarely as neat.

The empirical data supports the use of items 16 through 22 as a measure of student-to- student interaction as well as the exclusion of Item 15 from this measure. The internal consistency reliability estimate (described in the following section) also supports the exclusion of this item. Perhaps this measure is more one of level of student comfort than a measure of student interaction.

In terms of the active learning measure (items two through 14), the empirical data in Table Four do not support the use of this measure. Factor two (comprised of questions three, eleven, and fifteen—and potentially, questions four, five, thirteen, and fourteen) seems to reflect more of a positive attitude toward convenient access of learning materials.

**Reliability.** Reliability refers to whether an instrument would yield the same or similar results over subsequent administrations. In the current research, reliability is used to illustrate the “effectiveness” of the X Factor questionnaire in measuring the constructs of active learning and student-to student interaction.

Kathryn: the symbol for Alpha is not correct for printing purposes---It looks right on the screen but not on paper and I can't seem to identify the solution right now.

Cronbach's Alpha (  $\alpha$  ) was used as the reliability estimate and is technically defined as "the average correlation among items within a test [questionnaire]" (Nunnally & Bernstein, 1994). Coefficient Alpha is also known as internal consistency reliability. The greater the error variance in measurement, the lower the reliability estimate. Conversely, the smaller the error variance, the higher the true (actual) variance. Low reliability estimates mean that more items are needed or that items are not related to each other very well (Nunnally & Bernstein, p. 252).

Another important issue with reliability analysis is sample size, i.e., similar reliability analyses would yield similar results. Bryant and Yarnold (1995) recommend the use of a general rule in which the ratio of items to randomly selected participants should be five to one or a minimum of 100 participants. The current sample size of 60 indicates the need for further reliability analyses as more data become available.

All respondents were included in reliability estimates. For the active learning scale (items 2-14),  $\alpha = .75$ . If item two were removed from the reliability estimate,  $\alpha = .80$ . For the student-to-student interaction scale,  $\alpha = .87$ . This estimate increases to  $\alpha = .91$  if question 15 when item fifteen is removed from the calculation of reliability. The estimate of reliability for all 21 items is  $\alpha = .85$  which increases to  $\alpha = .87$  when item two is removed from the estimate.

According to Nunnally and Bernstein (1994), acceptable reliability estimates depend upon the use of a measure. With initial research efforts, similar to the current research, modest values of  $\alpha = .70$  or higher may be acceptable while even values of  $\alpha = .90$  may not be acceptable if decisions about individuals are made, e.g., admission to graduate school (Nunnally & Bernstein, p. 265).

### Summary

Both the principal components and reliability analyses supports the use of the student-to-student interaction measure (items 16 -22). Coefficient alpha for this measure is very high for social science research (  $\alpha = .91$  ).

However, although the reliability estimate for the active learning measure is much higher than the "modest" levels described by Nunnally and Bernstein (1994), the principal components analysis does not empirically support the use of items 2 through 14 as a measure of active learning. These results suggest that a moderate refinement of this measure is necessary.

## Appendix B

VERSION Survey Version (01, 02)

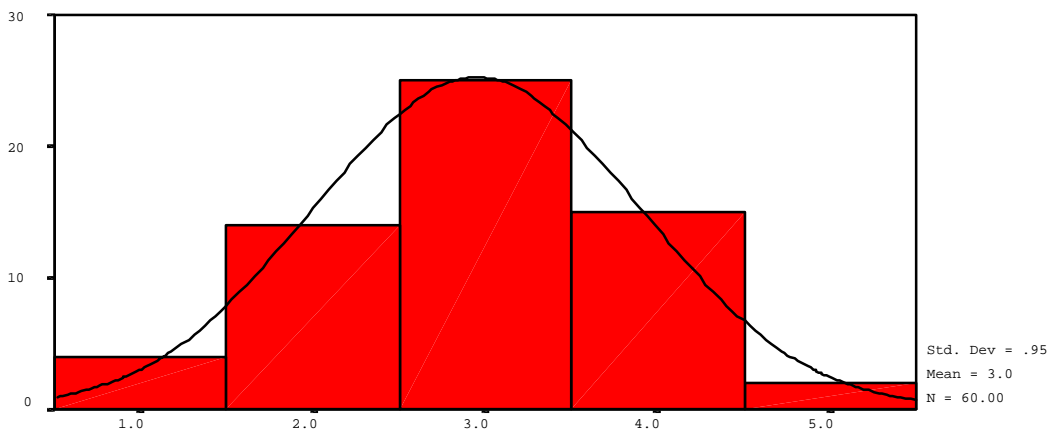
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Intro Class	32	53.3	53.3	53.3
2 Personality C	28	46.7	46.7	100.0
Total	60	100.0	100.0	

**Q1 Class Rank**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Freshman	24	40.0	40.0	40.0
2 Sophomore	4	6.7	6.7	46.7
3 Junior	15	25.0	25.0	71.7
4 Senior	17	28.3	28.3	100.0
Total	60	100.0	100.0	

**2 I use materials on reserve in the library to complete coursework**

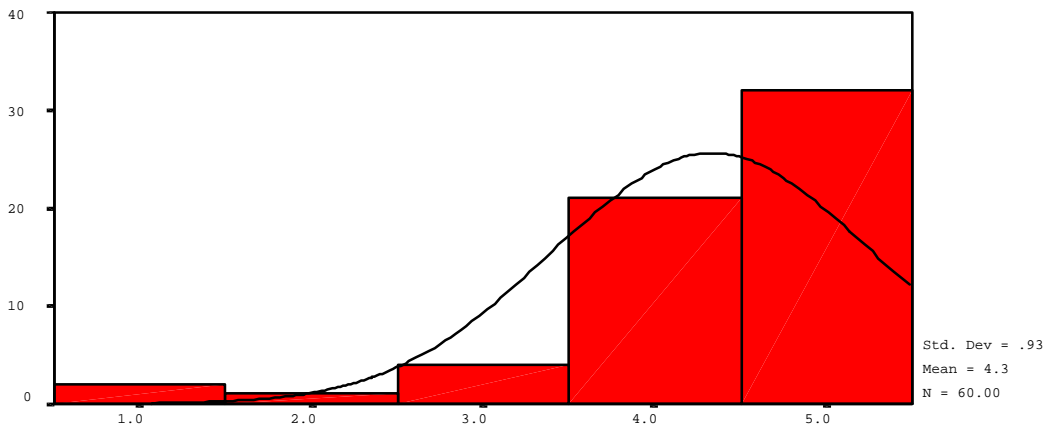
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	4	6.7	6.7	6.7
2 Disagree	14	23.3	23.3	30.0
3 Neutral	25	41.7	41.7	71.7
4 Agree	15	25.0	25.0	96.7
5 Strongly Agree	2	3.3	3.3	100.0
Total	60	100.0	100.0	



I use materials on reserve in the library to complete coursework.

**Q 3 I am more likely to access the Internet/WWW for academic info than go to the library.**

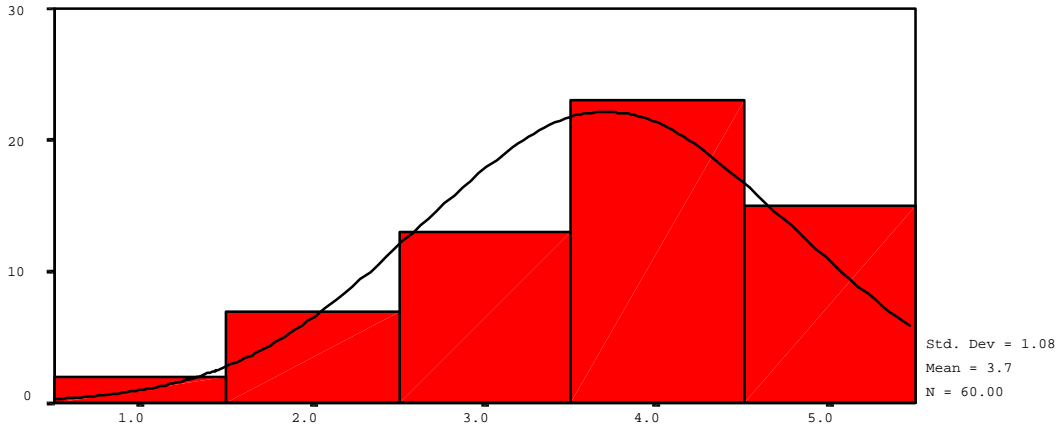
	Frequency	Percent	Valid	Cumulative Percent
Valid 1 Strongly	2	3.3	3.3	3.3
2	1	1.7	1.7	5.0
3	4	6.7	6.7	11.7
4 Agree	21	35.0	35.0	46.7
5 Strongly	32	53.3	53.3	100.0
Total	60	100.0	100.0	



I am more likely to access the Internet/WWW for academic info than go to

**am more likely to read course content found online than that available in textbooks.**

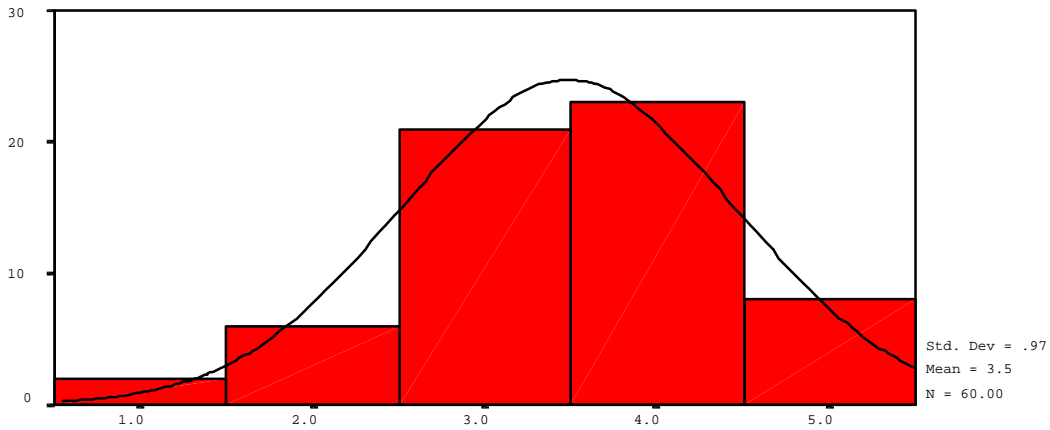
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	2	3.3	3.3	3.3
2 Disagree	7	11.7	11.7	15.0
3 Neutral	13	21.7	21.7	36.7
4 Agree	23	38.3	38.3	75.0
5 Strongly Agree	15	25.0	25.0	100.0
Total	60	100.0	100.0	



I am more likely to read course content found online than that available

**Q5 I use Internet/WWW resources in place of textbooks.**

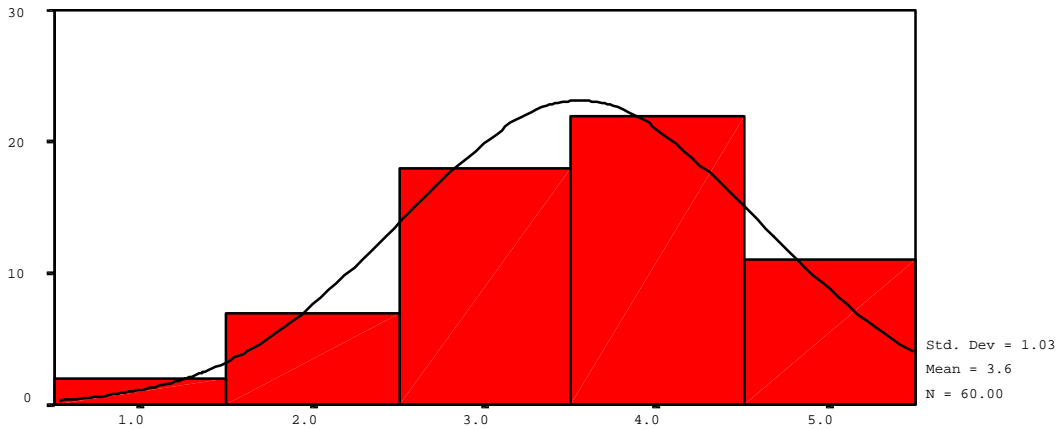
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	2	3.3	3.3	3.3
2 Disagree	6	10.0	10.0	13.3
3 Neutral	21	35.0	35.0	48.3
4 Agree	23	38.3	38.3	86.7
5 Strongly Agree	8	13.3	13.3	100.0
Total	60	100.0	100.0	



I use Internet/WWW resources in place of textbooks.

**Q6 I use Internet/WWW resources to supplement my textbooks.**

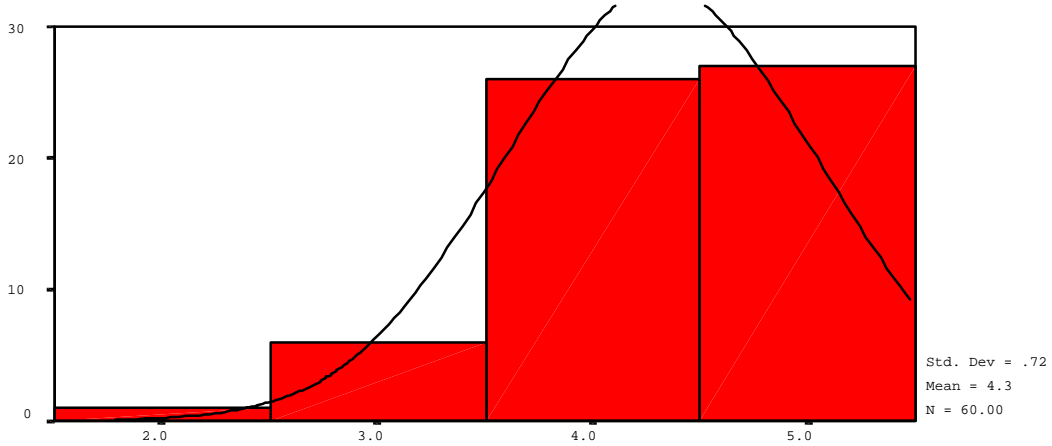
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	2	3.3	3.3	3.3
2 Disagree	7	11.7	11.7	15.0
3 Neutral	18	30.0	30.0	45.0
4 Agree	22	36.7	36.7	81.7
5 Strongly Agree	11	18.3	18.3	100.0
Total	60	100.0	100.0	



I use Internet/WWW resources to supplement my textbooks.

**Q7 I access course assignments online.**

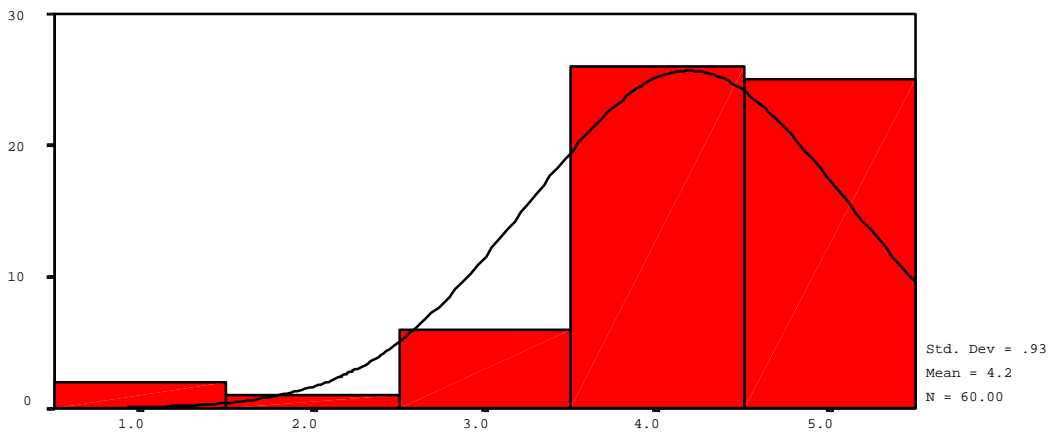
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 Disagree	1	1.7	1.7	1.7
3 Neutral	6	10.0	10.0	11.7
4 Agree	26	43.3	43.3	55.0
5 Strongly Agree	27	45.0	45.0	100.0
Total	60	100.0	100.0	



I access course assignments online.

**Q8 I use the Internet/WWW to access online course information.**

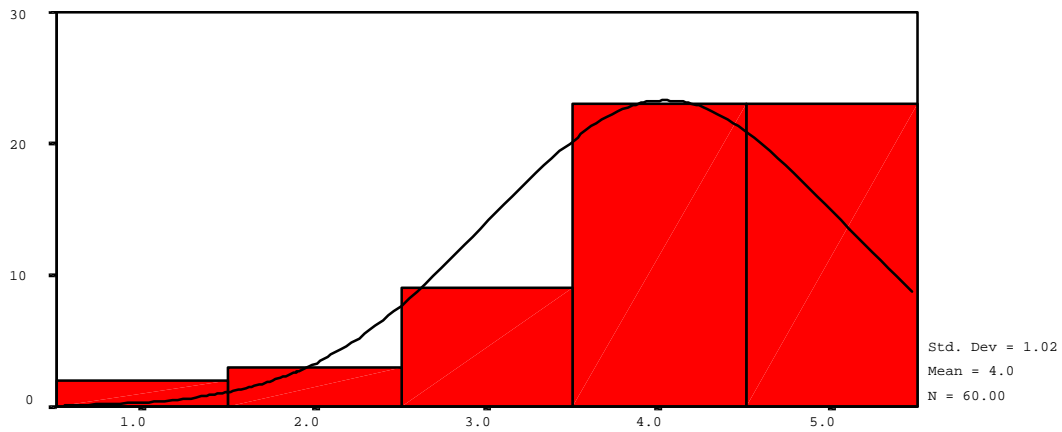
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	2	3.3	3.3	3.3
2 Disagree	1	1.7	1.7	5.0
3 Neutral	6	10.0	10.0	15.0
4 Agree	26	43.3	43.3	58.3
5 Strongly Agree	25	41.7	41.7	100.0
Total	60	100.0	100.0	



I use the Internet/WWW to access online course information.

Q9 I search the Internet/WWW to find information on course topics.

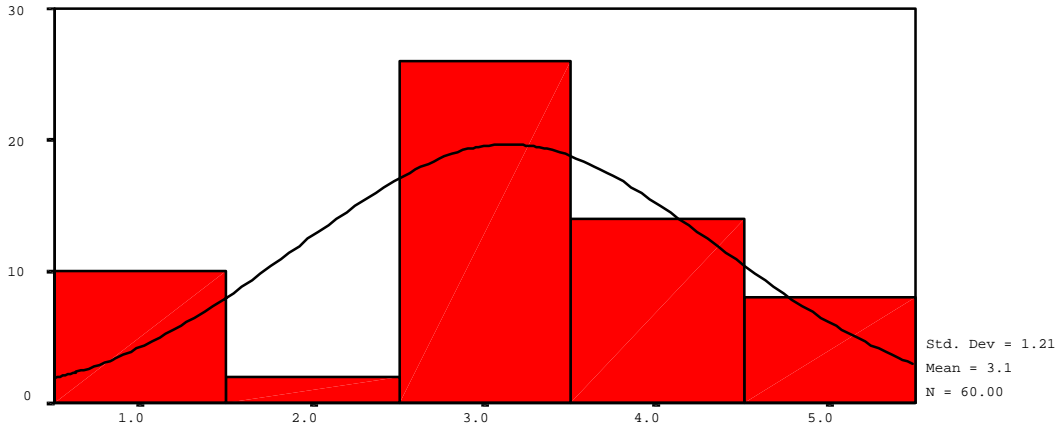
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	2	3.3	3.3	3.3
2 Disagree	3	5.0	5.0	8.3
3 Neutral	9	15.0	15.0	23.3
4 Agree	23	38.3	38.3	61.7
5 Strongly Agree	23	38.3	38.3	100.0
Total	60	100.0	100.0	



I search the Internet/WWW to find information on course topics.

Creating a digital portfolio is a valuable learning experience for

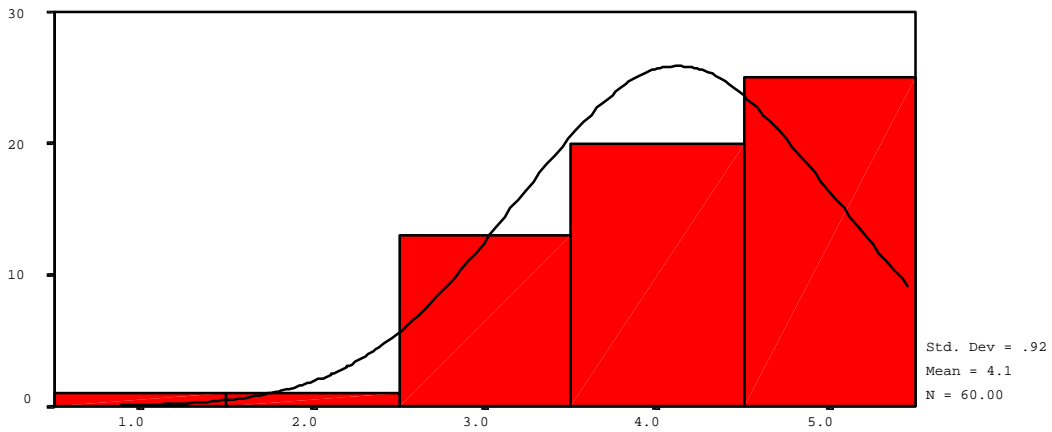
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	10	16.7	16.7	16.7
2 Disagree	2	3.3	3.3	20.0
3 Neutral	26	43.3	43.3	63.3
4 Agree	14	23.3	23.3	86.7
5 Strongly Agree	8	13.3	13.3	100.0
Total	60	100.0	100.0	



Creating a digital portfolio is a valuable learning experience for me.

**Q11 I create PowerPoint presentations for class projects.**

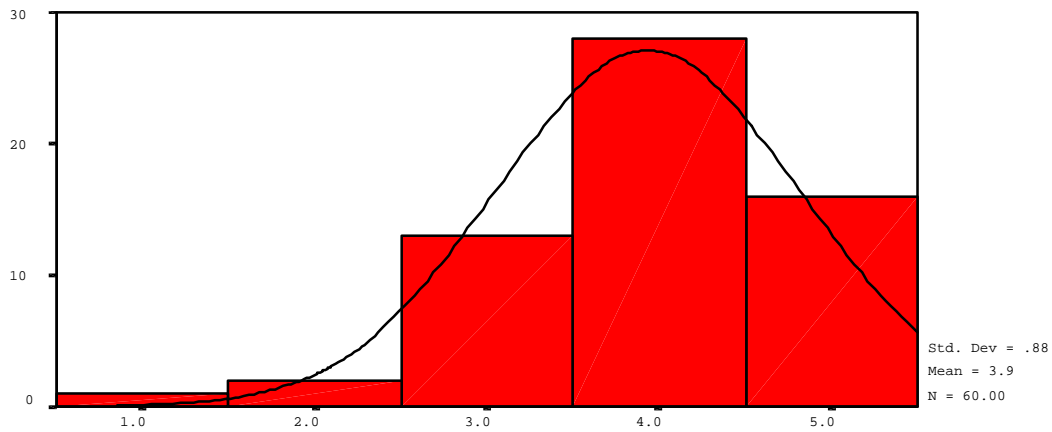
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	1	1.7	1.7	1.7
2 Disagree	1	1.7	1.7	3.3
3 Neutral	13	21.7	21.7	25.0
4 Agree	20	33.3	33.3	58.3
5 Strongly Agree	25	41.7	41.7	100.0
Total	60	100.0	100.0	



I create PowerPoint presentations for class projects.

I can take responsibility for my own learning because of how courses are structured.

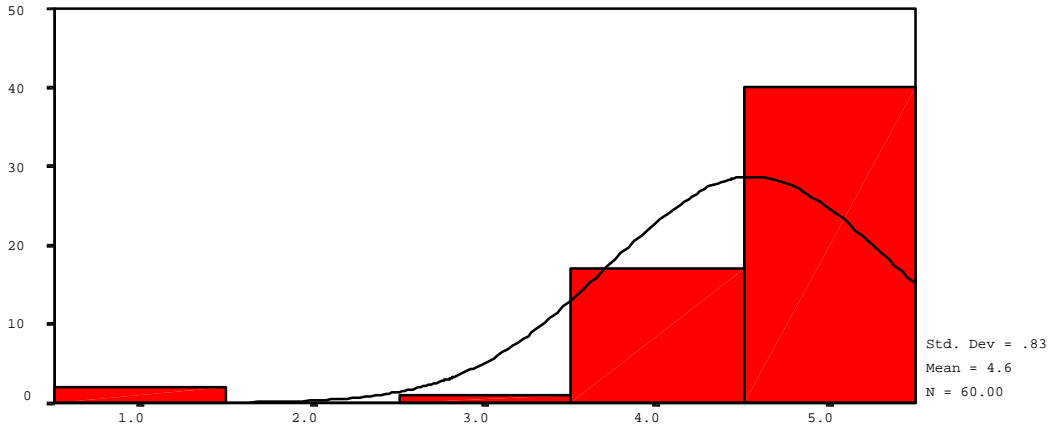
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	1	1.7	1.7	1.7
2 Disagree	2	3.3	3.3	5.0
3 Neutral	13	21.7	21.7	26.7
4 Agree	28	46.7	46.7	73.3
5 Strongly Agree	16	26.7	26.7	100.0
Total	60	100.0	100.0	



I can take responsibility for my own learning because of how courses are

13 I like being able to access course materials online at any time

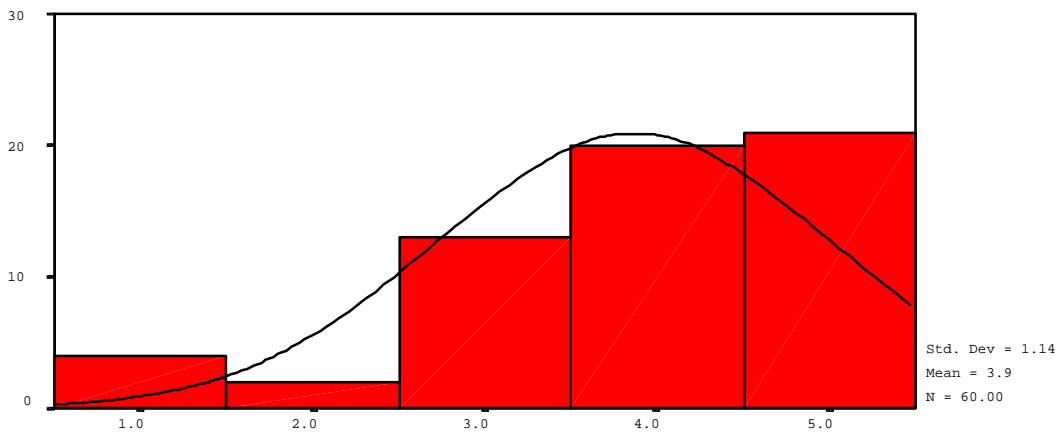
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	2	3.3	3.3	3.3
3 Neutral	1	1.7	1.7	5.0
4 Agree	17	28.3	28.3	33.3
5 Strongly Agree	40	66.7	66.7	100.0
Total	60	100.0	100.0	



I like being able to access course materials online at any time.

Q14 I would prefer to have all my courses offered partially online.

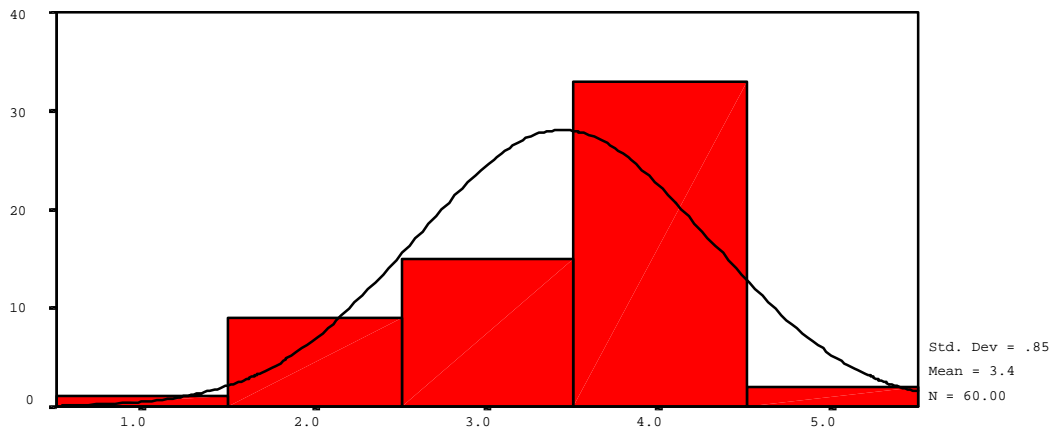
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	4	6.7	6.7	6.7
2 Disagree	2	3.3	3.3	10.0
3 Neutral	13	21.7	21.7	31.7
4 Agree	20	33.3	33.3	65.0
5 Strongly Agree	21	35.0	35.0	100.0
Total	60	100.0	100.0	



I would prefer to have all my courses offered partially online.

**Q15 I often work with other students on course projects.**

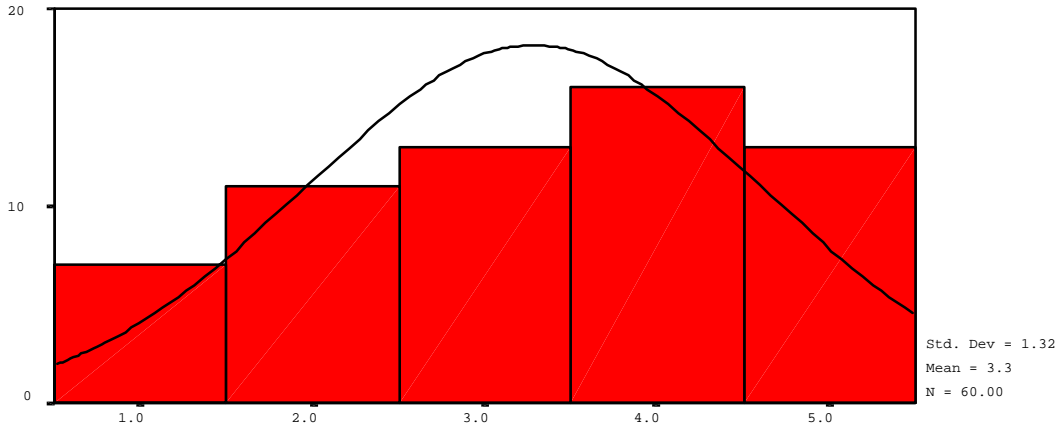
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	1	1.7	1.7	1.7
2 Disagree	9	15.0	15.0	16.7
3 Neutral	15	25.0	25.0	41.7
4 Agree	33	55.0	55.0	96.7
5 Strongly Agree	2	3.3	3.3	100.0
Total	60	100.0	100.0	



I often work with other students on course projects.

**Q16 I experience a higher degree of student interaction in an online environment than in a traditional classroom.**

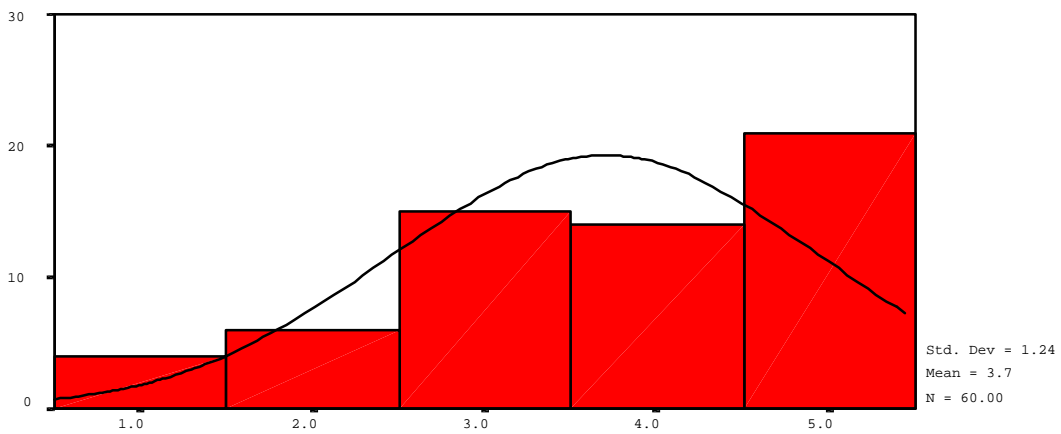
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	7	11.7	11.7	11.7
2 Disagree	11	18.3	18.3	30.0
3 Neutral	13	21.7	21.7	51.7
4 Agree	16	26.7	26.7	78.3
5 Strongly Agree	13	21.7	21.7	100.0
Total	60	100.0	100.0	



I experience a higher degree of student interaction in an online environment

**Q17 Online group discussions are more comfortable for me than face-to-face discussions in a traditional classroom.**

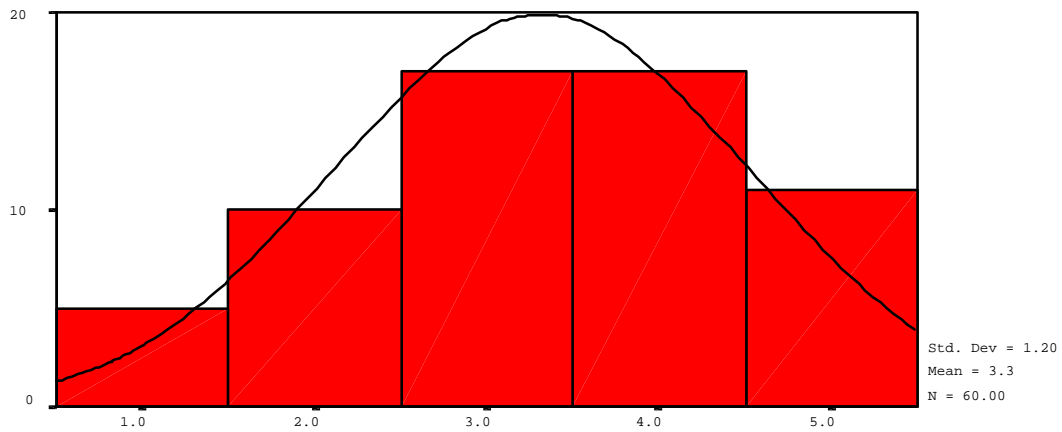
	Frequency	Percent	Valid	Cumulative Percent
Valid 1 Strongly	4	6.7	6.7	6.7
2	6	10.0	10.0	16.7
3	15	25.0	25.0	41.7
4	14	23.3	23.3	65.0
5 Strongly	21	35.0	35.0	100.0
Total	60	100.0	100.0	



Online group discussions are more comfortable for me than face-to-face discussions in a traditional classroom

I have more meaningful interaction with students in an online learning environment than in a traditional classroom.

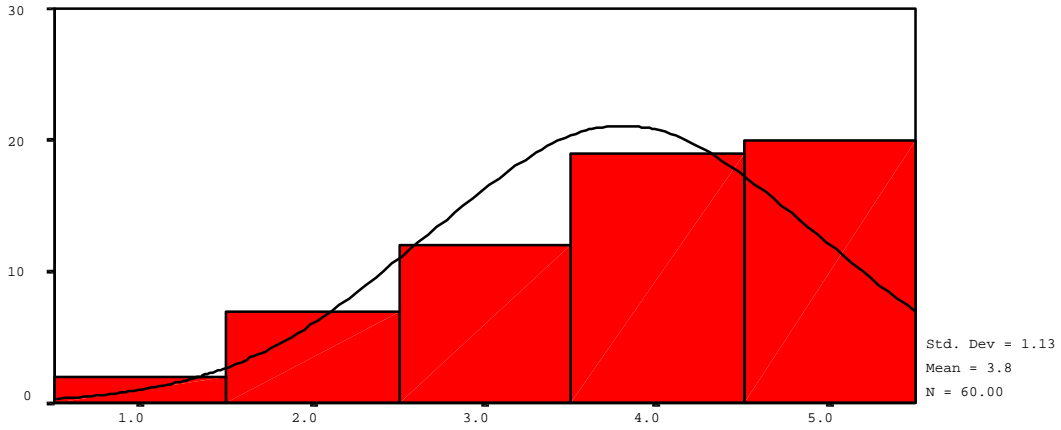
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	5	8.3	8.3	8.3
2 Disagree	10	16.7	16.7	25.0
3 Neutral	17	28.3	28.3	53.3
4 Agree	17	28.3	28.3	81.7
5 Strongly Agree	11	18.3	18.3	100.0
Total	60	100.0	100.0	



I have more meaningful interaction with students in an online learning environment than in a traditional classroom.

I am more likely to share my own opinion on a given course topic in an online learning environment than in a traditional classroom.

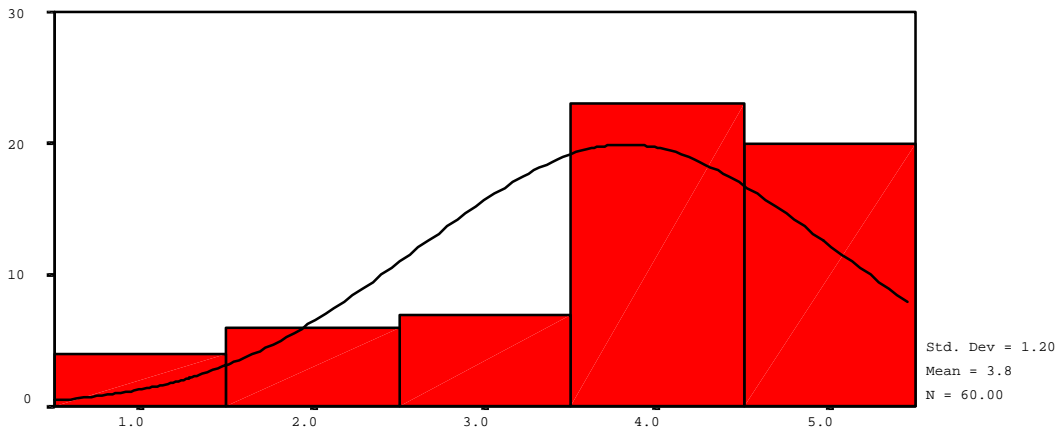
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	2	3.3	3.3	3.3
2 Disagree	7	11.7	11.7	15.0
3 Neutral	12	20.0	20.0	35.0
4 Agree	19	31.7	31.7	66.7
5 Strongly Agree	20	33.3	33.3	100.0
Total	60	100.0	100.0	



I am more likely to share my own opinion on a given course topic in an online learning environment than in a traditional classroom.

**find it easier to share my ideas in an online learning environment than in a traditional classroom.**

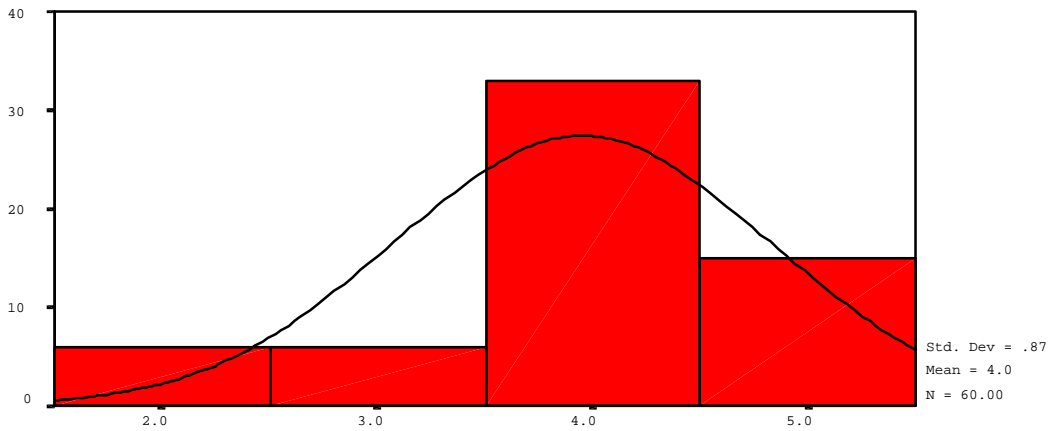
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disagree	4	6.7	6.7	6.7
2 Disagree	6	10.0	10.0	16.7
3 Neutral	7	11.7	11.7	28.3
4 Agree	23	38.3	38.3	66.7
5 Strongly Agree	20	33.3	33.3	100.0
Total	60	100.0	100.0	



I find it easier to share my ideas in an online learning environment than in a traditional classroom.

am more likely to discover what other students think about a given ic in an online learning environment than in a traditional classro

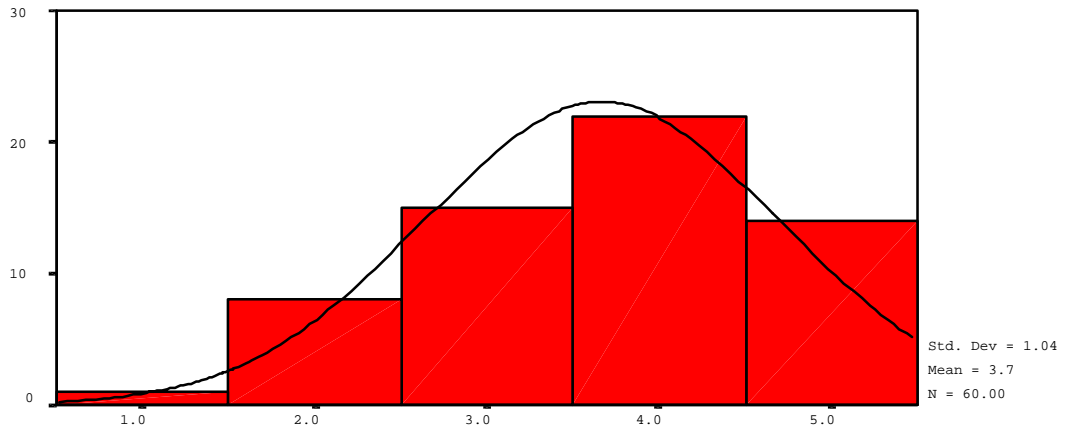
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 Disagree	6	10.0	10.0	10.0
3 Neutral	6	10.0	10.0	20.0
4 Agree	33	55.0	55.0	75.0
5 Strongly Ag	15	25.0	25.0	100.0
Total	60	100.0	100.0	



I am more likely to discover what other students think about a given cou

gain a wider perspective when discussing course topics with other s online than I do talking about them in the traditional classroom.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Strongly Disa	1	1.7	1.7	1.7
2 Disagree	8	13.3	13.3	15.0
3 Neutral	15	25.0	25.0	40.0
4 Agree	22	36.7	36.7	76.7
5 Strongly Agre	14	23.3	23.3	100.0
Total	60	100.0	100.0	



I gain a wider perspective when discussing course topics with other stud

**Statistics**

	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22
N Valid	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Miss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	2.95	4.33	3.70	3.48	3.55	4.32	4.18	4.03	3.13	4.12	3.93	4.55	3.87	3.43	3.28	3.70	3.32	3.80	3.82	3.95	3.67
Median	3.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	4.00	4.00	5.00	4.00	4.00	3.00	4.00	3.00	4.00	4.00	4.00	4.00
Mode	3	5	4	4	4	5	4	4 <sup>a</sup>	3	5	4	5	5	4	4	5	3 <sup>a</sup>	5	4	4	4
Std. Deviation	.95	.93	1.08	.97	1.03	.72	.93	1.02	1.21	.92	.88	.83	1.14	.85	1.32	1.24	1.20	1.13	1.20	.87	1.04
Skewness	-.146	-1.892	.624	.419	-.426	-.845	1.555	1.14	-.381	-.909	-.792	2.811	1.00	-.809	-.271	-.616	-.280	-.679	-.973	-.854	-.417
Std. Error of	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309	.309

<sup>a</sup>Multiple modes exist. The smallest value is shown

## References

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