Students' Attitudes towards Learning in an Academic Environment

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Abstract

This is a continuation of an on-going study. In an academic environment what students want to do is every bit as important as what students are capable of doing. Many learning decisions are made subjectively. A large portion of students' decision-making processes can be attributed to their epistemological beliefs and mindsets, and the students' views of usefulness and practicality, but what of remaining influences? This article addresses some of the components that contribute to the preservation of Self and modes of reception, or the means by which course material is communicated by the instructor and received by the student. ("Self" includes a person's self image, race, culture, religion, politics, gender, sexuality, response to authority, and any number of other societal beliefs and viewpoints.) Some students become "turned off" to learning if they feel it compromises who they are as individuals. The means by which information is presented in a classroom environment can also influence whether or not students are willing to learn. Twenty-six engineering technology students participated in this study and their responses focused on "face threat," domination and compliance, freedom, both academic and personal, and modes of reception and presentation. They paid little attention to cultural influences though it was presented as a possible concern.

Clearly "face threat" proved to be a primary concern. Face threat is a student's fear of looking inadequate in front of other students. This is normal, but a clear result of this study was that students were far more concerned with how they appeared to the instructor rather than to their fellow students. In this study students clearly expressed a general aversion to PowerPoint presentations. They felt that PowerPoint presentations should be brief and merely accompany a well-structured lecture, and not become the main vehicle of a lecture. Although not a direct part of this study another clear result was that some students primarily felt a need to feel a personal connection with their instructors. This need was not always clearly defined, but in general terms these students needed to feel that the instructor simply cared about them. These and other results are presented in this article.

Introduction

SAT and ATC scores are commonly used as a means to evaluate a student's probable capacity to learn in a college environment. It seems that less attention is given to what students want to do and to their opinions and attitudes towards learning. Learning is not a Pavlovian response to teaching. Learning is driven by the student's decision to learn, and that is driven by the student's hopes, fears, desires, goals, expectations, feelings, beliefs, opinions, and countless other subjective influences. Student's learning decisions are driven subjectively and they have to decide to learn if any learning is to take place. Students can decide to learn or to "not learn," and many do [1]. "Not learning" is a process by which students go through the motions of learning without doing so. They pass test, turn in assignments and meet other course requirements without absorbing or actually learning anything. This is why grades are not a complete measure of learning.

In some cases students decide not to learn at all and offer resistance to an instructor's efforts [2]. They argue in class or become outright disruptive, and perform poorly in general even though they have demonstrated high intelligence in the past. This article addresses some of the subjective issues that students, and people in general, exhibit as learners.

Background

When I became a full time instructor I encountered a small groups of students that were disruptive in every class they were allowed to disrupt. One instructor actually requested and received a security officer to be present when they were in attendance. They were also poor performers. Roughly two years later late in their junior and senior years they completely turned around, calmed down and began to perform well (surprisingly well). Why? One of these students told several instructors that he wished he had taken his courses more seriously, but he never said why he can made the decision to change. On the other hand a student that was doing very well simply shut down in his senior year. Grades of A suddenly dropped to grades of C. Homework assignments became sloppy and incomplete. I asked why, but I received no response. Clearly the decision to learn or not to learn had affected these individuals, but how and why? It was also clear that these decisions were driven subjectively. They were driven by the students' viewpoints even if these viewpoints were triggered by an objective or external event.

Before exploring students' subjectivity the term "subjectivity" should be defined. Brown defines subjectively as "*a person's subjectivity is merely his own point of view. It is neither a trait nor a variable, nor is it fruitful to regard it as a tributary emanating from some subterranean 'stream of consciousness'*" [3]. This definition bypasses the internal workings of a person's mind, none of which can be measured or known. We only know a person's subjectivity by what they express. We can record and review what people express as a reflection of their inner workings, but we can never know what is in their minds. In this study I gathered these types of expressions and used them in the same way I would gather temperatures

to assess the effects of heat. Smith refers to this approach as the "objectivity of subjectivity" [4].

Several subjective learning "models" exist, but I focused on five: epistemological beliefs and mindsets, which I combined, the preservation of "Self," andragogy, with a focus on needs and usefulness, and modes of receptivity. Each of these is stand-alone models or philosophies, and is combined to be more comprehensive. No one model covers all aspects of human subjectivity. Anyone can, and should, add or subtract from these models to match their needs.

Epistemological beliefs and mindsets

Schommer-Aikins began surveying students about their personal beliefs pertaining to learning, and over time developed a system or model of students' epistemological beliefs [5], [6]. She concluded that there were five dominant areas of learning concerns. Dweck and Leggett began testing elementary school children to determine what levels of difficulty would drive them to quit trying to solve problems [7]. To their surprise some students continued to try regardless of the level of difficulty. They eventually concluded that some students possessed a fixed mindset, i.e. a belief that whatever they were at birth was all that they would ever be, while others possessed a growth mindset, i.e. a belief that they would grow and improve over time as a result of new experiences. Both epistemological beliefs and mindsets are expressions of subjectivity.

When reviewing articles written by Schommer-Aikins and the book written by Dweck I noticed similarities in their results. Schommer-Aikins is a quantitative researcher and uses standard statistical methods to evaluate students' opinions. Dweck is a qualitative researcher and uses interviews and observations to evaluate students' behaviors, yet both drew similar conclusions. Schommer-Aikins added a fifth category to her epistemological beliefs model as she referenced Dweck and Liggett's article and Dweck clearly used a framework similar to Schommer-Aikins' to describe the working of mindsets in her book [5], [7]. It seemed only logical to combine the two as shown in Table I. The five categories of the epistemological beliefs model are used as areas of interest and mindsets provide a spectrum from fixed to growth to help evaluate each category.

Table I – Epistemological Beliefs/Mindset

Mindsets	Fixed	Growth
Epistemological beliefs:		
Ability to learn	Determined at birth	Develops over time
Structure of knowledge	Compartmentalized	Interactive
Stability of knowledge	Absolute	Evolving
Source of knowledge	Expert opinion	Experimental
Speed of learning	Quick	Gradual

"Ability to learn" addresses students' views of their own capability to learn. Are they "stuck" with the abilities they were born with or do they believe their abilities grow over time? Students with growth mindsets are more inclined to accept or even seek the challenges to new learning opportunities and to have little fear of failure. Student with fixed mindset tend to view failure as proof of an innate lack of ability.

"Structure of knowledge" addresses whether or not student view knowledge as existing in discrete segments or as part of an interconnected continuum. Students with fixed mindset tend to compartmentalize information and fail to see how one segment of knowledge lays the groundwork for another. Typical comments received by instructors are "We've already had that" or "I don't remember that" when using "old" information to help explain new information. Students with growth mindsets tend to view knowledge as interconnected and look for common themes.

"Stability of knowledge" addresses whether or not students view knowledge as static or changing, especially as new information becomes available. To view knowledge as static and never changing is an expression of a fixed mindset. Accepting and incorporating new information reflects a growth mindset.

"Source of knowledge" addresses whether or not students view either expert or authoritarian sources of knowledge as completely valid and beyond question. Is something true just because a person of authority said so? Students with growth mindsets are more inclined to question authority and experts and rely more heavily on their own experiences and demonstrable results (evidence).

"Speed of learning" addresses how students interpret the speed at which they believe they should learn. Students with fixed mindset expect to learn quickly. They feel that if they do not understand quickly then that was simply something they were never meant to know. Students with growth mindsets accept that learning can be slow and difficult. They tend to be patient and to persevere.

A note about mindsets: Mindsets are not rigid. Our mindsets morph and change with time and in the face to new information. We can have mixed mindsets. We can have a fixed mindset about one topic and concurrently hold a growth mindset about another. We can have a fixed mindset about the source of knowledge and a growth mindset about the speed of learning. Just as there are infinite variations in human beings, there are infinite variations in mindsets. When a person's mindset is evaluated it is a snapshot of that person's viewpoints at that time. A year later, or even the next day, a new snapshot may appear completely differently. There is nothing predictive about mindsets outside of whatever conclusions an observer may wish to draw.

Other subjective models were added because no one model covers the scope of what people think and feel, or the scope of human learning. For example, the preservation of Self

model addresses the societal and cultural beliefs and conflicts students may encounter in their daily lives that may or may not be present in the classroom, but effect their assent the learn none the less, especially if these conflicts lead to feelings of rejection, inadequacy or a desire to resist. These thoughts and feelings are processed subjectively and are just as much a part of each student as their I.Q. scores. The same is true for the tendency of students as adults to focus on that which is needed and useful, and the tendency of some students to evaluate not only the message but also how the message is delivered. The additional models were added for these reasons. Additional categories can and should be added or removed as needed.

Preservation of Self

Most instructors have experienced students that are reluctant to speak up in class even if speaking contributes to their grade. Some are simply shy, but others suffer from "face threat," the fear of looking inadequate to their peers [8]. These students need to protect themselves from criticism and negative comments that may come from other students. On a larger scale most people feel the same way about their culture, their personal "ways," their personal views and beliefs, and their personal life in general [1]. We tend to protect our "Self," that which we feel makes us "us." We feel this is basically good and useful and worth protecting. Preservation of Self can, and does, include culture, sexuality, gender identity, personal styles, national origin, language and any number of other personal components. If a student believes that a learning experience attacks Self, that student may very well resist learning. Very little learning will take place until the offending circumstance is resolved. Preservation of Self becomes very important in diverse teaching and learning environments. For this study preservation of Self focuses on face threat, cultural sensitivity, domination and compliance, and academic and personal freedom.

Andragogy

Andragogy (originally spelled Androgogy) was introduced by Knowles and was intended to recognize that adults learn differently than children, or at least have different learning goals and issues [9], [10]. Both supporters and critics of andragogy agree that adults are more focused on the usefulness of what is learned and whether or not it will be needed. Adults are more focused on practical applications, and can be more self-directed as learners, especially if their careers are tied to learning. This model, or philosophy, was included because usefulness and practical application are always expressed concerns of engineering technology students. "How would you use that?" is a common question.

Modes of reception

The mode of reception model was intended to address how people receive and process advertising [11], [12]. Both advertising and teaching have a common goal: to communicate a message such that it will encourage the recipients to take a desired action. The concern for both is how the message is received. Zenor presented four dominant modes of reception, but only two applied to the participants in the study [11]. The recipient's reaction to these modes

influences how he or she will respond to the message. The first mode is referential. The recipient compares the message, or what it being taught to his or her personal experiences and views. The second mode is discursive. The recipient reflects on the meaning and the value of the message. The mode of reception model allowed the participants to express their opinions about the means or methods used to teach.

Other

A miscellaneous category consisting of three statements that that did not fit into the four models above were added because the participants of the study deemed to be important.

These four models and "Other" were combined into an *assent to learn* model. It is a model of the various considerations engineering technology students may make before or as they are deciding whether or not to learn. The assent to learn model is presented as a Venn diagram and is intended to depict the overlap and possible interaction of every element of this model with every other element. A diagram of the assent to learn model is shown in Figure 1.

Research Method

The Q method or methodology was introduced by William Stephenson in 1935 and was designed specially as a means of evaluating human subjectivity, where subjectivity is defined as a person's personal point of view [13]. The Q method is best described as a qualitatively driven mixed method. It begins with collecting a list of subjective statements (opinions, thoughts, feeling, etc.) from a group of participants as on a given topic. Because there is no metric for an opinion, no minimum number of participants is required for the purposes of validity. Twenty-six engineering technology students participated in the current study. Five students developed the initial concourse or list of statements then the list was shared with the other 21 participants and revised in keeping with their inputs. This list reflected the student's views of learning in a classroom environment. As the researcher I did not participate in this discussion. I presented the research question: What are your attitudes and beliefs about learning in a classroom environment? I then observed and recorded. The initial discussion lasted about three hours.

The concourse was reduced to 52 statements and simultaneously mapped into the assent to learn model presented above and shown in Figure 1. The concourse was used to refine the assent to learn model to specifically fit the participants of this study. The list of the 52 statements is shown in Appendix I and is referred as the Q sample.

During the development of the concourse two opinions were expressed strongly and multiple times. The first was that the participant had no concerns about how they were viewed by their fellow students. They did not want to appear to be inadequate in the eyes of their instructors. Face threat was not student to student, but student to instructor. For this study it redefines face threat as presented in the literature [8].
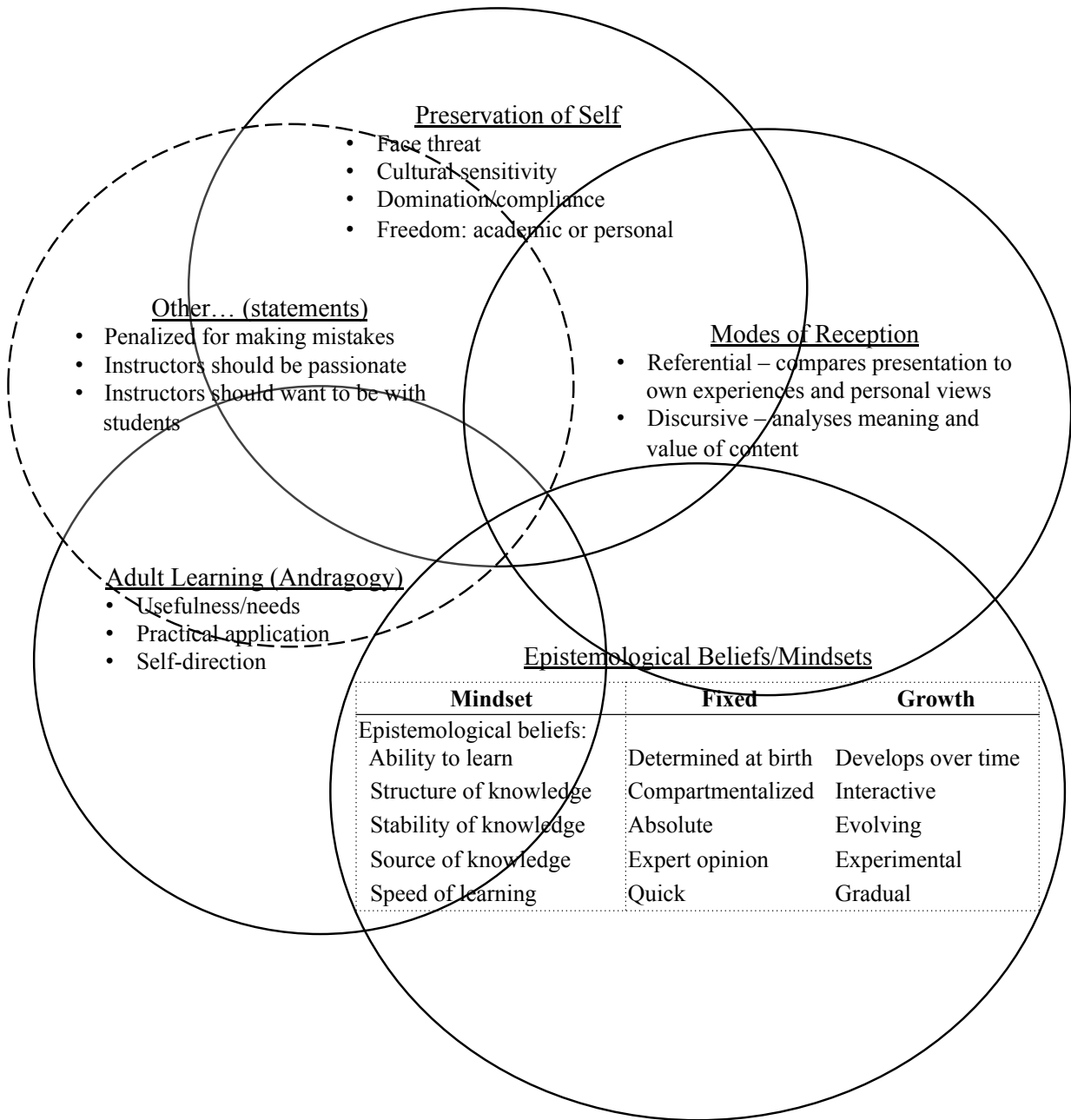
Preservation of Self
- Face threat
- Cultural sensitivity
- Domination/compliance
- Freedom: academic or personal

Other… (statements)
- Penalized for making mistakes
- Instructors should be passionate
- Instructors should want to be with students

Modes of Reception
- Referential – compares presentation to own experiences and personal views
- Discursive – analyses meaning and value of content

Adult Learning (Andragogy)
- Usefulness/needs
- Practical application
- Self-direction

Epistemological Beliefs/Mindsets

Mindset	Fixed	Growth
Epistemological beliefs:		
Ability to learn	Determined at birth	Develops over time
Structure of knowledge	Compartmentalized	Interactive
Stability of knowledge	Absolute	Evolving
Source of knowledge	Expert opinion	Experimental
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Figure 1. The assent to learn mode

The second is that this group of participants did not like PowerPoint presentation as a means of presenting class material. Some even considered it to be "lazy teaching" and a reflection of poor preparation for a lecture. This opinion was supported by the results of this study

Each statement of the Q sample was placed on a small slip of paper. Each participant was given a copy of the 52 individual statements to sort using the Q sort form shown in Appendix II. They were also asked to answer the follow-up questions shown on the form. In addition the five participants that helped to develop the concourse were interviewed after the sort. This was necessary because the sorting process showed what each participant considered to be or not to be important, but did not indicate why. The follow-up questions and interviews provided insights as to why the participants choose as they did and allowed the participants to add any additional opinions or inputs they wished to provide. The entire process through sorting was completely qualitative.

Each participant's response was assigned a numerical value, +5 through -5 (see Appendix II - The Q Sort Form). Each set of numerical values was compared to all of the other participants' sets so that a correlation matrix could be formed. The PQMethod program (a DOS program) was used to construct and evaluate the correlation matrix and factor it, then print which statements were prominent for each factor or group of participants to a file [14]. The program allows both principle component and centroid factoring. (Centroid factoring is rarely used today, but some Q methodologists prefer it.) Standard Varimax rotation can be applied or manual rotation, also called hand and judgmental rotation, can be used. This part of the process is quantitative.

Manual rotation is not statistically standard, but when applying the Q method the optimal solution derived via Verimax is not necessarily the best solution. Many times a researcher may want other existing solutions as well, especially if they are more descriptive and provides deeper insights into the data. It is valid to apply the subjectivity, the "hunches," and insights of the researcher when processing Q sorts. The guideline is orthogonality. Only factors that are orthogonal are valid. The Q method also allows for factors with only one loading. Loadings represent people, not traits, characteristics or items. If the one person loaded a factor is important for some reason the researcher definitely does not want to discard that person's opinions. The interpretation of the resulting factors is both qualitative and quantitative.

Discussion of Results

For this study three factors were derived and are shown in Table II. The participants selected their own code names. The factors were determined with principal component factoring and manual rotation. Each factor represents a group of participants with similar views about learning in a classroom environment. The raw factor data are shown in Appendices III through V.

Table II - Factor Loadings

Participant	Factor 1	Factor 2	Factor 3	
A please	0.3556	**0.5256X**	0.0692	
Fred	*02815*	*-0.0037*	*0.2653*	*
Beer Lover	*0.2295*	*0.1426*	*0.2103*	*
Joe Smith	**0.5043X**	0.2740	0.1945	
Code Name	**0.6856X**	-0.0125	-0.1578	
G	**0.7767X**	-0.0247	0.0427	
Blue Sky Research	0.3207	**0.5514X**	0.0343	
Heisenberg	0.3650	0.1343	**0.4222X**	
Roland Arter **	**0.4603X**	0.3449	0.2856	
George Washington	-0.0549	**0.8226X**	-0.0864	
Derek Zoolander	0.1479	0.2053	**-0.4498X**	
Anheuser	0.1727	0.2636	**-0.4992X**	
56	0.3362	**0.4120X**	0.2295	
Victor	**0.6780X**	0.2569	0.0016	
Ron White	*0.2688*	*0.2757*	*0.2734*	*
Boulder	0.2327	**0.5333X**	0.3196	
Ak15	0.3574	**0.6192X**	-0.1642	
All Out of Bubble Gum	0.3205	**0.5375X**	-0.1866	
McLovin	0.0472	**0.6192X**	0.3918	
Payton Manning	**0.6663X**	0.2599	-0.1498	
∞ (Infinity)	**0.4948X**	0.2380	0.0818	
KC	0.3517	**0.4798X**	-0.0290	
Lucky	**0.5410X**	0.2770	-0.1049	
Stan	0.1210	-0.0907	**0.6945X**	
JW	**0.7205X**	0.0239	-0.0242	
Number 10	**0.6607X**	0.0115	0.0410	

X – factor loadings

* Confounded loadings

** Not the author

The assent to learn categories are indicated as:

        E/M - Epistemological beliefs and mindsets
        PS - Protection of Self
        AL - Adult learning (andragogy)
        MR - Modes of reception
        O - Other.

These categories show which statements mapped into the categories of the assent to learn model. Summaries of each factor are shown in Tables III and IV. The Venn diagrams show how the opinions of these groups map into the assent to learn model.

The first group or factor (Table III) expressed self-direction and self-reliance. These participants preferred to develop or have their own learning strategies and then simply proceed. They want instructors that clearly understand the material and can convey that knowledge effectively. They are heavily focused on epistemological beliefs and mostly have positive mindsets. They have no fear of making mistakes and view it as part of the learning process. That general attitude was also reflected in their written comments and in the interviews. For example, when discussing mistakes,

"If I don't resolve a mistake, I could come across the problem again in life and not know how to solve it."

"We learn by our mistakes."

"Learning is a series of mistakes. Over time with practice the mistakes go away."

It should be noted that although these students expressed a strong independence and a clear learning strategy it does not mean that they would not "not-learn" if they felt a course did not meet their needs. It simply means that these students are very capable of "playing school." The same level of skill is required to successfully not-learn as to learn.

The second factor or group also consisted of proficient learners, but they expected the instructor to provide learning strategies and overall learning structures. They expressed a need a fair mount of scaffolding and direction. There were more expressions of fixed mindsets than the participants of the first group. Most of all these participants wanted detailed, step-by-step explanations and problem solutions. They lose track if steps are skipped. They liked test problems and lab problems to be very similar to the homework problems and lecture. Typically they will not make the "logical leap" from one set of circumstances to another without being given a direct link. They were more concerned with protection of Self issues and preferred instructors that teach more slowly. These students needed to feel that instructors care. The second group expressed more concerns about how they learn and their relationships with instructors.

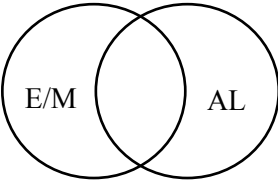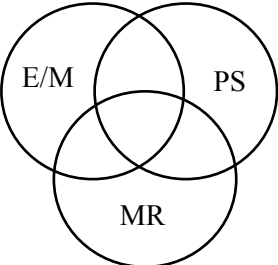<div align="center">Table III – Summary of Factors, Most True (+)</div>

Factor	Venn Diagram	Summary
Factor 1 *Self-directed* E/M - Ability (4) AL - Practical	(Venn diagram: E/M, AL)	**Main theme**: Processing and learning from mistakes (growth mindset). • Needs experience, not just lectures to enhance learning (practical). • Understanding and comprehension means more than just memorizing (growth mindset). • Needs to feel that the instructor is knowledgeable (source). • Classroom environment and comparison to others are not important.
Factor 2 *Not Self-directed* E/M - Structure E/M - Ability MR - Referential PS - Freedom PS - Face threat	(Venn diagram: E/M, PS, MR)	**Main theme**: Needs step-by-step approach to learning, starting with basic concepts and building up to the more complex (structure). • Does not like boring formatted presentations (referential). (No PowerPoint, please.) • Learns best when test problems and homework problems are exactly alike. (fixed mindset). • Prefers instructors that care more about students than maintaining the course schedule (freedom). • Learns better when feeling successful (face threat). • Cultural concerns, comparison to others and learning comfort are not important.

Table IV – Summary of Factors, Most True (+)

Factor 3		**Main theme:** Sensitive to the presentation of information and impressions given by the instructor.

Factor 3

Sensitive to Presentation

(+)
PS - Freedom
PS - Face threat
PS - Dom/Compliance
E/M - Ability
O - Passion (instructor)

Main theme: Sensitive to the presentation of information and impressions given by the instructor.

(+) *positive polarity*

- Needs enjoyment when learning (freedom).
- Feels bad when not grasping things as well as others in the class are (face threat).
- Learning is understanding, not just memorizing (growth mindset).
- Prefers to understand the parts first, then the whole (structure).
- The instructor should be passionate about teaching (other).

(-)
PS - Dom/Compliance
AL - Practical
AL - Self-direction
MR – Referential (2)

(-) *negative polarity*

- Do not like "book pushers" (dominance/compliance).
- Do not like learning without seeing a real world application (practical).
- Presentations should not be "canned"—standardized; no PowerPoint, please (referential mode of reception)
- Learning includes inputs from both inside and outside of the classroom (self-direction).
- Discouraged when instructor treats student as inadequate or disrespectfully (face threat)

Table V - Factor 3, Positive Polarity Compared Directly With Reversed Negative Polarity

| | Positive (+) | | | Negative (-) | | |
Stmt Nbr	Statement	Cat.	Stmt Nbr	Statement	Cat.	Common Themes
12	I need to enjoy what I learn and the career I select.	PS	48	Learning results from inputs of information from both in and out of class.	AL	How I learn
29	I feel bad when I am not grasping things as quickly as the people around me.	PS	49	The instructor's presentations should not seem like a form of media.	MR	Reception of information
1	Learning is under-standing and comprehending concepts, not just memorizing.	E/M	28	Presenting with PowerPoint, page after page, becomes boring and impairs learning.	MR	Personal focus
2	Information as a whole is important, but it's a second step. You have to understand the parts first.	E/M	6	I don't like to learn if I don't see a real-world application.	AL	Reception of information
32	The instructor should be passionate about what he/she teaches.	O	11	I don't like instructors that are book pushers (insisting that students buy a large number of books, many of which are hardly used).	PS	What I want from instructors

Comment from the second group:

"If you do not understand the foundation of the topic at hand, how can you progress and grasp the in-depth parts of that topic?"

"If an instructor isn't knowledgeable, it can make [learning] more confusing."

"I like to talk with people and learn about them…I really like to interact with my instructors."

The third factor was bipolar. Two participants loaded positively and two loaded negatively on the same factor. This means that their opinions were diametrically opposed on any given topic. However when the positive and negative responses were compared as shown in Table V there were underlying agreements. These participants were almost completely concerned with instructors' presentation styles and modes of reception. They seemed very sensitive to the means by which instructors present information and to what they expect from instructors. They enter the learning process with fixed ideas of how they feel they have to learn and expect the instructor to teach and respond in certain ways. They expressed face threat and dependence on one hand and self-confidence and independence on the other. Some of what they felt centered on dominance and compliance issues. These students do not like being "told what to do." At the same time they expressed both an understanding of what learning meant to them and a desire to learn. The following comments express the theme, "I can learn if…"

"Everyone learns differently."

"I was home schooled most of my life learning on my own terms, so at times I feel very uncomfortable in school"

" Different perspectives from instructors allow me to decide which way of receiving information is most helpful in my learning process."

The PQ method program also provides consensus statements, shown in table VI [14]. These are statements that do not distinguish between any two factors.

Table VI – Consensus Statements

Nbr	Statement	Avg Rank*
8	I would like to see more visual reviews of material to augment classroom presentations. Helps me to find "where I lost it."	-2.00
9	If the instructor does not care, it becomes harder to learn.	+2.33
41	I learn best when the instructor shows the reasons for the intermediate steps not just the outcome.	+2.33

* Average rank is on a scale from -5 to +5. Average ranks of -2 and +2.33 reflect a medium consensus of agreement or disagreement.

Considerations

This study was never intended to produce "how to" results. The focus was on understanding the question of what do engineering technology students feel and think when faced with a classroom-learning environment? There were differences, but there were also some strong areas of agreement that did not seem to surface until the data was completely reviewed. Some of these findings were surprises to me and in my mind underpinned the need to conduct these types of studies. I make no recommendation. It is up the reader to decide how and if to use these results.

- During the development of the concourse students openly and strongly expressed that they felt no face threat between themselves. They felt the face threat between themselves and the instructors. None of them wanted to look inadequate to the instructors. This opinion was expressed during the development of the concourse, in the factors and in the supporting comments.

- Almost all of the students disliked PowerPoint presentations. They felt that most instructors use too many slides so the presentations became boring. Many also viewed it a lazy teaching and a lack of preparation by the instructor. In general a presentation of 10 to 15 slides along with in-depth explanations and discussion is preferred and viewed as helpful. It was not that students hated PowerPoint presentations *per se*. They hated what they viewed as the misuse of PowerPoint. In fact, engineering technology students like visual displays of technical topics.

- Engineering technology students want more in-depth explanations of topics including all of the intermediate steps. This was expressed to some degree in all three groups. They need to see a clear path from beginning to end, and they want the reasons for each step. They also expressed a need to be given test problems that reflect what was covered by lectures, projects and homework assignments.

- Student expressed a need to feel a friendly relationship with their instructors. They did not want to feel hostility or distance. It can be difficult to agree on what "friendly" is and still maintain professional distance. The students in this study felt that all instructors should at least try.

- All three groups selected the statement "Learning is understanding and comprehending concepts, not just memorizing" within their top six +5 selections. Regardless of personal needs, strengths or weaknesses every student was clear about what he or she thought learning was. Some students understood better than others, but they all understood.

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Appendix I - The Q Sample

1. Learning is understanding and comprehending concepts, not just memorizing.
2. Information as a whole is important, but it's a second step. You have to understand the parts first.
3. I learn best when other sources of information about the topic being taught are added in addition to that of the textbook.
4. I don't like to learn if I don't see a meaningful result, purpose or value.
5. Learning should focus on applying what we learn in class to a physical activity.
6. I don't like to learn if I don't see a real-world application.
7. Low accessibility to the instructor impairs my learning.
8. I would like to see more visual reviews of material to augment classroom presentations. Helps me to find "where I lost it."
9. If the instructor does not care, it becomes harder to learn.
10. Learning of other cultures is important.
11. I don't like instructors that are book pushers (insisting that students buy a large number of books, many of which are hardly used).
12. I need to enjoy what I learn and the career I select.
13. We are penalized for making mistakes. That impacts how I learn.
14. Learning can be uncomfortable.
15. Continuity is very important.
16. I learn best when the instructor understands the material.
17. Learning reflects the ability to apply.
18. Using new presentation technologies in the classroom is "lazy" teaching.
19. Good instructors collaborate so that they can present content that aligns with the content of other courses in the program.
20. I compare myself to others.
21. I have to accept the existence of my cultural and personal biases, and do my best to keep it low, down, "toleranced."
22. I learn more if the instructor is approachability.
23. I learn best when the instructor is more concerned with how the students are learning than with the target dates in the syllabus.
24. Learning can be challenging.
25. I want to see more in-depth explanations of how problems are solved.
26. Learning is gradual over time.
27. Learning *about* exercising, but never exercising is not learning.
28. Presenting with PowerPoint, page after page, becomes boring and impairs learning.
29. I feel bad when I am not grasping things as quickly as the people around me.
30. It is important to get along with other people and regard them as important.
31. I don't learn much from instructors that seem to feel that they are above us students.

32. The instructor should be passionate about what he/she teaches.
33. Mistakes are part of the learning process.
34. Learning relates to other topics and exhibits parallels between the content of more than one subject.
35. Working in classroom "kills learning out." It detracts from what is actually going on in a real-world sense.
36. Reading directly from a textbook with no extra examples or inputs from the instructor.
37. I am discouraged when the instructor treats me as if I'm inadequate or is disrespectful.
38. I'll give the instructor the respect he/she gives me.
39. The instructor should want to be with students.
40. Resolving mistakes and problems "sets" the information in my mind.
41. I learn best when the instructor shows the reasons for the intermediate steps not just the outcome.
42. I want to see "with my fingers," not just with my eyes.
43. Humor, history, practicality makes for a good presentation from an instructor.
44. I learn better if I feel I am succeeding at it.
45. If I feel something should be done a certain way and the book recommends another way, I follow the book to reduce the chance of making a mistake and losing points.
46. I learn best when the homework and test problems are exactly like the example problems covered in class.
47. The instructor should start with basic concepts and progress in sequence to more complex topics without jumping around.
48. Learning results from inputs of information from both in and out of class.
49. The instructor's presentations should not seem like a form of media.
50. Society ties our learning and education too closely to our worth as a person.
51. It does not make sense to argue about homework or test points instead of using that time to learn more?
52. I like to receive information in different ways from difference perspectives.

Appendix II - The Q Sort Form

Code Name: _____Date: _____

Which statements best (or least) reflect your attitudes and beliefs about learning in a classroom environment?

2	*3*	*5*	*6*	*6*	*8*	*6*	*6*	*5*	*3*	*2*

***Least* true**   ***Most* true**

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Check: Is each entry unique? (No double entries or skipped values, please.)

- What thoughts, opinions or feelings led you to select your **+5 choices** (most true)?

- What thoughts, opinions or feelings led you to select your **-5 choices** (least true)?

- How did you determine your **0 selections** (neutral)?

- What other issues about your assent to learn came to mind as you filled in this form?

- Is there something additional that you think I should know to assist in my understanding of your answers?

- Is there any topic or statement that you feel should have been included or was missing from the list of statements?

- Did my presence influence any of your selections, and if so, how?

- Do you have any general comments or inputs?

Appendix III - Factor 1, Raw Data Outputs of PQMethod Program

Stmt Nbr	Most true (+) Statement	Mod Cat.	Stmt Nbr	Least true (-) Statement	Mod Cat.
40*	Resolving mistakes and problem "sets" the information in my mind	E/M	35	Working in classroom "kills learning out." It detracts from what is actually going on in a real-world sense.	AL
1	Learning is understanding and comprehending concepts, not just memorizing.	E/M	18*	Using new presentation technologies in the classroom is "lazy" teaching.	MR
27*	Learning *about* exercising, but never exercising, is not learning.	AL	36	Reading directly from a textbook with no extra examples or inputs from the instructor.	MR
33*	Mistakes are part of the learning process.	E/M	20*	I compare myself to others.	PS
16	I learn best when the instructor understands the material.	E/M	46*	I learn best when the homework and test problems are exactly like the example problems covered in class.	E/M

Additional distinguished statements – statements unique to this factor

Stmt Nbr	Statement	Mod Cat.	Stmt Nbr	Statement	Mod Cat.
25*	I want to see more in-depth explanations of how problems are solved.	E/M	45*	If I feel something should be done a certain way and the book recommends another way, I follow the book to reduce the chance of making a mistake and losing points.	PS
52*	I like to receive information in different ways from different perspectives.	MR	29*	I feel bad when I am not grasping things as quickly as the people around me	PS

(* indicates distinguished statements)

Appendix IV - Factor 2, Raw Data Outputs of PQMethod Program

Stmt Nbr	Most true (+) Statement	Mod Cat.	Stmt Nbr	Least true (-) Statement	Mod Cat.
47*	The instructor should start with basic concepts and progress in sequence to more complex topics without jumping around.	E/M	50*	Society ties our learning and education too closely to our worth as a person.	PS
28*	Presenting with PowerPoint, page after page, becomes boring and impairs learning.	MR	51*	It does not make sense to argue about homework or test points instead of using that time to learn more.	E/M
46*	I learn best when the homework and test problems are exactly like the example problems covered in class.	E/M	10*	Learning of other cultures is important.	PS
23*	I learn best when the instructor is more concerned with how the students are learning than with the target dates in the syllabus.	PS	14*	Learning can be uncomfort-able.	E/M
44*	I learn better if I feel I am succeeding at it.	PS	20*	I compare myself to others.	PS

Additional distinguished statements – statements unique to this factor

Stmt Nbr	Statement	Mod Cat.	Stmt Nbr	Statement	Mod Cat.
43*	Learning is understanding and comprehending concepts, not just memorizing.	MR	4*	I don't like to learn if I don't see a meaningful result, purpose, or value.	AL
1*	Humor, history, practicality makes for a good presentation from an instructor.	E/M			

(* indicates distinguished statements)

Appendix V - Factor 3 (bi-polar), Raw Data Outputs of PQMethod Program

	Most true (+)			Least true (-)	
Stmt Nbr	Statement	Mod Cat.	Stmt Nbr	Statement	Mod Cat.
12*	I need to enjoy what I learn and the career I select.	PS	11*	I don't like instructors that are book pushers (insisting that students buy a large number of books, many of which are hardly used).	PS
29*	I feel bad when I am not grasping things as quickly as the people around me.	PS	6*	I don't like to learn if I don't see a real-world application.	AL
1	Learning is understanding and comprehending concepts, not just memorizing.	E/M	28*	Presenting with Power- point, page after page, becomes boring and impairs learning.	MR
2*	Information as a whole is important, but it's a second step. You have to under-stand the parts first.	E/M	49*	The instructor's presentations should not seem like a form of media.	MR
32	The instructor should be passionate about what he/she teaches.	O	48*	Learning results from inputs of information from both in and out of class.	AL

Additional distinguished statements – statements unique to this factor

50*	Society ties our learning and education too closely to our worth as a person.	PS	23*	Learning is gradual over time.	PS
13*	We are penalized for making mistakes. That impacts how I learn.	O	15*	Continuity is very important.	E/M
20*	I compare myself to others.	PS	37*	I am discouraged when the instructor treats me as if I'm inadequate or is disrespectful.	PS

(* indicates distinguished statements)