

# HIGHER EDUCATION, BLENDED LEARNING AND THE GENERATIONS: KNOWLEDGE IS POWER-NO MORE

*Charles Dziuban, Patsy Moskal, and Joel Hartman*  
Research Initiative for Teaching Effectiveness, LIB 118  
University of Central Florida  
Orlando, FL 32816-2810  
Telephone: 407-823-5487  
Fax: 407-823-6580

1. [dziuban@mail.ucf.edu](mailto:dziuban@mail.ucf.edu)
2. [pdmoskal@mail.ucf.edu](mailto:pdmoskal@mail.ucf.edu)
3. [joel@mail.ucf.edu](mailto:joel@mail.ucf.edu)

## ABSTRACT

The authors explore blended learning environments from metaphorical and generational perspectives. They suggest that the language of higher education reflects metaphors that evolve for the academy, faculty, and students. Generational markers for Mature, Baby-Boomer, Generation X, and Millennial student cohorts interact with blended learning satisfaction. Principal components analysis identified two satisfaction dimensions – learning engagement and interaction value. Student scores on the two components showed that Millennials responded least positively to their blended learning experience. The authors conclude that the metaphor “knowledge is power” is evolving to more accurately reflect asynchronous learning networks (ALN) in higher education.

## I. INTRODUCTION

The title of this paper foreshadows our belief that blended learning is transforming higher education by altering the metaphors we use to define our profession. Sir Francis Bacon’s famous proclamation that “knowledge is power” has been the foundation of the academy for hundreds of years [1]. This supposition implies that knowledge is a commodity and access is the key. However, even a casual review of the ALN and blended learning literature indicates change in higher education.

The structure of metaphors provides us with a device for understanding the world and our actions in it. Lakoff & Johnson, for instance, contend that, “Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature” [2]. Cytowic agrees, affirming that metaphors explain how we think and act [3]. By describing an object or idea in terms of something else, we provide ourselves with a concept map and a universal language of understanding. For instance, the common metaphor in our society, “good is up; bad is down,” is found in language such as, “She went to a top university, but he bottomed out.” Another example, “argument is war,” is described by phrases such as, “He attacked my main point.”

Over time metaphors have evolved for higher education other than “knowledge is power.” A good example is that the university is an ivory tower intimated in words such as, “That program is a bastion of excellence” or, “At the university, he isolated himself from the real world.” Another illustration might be that the university is a ship; “The president is charting a wonderful course for us.” Additionally, metaphors surface for the role groups at the university. Alternately, we characterize students as consumers, empty vessels, clients, disciples, raw material, budding flowers, and blank slates among many others [4, 5]. Faculty experience the same metaphorical descriptions as storytellers, performers, task masters, facilitators, counselors, coaches, directors, oracles, mentors, and cheerleaders, just to name a few [4, 5, 6].

Given this definitional theory, it is no surprise that metaphors are developing for blended learning [7, 8, 9]. For instance, blended courses are a hybrid species – “From the way he teaches now, you wouldn’t recognize the class,” or a confluence – “Her face-to-face and online teaching are really coming together.” Undoubtedly, the metaphors we use impact the language for conducting business in higher education (or vice versa). The student as consumer leads to a particular model aligned with the university as a community and the faculty as facilitators. In a sense, reconciling our metaphors defines the linguistic strategic plan for the university. Undoubtedly, however, generational time periods give rise to quite different metaphors for students, faculty, and higher education. With that in mind, we would like to explore some recent developments about today’s students and their satisfaction with blended learning.

## **II. THE NEW LEARNER**

Recently, scholars have turned their attention to a phenomenon named the new or next generation learner [10, 11, 7]. This development emerges from sociological, cultural, economic, and political perspectives rather than individual preference or psychological constructs as one might incorporate when studying learning styles. Defining today’s students as new learners suggests a fundamental difference in the way they approach knowledge acquisition, problem solving, and moving into the workforce [12]. The paramount questions become: is higher education meeting the needs of the present generation learner and, possibly more important, who is generation-next? These questions cause speculation about how we might transform or rebuild higher education. Let’s briefly consider the generations that populate our campuses at the present time.

## **III. THE GENERATIONS**

When investigators consider the generations they generally reference four groups: Matures (born prior to 1946), Baby Boomers (1946-1964), Generation X (1965-1980), and Millennials (1981-1994) [13]. Undeniably, these classification dates are arbitrary: for instance, someone born in 1945 is labeled a Mature while another person born in 1946 is a Baby Boomer, although their life-shaping political, social, and economic milestones are nearly identical. However, these categories do provide useful referents for contextualizing behavior.

### **A. Matures**

World War II, the Korean Conflict, The Depression, and the New Deal were some of the major markers of this generation. Even though those persons born later in the cohort didn’t directly experience these events, they shaped their lives, nonetheless, because this generation lived in extended families (same house, same block, same town) and told stories. Later Matures remember well their parents recounting (over and over) the impact of World War II and the Great Depression. These narratives had a profound impact. Furthermore, there were consistent messages in these conversations, on the radio, in the movies,

and in newspapers and magazines: “hard work is the key to success,” “the common good above all,” “be thrifty and save your money for a rainy day - there are hard times ahead,” “there are good people and there are bad people,” “authority deserves respect,” and above all, “one should be loyal to one’s family, friends, job, country, and community.” These events and themes played a powerful role in shaping the mindset of the Mature generation. Technology markers for this group included such things as trans-Atlantic radio signals, stereo phonographs, and the development of electronic computers. These citizens, who believed in an honest day’s work for an honest day’s pay, saw the university as an ivory tower: “Go to college, I want better for you.” [13, 14, 15]

## **B. Baby Boomers**

Baby Boomers, through their sheer weight of numbers, have had a monumental impact on the country – politically, economically, socially, and culturally. The beginning period of the generation saw rapid and sustained economic expansion, giving rise to a strong sense of financial security. Life was good; however, other events impacted this generation: divorce, consumer debt, the Cuban missile crisis, the Kennedy and Martin Luther King assassinations, and Vietnam. Even in the face of these events, Boomers remain optimistic, are willing to go into debt, remain process-oriented, and strive for convenience. They occupy high positions in government, commerce, and industry, and are becoming legendary for their potential impact on the social security system. Some of the major technology markers for this generation include PLATO, the fax machine, the BASIC computer language, and the minicomputer. For the Boomers, the university was a great expectation: “Buy it now, pay later. Everything is going to work out once I get my degree.” [13, 14, 16]

## **C. Generation X**

Generation X experienced a significantly different set of markers from the Baby Boomers and was the first generation to feel the profound impact of technological developments. They encountered events such as Watergate, anti-war protests, excessive inflation, massive layoffs, the Challenger tragedy, the energy crisis, Three Mile Island, AIDS, and the Exxon Valdez. After school they became resourceful, since both parents were working, forming the first “Latch Key Generation.” As a result, Gen-Xers grew up skeptical and mistrustful of established organizations, institutions, and traditions. Viewed as disrespectful, they speak up and look out for themselves because they feel societal expectations such as employment and security are ephemeral. Because they see job security as a myth, they work to live, putting very little stock in future stability. For Generation X, versatility provides security. There were many important technology markers for this generation: Windows keyboard mouse, the UNIX operating system, Intel’s introduction of the 4004, 8008, and 8080 microprocessor chips, the C programming language, and the foundation of Microsoft, and Apple Computer. For Gen X-ers, their university experience was an uncertain mediation: “I have no idea what’s happening after graduation.” [13, 17, 18]

## **D. Millennials**

The Millennial generation is described by many as the new learner, the Net Generation, Generation Y, Generation Why?, Nexters, and the Internet Generation. Media exposure has taught these young people to challenge any tradition, institution, value, or person they choose, and in many respects they are confused by media-highlighted scandal and dishonesty in industry and the government. They have seen a meteoric rise in stock prices and grew up in a world of cell phones, pagers, the Internet, and the Web. Millennials take class notes on personal digital assistants, get their information from blogs and wikis, and are asked by their professors to turn off their cell phones in their face-to-face courses. They have access to worldwide events that are unprecedented in history. However, they view these sometimes gruesome situations through the aloof templates of television and unfiltered websites that are repositories of

pornography and extreme violence. At the same time these influences tell them what to think. They see political campaigns as media spin and job expansion at the minimum wage level. Millennials are the most diverse generation in the history of our nation and can navigate complicated software with such ease that they intimidate members of previous generations. They can complete a task, listen to the portable CD player, and talk on the cell phone simultaneously, but employers report that their basic skill levels, critical thinking ability, and initiative are developmentally lacking. Millennials bring a mindset and approach to the workplace and the world community that many simply cannot comprehend. Their technology markers are impressive indeed: the PC is introduced, the Internet is established, CD sound systems marketed, Microsoft introduces the initial version of Windows OS, Apple introduces the Macintosh, the development of HTML, and the first e-commerce sites appear in the Web. The technologies of the decades after their boundary year (1994) have been even more impressive: the first Internet search engines were developed, DVDs marketed, the MP3 audio format released, the number of Internet hosts exceed 172,000,000, and Google claims a database of 4.28 billion Web pages. The Millennial generation experiences the university through bricolage: "I'm piecing together a program from four departments." [13, 19, 20]

## **IV. LITERATURE REVIEW ON BLENDED LEARNING**

### **A. Today's Students**

Today's students are increasingly more diverse than ever before. Incoming undergraduates are in many cases more technologically proficient than their faculty with 80% reporting that they have a computer by the time they reach college. With the majority of these students having already "surfing" the Internet for homework purposes (78%) and two-thirds having used e-mail, they are approaching college courses already experienced in Web technologies [21].

Undergraduates also appear to be more non-traditional than in years past with 43% being 24 or older. The majority of these older undergraduates also report being employed (82%) and, as a result, are approaching college with responsibilities above and beyond what they encounter in their classrooms [22].

### **B. What's the Perfect Blend?**

Many faculty and universities are now experimenting with courses that utilize both fully online and face-to-face instruction. Faculty, students, and administrators are realizing a number of advantages in these blended courses and many see them as offering the best of both instructional worlds. Webster's Revised Unabridged Dictionary defines "blend" as "to mix or mingle together; esp. to mingle, combine, or associate so that the separate things mixed, or the line of demarcation, cannot be distinguished" [23]. Within the context of blended courses, this definition can be related to the combination of web and face-to-face that is necessary to produce a course utilizing the best of both instructional worlds. Some educators define blended learning approaches as "finding a harmonious balance between online access to knowledge and face-to-face human interaction" [24] or the "thoughtful integration of classroom face-to-face learning experiences with online experiences" [25].

Courses that replace a portion of face-to-face instruction with Web components allow for the flexibility of utilizing Web resources to reduce the on-campus time, yet allow face-to-face interaction as well. Just how many of the face-to-face components are replaced with online instruction varies widely by universities and instructors. This mix is influenced by many factors including the course instructional goals, student characteristics, instructor experience and teaching style, discipline, developmental level, and online resources [24]. In fact, there is no defined standard as to how much or what part of courses go online and it varies widely [25, 26]. Many replace 25-50% of in-class time with Web components [7, 27, 28].

Programs are beginning to see the usefulness of utilizing blended learning, particularly when they serve students whose lifestyles preclude them from attending full face-to-face courses, such as graduate nursing programs [28]. Through utilizing blended learning, accreditation and high standards can be maintained while providing the additional flexibility that students require.

The number of universities utilizing blended courses is growing rapidly. Some estimates are that between 80 and 90 percent of the course will someday be hybrid [29].

### **C. Why Blend?**

There are a number of potential advantages to blended learning that are emerging. Some of these revolve around accessibility, pedagogical effectiveness, and course interaction. Many of today's college students are non-traditional, attempting to balance family, jobs, and university life. Coming to campus is often difficult for many of them and through reducing the number of face-to-face hours required, blended learning can help them meet this challenge. Universities and faculty are looking for ways to reach and retain these students. By putting course materials on the Web, students can access the material at any time of day and review it as needed, which provides them with increased flexibility [28, 30, 31]. Busy students don't have to spend time commuting and parking, so blended courses can add up to significant time savings for those with long commutes [26, 29]. Students like the ability to access course materials anytime, anyplace, and are positive about the convenience and flexibility this provides them [7]. Because many students are older and working, blended courses help provide them with the flexibility they need to juggle jobs, school, and family [32, 33, 34]. By reducing time and space commitment, access is easier and thus many students have come to prefer these courses over the face-to-face counterparts.

### **D. Increased Interaction**

An additional benefit often reported in blended classes is an increase in interaction over what students and faculty typically perceive in face-to-face courses [35, 33, 7]. Web resources, and course management systems offer easier access to both students and faculty through discussion groups and e-mail, and they also allow access to material and experts who might not be available otherwise. The end result is a learning environment where students can be actively engaged, potentially learning more than in a traditional on-campus classroom.

Faculty at Mercy College are finding an increased sense of community and collaboration in the blended format because their pedagogical strategy has been to "address varying learning styles, increase interactivity, promote community, and meet the special needs of online students" [36]. Researchers from Brigham Young University also use the blended format to compensate for student differences in experience with content, realizing that some students had prior experience with the material and, thus, might not have to review the material as much as other novices [37]. Being able to review online material as often or as much as needed can be a strategy by which faculty address students' varying learning styles or those with English as a second language who might need extra practice [28].

Through available Web resources, faculty change the organization of the course and add enhancements to accommodate unique needs or learning styles of some students. Students who need more repetition and exercises can have that opportunity without taking face-to-face class time away from those who might not need the extra reinforcement [33].

Blended courses have the potential to facilitate a community of inquiry. By forcing students to be independent and have control over their learning, blended formats can help foster critical thinking and facilitate collaborative learning [25]. To maximize the benefit of individualizing instruction through blending, Schwartzman & Tuttle [38] provided redundancy to students in the form of audio, video, and textual versions of modules and increased the variety of ways students could engage the material. Without the bounds of in-class time, students can spend as much time as necessary to master the material.

An increase in student engagement in blended courses also occurs as students and faculty experience a level of comfort facilitated by student-to-student and faculty-to-student interactions [38]. When students become comfortable with the instructor and their peers, they become more involved with the course material.

## **E. Student and Faculty Perceptions**

While there is much variation in blended courses (and in face-to-face courses as well), one finding that appears to be consistent is student and faculty satisfaction with this modality. Both students and faculty are positive regarding the flexibility and convenience and the perceived increase in interaction they have with blended courses [39, 40, 7, 37].

Students rate the quality of their blended experience as high as or higher than their face-to-face courses. They also report high satisfaction with instructor interaction. Course weaknesses often refer to problems with technology, including difficulty with course management systems [35]. Researchers at Ohio State University surveyed 201 students from three universities about their experience in courses spanning the distance education continuum from completely face-to-face to completely online. What students indicated was that the intuitive structure of the course – clearly defined objectives, assignments, deadlines, and encouraging dialogue and interaction—were most important in satisfaction with the course [41].

Rovai and Jordan [42] compared three education graduate courses—traditional, blended, and fully online—and found that students in the blended course measured highest in a sense of community, similar to those students in the face-to-face section, but higher than those in fully online section. They stated “since students in the blended course exhibited similar sense of community and variability as students in the traditional course, offering the convenience of fully online courses without the complete loss of face-to-face contact may be adequate to nurture a strong sense of community in students who would feel isolated in a fully online course” (p. 13). Students in the blended courses touted the benefits of the online portion of the course which allowed them the freedom to perform some of the course instruction at their own flexibility, a feature important for these students, many of whom needed to work. However, many of them also mentioned the value of the face-to-face component which they felt helped them both academically and in building professional relationships and a strong sense of community. In addition, some students in the fully online course misread the instructor’s comments as being “sharp and frank” while students in the blended and fully online courses did not convey such impressions, possibly because of the opportunity for face-to-face discussions which allowed everyone to become acquainted.

For the most part, faculty report that student performance in blended courses is as good as, or in some cases better, than face-to-face [35]. The Pew Grant Program in Course Redesign found improved student learning in 19 out of 30 projects with 11 having no significant difference from face-to-face sections [43]. Comparing face-to-face and blended introductory statistics courses, Utts, et al, [44] found performance was equal, although hybrid students were slightly less positive.

O'Toole & Absalom [45] found students in the blended format, accessing both online resources and attending lectures, performed better than students who attempted to perform without attending lectures. They posit that the lecture provides high motivation for students to maintain progress, thus equating to higher student achievement.

## **V. A STUDY OF GENERATIONAL SATISFACTION WITH BLENDED LEARNING**

### **A. Methods**

The investigators conducted a satisfaction survey of the blended learning student population at the University of Central Florida. Five-point Likert scale questions formed the basis of this study, asking students to index their blended learning experience with respect to overall satisfaction, ability to integrate technology into their learning, ability to control their own learning, study efficiency, ability to meet their educational objectives, willingness to take another blended course, ease of interaction, amount of interaction with students, quality of interaction with students, amount of interaction with the instructor, and quality of interaction with the instructor.

These items were inter-correlated and the (11x11) matrix subjected to a principal components analysis [46]. Components were extracted according to the number of eigenvalues of the correlation matrix greater than one. The components were transformed using the promax [47] procedure. Coefficients in the transformed pattern matrix absolutely greater than .3 were considered salient. Prior to any "factoring" procedures the domain sampling properties of the data were indexed with the measure of sampling adequacy (MSA) [48]. Component scores for each responding student were computed using the regression method. Subsequently, a one-way analysis of variance was completed for the component scores by the generations (Boomer, Gen X, and Millennial). Finally, decision trees were derived for each set of scores using generational membership, gender and ethnicity as predictors. Chi-square Automatic Interaction Detection (CHAID) [49] derived the tree structure on the sample that was validated with a ten partition fold. The objective of these procedures was to gain a better perspective of the generational perceptions (metaphors) of blended learning. Of the 2000 survey instruments distributed, 491 were returned.

### **B. Results**

Table 1 presents the percentage distribution, with no Matures responding to the survey, and showing the majority of student respondents (80%) representing Generation X and Millennials. The majority of Millennials (92%) represent undergraduate education while the majority of Boomers (78%) come from graduate classes. Generation X is split between the upper undergraduate level (42%) and graduate classes (51%).

**Table 1**  
**Percentage of students responding to the survey instrument and registrations**

Questionnaire Responses (n=487)			Student Registrations		
	N	%	Low Und %	High Und %	Graduate %
Boomer	99	20	2	20	78
Gen X	206	42	7	42	51
Millennial	182	38	55	37	10

Table 2 gives the promax transformed pattern matrix for the principal component analysis with a measure of sampling adequacy (.87) indicating excellent domain sampling. The eigenvalue selection criterion (>1) retained two components. The pattern coefficients for component one show substantial values for overall satisfaction, integrating technology, more learning control, study efficiency, willingness to take another blended course, and meeting educational objectives. The construct associated with these coefficients is probably best described as **learning engagement**. The second dimension is entirely related to **interaction value**: ease, quantity, and quality with students and instructors. The correlation between the two components is .47.

**Table 2**  
**Promax transformed pattern matrix**  
**Principal components solution for students' rating of blended learning (n = 491)**

	I	II	H <sup>2</sup> **
Overall Satisfaction	83	00	68
Better Integrate Tech.	75	01	57
More Learning Control	73	05	57
Study Efficiency	80	.04	67
Take Another Blended Course	80	-07	60
Met Educational Objectives	74	02	57
Easier Interaction	08	70	54
Amount of Student Interaction	-19	95	77
Quality of Student Interaction	-02	87	75
Amount of Instructor Interaction	.10	75	64
Quality of Instructor Interaction	.19	70	66
Eigenvalues	5.2	1.8	
% Variance	48	16	

Measure of Sampling adequacy = .87

Component Correlation = .47

Decimals Omitted for Pattern Coefficients

\*\*Communality

Table 3 presents the results of the one-way analysis of variance of the component scores for learning engagement and interaction value scores. The reader should be cognizant that component scores are not a simple sum of the items with high “loadings” but rather a function of the transformed pattern values used as regression coefficients. One advantage of component scores is that, because of their scaling, they produce values in a unit normal metric, thus presenting differences in standard deviation units. The learning engagement scores produced a significant difference ( $p=.00$ ) showing Boomers most positive (.404) and Millennials least favorable toward their blended learning experience (-.204). Those values place Boomers and Millennials over one half a standard deviation apart. The interaction value component scores produced a similar result ( $p=.00$ ) with Boomers showing an average component score of .246 and Millennials producing an average score of -.273, again locating those two groups over one-half standard deviation apart. Note from Table 3 that the correlation between the learning engagement and interaction scores was .71 – supporting the supposition that student satisfaction is positively related to interaction.

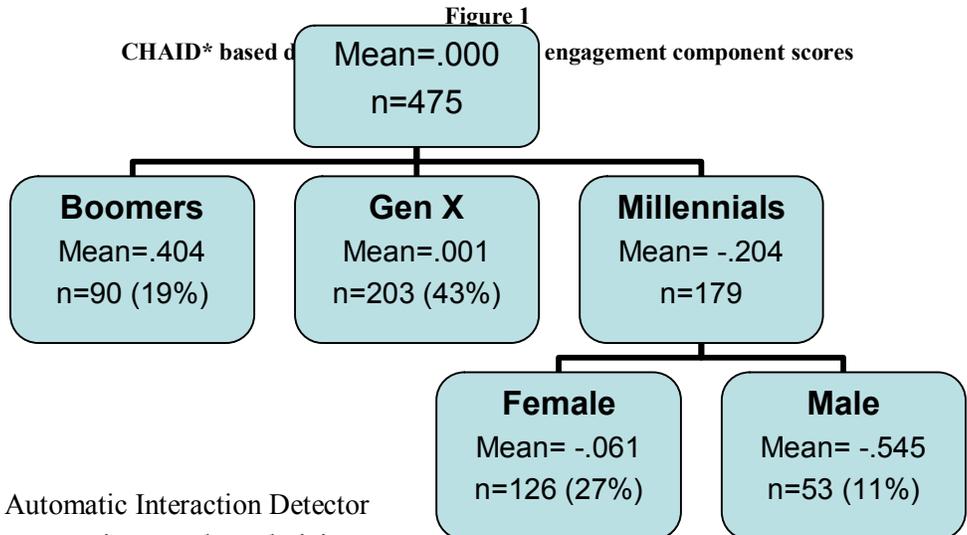
**Table 3**  
Average learning engagement and interaction component scores by generation in blended course

Learning Engagement	n	Mean	SD	p
Boomer	90	.404	.823	.00*
Gen X	199	.000	1.024	
Millennial	179	-.204	1.003	
Interaction	n	Mean	SD	p
Boomer	96	.246	1.055	.00*
Gen X	199	.134	1.004	
Millennial	179	-.273	.903	

\*Probabilities based on one way analysis of variance

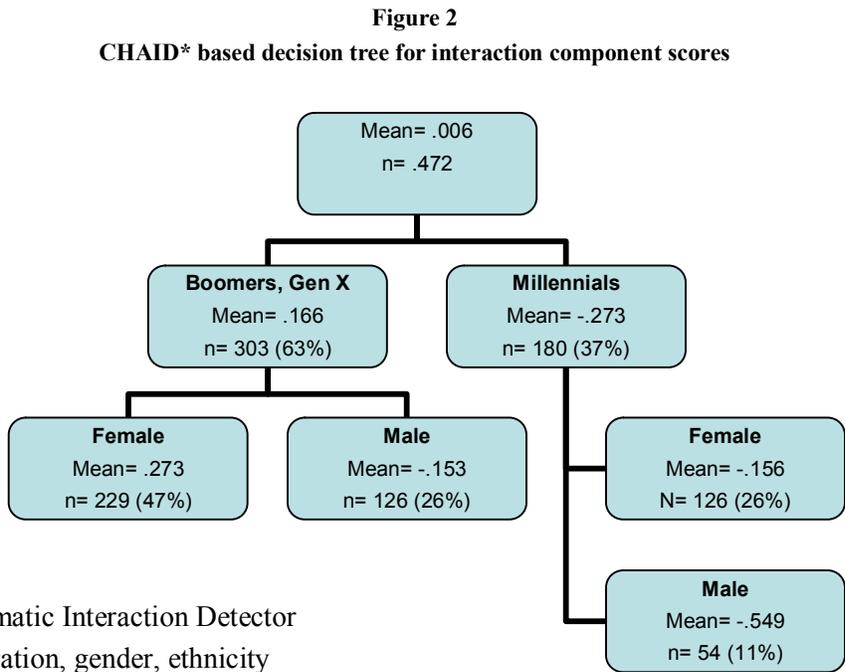
Learning engagement/interaction component score correlation = .71

Figure 1 presents the decision tree for learning engagement using generational membership, gender and ethnicity as predictors. One conclusion from Figure 1 is that of the predictors, only generation and gender were selected by the decision rules. Three noteworthy outcomes appear in Figure 1 – male Millennial students can be expected to score over one-half of a standard deviation below the mean on learning engagement with the distance between Boomers and Millennial males being almost one complete standard deviation. Also, male Millennials (-.545) scored considerably lower than female Millennials (-.061) who have an average value close to the group mean. Figure 1 indicates that the correlation between age and learning engagement is quite low,  $r = .172$ .



Chi Square Automatic Interaction Detector  
 Predictors = generation, gender, ethnicity, engagement  
 $r(\text{age} \times \text{learning engagement}) = .172$

Figure 2 presents the decision tree for interaction value with generation, gender, and ethnicity, once again, used as predictors. For this structure, male Millennials can expect the lowest interaction score being more than one half a standard deviation below the group mean (-.549). The greatest distance in the tree may be found between male Millennials (-.549) and females in the combined Boomer and Generation X group (.273). In this diagram, males score below the mean of their parent node while the females score above the average. Figure 2 indicates that the correlation between age and interaction component scores is .173.



Chi Square Automatic Interaction Detector  
 Predictors= generation, gender, ethnicity  
 $r(\text{age} \times \text{interaction}) = .173$

Table 4 shows the percentage of each generation responding to the questionnaire indicating that they changed their approach to learning as a result of blended learning. The familiar pattern of these data continues. Fifty percent of the Boomers indicate a change while only 20% of the Millennials claimed to have transformed their approach to classes.

**Table 4**  
**Percentage of generations that changed their approach to learning in blended learning courses**

	n	%	p
Boomer	47	50%	.00*
Gen X	76	38%	
Millennial	36	20%	

\*Probability based on a chi square contingency test

## VI. CONCLUSION

### A. Knowledge is Power

In our introduction, we suggest that the blended format modifies the commonly held metaphor for higher education: “knowledge is power.” Historically, the university sequestered knowledge in its library, laboratories, in professors’ notes, correspondence, experience, and in their communication with colleagues across universities. Faculty members controlled access to that knowledge, especially at the graduate level where Matures and Boomers served their “Ph.D. serfdom.” To further reinforce the concept that he (or she) who controls the knowledge has the power, we now inform the reader that Francis Bacon’s actual quote is “For knowledge itself is power.” Under this organizing metaphor, faculty can be oracles, students can be blank slates, and universities can be ivory towers.

We believe the new metaphor for higher education is “**The ability to use knowledge effectively is power.**” The immediate availability of data, information, and knowledge to university students is astounding. The Millennial generation has much more access to information than its professors did. Hindman and Cukier [50] assert that Google and Yahoo (or entities using their technologies) handle 95% of all Web searches in the United States. Google, with more than four billion Web content pages, handles hundreds of millions of searches each day.

We should not be surprised, therefore, that when Millennial generation students evaluate their blended courses for learning engagement, interaction value, and changed learning habits, they report that they are the least positive (or satisfied). Possibly, the new technologies that universities offer these students do not relate to their view of technology-based learning, and surely, only the most engaging face-to-face presentation will hold their attention. Millennials declare:

“I spend more time reading and reviewing without the professor telling me everything there is to know.”

“I respect myself more as a self-teacher.”

“Learning that takes place in the classroom isn’t as important as time studying on your own.”

“Online gives me something to do when I’m bored with the professor.”

Wendover [13] states that when students view general education course requirements that do not translate into usable job skills to be irrelevant, their metaphor for university is an “*unresponsive object*.” The metaphor for university is “*right of passage*” for students who are obliged to obtain a degree to become eligible for promotion in certain industries. Overall, therefore, the ability to use knowledge as a *structure* becomes the dominant metaphor for these students, and to some degree, blended learning contributes to this phenomenon. Millennials have access to the world and they bring it into the classroom. They visit an expert’s blog on the topic being taught, discuss the class assignment with several students around the world, and question the inconsistencies about the instructor’s requirements. Who has the power?

## **B. Generational Satisfaction with Blended Learning**

We identify two major components for student satisfaction with blended learning: learning engagement and perceived ability to communicate effectively. Within the limitations of our instrument, these two components hold for Baby Boomers, Generation X, and Millennials. However, the generational cohorts do not reveal the same levels of satisfaction for blended learning on those two dimensions. Are the explanations for this phenomenon different than generational markers? An insight might be the metaphor, “perception is reality,” even if that perception is not accurate. Laing, Phillipson, and Lee [51] offer one hypothesis about interpersonal perception. They present a three-level model of perception, in which the final stage is called meta-meta perspective. In a husband and wife dyad, meta-meta perspective asks the husband to convey how his wife would describe him (or vice-versa). Laing and colleagues’ indicate problems if one or both spouses cannot accurately portray the other’s point of view [51]. We suggest, therefore, that Millennial students’ decreased satisfaction rates in blended courses (and probably others) affirm that instructors do not accurately understand how their students perceive them.

Our professors are shocked when student subgroups assign them low values on items such as “The instructor was interested in your learning,” or “Expression of expectations for the course.” The professors are dismayed when student write statements such as “If only she taught as well as she dressed.” Here, we have mixed metaphors or an inaccurate meta-meta perspective. Instructors perceive themselves in a particular pedagogical style, but their students see them differently—a discrepancy of which the instructor is unaware. This discrepancy is greatest for the Millennial generation. Is it a question for future research?

## **C. Another Explanation**

Richard Clark’s work on motivation in the workplace offers an alternate hypothesis for declining satisfaction across the generations [52]. His CANE model (commitment and necessary effort) bases itself on three multiplicative components for determining commitment: personal agency (“Can I do this and what are the barriers?”), emotion (“Do I feel like doing this?”), and task value (“Will this do me any good? Am I interested? Is this important to me?”). The second two components are particularly important for understanding Millennial students in blended learning. Certainly, as we have discussed, technological personal agency is not a problem for them. However, emotion and task value also interact with blended learning satisfaction. If the task is something that students just don’t feel like doing or they see very little value in its completion, then the CANE model predicts low commitment. The multiplicative nature of the model dictates that only one component needs to approach zero or be negative for commitment to diminish. The CANE model features an additional dimension that predicts the effort one is likely to expend on a task depending on his or her perceived personal agency. Interestingly, Clark demonstrates that when personal agency is excessively high or low, effort diminishes. Accordingly, Millennials with high facility for technology but negative affect and low task value are likely to express lower satisfaction. On the other hand, Baby Boomers with moderate technology capability (in general) but positive affect and high task value are likely to expend more effort, evidence more commitment, and express higher

satisfaction.

#### **D. Blended Learning and the Millennial Generation: A Final Metaphor?**

Designing a blended learning course that maximizes the potential of both the face-to-face and online components raises questions: What is the best definition of blended learning? How much of each modality should comprise a course? We argue that students and faculty should not view the face-to-face aspect of a blended course and the online element as separate components [53]. The instructional design perspective, therefore, requires a reevaluation of teaching and learning to blend or harmonize the distinction between the two—a challenging task, made even more formidable by the presence of the new learners [11].

Some characterize the Millennials by their technological empowerment: stimulus junkies and gamers, who multitask, demand response immediacy, and communicate by text messaging; students who are generally facile with rapidly emerging technologies. Others [13], however, suggest that Millennials are not proficient in higher order thinking, and are unwilling to take intellectual risks and view problem-solving as a series of choices on the monitor. If older generation faculty confuse the Millennials' extensive technological sophistication with maturity, the faculty may forget that many of these new learners are still adolescents. Howe and Strauss [19], however, describe Millennials differently: conventional, confident, special, sheltered, pressured, achieving, and team-oriented. Despite their technological savvy, these students face more stress than prior generations, especially when their need for team orientation pressures them to persist in a milieu of higher education that emphasizes individual accomplishment.

Millennials' diminished satisfaction with blended learning reflects their cooperative approach to problem solving. Their metaphor is **knowledge is teamwork**. Because of this viewpoint, Strauss believes that this generation ultimately will be defined as possibly the next greatest generation, just as the GI generation defined the twentieth century. Our challenge, then, is to develop teaching and learning strategies for the blended learning environment that will capitalize on the Millennial students' strengths while accommodating their immaturity. We cannot wait to see what new metaphors develop.

## VII. REFERENCES

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