The Impact of Campus Facilities on the Recruitment of Students in Higher Education

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THE IMPACT OF CAMPUS FACILITIES ON THE RECRUITMENT OF STUDENTS IN HIGHER EDUCATION

A Dissertation
Presented to
The Faculty of the Educational Leadership Doctoral Program
Western Kentucky University
Bowling Green, Kentucky

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Doctor of Education

By
Lucinda S. McDonald

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THE IMPACT OF CAMPUS FACILITIES ON THE RECRUITMENT OF STUDENTS IN HIGHER EDUCATION

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- Western Kentucky University
- University of Kentucky
- Morehead State University
- Georgetown College
- Eastern Kentucky University
- Centre College
- Northern Kentucky University
- Murray State University
- Midway University
- Bluegrass Community and Technical College
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The statement often has been made over the years that university recruitment efforts are strongly impacted by campus facilities. The subject has been a topic of research over the past several decades. This study indicates that as generations change and times change, the significance of various aspects of the university to the prospective student change as well.

This research effort is a mixed-methods study to provide insight on the facilities current students deem most important when determining which college or university they will attend. The research for this study was conducted through an online survey asking students to:

- Choose which factors were most important in selecting a college.
- Select preferences related to various design elements (classroom color, furniture, and windows).
- Provide preferences on technology and how it is used.
- Rank the importance of specific facilities.

Students from six universities and colleges in Kentucky responded to the survey and provided data for evaluation.

The study found little significant change had occurred from research completed by Reynolds and Valcik in 2007 on what students see as the most important factors for selecting a college. The five most important factors were a strong major in the field of
interest; location of institution—nearness to home; pleasant and attractive campus/surroundings; location of institution—city, state, etc.; and preparation for a career. The facilities most important to students included facilities for their major, classrooms, libraries, residence halls, and dining facilities. Availability of technology also was of prime importance.

Based on the findings of this research, recommendations are made on developing campus-wide programs for improving communications and cooperation between divisions. The study further recommends taking the information gathered from the collaborative brainstorming sessions and student surveys to develop a continuous improvement program and facility improvement plan in an effort to provide a fiscally-responsible institution with a primary focus of providing affordable, high-quality education to its students in appealing facilities.
CHAPTER I: INTRODUCTION AND OVERVIEW

Introduction

During the late 1970s, forecasters projected sharp declines in college enrollment to occur by the turn of the next century (Chapman, 1981). With this forecast, sociologists and higher education researchers began studying how to attract more students. Up to that time most research had focused on how students made the decision on whether to attend college, rather than on which one they should attend (Chapman, 1981). It was during this time that higher education administrators began to understand they were dealing with a new and different generation. It was no longer Baby Boomers (1946-1964) who were starting college; it was Generation X (1965-1984), with a whole new set of ideas and points of view. This was a time of transition from young adults who were idealistic, team-oriented, and work-focused to those who were pragmatic, independent, and focused on life-balance (Bump, 2014). Similarly, in this current era higher education is facing changes as the generations known as Millennials and Generation Z are now college students.

The current college students, Millennials typically delineated as those born between 1985 and 2000, are characterized as an optimistic, independent, and individualistic generation who place great emphasis on family and friends. They tend to adapt easily to teams, as they have grown up with social media and its networking features (Bump, 2014). Table 1 presents a comparison of the common characteristics attributed to the various generations which colleges have experienced.
Table 1

*General Characteristics of the Generations*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Silent Generation</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Millennials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Age</td>
<td>73 - 89</td>
<td>55 - 73</td>
<td>35 - 54</td>
<td>19 - 34</td>
</tr>
<tr>
<td>% of 2014 Population</td>
<td>11%</td>
<td>32%</td>
<td>28%</td>
<td>29%</td>
</tr>
<tr>
<td>Influences</td>
<td>Post-world war</td>
<td>Vietnam</td>
<td>HIV/AIDS</td>
<td>Digital Media/ Internet</td>
</tr>
<tr>
<td>Korean War</td>
<td>Civil rights</td>
<td>MTV</td>
<td>School shootings</td>
<td></td>
</tr>
<tr>
<td>Parents are survivors of Great Depression</td>
<td>Cold War</td>
<td>Energy crisis</td>
<td>Terrorism</td>
<td></td>
</tr>
<tr>
<td>Economic prosperity</td>
<td>Watergate</td>
<td>Global competition</td>
<td>Children of divorce</td>
<td></td>
</tr>
<tr>
<td>Low employment competition</td>
<td>Space race</td>
<td>Divorce</td>
<td>Sheltered as children</td>
<td></td>
</tr>
<tr>
<td>Chance for advancement</td>
<td>Divorce</td>
<td>Collapse of communism</td>
<td>Economic expansion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual revolution</td>
<td>Divorce</td>
<td>Kept busy as kids</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Woodstock</td>
<td>Dual income families</td>
<td>Children with schedules</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Latchkey kids</td>
<td>Job instability</td>
<td></td>
</tr>
<tr>
<td>Characteristics</td>
<td>Practical</td>
<td>Independent</td>
<td>Insecure</td>
<td>Narcissistic</td>
</tr>
<tr>
<td></td>
<td>Loyal/Dedicated</td>
<td>Challenge authority</td>
<td>Diverse</td>
<td>Depressed</td>
</tr>
<tr>
<td></td>
<td>Diligent</td>
<td>Entitled</td>
<td>Cynicism</td>
<td>Anxious/Sensitive/Limited self-control</td>
</tr>
<tr>
<td></td>
<td>Compliant</td>
<td>Team-oriented</td>
<td>Work to live</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confident</td>
<td>Optimistic</td>
<td>Adaptable</td>
<td>Reject social norms</td>
</tr>
<tr>
<td></td>
<td>Patriotic</td>
<td>Ambitious</td>
<td>Desire independence</td>
<td>Less obligation to employer</td>
</tr>
<tr>
<td></td>
<td>Respectful</td>
<td>Diligent</td>
<td>Confident</td>
<td>Focus on money and power</td>
</tr>
<tr>
<td></td>
<td>Strong work ethic</td>
<td>Live to work</td>
<td>Pragmatic</td>
<td>Entitled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competitive</td>
<td>Self-starters</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Table 1. *Generational Characteristics* (continued)

<table>
<thead>
<tr>
<th>Parameter Characteristics (cont.)</th>
<th>Silent Generation</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Millennials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrifty</td>
<td>Materialistic</td>
<td>Entitled</td>
<td>At ease in teams</td>
<td></td>
</tr>
<tr>
<td>Good communicators</td>
<td>Skeptical of authority</td>
<td></td>
<td>Attached to gadgets and parents</td>
<td></td>
</tr>
<tr>
<td>Idealistic</td>
<td></td>
<td></td>
<td>Family friendly</td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td></td>
<td></td>
<td>Structured lives</td>
<td></td>
</tr>
<tr>
<td>Strong work ethic</td>
<td></td>
<td></td>
<td>Global thinking</td>
<td></td>
</tr>
<tr>
<td>Idealistic</td>
<td></td>
<td></td>
<td>Innovative</td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td></td>
<td></td>
<td>Sociable</td>
<td></td>
</tr>
<tr>
<td>Strong work ethic</td>
<td></td>
<td></td>
<td>Optimistic</td>
<td></td>
</tr>
<tr>
<td>Idealistic</td>
<td></td>
<td></td>
<td>Parent advocacy</td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td></td>
<td></td>
<td>Techno-savvy</td>
<td></td>
</tr>
<tr>
<td>Strong work ethic</td>
<td></td>
<td></td>
<td>Patriotic</td>
<td></td>
</tr>
</tbody>
</table>


Throughout their existence, colleges and universities have made efforts at each of these junctures to change and adapt to attract the current generation of students. The challenge for administrators, now as it was then, is to discern how campus facilities can best meet the needs and expectations of each new generation.

**Generational Cohorts**

Generational cohort theory explains changes in values, attitudes, beliefs, and inclinations across generations due to important historical events and social changes (Moss, 2016). The events could be things like wars, the presence of heroic figures, or
experiences that impact a large portion of the population. They are particularly impactful
during an individual’s formative years, cause specific inclinations or styles, and persist
over time (Moss, 2016).

Students today develop as they have throughout time, maturing into adulthood
based on childhood experiences as they form relationships, develop skills, and determine
their path for the future. But today’s students also have experienced a world with a vast
potential for life experiences, technological sophistication, and pluralistic social models,
all of which have affected their attitudes, behaviors, and aspirations. The college students
of today are at the forefront of technological proficiency, generally well beyond their
parents, teachers, and potential bosses (Newton, 2000).

Being part of a particular generational cohort does not mean the generalizations
made are completely applicable to all who fall within the particular timeframe, nor does it
result in a specific type of college student. Newton (2000) noted that current students
“enter college having had greater exposure to, and more experimentation with, ‘grown-
up’ activity than any previous generation” (p. 9). This was the case for Millennials, as
they seemed to mature physically at a younger age and were spreading their wings
(experimenting and acting out) at an earlier age (i.e., middle school and high school)
(Newton, 2000). However, Generation Z is now entering college with a slightly different
perspective. They spent more time at home with their families, did not work during
school as much, and were watched more closely by their Generation X parents (Twenge,
2017).
Newton (2000) stated that current students have:

Received extensive and rapid exposure to a vast and ever-increasing level of informational activity, which makes them the most informed generation to have lived on the planet. However, even though students have more general knowledge, they come to our campuses with less experience in exercising the discipline and focus required to explore a subject in depth. (Newton, 2000, p. 9)

While the internet has made researching much easier, it is not infallible and students must develop their ability to recognize sound academic information. “Educators are now spending time teaching students how to determine what is credible for academia as research shifts from peer-reviewed journals and books in a library to blogs and op-eds” (Seemiller & Grace, 2016, p. 174).

While college students through the ages have “lived by the seat of their pants,” as Newton (2000, p. 10) put it, this generation has more difficulty because of less hands-on mentoring and training to learn proper behaviors and actions. Of course, as Seemiller and Grace (2016) stated, “each generation has its own set of social norms and trends” (p. 57), which may result in a rewriting of social etiquette rules as we know them. But this difference between the cohorts has particularly become an issue as they look to advance their lives and careers as “Social connection and intimacy are taking on different patterns” (Newton, 2000, p. 10).

Twenge (2017) described Generation Zers as “spending more leisure time alone” (p. 74) and on their devices, which has been linked to less happiness and increased depression. He also noted that adult mental health tends to improve with in-person interaction as he observed that college students’ mental health was deteriorating and
Millennials were reported to be happier than Generation Zers. The solitude and reduced interpersonal interaction seen with the assimilation of social media have resulted in students who are increasingly experiencing high levels of stress and anxiety (Newton, 2000).

Today’s generation of college students is caught in a complex and rapidly changing society which has caused alienation and loss of purpose; life often has become empty of meaning offering no standard ethos. This instability has created a need for resolution and coherence in their lives (Newton, 2000). These objectives are reached through establishing a worldview, developing a sense of manageability, and building a sense of meaningfulness.

Moss (2016) also noted anxiety, depression, and narcissism have increased over time. There also has been a trend from an internal locus of control to an external locus of control, meaning the younger generations are more likely to place blame on others rather than accept it themselves (Moss, 2016). They also are “especially sensitive to the support of managers” (2016, p. 5). Moss noted two studies using the Minnesota Multiphasic Personality Inventory (MMPI) (the most widely used and researched standardized psychometric test of adult personality and psychopathology) found increases in depression, hypomania paranoia psychopathic deviation, and other psychopathological manifestations. Specifically, according to Moss the study found younger generations exhibit inflated perceptions of themselves, limited self-control, rejection of societal norms, instability, dissatisfaction, feelings of isolation and being misunderstood, and undue sensitivity. Moss also reported loyalty and commitment to organizations have waned over the generations. Where Baby Boomers tended to form emotional
attachments to their workplaces, younger generations see the work environment only as the means to reach their professional and social goals. As a result, loyalty has diminished and turnover has increased, while trust has become even less important (Moss, 2016). The commitment and loyalty levels are considered in direct contrast to a more recent study of Generation Z, specifically, by Seemiller and Grace (2016) that reported significant differences from Millennials. They reported Generation Zers, having experienced 9/11, a failing economy, unemployment, and a world at war, and are more loyal and compassionate, less concerned about appearances, and risk averse. They tend to have a strong work ethic similar to the Baby Boomers and have a sense of responsibility and resiliency like Generation X (Seemiller & Grace, 2016). Plus, they are even more technologically savvy than the Millennials.

**Considerations for Millennials**

In the book, *Millennials Go to College*, Muntz (2004) observed that (a) each new generation breaks away from the current young-adult generation, (b) the new generation corrects what it perceives as the excesses of the current midlife generation, and (c) the new generation fills the roles of the vacating older generation. He noted Millennials are a third larger than the Baby Boomer generation, with over 100 million members, and 70% plan to attend college.

In an article by Giambatista, Hoover, and Tribble (2017), consideration was given to the challenges associated with managing Millennials, particularly narcissistic Millennials, since that is one of the characteristics often correlated with the group. The authors suggested a predisposition of Millennials to what they described as complexity avoidance and how intervention theory, in conjunction with classic principles of
managing organizational behavior, is applicable. Giambatista et al. (2007) noted
Millennials are viewed by society as relatively disloyal, job-hoppers, high maintenance, entitled, and casual/informal. Millennials grew up with the internet and other technological advances that produced instant gratification, so as a result they learned to expect quick fixes and easy access to solutions. The result has been impatience and discomfort with matters that require patience, reflection, or perseverance. According to Giambatista et al., Millennials are more prone to narcissism than earlier generations. They have an insatiable desire for positive feedback and approval from others; at the same time, they are resistant to constructive criticism. Considering Millennials have been characterized as inclined to being narcissistic and avoiding complexity, they tend to minimize or distort information to serve their own purposes. They are very resistant to organizational or individual change and lack the ability to see others’ perspectives or to be empathetic. Collaborative work tends to be difficult for the Millennial when a collective endeavor is undertaken. Feedback from group work may not provide the confirmation needed and can result in aggressive and/or antisocial behavior. Giambatista et al. suggested rather than learning from their mistakes, they blame others for their failure.

Of course, just because a person was born within the generational range does not mean they must meet all the characteristics attributed to their cohort. Managers and educators must be observant, watching for clues like high self-esteem, narcissism, anxiety, depression, lower need for social approval, external locus of control, and more agentic traits (Giambatista et al., 2017). Giambatista et al. (2017) also recommended being aware of signs of complexity avoidance and patterns of superficiality in work.
Without these traits, management as a Millennial is not necessary, but the manager or educator must still be aware of potential narcissistic traits (Giambatista et al., 2017).

Narcissism impacts the educator in determining how to provide the best education for the Millennial, according to Giambatista et al. (2017). Millennials rely on quick, simple solutions, as they have become dependent on technology and an external locus of control. Educators should consider a less is more approach that focuses on learning, change, and development rather than presenting large amounts of information for memorization. Efforts should be directed toward building behavioral skills through actions like role play; direct and vicarious observation; immediate peer and instructor feedback; repetition; opportunities for personal reflection; and behavioral integration laced with generous portions of positive feedback, communication, and encouragement. Giambatista et al. said for the narcissistic Millennial, leadership takes additional effort to stroke their ego in all communications, flattering their need for achievement and power. In addition, leaders should remember the narcissistic Millennial’s lack of teamwork ability and tendency toward social influence tactics could ripple over into other Millennials in a group and undermine the teamwork. The recommendation is that narcissistic Millennials not be assigned to teams or, if they must be, to group them with others of similar traits.

**Considerations for Generation Z**

The ongoing question for researchers is determining where Millennials end and Generation Z begins. Since these generational cohorts are not specifically defined or delineated (as by the U.S. Census Bureau), the beginning birth year for Generation Z is rather arbitrary (Bump, 2015). For the purpose of this study, the line of delineation was
drawn at the year 2000, meaning that Generation Z students are now entering colleges and universities.

As Seemiller and Grace (2016) stated, “Context shapes the way people see the world” (p. 25). The context for Generation Z is one of world wars, terrorism, violence, and insecurity. As a result, Generation Zers have been over-protected by their parents’ zeal to always keep them safe (Twenge, 2017). They tend to be risk averse: partying less, driving less, drinking less, and focusing more on financial security and careers (Seemiller & Grace, 2016). This pragmatic generation does not want to let others down; they want to be advocates for others who are less fortunate and to make a difference in the world. In contrast to previous generations, Generation Zers tend to be more concerned with the well-being of the whole rather than the one (Seemiller & Grace, 2017).

A quote in the report by Robyn Showers (2016) says:

Generation Z is the first truly global generation with limitless interests and avenues for learning. They have been raised in a high-tech, hyper-connected, on-demand, and impatient culture…. This self-directed, entrepreneurial-minded, highly educated, and uber resourceful generation will stop at nothing to make their mark on the world. (p. 3)

Generation Zers are accustomed to having all the information they need literally at their fingertips, at the click of a button. The downside is that they have had an almost continuous exposure to the violence and perils present in the world. These dangers have made them very cognitive of online threats as well, like identity theft, cyberbullying, and phishing, resulting in an appreciation of privacy, particularly related to technology (Seemiller & Grace, 2017).
Generation Zers are responsible, loyal, compassionate, and career-minded. Personally, they are looking for opportunities for advancement and rewards that will improve their financial standing (Seemiller & Grace, 2016). They have been described as a loyal group and, as such, are expected to change jobs less often than Millennials. Seemiller and Grace (2016) also observed even though Generation Zers prefer face-to-face communication, they tend to lack strong interpersonal skills because most of their communication experience has been through technology. Twenge (2017) reported Generation Zers tend to spend less time in group activities “building social skills, negotiating relationships, and navigating emotions” (p. 72).

Generation Z students, like the generations before them, want to learn and acquire the skills needed to advance their careers (Seemiller & Grace, 2017). They prefer learning that is more “hands-on” and directly applicable to real life. They see education as the key to success, as stated in five themes presented by Seemiller and Grace (2016):

- Education leads to future personal success.
- Education is an investment in America’s future.
- An educated society is a better society.
- America’s education system is declining.
- There is limited access to quality education.

For Generation Zers, the number one social concern is the cost of higher education due to the negative impact it will have on their financial status in their adult lives (Seemiller & Grace, 2016). They are looking for ways to avoid the excessive costs associated with college and leaning toward a “limited college experience,” choosing only those college offerings that are absolutely necessary to graduate (“college a la carte”)
According to Seemiller and Grace (2016), three quarters of Generation Zers believe a degree is “essential to having a career” (p. 100). They see jobs as necessary for survival, but hard to find. They feel everyone should have the ability to be employed, but see going to college only as a means to meet their goals (Seemiller & Grace, 2016). Interestingly, as Generation Z has seen layoffs and unemployment during their young lives, they see entrepreneurship as their means to financial success. The prediction is that self-employment will “grow at a rate of 6 percent for the next five years” (Seemiller & Grace, 2016, p. 103). With the desire for self-employment comes the desire for related education. Colleges and universities have the opportunity to provide education that encourages and supports the future entrepreneurs (i.e., internships, business operations, and leadership).

**Generational Considerations for Higher Education**

Newton noted in 2000 the need for faculty and staff to recognize the traits and needs of the new generation in order to offer suitable learning experiences that provide deliberate classroom and out-of-class opportunities for student personal awareness and exploration to take place. He suggested seminar groups, class discussion periods, and Socratic teaching methods are time-honored class processes that are still appropriate.

As Oblinger (2003) pointed out, higher education administrators, faculty, and staff generally are part of a much different generation from the student population and, therefore, have quite different ideas/beliefs from current students. The traditional students now entering colleges are part of the Millennial generation, or Generation Z. But student bodies often are dominated by nontraditional students who can have considerably different needs and desires (Oblinger, 2003).
Today’s students grew up with technology; they often find the use of technology in schools to be disappointing and uninspiring (Oblinger, 2003). According to Oblinger, “…there are many indications students actively compare programs, evaluate institutions based on the characteristics they consider to be important, and make choices” (2003, p. 42). And conversely, the better the student does, the better the institution looks to future students. Several recommendations are made for meeting the needs of today’s students:

- Eliminate delays by improving communication and response times for all student services.
- Improve customer service by providing multiple avenues for information and support, in a timely manner. Oblinger (2003) said, “For today’s learners, customer service is an expectation, not an exception. Yet it is rare that students and institutions have the same expectations for service” (p. 42).
- Provide experiential, interactive, and authentic learning through interactive learning experiences that can be accessed anywhere, any time (Oblinger, 2003).

In a later study, Oblinger and Oblinger (2005) provided additional information for consideration. They indicated older students are much more likely to be satisfied with online classes than Millennials who want to be connected with people and to be social. They reported younger students tend to put technology in perspective as they reported:

- Teachers are vital to the learning process. Technology is good, but it is not a perfect substitute.
- Computers can never replace humans.
• Learning is based on motivation, and without teachers, that motivation does not exist.

• A major part of school is building social skills. Communicating strictly through technology, and not in person, the way life is viewed changes dramatically. (Oblinger & Oblinger, 2005, p. 2.3).

Given the differences between the cohorts, educators can expect to see variances in how they learn. According to Seemiller and Grace (2016), Generation Z students most frequently use logic-based approaches and experiential learning. Logic-based approaches focus on how information is organized, while experiential learning provides hands-on practice. Generation Zers expect learning to be more beneficial, particularly for getting a job after graduation (Seemiller & Grace, 2016). Generation Z students prefer intrapersonal learning; they would rather work alone at their own pace with collaboration as an option as needed. Their preferred method of learning is to gather foundational information individually, with face-to-face classes being more collaborative, hands-on, and participatory, and teachers acting as facilitators (i.e., the flipped classroom or hybrid classes) (Seemiller & Grace, 2016).

Seemiller and Grace (2017) provided recommendations for effectively engaging with Generation Z students that may extend beyond the classroom setting:

• Utilize video-based learning,

• Incorporate intrapersonal learning,

• Offer community engagement opportunities, and

• Connect students to internship opportunities.
As Seemiller and Grace (2017) stated, “Higher education can either adopt philosophies and practices that educate, mobilize, empower, and prepare Generation Z to solve our world’s problems or miss the opportunity to influence significantly the great minds of our next great generation” (p. 25).

Higher education institutions also have seen a recurring theme with the newer generation, the desire for the college to be more like home. Twenge (2017) reported:

This focus on college as a “home,” some have noted, might be part of iGen’s slow developmental track. As Yale faculty Douglas Stone and May Schwab-Stone wrote in the New York Times, “Instead of promoting the idea of college as a transition from the shelter of the family to adult autonomy and responsibility, universities like Yale have given in to the implicit notion that they should provide the equivalent of the “home environment.” In other words, all of this focus on protection, safety, comfort, and home is the downside of teens growing up more slowly; they are unprepared to be independent and thus want college to be home. They love the idea of adult freedom that college offers (no curfew!) but still want to feel “safe” at all times. (p. 159)

Generation Z wants college administration, faculty, and staff to take on the role of the authoritarian parent (Twenge, 2017).
Statement of the Problem

Ike, Baldwin, and Lathouras (2016) noted higher education has changed dramatically as globalization has expanded, the needs of the business community have come to the forefront, and access is no longer reserved strictly for the elite. But universities are still in business to teach and research, so they must find ways to attract and retain students through methods that speak to the current generations (Ike et al., 2016). An online report by Jon Marcus in 2017 noted there are “2.4 million fewer college students in the United States than there were just six years ago” (p. 4). The report went on to explain that the birth rate has dropped, meaning fewer high school graduates and nontraditional students, those over 24 years old, have returned to work as the economy has improved. Marcus also noted an upswing in enrollment is not expected until around 2023.

In light of current declining enrollment trends, colleges and universities are challenged with evaluating existing recruiting methods and looking at all aspects of operations for ways to improve. Vladeck noted as far back as 1979 that smaller institutions were folding. He warned then that “excess physical capacity must lead, over time, to a shake-out, to the failure of the least efficient firms and the absorption of some others by the most successful competitors” (p. 40).

Administrators must make difficult decisions related to program offerings, student relations, and facilities management given the ever-tightening budgets associated with decreased enrollments. Decisions must be made through exhaustive evaluation based on costs, efficiency, and effectiveness. One part of this evaluation involves an in-depth analysis of current facilities, their condition, and their potential. This data can then be
compared to information related to student needs and desires for college facilities. This comparison can provide a basis for establishing a strategic plan and insight into current needs to better serve the needs of future generations by developing priorities and cost-effective solutions.

**Purpose of the Study**

The intent of this study is to provide current, generalizable information that is useful for college administrators in making decisions relative to institutional facilities and, in turn, to positively impact recruitment efforts. The first step in the research process was to gather data from first-year university students related to their reasons for selecting, or not selecting, a particular institution. A survey instrument was constructed with the goal of being a simplistic, easy-to-respond-to format that would allow for the provision of some comparison to previous studies on the impact of facilities on recruitment, and to provide context and continuity similar to that found in more longitudinal studies. The premise is that the data gathered will help to provide insight as to the desires and needs of the current generation of college students. Identifying and prioritizing the facilities potential students most desire in a college will help the college to decide the best use of available funding to attract the greatest number of new students.
CHAPTER II: REVIEW OF THE LITERATURE

Introduction

At the turn of the 20th century, college typically was an endeavor reserved for the upper class. After World War II, with the introduction of assistance programs like the Servicemen’s Readjustment Act of 1944 (more commonly referred to as the G.I. Bill) and a vibrant economy, a broader segment of the population was able to attend (Hill, 2017). At that point the higher education business also was booming and continued through the 1970s and the Baby Boomer generation. Of course, with the increased demand came a need for more and bigger colleges. This situation did not last, and by the end of the 1980s college student numbers were decreasing. As Hill (2017) noted, the post-war educational boom “created a large number of colleges and universities, each of which is now competing in an open marketplace for an increasingly scant resource: students – and student dollars” (p. 4).

College Recruitment Considerations

In 1982, Litten expanded further on Chapman’s (1981) model of student college choice, which noted that over 50% of entering freshmen attended colleges within 50 miles of their home and approximately 92% were within 500 miles of home. The choice of which college to attend was found to be affected first by the student’s and student’s family’s socioeconomic characteristics. Second, the choice was affected by external influences, including other significant persons, the fixed characteristics of the college, and the college’s efforts to communicate with prospective students (Chapman, 1981).

It has been reported that many people play an important role in a student’s college choice, but they are most influenced by their parents (“Parents”, 1986). The 1986
“Parents” article in *Change* reported students’ parents have the greatest influence on their decision to attend, what qualities to look for in a college, and what was expected to be gained from the institution. The majority of parents polled in the 1986 study wanted their children to attend college to sustain and improve their child’s social position and to enhance their quality of life, but both students and parents expected to obtain a better job and achieve higher lifetime earnings from a college education (“Parents”, 1986). While the expectation of finding a better job upon graduation is still applicable for the current generations, peers’ opinions seem to be more important to students than in the past, while their parents’ influence has diminished somewhat (Showers, 2016). Interestingly, Generation Z is exhibiting some change in this scenario, as they tend to “like their parents” and are “extremely close to them; they see them as trusted mentors or guides” (Seemiller & Grace, 2016, p. 157). However, differences are being observed between parents encountered now and those of recent years, according to Loveland (2017). Millennials are offspring of the idealistic Baby Boomer generation who tended to be trusting of institutions. But Generation Z students are born of Generation X parents who tend to be more distrustful of institutions and more protective. Where questions used to be more about things like parking and weekend activities, they have turned to those of safety, student loan debt, and graduation rates (Loveland, 2017). This means colleges will need to adjust their recruitment efforts to accommodate the new generation of parents as well as students.

Litten (1982) further stated the selection process is composed of a “complex series of activities” (p. 400) that may vary by group (i.e., race, gender, academic level, parental academic level), although some decisions are common among all groups. For
instance, he noted “parental education has stronger effects on the conduct of the college selection process than attributes such as race or gender, with the greatest effects on the way information is obtained” (p. 400).

The college selection process has been studied from many different perspectives. Litten (1982) noted that sociologists have examined the process in relation to social mobility, occupation, and the decision-making process (i.e., Alexander & Eckland, 1976; Sewell and Shah, 1967; Thomas, 1977; Trent, 1974). Economists have studied the decision from the public policy point of view (i.e., Kohn, Manski, & Mandel, 1973; Nolfi, Fuller, Corrazzini, Epstein, Freeman, Manski, Nelson, & Wise; 1978). In more recent years, educational practitioners have taken on the research challenge in the hope of gaining a better understanding of the process and improving the institution’s involvement (Litten, 1982). Litten noted differences in college selection decision-making based on a variety of socioeconomic characteristics; for this reason, different types of information and methods of distribution have been recommended. He also identified the need for evaluating a college’s specific market to properly identify the best recruitment methods.

Over a decade after Litten’s (1982) study, Choy, Ottinger, Carroll, and the National Center for Education Statistics (1998) presented data showing 25% of all beginning postsecondary students enrolled in four-year public institutions; 15% in private, not-for-profit four-year institutions; and 46% in two-year public institutions. The students at both the private, not-for-profit, and public four-year institutions most often cited the college’s reputation as their most important reason for attending. However, public institution students also cited location and price as important.
Litten’s (1982) closing statement sums up his information: “In view of the rapidly changing environment for higher education… the ways in which student attributes affect the college-selection process will need to be periodically monitored” (p. 401). Indeed, times change, environments change, and generations of people change. Research is necessary to continue that periodic monitoring in relation to programs, services, and institutional facilities.

This monitoring process, including evaluation, planning, and implementation, could be considered similar to the process term often associated with industrial operations: continuous improvement. Continuous improvement is considered a basic part of the philosophy known as Total Quality Management (TQM) and is applicable to the many practices within the university. TQM is defined as “the management philosophy that focuses on fulfilling customer expectations by providing quality services and products as a result of continuous improvement to the organizational process” (Ehrenberg & Stupak, 1994, p. 79). It was first presented by W. Edwards Deming in the 1950s. A continuous improvement program results in small changes within a process or, at times, even larger changes to an entire process which help to improve effectiveness and efficiency. Since its development, TQM has been recognized as applicable to businesses beyond just manufacturing (Meredith & Shafer, 2010), encouraging more focus on meeting customers’ needs. Blocher, Stout, and Cokins (2010) presented five steps for quality improvement:

1. Determine the strategic issues surrounding the problem.
2. Identify the alternative actions.
3. Obtain information and conduct analyses of the alternatives.
4. Based on strategy and analysis, choose and implement the desired alternative.

5. Provide an ongoing evaluation of the effectiveness of implementation in Step 4. (p. 749)

Regular inspection, evaluation, and analysis of all institutional operations, including those related to recruitment, is necessary to provide insight for administrators in their decision-making processes. This effort is particularly important regarding physical facilities, given the time and effort involved in making improvements and changes.

A study presented in the *Building Design & Construction* magazine in 2007 (Editor-in-Chief) provided a comparison of information gathered in 1986 to data from 2006. In 1986 the study asked 1,000 students what physical factor most influenced their college choice. Sixty-two percent said the appearance of the buildings and grounds was the crucial facilities-related factor (Editor-in-Chief, 2007). A study completed 20 years later in 2014 by the Center for Facilities Research (CFaR) of APPA: Leadership in Educational Facilities (APPA) noted that physical factors are extremely or very important in college selection. The significant facilities included those related to their major (72%), libraries (53%), sophisticated academic technology (51%), classroom buildings (50%), and residence halls (42%). The study (Editor-in-Chief, 2007) also stated 64% of the students agreed the condition of campus facilities was important in selecting a college. More than a fourth of the students (26%) said inadequate facilities would cause them to eliminate that college from their list, particularly residences, facilities in their major, and classrooms. While students acknowledged true academic factors were most important, they felt the quality and appearance of the facilities could be an indication of the quality
of the university (Editor-in-Chief, 2007). The author noted the discrepancy between study findings and actual institutional activities:

In fact, only 32% of students surveyed said that recreation facilities were either ‘important’ or ‘very important’ in their decision to attend an institution. “It’s my guess that elaborate recreation centers have a lot to do with the egos of rich donors who want the family name on a sexy building. I mean, who wants to have their moniker on the Classics Department building? But if the CFaR data is right, prospective students don’t care as much about rec centers as the trustees think they do. (Editor-in-Chief, 2007, p. 1)

According to David A. Cain of architectural firm Carter & Burgess (June, 2006):

“Buildings related to academics are the most important. Students really want to know what type of facilities are in their major” (p. 1). Ultimately, as Cain is quoted, “Long-range planning for new construction and the repair and replacement of existing facilities and infrastructure must be a guiding principle within the context of the institution’s strategic plans and overall academic mission” (June, 2006, p. 2).

In 2014 Lipman Hearne presented a study of 2,300 students across the US that looked at what influenced students to choose a particular college:

- Students of color said college fairs and emails were important information sources, while white students did not even rank them.
- Students from the South were more interested in “appealing college traditions,” while New England students were more focused on “international/global experiences.”
• Female students with high SATs and ACTs related all of their requirements to academics.

• Male students with low SAT scores were looking for “appealing campus traditions” and Division I athletics.

• The majority of students enrolled at their first choice. Reputation and “sense of community” were important factors.

• Students not enrolling at their top choice based their selection more on financial aid. (p. 1)

As reported by Hill (2017), Boston College surveys students annually to determine what interests them in the college and what influences their decision. They found through these surveys the location of the college and the attractiveness of the campus were strong reasons for choosing the college (Hill, 2017). Realizing the importance of attractiveness stimulated colleges to display images of the city and the campus more prominently, particularly in their online presence. Since that time, they have seen an increase in campus tours and on-campus interviews. Boston College has used the data from their surveys as they plan for the future (Hill, 2017).

Falk (2010) emphasized the need for planning for the future due to changing student populations, deteriorating economic conditions, and improving technologies. College leaders should alter their thinking in relation to campus offerings, facilities, operations, services, and pricing given the changes in student body characteristics according to Falk. Falk’s supposition was that the strategies of the past may not be the ones that make them successful in the future. This conclusion was based on themes related to population demographics, increasing numbers of nontraditional students, and
the economics of higher education. He recommended academic leaders move from traditional strategies to consider things like career-focused curricula, tele-courses, online courses, credit-for-life courses, service learning experiences, off-site learning, differential tuition pricing, and inter-institutional collaboratives (Falk, 2010).

Martinez and Wolverton (2009) also contributed to the planning discussion and made the point that “strategic planning has fallen out of favor in many business organizations,” (p. 23) but it remains widely used among colleges. They added that strategic planning is a good tool but may not be the only one. They suggested Porter’s (1980) five forces model for analysis may enhance the process by considering the five forces that can influence an industry: (1) Threat of new entrants, (2) Intensity of rivalry, (3) Threat of substitutes, (4) Bargaining power of buyers, and (5) Bargaining power of suppliers. Martinez and Wolverton (2009) stated that decision makers must understand the context in which their organizations operate, whether a program, department, college, institution, or system. College is no longer the brick-and-mortar buildings with the traditional 18- to 24-year-old, straight-out-of-high-school students. It is important to consider the shifting economy; the advances of opportunistic providers; and the changing demands, preferences, and needs of consumers. The competitive nature of the college recruitment process has presented a point where the industry analysis complements the traditional planning process and provides a more comprehensive strategy (Martinez & Wolverton, 2009).

**Recruitment Strategies**

Kealy and Rockel (1987) explained that studies to determine a direct link between recruitment strategies and college choice are misguided. They emphasize that a
recruitment strategy’s effectiveness cannot be measured by whether or not the student chooses to attend a particular institution, but must be gauged on the student’s perceptions of the college’s quality. Their comprehensive research study involved 1,424 college applicants and evaluated the impact of observable influences on their perceptions through a quantitative analysis of four latent variables: academic quality, social life atmosphere, campus location, and athletic quality (Kealy & Rockel, 1987).

Letawsky, Schneider, Pedersen, and Palmer (2003) looked at recruitment from a different aspect as they considered factors that influence student athletes in comparison to non-athletes. The most influential factors for choosing a college for student athletes are degree program options, head coaches, academic support services on campus, type of community in which the college is located, and the school’s sports tradition. The least important factors are college choice of high school friends, prospect of television exposure, other non-athletic financial aid, school colors, and opinions of high school teammates.

Letawsky et al. (2003) quoted F. B. Newton who, in 2000 labeled current college students (Millennials) as ambitious, precocious, stressed, wayward, and indifferent, as well as having been exposed to more “grown-up” activities and less experienced in exercising discipline and decision-making. College admissions personnel must understand the generational differences and be familiar with how these students select a college (Letawsky et al., 2003). Kealy and Rockel’s (1987) study evaluated several recruitment methods in relation to student perceptions including college catalogs, supplemental written materials and photographs, campus visits, campus tours, on-campus interviews, group admissions conferences, and opportunities for faculty interaction and
alumni communication. One significant finding was that faculty and current student interaction provided a positive correlation with student perception of the college’s quality. The most significant recruitment effort was the college visit, even though activities commonly associated with the visits, like tours and interviews, were not significant in influencing their perceptions of college quality. The authors suggested the college visit is the best recruitment effort and should be paired with other positive influences like faculty and current student interaction (Kealy & Rockel, 1987).

Thirty years later, the importance of the campus visit was confirmed in a report from Ruffalo Noel Levitz entitled *2017 Marketing and Student Recruitment Report Of Effective Practices*. This report was a compilation of findings from a poll conducted of “undergraduate officials from a broad cross-section of private and public U.S. colleges and universities” (Ruffalo Noel Levitz, 2017, p. 3). The report stated:

- Campus open house events were ranked very effective or somewhat effective by 98.3% of the respondents.
- Overnight visits for high school students were ranked very effective or somewhat effective by 95.5% of the respondents.
- Campus visit days to high school students were ranked very effective or somewhat effective by 93.4% of the respondents.
- Weekend visit days were ranked very effective or somewhat effective by 90.9% of the respondents.
- Campus visit events designed for high school counselors were ranked very effective or somewhat effective by 80.5% of the respondents.
Hoover (2009) discussed the “crucial ritual” of the campus visit and how many of them are bland and predictable in his article in *The Chronicle of Higher Education*. He pointed out that colleges should clearly present what they are and are not; they should market themselves as total experiences (Hoover, 2009). He went on to suggest student ambassadors (tour guides) become storytellers to provide a more personalized experience for visitors. The article quotes Ronald G. Ehrenberg, director of the Cornell Higher Education Research Institute, as saying, “We know this generation is different from other generations. Once they get to college, they think, ‘We’re entitled to positive experiences because we’ve paid a lot of money to come here’” (Hoover, 2009, p. 5). Colleges and their campuses often can be complicated and difficult to promote in a single afternoon visit, making authenticity a rather nebulous goal. Eckert (2012) noted that when students are making college choice decisions, if evidence of quality does not exist, they may make decisions based on subjective evidence such as photos and word of mouth. From the review of viewbooks from 38 Ohio universities, Eckert found an abundance of outdoor physical campus pictures. Perception of the campus begins to form with these pictures prior to the campus visit.

Most often in this age of internet sites and social media, the initial research done by a student and their parents is online. Often this is their first step in the selection process (Okerson, 2016). Once they have narrowed down their list of potential colleges, the visit is the next important step. This step allows the student to see the campus up close and personal, and to see how it feels. Students relate their “feelings” about the campus to aesthetics and community based on observing and listening during campus visits (Okerson, 2016). According to Secore (2018), the campus visit is “overwhelmingly
the single most influential source of information for students in their decision on college choice” (p. 151). As he noted, the “high-touch” experience tends to be more influential than other more “high tech” information. Every aspect of the campus visit is essential to the student’s college choice.

In an article in *The Chronicle of Higher Education* in April 2010, Hoover expressed the importance of the campus saying, “A good impression might not sway a prospective student one way or the other. A bad one probably will” (p. 1). And “distinctiveness is key for the many colleges that lack the shimmer of national prestige…Still, there’s no way to measure the thoughts that students and parents carry home from even the most carefully planned visits” (Hoover, 2010a, p. 5).

Knowing campus visits play an important part in student perceptions, this quote from Alan Green, former president of the Cooper Union for Advancement of Science and Art and former director of the Educational Facilities Laboratories in New York, is significant: “Steady enrollments mean that, if anything, it’s more important than ever to put attention and care into one’s physical plant. Ignoring physical facilities could well jeopardize the fiscal health of an institution” (Williams, 1985, p. 16).

**The Role of Physical Facilities in Recruitment**

In 1985, Williams presented a historical description of academic facilities, from the Baby Boomer era (1960s) when buildings were constructed quickly and cheaply to keep up with enrollment, through the decline of the 1970s, and 1980s when administrators began to realize the physical facilities had the potential to have a positive effect on enrollment. The Baby Boomers began reaching college age in the 1960s, and institutions saw a dramatic increase in enrollment from approximately 3.8 million to 8.6
million students. They were in such a hurry to accommodate the hordes of students, the buildings went up fast and cheap. Many of these buildings still stand and, in a spirit of historic preservation, have been restored, renovated, and expanded in an attempt to meet the needs of today’s students.

One way architects have addressed the social aspect of a college education, particularly with increases in the number of nontraditional students, was with the creation of student centers. Again quoting Alan Green: “What do students want to see on the campus tour? First a clean admissions office; but then, the dormitories and the student center” (Williams, 1985, p. 53). The 1980s brought “consolidated humanities buildings; arts centers; updated science laboratories; expanded business and computer science facilities; [and] dormitories and student centers to colleges and universities”; and, as Williams (1985) noted, a building can “succeed on a variety of levels” (p. 55).

Twenty years after Williams, the importance of physical facilities relative to student recruitment continues to be a topic for higher education. In a conference for higher education professionals in 2007 entitled “The Campus of the Future: A Meeting of the Minds,” several ideas were noted:

- Facilities play a supporting role in attracting and retaining students.
- The campus and facilities are the face of the institution and if they don’t like them, they will leave.
- 26-27% of students attend a school because they like the campus, not the programs.
- Traditional students (age 18-22) today want more than in years past, they are more discriminating and have higher expectations for comfort, campus-wide.
• Students compare colleges based on “the best technology, the best buildings, and the best on-campus eateries” (Suttell, 2007, p. 1).

This move toward comfort and amenities has been argued to have been taken too far and students are being sent the wrong message, thus allowing for misconceptions of the real world outside of school (Suttell, 2007). The information provided in Suttell’s (2007) article allows for some critical thinking regarding how facilities should be planned and designed for the future.

Also, in 2007, Reynolds and Valcik published an extensive study of over 16,000 students at 46 different institutions to determine how physical assets on college campuses influenced student recruitment and retention. Students were asked to identify what aspects of the college were essential or very important in selecting and remaining at a particular institution. The top five institutional characteristics were all academically related: strong major in their field of interest, excellent teachers, preparation for a career, accessible professors, and customizable education. They also found approximately two thirds of the students believed the overall quality of the campus facilities was essential or very important. The study went on to ask students about the importance of various facilities and what they considered important to see during campus visits (Reynolds and Valcik, 2007). The facilities they most wanted to see included facilities related to their major, libraries, technology, classrooms, and residence halls. Further questioning led to findings such as:

• Having adequate facilities for their major was of highest importance.

• Adequate residential facilities, open spaces, classrooms, and libraries also were important factors.
• Poorly maintained facilities were cause for rejection of an institution, particularly in residence halls, classrooms, open spaces, and student centers. This study has provided helpful historical information for use in new research related to the impact of facilities on student recruitment and retention. Rullman and Van Den Kieboom also supported this information in 2012 when they noted that “when users are faced with a contradiction between intended communication (e.g., a welcome sign) and unintended communication (e.g., poorly lit or dirty space), users are more likely to believe unintended communication” (p. 181). The importance of facilities management in the overall educational process is further emphasized by this statement.

Following shortly after Reynolds and Valcik (2007), Barista (2008) confirmed the competitive aspect of student recruitment among colleges as they try to outdo each other with “bigger, badder facilities” (p. 1) for recreation facilities. “Indeed, universities large and small are replacing their smelly, old physical education buildings with posh, high-end facilities packed with amenities and activities that rival private health and wellness clubs,” stated Barista (p. 1). Barista added that schools are competing for the best and brightest and are looking for any edge they can get. He asserted “improving the quality of life is a sure-fire way to stay competitive” (p. 1). In contrast to other researchers, he posited that the college’s money is well spent on recreational facilities based on a statement from architect Curtis J. Moody of the architectural firm Moody & Nolan in Columbus, OH, who said, “We’ve had multiple clients change their entire recruitment tour once their recreation center opened” (Barista, 2008, p. 2). The article also quoted Moody as saying current students have higher expectations since many of them have come from communities that have upscale health and fitness clubs and recreation centers.
Barista also noted recreation centers are the primary social spaces on campuses “where you’re going to meet your friends, hang out, and even study” (p. 2). Barista’s article further discussed the financing of these facilities and quoted Kimberly A. Martin of Brailsford & Dunlavey in Washington, DC, as saying, “The vast majority of these projects are funded by the students, through increased student activity fees” (2008). The report noted students can pay anywhere from $50 to $150 more per semester to finance construction and operation of recreational facilities. Barista also proposed other options for funding, such as qualifying for state funds by incorporating academic areas into the building, working through a public/private partnership for construction and operation, or charging for use of the various facilities.

Several years later, Tierno (2013) studied the impact of college union facilities on student retention. This study confirmed the findings of Reynolds and Valcik (2007), in that even though college unions were an important part of the campus related to student retention, they fell in line of importance behind academic buildings, dining centers, performing arts spaces, residence halls, and libraries. The college union had a positive impact on student satisfaction because of involvement opportunities, employment experiences, and places to relax and hang out. This research again emphasized the importance of student facilities that support the academic mission of the institution, enhance communication of community values, provide a diverse space, serve as a community center, celebrate traditions, and are welcoming.

In 2014, Steelcase Education Solutions presented a study corroborating this information, stating that “classrooms have a larger influence over prospective students’ enrollment decisions than university-provided amenities such as dining and fitness
facilities” (p. 1). Steelcase reported 51% of students surveyed said classrooms were the most important environment influencing their enrollment, as compared to 24% for dining facilities and 23% for athletic facilities. Additionally, 72% of students said active discussions and group work impacted their ability to learn and helped them feel “like part of the community” (p. 1). The report further stated “it is the potential of in-the-classroom engagement with peers and faculty that is most important to students during the college search process” (p. 1).

An additional consideration that has accompanied the newest generation and the times in which we live is the need for security. Generation Z students are coming to college with an intense awareness of the violence in the world. Seemiller and Grace (2016) pointed out the necessity of creating more “robust and transparent policies and practices around campus safety” (p. 195). These would include things like safety presentations for students and training for emergency situations, which is information that may be of particular interest to students as they make college choices.

Specific Physical Facilities Considerations

The literature has presented concepts of how campus facilities have impacted student perceptions and recruitment over the past several decades. The university’s physical facilities play a significant role in a student’s decision to enroll. Several different facility attributes have been linked to student enrollment, success, and matriculation.

Boylan (2005) noted the importance of building design through a quote from Winston Churchill: “We shape buildings. Thereafter they shape us” (p. 1). Those who are involved in renovating or planning facilities must do so carefully, remembering that
spaces can impact people’s interactions, creativity, productivity, and capacity to learn.

Boylan made a series of recommendations to college administrators:

- Do not assume the architects will know everything they need to know about the particularities of the kinds of teaching and research done at the present and planned for the future. Do not assume the faculty and staff know what they need or what the options are. Do enough research so that you know the questions to ask and how to maximize the likelihood that the building or renovation will achieve its full potential. (p. 1)

Boylan’s (2005) suggestions for the steps to follow in the building design process were as follows:

1. Involve faculty in the architect selection process.
2. Insist that the architects and the departments involved talk.
3. Support the involvement of a faculty-led leadership team.
4. Prepare the community for change and hardship.
5. Prepare the community for the move-in phase.
6. Take a vacation.
7. Dream about what is next. (p. 1)

Blanchette (2012) noted issues related to space often are cultural and can affect how social groups arrange their lives and interact in their communities. Space may impact how individuals respond to their environment by affecting their personal attitudes and behaviors. She went on to say space allocations within a university may be indicative of value within the organizational culture, institutional priorities, or power and prestige and may even determine how a person works or learns. “The challenge of
making effective space management decisions must be addressed in order to align with changes in pedagogy and research, maximize educational effectiveness, and promote institutional mission fulfillment” (p. 64).

As part of the fulfillment of mission, Valenti (2015) suggested colleges create flexible, multimodal, and authentic learning experiences that help to create the collaborative and creative employees that employers desire. The digital natives of today are forcing higher education leaders to meet their educational needs on their terms: their style, their space, their schedule. Valenti reported their expectations often are very different from the traditional methods of education. Rather than classroom lectures on set schedules, students want to take classes in such a way as to gain skills that employers desire. One such idea is the “flipped classroom” where assignments are done at home and classroom time is for discussion and problem solving. With these types of changes coming, colleges will need to consider how they will transform spaces to meet the needs associated with the learning styles. Valenti proposed learning spaces should be flexible, collaborative, team-based, and project-based with the capability of creating and making. Students need broad access to technology as project teams become interdisciplinary and transdisciplinary.

**Classroom design.** As past researchers (Reynolds & Valcik, 2007; Editor-in-chief, 2007; Steelcase, 2014) have noted, classrooms are an important factor in selecting a college or university. Therefore, the impact of classroom design and the impressions made on prospective students are important considerations for recruitment. In 2006, Veltri, Banning, and Davies studied students’ perspectives on classroom design, the design’s impact on their learning, and their suggestions for future classroom designs.
Students noted the need for furnishings that allow for group interaction, absence of distracting noises, well-lit rooms, and comfortable room temperature. Students also noted positive impacts on learning from things like a tiered classroom, an instructor who is well-versed in the audiovisual equipment, bright colors to keep them awake, and adjustable lighting controls (Veltri et al., 2006). Veltri et al. reported that if classrooms and their furnishings are uncomfortable or inadequate, student focus could be shifted from the material being presented. They recommended classroom furnishings be non-restrictive, fit the space, and allow students to comfortably organize their materials and still be able to interact with others when necessary.

Herzog and Valcik (2007) also studied the impact of classroom features on student success through a quantitative analysis of cohorts of freshman students over a five-year period relative to their performance in mathematics and English. Herzog and Valcik identified a variety of factors that are considered to have an impact on student academic success, including class start time, presence of windows in the classroom, and room size. The study noted a positive impact on success by simply having windows in classrooms. On the other hand, the study also noted negative impacts on success from extra-large classrooms and from classes held later in the day (Herzog & Valcik, 2007). Lower GPAs (0.05 lower) were found in those students who took classes after 1:00 pm. Similarly, larger rooms lowered the GPA by 0.01 for every additional 100 square feet of room space. These items also negatively affected retention into the second year. Herzog and Valcik quoted Jamieson’s 2003 article, Designing more effective on-campus teaching and learning spaces: A role for academic developers, saying, “Recent attempts to create new teaching and learning facilities on university campuses have often resulted in
celebrated architecture that has proved to be educationally problematic,” stressing that “the design and development of new spaces, or the refurbishment of existing classrooms and other formal and informal teaching and learning settings, are fundamentally educational concerns impacting directly on the student learning experience” (p. 120). This statement emphasizes the need for proactive planning for the institution and its infrastructure on a continual basis, taking academic needs into consideration at all steps first and foremost.

During this same time frame, Kent (2009) also noted the need for change in classroom design and the fact that the traditional classroom with its straight rows and chairs facing forward is not conducive to student interaction, teamwork, or developing interpersonal skills. The author suggested workers of the information age will need to be able to communicate well, think globally, and work collaboratively with a diverse group of people. A classroom designed to encourage creativity, interdisciplinary interaction, exposure to other viewpoints, and diversity of culture and thought was recommended.

According to a brief article presented by Cornell University’s College of Human Ecology Design + Environmental Analysis, “traditional environments of students seated at tables facing the front, that are difficult for group work and aren’t adaptable to different learning styles throughout the course of an hour-long class, don’t align with the learning goals that we aspire to have as a college” (D’Angelo, 2017, p. 40). According to D’Angelo (2017), current research indicates more active learning and student engagement improves information retention rates and understanding of education material.
Kent (2009) agreed. His dissertation was a mixed-methods research project to study the effect of spatial design of the classroom on student and faculty perceptions. The concept was a coffeehouse style of classroom as an alternative to the traditional lecture hall; a setting intended to be comfortable, inviting, and pleasurable. The coffeehouse style of classroom has flexible furnishings to allow for a variety of faculty and student working and learning arrangements. Flexibility meant offering a variety of table heights, different seating options, and various size furniture groupings, as well as adequate technology access. Kent’s (2009) study found the coffee house style classroom had positive impacts on involvement (engagement and interaction), satisfaction, and personalization. There also was positive feedback from faculty members who expressed a high degree of satisfaction with the setting.

Overall, Kent (2009) recommended hybridizing college courses by offering half of the classes in a traditional classroom and half in the coffeehouse classroom, stating it “could be a beneficial delivery practice for the students and the faculty and help contribute to the culture and image of the college and its stakeholders” (p. 67). This type of collaborative classroom with media-rich presentation technology also was recommended by Fabris (2012) and Park and Choi (2014).

Lei (2010) also studied how classroom design affects student engagement and learning, as well as instructor ability and confidence. This study supported findings by Herzog and Valcik (2007) relative to classroom size and the need for being well-lit. Lei’s study also noted the impact of color on classroom design. Lei stated color can have a psychological impact on students and can affect productivity, absenteeism, and morale.
McLaughlin and Faulkner (2012) further noted the need for reconsideration of classroom design. As students and technology have changed, so have the ways of studying and learning. Students are spending less time on campus and more time interacting through technology. With this in mind, McLaughlin and Faulkner took on a qualitative study to determine what types of learning facilities students wanted on campus. They found students expected digitally-rich environments, looking for efficient and fast networks, as well as having all classwork available digitally. Students also expressed their dissatisfaction with traditional classroom lecture classes with chairs in rows and no ability or encouragement to collaborate. Students desired a more participatory, informal learning environment with relaxed, informal physical facilities where they could meet, discuss, and learn from one another.

Likewise, Lei (2010) studied the effect of physical attributes which influence students and instructors: classroom size, classroom shape, seating arrangement, furniture arrangement, technology availability and location, lighting, thermal condition, and noise level. Lei recommended several considerations in classroom design:

- Classroom size and shape should reduce the distance between the students and instructor to increase eye contact.
- Wide, rather than deep, classrooms are preferred.
- Classrooms should be fully equipped with the necessary instructional technology and instructors effectively trained in its use.
- Well-lit classrooms are conducive to active learning, but should be adaptable for various visual presentations. (p, 128)
Lei (2010) also noted ambient conditions have the potential to affect emotional states, task performance, and attention spans. Extreme temperatures can distract students’ focus away from learning. And noise can be detrimental to learning because it can reduce teaching time, force frequent repetition and pauses, and make communication difficult. Poorly designed classrooms can result in poor student satisfaction ratings of instructors, according to Lei. Consulting faculty and students during design of classrooms can have a positive impact on design, learning, and satisfaction ratings (Lei, 2010).

Park and Choi (2014) echoed Lei’s (2010) findings in their quantitative study which made a comparison of the traditional classroom design to an active learning classroom (ALC). The traditional classroom was shown to have a golden zone (front, center rows) and shadow zone (back rows) that results in discrimination in learning. Students reported in the study that the golden zone provided good eye contact and interaction with the instructor, a better environment for maintaining concentration and motivation, and the best view of the screen and whiteboard. The shadow zone seats were the least desirable for the opposite reasons, and the back of the room allowed for more distractions for students overall.

The ALC was designed in an attempt to provide all of the positive characteristics of the golden zone in the traditional classroom (Park & Choi, 2014). The ALC includes a movable lectern for the instructor, round tables for the students, and additional screens and LCD screens around the classroom that connect to docking stations at the tables. The ALC in the study provided increased student interaction, increased interest in the subject matter, increased communication with the instructor, enhanced class participation,
inspired feedback, and improved students’ willingness to ask questions in class (Park & Choi, 2014). The ALC was shown to enhance students’ tendency to share knowledge and promote the development of creative ideas. A downside to the ALC was the expense of furnishing the classroom and the decreased revenue because of fewer seats for the size of the room. The Park and Choi (2014) recommendations for classroom design included:

- Institutions should “pay more attention to the educational impact that classroom design has on students, and make investment in healthy learning spaces a priority” (p. 769).
- Teaching and learning methods should be tailored for the ALC environment.

In 2014 Weber-Bezich completed a mixed-methods study designed to investigate the impact of classroom design on student engagement. The data revealed the collaborative learning classroom design increases student engagement with faculty and other students and contributes to the student’s ability to learn. Weber-Bezich’s study presented nine key findings:

1. The design of learning studio classrooms contributed to increased student engagement with faculty.
2. The design of learning studio classrooms contributed to increased student engagement with fellow students.
3. Students credited the design of learning studio classrooms with having an effect on their ability to learn.
4. Learning studio classrooms conveyed a strong message to faculty and students that the institution valued student engagement.
5. The learning studio design feature of increased access to technology contributed to increased student engagement with faculty and content material.

6. The learning studio design feature of desks configured in pods/groups was the greatest contributor to increased engagement with fellow students.

7. Learning studio classrooms supported an integrated instructional approach that assimilated multiple teaching strategies and learning activities into a single class period.

8. Learning studio classrooms promoted instructional versatility and efficiency.

9. Student views on the perceived effectiveness of the learning studio setting did not differ by age or gender. (pp. 124-135)

Weber-Bezich’s (2014) study went on to recommend:

- The learning studio design element of desks configured in pods/groups should be considered a best practice when designing or redesigning classroom spaces.

- The design or redesign of classroom spaces should provide students with increased access to technology.

- Information technology personnel should be involved in the design or redesign of classroom spaces from the onset of the planning process.

- Professional development and sharing opportunities regarding the use of technology to support active and collaborative teaching strategies in a learning studio classroom should be offered and provided to faculty on a continuous basis. (pp. 137-139)
Through consultation with students and faculty, college administrators and facility planners can gain an understanding of what students and instructors need now in order to know how needs have changed from years past. Classroom design has been impacted by newer pedagogical methods that have changed to become more interactive and group-focused (Fabris, 2012). As Park and Choi (2014), Fabris (2012), and Weber-Bezich (2014) agreed, to better suit today’s learner, new classrooms should be furnished with easily movable furniture and media-rich presentation technology. The new rooms require updated electrical systems and more square footage, 25-40 square feet per person versus 17-18 square feet in the traditional classroom (Fabris, 2012).

According to Fabris (2012), to be most cost-effective, these new classrooms must be utilized to their maximum, which means they must be shared by multiple departments. This full utilization also requires the flexibility to quickly and easily reconfigure spaces as needed. Collaboration can be promoted in current designs by locating different disciplines within the same building with the expectation of gaining more effective learning, higher-quality research, and greater innovations.

Park and Choi (2014) proposed three questions to be posed to institutions for consideration:

1. What is the institution’s vision for education and is it willing to consider the inclusion of effective classroom space?

2. Does the university, and its faculty and students, desire to implement newly-designed classrooms?
3. Would the new space design fit within the budget, coexist with the concept of providing enough classrooms, and blend naturally with the student population and culture? (p. 769)

Each of these questions should be considered early in the planning and design process.

**Library facilities.** Like classrooms, libraries have been a facility of concern for students during their college selection decision-making process, although current students are looking at them differently than past generations. Fabris (2012) pointed out that, with the digital age, large libraries full of printed material are vanishing. These areas are large and are quickly becoming under-utilized space. They often are repurposed for things like lounges, study rooms, and media rooms. Fabris’ watchwords for future university construction projects—*multi-purpose, multi-use, and reconfigurable.* Mills (2012) supported this stance by suggesting multiple facilities be fused into a single building to save costs, eliminate redundant space, increase utilization, maximize technology usage, increase space flexibility, provide new revenue sources, allow for more creative funding options, and enhance recruitment and retention.

The need for and value of the traditional academic library has been questioned since the 1990s and has prompted the discussion of the role of libraries in the future, as what Closet-Crane and Pickering-Thomas referred to as “space and place” (2009, p. 1). Their dissertation described the terms *information commons* and *learning commons* as “evolutionary stages in the re-alignment of the library with the education mission and changing needs of universities and colleges that are re-focusing their approach to higher education on student-centered teaching and learning” (p. 158). Information commons is the adaptation referring to the changing technology associated with the digital age, while
learning commons is a higher level of evolution of the library to be a space and place for learning.

Massis reported in 2011 a concern among librarians about changes being made in campus libraries. He noted libraries were working to balance their collections of printed materials with the need for digitally-related media and equipment. At issue was how to provide proper utilization of shelf space while still allowing for “serendipitous” browsing (p. 1). One suggestion was to develop a “browsing collection” in a conspicuous, comfortable, and quiet location where recently published books and magazines are located and rotated out on a three to four-month basis. Massis also suggested moving printed materials to off-site storage might prove effective, as it frees up and provides a balance of materials in the premium corner of the campus.

Hunter and Cox (2014) proposed modern academic libraries be seen as multifunctioning spaces to provide areas for individual study, technological connection (including the need for inhabiting more than one virtual space at a time), counseling, tutoring, and disability support, just to name a few. Often areas outside of libraries are used for study, commons areas, cafés, and student unions, supporting the idea that different learning styles require different spaces. Informal learning spaces provide areas where students can gather and work together. Hunter and Cox suggested university libraries consider providing open spaces where students could claim their own personal space without distractions. Libraries should avoid creating soulless, institutionalized academic spaces and aspire to make them warm, friendly, and homey.

Miller’s (2012) concern related to library facilities was that the value be properly communicated to both students and parents, particularly emphasizing the library’s
contribution to the college’s strategic goals. Given that the library is one of the facilities noted as having significant impact on a student’s college choice, as noted in other studies, the quick glimpse of the library during the campus visit seems inadequate. Miller noted the importance of educating enrollment managers, admissions staff, and tour guides about the library and its offerings. Other tactics also were suggested: direct e-mail correspondence from the library to new students, creating a library website specifically for prospective students, librarian guest blogging on the admissions website, and increased library involvement in admissions events. Miller’s recommendations for increasing the visibility of campus libraries included: “(1) Get on the campus tour; (2) Make sure facilities are clean, pleasing to the eye, and have clear signage; (3) Give good information; (4) Connect with student tour guides and their advisors; (5) Give constant updates to staff and tour guides; (6) Be available during tours; (7) Alert library staff of tour schedules; (8) Share real stories about the library with prospective students; and (9) Embrace the helicopter parent by working to educate them on how the library can help” (p. 588).

A recent study of Generation Z students found that learning space and library designs are important to them (Seemiller & Grace, 2016). They desire a designated zone for learning away from distractions where they can focus, with access to necessary tools like the internet and plenty of table space. Creating such a place can be accomplished through providing a variety of sizes and types of spaces throughout the library area (Seemiller & Grace, 2016).

**Residential facilities.** Interestingly, during the 1980s Williams (1985) noted that:
Student demand for residential services was rising, since on-campus living is usually cheaper than renting apartments off campus, and with aid on the decline, students are saving where they can. And, most certainly, today’s students are more likely to embrace administrative overtures directed toward improving their social lives. (p. 50)

With that desire for on-campus housing, construction was again on the rise as universities began to recognize the more competitive nature of student recruitment. Competition has continued related to student housing, as students may base college selection on residential facilities.

Ike et al. (2016) also noted the impact of campus housing on the decision process. They recognized students utilizing campus housing often achieved better educational outcomes and were more likely to graduate. Campus housing also provided some attractiveness to students and their families with the perception of a greater sense of safety and security. Despite the potential for improved academic performance, increased social interaction, and proximity to activities, current students often cite privacy, independence, and costs as reasons to select off-campus housing rather than the residential facilities offered by the university (Wode, 2018).

Fabris (2014) summarized a study done by Little Diversified Architectural Consulting that interviewed 62 college students in North Carolina to see what they wanted in college living spaces. In their dormitory rooms they want:

- The ability to reconfigure the room
- Built-in furniture that defined the space
- Mobile beds with cushioned seating
• “Work surface” desks and comfortable chairs
• The ability to create a private zone with things like translucent dividers along beds
• Storage
• A sink in the room
• Updated dorm furniture
• The option to paint a wall
• Non-neutral colors
• Murphy beds or loft beds rather than bunks. (p. 1)

For study spaces they want scattered, small, individual study nooks, particularly near stairs/elevators; comfortable seating; well-lit areas (without glare and heat-gain) and windows; flexible furniture options; and outdoor study space (Fabris, 2014; Seemiller & Grace, 2016). Fabris (2014) also noted students desire common areas that promote a sense of community for relatively small groups (16-32 students) and are near circulation areas; could accommodate variety, learning and “chilling”; have laundry facilities near the social spaces; have kitchenette areas to serve smaller groups; and had nearby outdoor areas and green spaces for play or congregating.

Nugent (2012) also studied residential common spaces and their impact on students. The desire for administrators is that campus housing should support academic and developmental needs of students encouraging engaging communities that develop a sense of belonging. In response to this desire, the Massachusetts State College Building Authority (MSCBA) decided to study why some housing works and some does not. They found three basic concepts appear to affect student needs:
• Learning happens in many ways—Academic pedagogy is changing: project-based learning, social interaction, focus on transactions between people, group work, and multiple learning styles.

• Learning happens in many places—Campuses are not compartmentalized: eating in the library, seminars in the residence hall, and research anywhere there is Wi-Fi.

• Learning is more than just academics—College is not only an academic experience but a maturation and growth experience as the students become adults (Nugent, 2012, p. 234).

Nugent’s (2012) study for the MSCBA found the most successful spaces share some attributes:

• Common areas were open to, and visible from, the main entry and traffic.

• Large, multi-purpose areas attracted a variety of people and tended to promote interaction between the various social groups.

• Common areas were sized to encourage interaction while still encompassing a range of activities.

• Size and offerings within common areas were varied as they were distributed throughout buildings to maximize opportunities for social connection at various scales.

• The policies were such that students were allowed to personalize the residence hall to make it their own.
- Spaces with natural light, inviting colors (avoiding excessive use), and comfortable, easily moved furniture were attractive to students. A more homelike environment seemed to inspire a sense of pride and ownership. Nugent, Fabris (2014), and Williams (1985) appeared to find similar results on the needs and desires of students as related to residential facilities.

**Student common areas.** Grummon (2009) stated surveys indicated space design is usually determined by the people who manage the space, but would be more beneficial if the actual users of the space were the key drivers. He found active engagement increased the likelihood that the learner would retain and use the information later. He also recommended institutions work to create facilities that encourage collaboration and active participation.

When not in the typical classroom, students are multitasking on their computer, on their phone, in their books, and talking with others, all informally and in a variety of relaxed atmosphere spaces. Grummon (2009) recommended using various social media platforms to evaluate and survey student preferences for learning spaces. According to this study, flexibility is one of the most desirable characteristics in a space, such as furniture that moves and acoustic and visual separations that allow collaboration.

**Universal design facilities.** Beyond the traditional university student of 18-22 years, university administrators and facilities planners also must consider accommodations for disabled students, older learners, students with children, and all types of nontraditional learners. Salmen (2011) presented a study of the idea of universal design (UD). The intent for the application of UD was to take the nontraditional types of students into account, taking accessibility beyond just what is necessary for compliance.
UD is intended to improve usability for the academic community while ensuring compliance with all applicable regulations (Salmen, 2011).

The principles of UD include equitable use, flexibility in use, simplicity and intuitiveness, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. Examples of UD on a college campus include features like providing choices for how to enter buildings or options for sitting in classrooms, together or separately (Salmen, 2011). Providing information in more than one sensed modality also would be considered UD, like alarms and warnings being transmitted visually and audibly. UD suggests five means for providing access: architecture, personal assistance, procedures, equipment, and medical intervention (Salmen, 2011).

Colleges can look at several areas on their campuses:

- Grounds—create accessible paths with signage to direct students and visitors to the most navigable routes.
- Buildings—multi-height/accessible tables, wide aisles, sensor-activated doors, family restrooms, etc. (Salmen, 2011, p. 18)

**Ambient attributes of facilities.** As noted earlier, Lei (2010) found links between student success and environmental factors such as color, lighting, noise, and thermal conditions. He reported colors have an emotional impact and could improve productivity, absenteeism, and morale. Learning productivity was found to increase by 5-10% because of color selections, according to Lei. The study noted several impacts of color: (a) light colors had a calming effect, (b) bright colors had a gloomy effect, and (c) multiple-color patterns facilitated pondering/thinking during class time. Colors can transform a classroom into a pleasing and exciting room that encourages positive
feelings. Kurt and Osueke (2014) provided support for this theory by stating “the ambiance of the interior space affects the users’ behavior and perception of that place by influencing their emotional situation” (p. 1).

In 2003, Wang completed a study of 145 students who participated in assessments utilizing the Wall Color Preference Test and the Myers-Briggs Type Indicator test. Students’ wall color preferences were in the “cool color” palette, but no correlation was found between color preference and personality type. Cool colors, blues and violets, are perceived as receding, tranquil, and passive; warm colors, bright hues of red, orange, and yellow, are perceived as advancing and tend to accelerate the pulse, increase body temperature, and foster an extroverted emotional response. Warm colors tend to stimulate brain activity and a feeling of warmth. Cool colors promote relaxation, passive participation, and coldness. The most preferred wall colors in Wang’s study of students were the cool colors of Dusky Lilac, Sailing Blue, and Viola.

Kurt and Osueke (2014) reported using color is an important element of designing the appropriate circulation of public interiors. As part of their study, the psychological properties related to various colors were presented, much like Lei (2010) and Wang (2003). Kurt and Osueke quoted Mahnke in 1996 as saying the environment should include colors in changing hue, saturation and brightness, and changing temperatures. They recommended the use of warm and cool colors, with a complement of the dominant color to a degree. Kurt and Osueke did not recommend the use of gray and black based on the fact that their psychological properties could be negative; pure gray is considered suppressive, black shows coldness and efficiency, and brown is a calmer version of black. On the other hand, direct sunlight was said to give a warm and friendly atmosphere,
which complements Herzog and Valcik’s (2007) findings relative to having windows in the classroom to improve student success. Lei’s (2010) conclusions supported these findings as well, as he noted well-lit rooms are conducive to active learning.

More color has been shown to affect moderate arousal and to increase memory retention, but the use of large areas of white was considered boring and uninteresting. The study recommended balancing complexity and unity; avoiding large, one-color areas (Kurt & Osueke, 2014). Other environmental conditions also were found to affect emotional states, task performance, and attention spans (Lei, 2010). For instance, extreme temperatures and noise can be distracting and can affect learning.

**Planning Facilities for Recruitment**

In an article presented by the Learning Spaces Collaboratory (2012) relative to designing learning spaces, the first step must be to identify the institution’s mission and be able to plan with the end in mind. Kahlenberg (2011) expressed the larger goals of higher education as being: (a) To ensure every student, no matter the wealth of her parents, has a chance to enjoy the American dream, (b) To educate leaders in our democracy, (c) To advance learning and knowledge through faculty research and by giving students the opportunity to broaden their minds even when learning does not seem immediately relevant to their careers, (d) To teach students to interact with people different than themselves, and (e) To help students find a passion—and even a purpose in life.

An important question to ask during the planning and development stage is how the space matters for learning and how the new spaces will contribute to “better learning for all students” (Learning Spaces Collaboratory, 2012, p. 1). Both campus and
curriculum must be considered from the perspective of mission, strategic goals, and priorities. During space planning, the creation of connections between departments and disciplines is important, as well as the college and the community. “Considerations should be given to the architectural and intellectual connections that foster community” (Learning Spaces Collaboratory, 2012, p. 3). A Project Kaleidoscope study in 1998 noted that well-designed, attractive, and well-equipped contemporary learning spaces create a new excitement which encourages innovation and conversation inside and outside the campus. The faculty and administrators’ jobs then are to relay that information to internal and external audiences (funding sources) before and after any construction project begins. Project Kaleidoscope reported the key to a facility that makes a difference is in the thoughtful definition of program goals well before the design process ever begins. It must be a collaborative effort of all stakeholders of the college community.

Haas concurred in 2015, noting strategic planning must be integrated planning, including academics, finances, and facilities. He went on to state the integrated plan must consider square feet of space required, where the program will be housed, whether new buildings or old buildings will be used, the number of faculty and staff needed, the number of students expected, the additional upkeep (maintenance) required, the source of funding, and how all of the numbers will balance. The Project Kaleidoscope (1998) study made the following planning recommendations for faculty and administrators:

- As the first step in planning improved spaces, set clear goals for student learning; do not underestimate the importance of planning that links programs and facilities.
• Document the total need for improving the physical infrastructure for research, training, and instruction in mathematics and the various fields of science.

• Determine how to fund the needs over the long-term, including the allocation or reallocation of funds and the use of a variety of funding mechanisms.

• Identify ways that changes in the practice of science, emerging technologies, and new understandings about the nature of learning are changing the education environment.

• Plan buildings with basic systems that are adaptable, that will accommodate new directions in science and approaches to learning in years to come.

• Use new spaces to enhance the learning community as they encourage interaction and add to the architectural distinctiveness of the campus. (p. 3)

**The economics of planning.** In 1999, Agron noted colleges were trying to improve their position in the recruitment competition by focusing on the prospective student’s and parent’s first impression. They attempted to accomplish this goal by allocating more money to improve the appearance and operations of facilities. Agron stated colleges earmarked approximately 10% ($741.71/FTE student) of their budgets toward maintenance and operations (M&O) in 1998-99, up from 9.7% in 1997-98 (based on a study mailed to 1300 college physical plant directors). Spending of M&O funds was divided between salaries/benefits—52%, utilities—28%, supplies—10%, equipment maintenance—6%, and equipment—4%. The allocations resulted in $3.62 per sq. ft. At that time, according to Agron, institutions averaged 194 sq. ft. per full-time equivalent (FTE) student. Agron stated that four-year colleges traditionally allocate much more
M&O funding per student than did two-year colleges. In 1998-99, 4-year colleges annually allocated $1,559 per student and two-year colleges spent $536 per student. The difference was attributed to educational mission and offerings, existence of specialized buildings and courses, older physical plants, laboratory and health facilities, housing, and 24/7 year-round usage. Four-year colleges employed 4.0 M&O personnel per 100 FTE students in 1998-99, and two-year colleges employed 1.61 per 100 FTE students. The median for all colleges was 2.72 M&O personnel employed per 100 FTE students in 1998-99 (Agron, 1999).

American School & University continued this survey, as reported by Agron (2009), on an annual basis for several years. In the final 2008-09 study, Agron (2009) reported the existence of an economic downturn and tight budgets for M&O in colleges. The median college allocation in 2008-09 was 10% ($1303.75/ FTE student) of the total budget to M&O, resulting in an M&O budget of $5.49 per sq. ft. An additional fact reported by the 2008-09 study was that approximately 13% of the colleges in the survey were contracting out M&O services, and 56% were using a green cleaning program. Agron (2009) also reported that, on average, custodians were maintaining 39,647 sq. ft. per person, and maintenance workers were maintaining 79,293 sq. ft. per person.

In light of the economic situation in which colleges find themselves, Alexander and Drumm (2016) recommended the use of calculating the return on investment (ROI) in facilities planning processes to achieve maximum financial benefits. Their article was a case study of the development of a long-range academic and facilities plan for Central Piedmont Community College (CPCC) to identify projects that would enhance and expand academic programs to serve students, citizens, and community employers. The
Academic and Facilities Plan considered departmental programs for academics, enrollment growth, strategic growth (included a BYOPC model), talent acquisition, infrastructure assessment, and land acquisition. As part of the North Carolina Community College System (NCCCS), CPCC desired to meet the standard of 100 assignable sq. ft. (ASF) per FTE student. Alexander and Drumm noted projects presented within the Academic and Facilities Plan were evaluated and prioritized based on how well they achieved the ASF/FTE, justified cost of projects (formula funding), and positively impacted accountability measures (performance funding); i.e., which projects would provide the greatest achievement per dollar spent.

The Center for Facilities Research of the APPA also saw a need for strategic planning and recommended leveraging facility assets in the *APPA Thought Leaders Series 2014*. This document recommended focusing on facility contributions to the core goals of the institution by “contributing to student success, using total cost of ownership principles, maximizing space management, expanding data analytics systems, and involving the campus community in sustainability and energy efficiency” (CFaR, 2014, p. 38).

**The planning process.** A British study by Belfield and Thomas (2000) noted a correlation between larger, more well-funded colleges and improved academic performance. Ultimately, they found in their study that “how resources are used matters at least as much as how many resources are available.”

As Kadamus said in 2015, the goal is to maintain high quality education while keeping costs in check. This is often difficult task at a time when as many as one third of all colleges and universities were reporting significantly weaker financial positions than
prior years, particularly due to having more liabilities, debt, and expenses, while revenue was decreasing. Kadamus reported expensive amenities (i.e., fancy dormitories, state-of-the-art gyms, and climbing walls) have garnered a large portion of the focus in relation to costs, but the bigger concern for institutions is the large number of buildings that are aging rapidly and in need of renovation or replacement. As Kadamus stated:

The amount of investment required to maintain complex buildings and to catch up on deferred maintenance and renovations required for post-war buildings is too much for institutions to handle unless they closely examine their missions and make tough decisions regarding capital investments. (p. 75)

Colleges are reaching a point of crisis as campus buildings have aged, deferred maintenance backlogs have grown, and operating budgets have been reduced, making staying competitive and meeting changing programmatic and student needs extremely difficult (Kadamus, 2015). Old buildings require renovation, and newer buildings require more upkeep and maintenance, so operations budgets are experiencing a greater and greater burden. Kadamus recommended colleges implement strategies to meet these challenges by creating policies and practices to reallocate operating savings to increase campus stewardship; his suggestion was to repair campuses while simultaneously slowing deferred maintenance rates.

In contrast, Kenton (2014) noted colleges have increased tuition at much higher rates than inflation over the past several years, all the while counting on the common perception that a college degree is essential in this day and age. The result is that students have accumulated massive amounts of debt and yet are struggling to find good paying jobs when they graduate. Kenton noted, “As students carry an increasing burden
for funding the enterprise, institutions will need to find ways to lessen the burden of annual tuition increases if they wish to remain viable entities” (p. 17). Each institution is different and some colleges may be better able to survive an economic downturn than others, but change is still needed. Kenton suggested better management and utilization of faculty time, reducing release times, and managing faculty loads were needed changes. Next would be a control of what the author called *curricular proliferation*, where new programs are added but few are dropped, leading to small class size and increased class costs. A third consideration was to bring more of a balance to employee compensation by reducing high salaries for “special” positions like presidents, coaches, and star faculty members. According to Kenton,

… with each new building comes an obligation to pay for its maintenance, operations and (depending on its funding) debt financing… Today many campuses don’t fully utilize their existing buildings…. If they were to better utilize their existing facilities, they may not need these new facilities. (p. 21)

Vidalakis, Sun, and Papa (2013) reported expenditures on land and facilities is the second largest expenditure for universities next to salaries, so wise budgeting could free up funds for other aspects related to the student experience. The quality of the campus adds value by enhancing marketability, strengthening identity, and facilitating recruitment. Facilities must provide a good ROI by developing a deep understanding of the user’s needs. Vidalakis et al. quoted Kowalski (1983) as saying:

Educational facilities, like other material resources, are consumable. In time, they are used up and must be replaced or revitalized… In an era of declining resources and dramatically changing educational programs, it is essential that those
individuals responsible for solving educational facility problems understand the
issues if they are to effectively meet the needs of future generations of students.

(p. 490)
Since universities have become increasingly dependent on tuition and fees paid by
students, recruitment has become particularly important. Therefore, student “purchase
behavior” is of prime importance, according to Vidalakis et al. Given the information
presented on students’ college choices, the conclusion drawn would be that quality built
and maintained facilities are a necessity for recruitment and retention. Vidalakis et al.
said, “Maintaining the quality of facilities to high standards can have a significant impact
on student recruitment” (p. 498). However, the expectation is that in order for facilities
to impact recruitment, they must be incorporated into the college’s marketing strategy.
The study ultimately recommended the design and procurement of buildings, facilities,
and related services should be focused on users’ needs, as well as a good return for the
money spent (Vidalakis et al., 2013).

Haas (2015) proposed the development of an integrated strategic plan to look at
the problems and proposals from all directions to determine the feasibility and impact on
all departments and the college as a whole. Integrated planning should be a regularly
scheduled and frequently occurring activity resulting in the allocation, reallocation, and
effective use of resources. Haas recommended four tools to provide a common
understanding and basis for planning: (a) inventory of the past and present, (b) statement
of the division of labor and the objectives of the institution, (c) future projections, and (d)
special studies. Planning must be approached strategically: completing facility condition
assessments (FCA), determining functional adequacy, and performing a gap analysis to
start (Dufresne, 2012). By proceeding in a systematic and data-driven manner, the plan is defensible and costs are quantified, which can help to prevent unnecessary spending (Dufresne, 2012).

Blanchette (2012), however, recognized fragmentation and ambiguity in the academic culture of shared governance. Roles are fragmented as a result of independent actions of faculty and administrators and ambiguous due to unclear lines of authority (who is responsible for what). Blanchette recognized the decisions often are made using limited rational choice theory (information needed is seldom complete), all alternatives are not considered, individual preferences came into play, and agreement on the goals does not exist, resulting in uncertainty and risk. Two of these aspects, individual preferences and conflicting goals, make the decision more political in nature and are even more pronounced when there is competition over scarce resources.

Chapman (2012) agreed, as he recognized money spent on facilities results in scarce educational resources which put important services and programs in jeopardy. He emphasized this premise by saying, “public choice theoretical perspective argues that many of the expenditures made to expand campus facilities are wasteful” (p. 97). He cited studies (Jensen, 2000; Milgrom and Roberts, 1992; and Cyert and March, 1963) that pointed out the self-serving behavior of administrators, which often overrule rational decisions. Of concern for the future is that higher education campuses will look very different from those of the past in terms of square footage actually needed. Chapman recommended college and university stakeholders challenge and evaluate proposed changes in campus square footage given the prediction of reduced student populations in the future. With a projected decline in the number of potential students and growing
online enrollment, square footage needs require recalculation based on empirical data and strategic planning (Chapman, 2012). Out of concern for the planning process and space usage, Blanchette (2012) developed four recommendations for space management decision-making:

1. Develop a protocol for requesting space.
2. Delegate decision-making authority.
3. Ensure delegates have complete knowledge of and commitment to institutional priorities.
4. Develop and maintain quantitative and qualitative data on space. (p. 68)

Concern for the proper planning of college campuses was expressed in a conference of university associations held in 2012 called Physical Place on Campus: A Summit on Community (Rullman & Van Den Kieboom, 2012). Rullman and Van Den Kieboom (2012) reported the primary concern in this summit was the importance of exploring whether physical spaces are making appropriate contributions to the colleges’ learning and civic goals, emphasizing the college campus should be a place to receive a well-rounded education through community in spaces that allowed it to be possible. They noted, “…campus planning too often occurs within the management silos of a typical college administrative structure, one which more likely reflects staff reporting lines than the interconnectedness of the student experience” (p. 179).

The summit supported the perspective of architectural probabilism—behavior is not predictable—but it is possible to enhance behavioral responses through thoughtful design. The bureaucracy of higher education has focused more on efficiency and productivity than on the student experience and, as a result, students have found their
own forms of community away from the college but without the potential to enhance learning (Rullman & Van Den Kieboom, 2012). Facility planning and design must improve to allow the college to recommit to this role. Institutional leadership for facilities planning must be familiar with the research on community and place to achieve places for learning and engagement. Rullman and Van Den Kieboom (2012) stated, “As the world becomes flatter, funding becomes tighter, and the national narrative becomes more challenging, higher education simply must do more to ensure an intentional link between what it does, what is learned, and what society needs” (p. 190).

**Summary of the Literature**

This literature review presented information that should be considered when evaluating the impact of campus facilities on student perceptions of colleges and universities, and how those perceptions have related to recruitment over the past several decades. New generations are now enrolled, and enrolling, in college. The Millennials have different needs, abilities, and desires from previous generations, as does the next cohort, Generation Z. Their characteristics must be taken into consideration when operating, maintaining, and building facilities for their use. Table 2 provides characteristics of potential student generations currently enrolling, or soon to be enrolling, in institutions of higher education.

Institutions are now seeing the next generation of students, Generation Z, entering their halls. As can be inferred from Table 2, differences must be expected and planned for, with the coming generation recognizing, as Dimock (2018) pointed out, that this newest generation is still young and many specific characteristics are yet to be identified.
Determining their specific characteristics will be an ongoing task and an important topic to follow for campus planners as they move into the next generation of students.

As times and people have changed, the higher education institution has had to adjust. With each different generation, colleges have worked to meet their needs in academic programs, student activities, and in facilities. Colleges have come to realize the importance of the type and quality of the facilities offered in relation to recruitment and retention. The challenge though, is in determining what specific facilities are most important to current students, their perceptions, and their decisions to enroll.
Table 2

Comparison of Generations Currently Enrolling: Baby Boomers through Generation Z

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Millennials</th>
<th>Generation Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Age</td>
<td>54 - 72</td>
<td>38 - 53</td>
<td>18 - 37</td>
<td>0 - 17</td>
</tr>
<tr>
<td>% of 2017 Population</td>
<td>15%</td>
<td>20%</td>
<td>27%</td>
<td>32%</td>
</tr>
<tr>
<td>Influences</td>
<td>Television</td>
<td>Computers</td>
<td>Digital Media/Internet</td>
<td>Continuous technology</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Vietnam</td>
<td>HIV/AIDS</td>
<td>School shootings</td>
<td>Iraq/ Afghanistan</td>
</tr>
<tr>
<td>Civil rights</td>
<td>Civil rights</td>
<td>MTV</td>
<td>Terrorism</td>
<td>First U.S. President of color</td>
</tr>
<tr>
<td>Cold War</td>
<td>Cold War</td>
<td>Global competition</td>
<td>Children of divorce</td>
<td>War on Terror</td>
</tr>
<tr>
<td>Watergate</td>
<td>Watergate</td>
<td>Divorce</td>
<td>Sheltered as children</td>
<td>School &amp; other shootings</td>
</tr>
<tr>
<td>Space race</td>
<td>Space race</td>
<td>Collapse of communism</td>
<td>Kept busy as kids</td>
<td>Bullying</td>
</tr>
<tr>
<td>Divorce</td>
<td>Divorce</td>
<td>Dual income families</td>
<td>Children with schedules</td>
<td>International espionage</td>
</tr>
<tr>
<td>Sexual revolution</td>
<td>Sexual revolution</td>
<td>Latchkey kids</td>
<td>Job instability</td>
<td>Political unrest</td>
</tr>
<tr>
<td>Woodstock</td>
<td>Woodstock</td>
<td>Job instability</td>
<td>Children with schedules</td>
<td>Great Recession</td>
</tr>
<tr>
<td>Independent</td>
<td>Independent</td>
<td>Job instability</td>
<td>Children with schedules</td>
<td>Loyal</td>
</tr>
<tr>
<td>Challenge authority</td>
<td>Challenge authority</td>
<td>Job instability</td>
<td>Children with schedules</td>
<td>Thoughtful</td>
</tr>
<tr>
<td>Entitled</td>
<td>Entitled</td>
<td>Insecure</td>
<td>Narcissistic</td>
<td>Compassionate</td>
</tr>
<tr>
<td>Team-oriented</td>
<td>Team-oriented</td>
<td>Diverse</td>
<td>Depressed</td>
<td>Open-minded</td>
</tr>
<tr>
<td>Optimistic</td>
<td>Optimistic</td>
<td>Cynicism</td>
<td>Reject social norms</td>
<td>Responsible</td>
</tr>
<tr>
<td>Ambitious</td>
<td>Ambitious</td>
<td>Work to live</td>
<td>Anxious/Sensitive/Limited self-control</td>
<td>Career-minded</td>
</tr>
<tr>
<td>Diligent</td>
<td>Diligent</td>
<td>Adaptable</td>
<td>Less obligation to employer</td>
<td>Multi-taskers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desire independence</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confident</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. *Comparison of Generations Currently Enrolling: Baby Boomers through Generation Z* (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Millennials</th>
<th>Generation Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics (cont.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live to work</td>
<td>Pragmatic</td>
<td>Self-starters</td>
<td>Focus on money &amp; power</td>
<td>Technoholics</td>
</tr>
<tr>
<td>Materialistic</td>
<td></td>
<td></td>
<td>Optimistic</td>
<td></td>
</tr>
<tr>
<td>Competitive</td>
<td>Entitled</td>
<td>Skeptical of authority</td>
<td>At ease in teams</td>
<td>High expectations</td>
</tr>
<tr>
<td>Good communicators</td>
<td></td>
<td></td>
<td>Attached to gadgets and parents</td>
<td>Self-aware, self-reliant, &amp; driven</td>
</tr>
<tr>
<td>Idealistic</td>
<td></td>
<td></td>
<td>Family-friendly</td>
<td>Productive, goal-oriented, &amp; realistic</td>
</tr>
<tr>
<td>Loyal</td>
<td></td>
<td>Structured lives</td>
<td></td>
<td>Environmentally aware</td>
</tr>
<tr>
<td>Strong work ethic</td>
<td></td>
<td></td>
<td></td>
<td>Socially aware</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Innovative</td>
<td>Impatient-expect stimulation &amp; change in work</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sociable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Optimistic</td>
<td>Ambitious &amp; innovative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Parent advocacy</td>
<td>Focus on money &amp; job security</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Entitled</td>
<td>Want mentoring &amp; ongoing feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Techno-savvy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Patriotic</td>
<td>Independent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sedentary</td>
</tr>
</tbody>
</table>

Many changes have been made over the years in college facilities in response to changes in generational characteristics. The Carnegie Foundation for the Advancement of Teaching (1986) completed a study of 1,000 high school seniors to gather information on what affected their college choices. The Generation X students surveyed during that 1984 study ranked campus visits as the most important source of information in making decisions. Students surveyed in the Carnegie study said the visits allowed them to talk with students, see buildings, and get a feel for the campus. Sixty-two percent of the students noted the appearance of the buildings and grounds was most influential. One interesting piece of information from the study was that only about 28% of the students surveyed utilized “computerized college information” in their decision process.

The Carnegie (1986) study of Generation X students provided contrast to the study presented by Reynolds and Valcik in 2007 of early Millennial students. That report stated that 66.9% of the 13,782 U.S. students involved ranked the “overall quality of campus facilities” as essential or very important (p. 66). This factor fell behind “strong major in field of interest” (79.6%), “excellent teachers” (78.8%), “preparation for a career” (77.7%), “accessible professors” (71.8%), and “customizable education” (71.6%) (Reynolds and Valcik, 2007, p. 66). The most important facilities noted in this study were those for their major, the library, residential facilities, technology, and classrooms. This study also found a well-maintained facility is important to students even to the point of rejecting an institution if it is poorly maintained (Reynolds and Valcik, 2007). Today, seeing the campus up close and personal is still important. Students develop their feelings about the campus based on aesthetics and their interpretations of community as they observe during campus visits (Okerson, 2016)
This information gathered on college student preferences stresses the necessity for colleges to stay in touch with the changing needs and desires of students and work to provide for those needs. Regular evaluations of student characteristics and preferences are necessary in making these types of decisions. By studying student responses to questions regarding their needs and desires, conclusions can be drawn that provide direction for college administrators for future planning.

Beyond the needs and desires of the students, however, administrators also must consider the objectives of the university as a whole as outlined by their strategic plan. Facilities construction, improvements, and expansions must be considered in light of the stated mission and developed cooperatively with all stakeholders, faculty, staff, and students. Additionally, colleges and universities must evaluate all options to provide optimum utilization of facilities to obtain the best ROI. As suggested in the Sightlines 2018 State of Facilities in Higher Education report:

By proactively engaging campus constituents, facilities organizations can tell their story regarding resource constraints, understand what is most important to their customers, and involve the campus community in decisions around resource tradeoffs. This won’t make the decisions any easier, but the transparency can create institutional alignment and ultimately increase the general satisfaction with the decisions that are made. (p. 8)
CHAPTER III: METHODOLOGY

Introduction

This research effort was a mixed-methods study looking to answer two questions: What type of facilities are most important to you in choosing a college? and How can college leadership enhance recruitment efforts of current and future generations through the facilities offered?

A survey instrument was developed to determine which specific aspects are more, or less, important to the prospective student. The expectation, based on previous studies, was that students do in fact choose a college based, at least partially, upon the atmosphere and quality of the facilities. But it also is foreseeable that students of the current generation may place emphasis on different aspects of facilities than previous generations.

Research Questions

The purpose of this study was to identify the institutional characteristics students view as most influential when selecting a four-year college or university. The desired outcome for this study was to present information that will provide college administrators with supporting data helpful in making decisions regarding renovation and operations of existing facilities, as well as in the planning for new facilities. To investigate this topic, research questions were formulated:

1. What are the top considerations students view as being most influential in the college selection process?

2. What campus facilities do students identify as being most important in the college selection process?
3. What classroom features (i.e., windows, seating, colors) are most important to students in the college selection process?

4. What common learning resources (i.e., computer availability, internet availability, hard copy reference materials) are important to students in the college selection process?

5. What technology features do students deem most important in the college selection process?

6. Which facility’s characteristic is the primary reason students reject a college in the selection process?

**Study Design**

For this study a sample of freshman students attending four-year universities was utilized. Looking at preferences for the general population of freshmen was determined to be more pragmatic than considering specific characteristics of the group. The demographic considerations for this study included age, college size, and college type (public or private).

This study was a Utilization-Focused Evaluation (UFE). The intent of the UFE is to provide information of value to a specific group of stakeholders for use in administration of an organization (Mertens & Wilson, 2012). In this case, the information gathered was intended to be useful to college and university administrators, from facilities operations personnel to presidents, and those involved in the designing and planning for college campuses, such as architects and planners. Mertens and Wilson (2012) presented information on three inquiry phases of an evaluation specifically for learning organizations, as developed by Preskill and Torres (1999):
1. Focusing on the inquiry. For this study, the topic of concern was determining what facilities have the most impact on students’ college selection.

2. Carrying out the inquiry. For the purposes of this study, the determination of the design, methods, analysis, and interpretation related to the subject was decided by the evaluator and advisors.

3. Applying learning. The intention of the evaluator was to provide adequate generalizable information to be a basis for operations and planning decisions at similar institutions.

In this study, the population was defined as freshman students attending four-year universities. A sample was determined to allow for manageable yet generalizable results. The sample was based on only four-year universities and colleges in Kentucky. Clustered sampling was considered the method of choice for developing the sample group for this study. Looking at all freshman classes in the 50 or so Kentucky public and private colleges/universities could have been considered clustered. However, that size sample would be difficult to manage; even using only the eight public universities would have been difficult. Therefore, the study was limited by selecting only six of the colleges and universities in the state: Western Kentucky University, The University of Kentucky, Eastern Kentucky University, Morehead State University, Centre College, and Georgetown College. The selected group provided a broad and comprehensive range in regard to size and type of schools.

The survey instrument for this study was an online questionnaire that provided a list of various options to each question that could be considered important to the student in the college selection process. The list included many possible reasons for choosing a
particular institution, including options related specifically to facilities. Student preference questions were developed in consideration of previous similar research with the intent of providing comparisons to past generations of students. The survey also included questions related to specific facility-related items such as colors, classroom design, and furnishings. The student was prompted to select the appropriate options.

The survey instrument was made up of nine questions that were a combination of a Likert rating scale and multiple choice. The Likert scale was used to measure the importance of certain features on the student’s college selection. Other questions allowed the student to choose those features they considered most desirable in the college selection process. Students also were asked to indicate features that caused them to reject a university. A copy of the survey is included as Appendix A. The survey, constructed through Qualtrics, was initially distributed in March 2019.

**Limitations and Delimitations**

The study had the potential to be limited if response to the questionnaire was inadequate. A small response could have caused the usefulness and generalizability to be reduced. Although requests to complete the survey were sent to over 9,600 students at the six universities, usable data were received from only 224. It was determined this number would provide adequate data to develop conclusions regarding the subject based on the distribution across all categories, as shown in Table 3.
Table 3

Distribution of Responses to Survey

<table>
<thead>
<tr>
<th>Birth year</th>
<th>Large public university</th>
<th>Medium public university</th>
<th>Small public university</th>
<th>Small private university</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td>46</td>
<td>39</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>1998-1999</td>
<td>19</td>
<td>27</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>1988-1997</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Pre-1988</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Undisclosed</td>
<td>26</td>
<td>15</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>86</td>
<td>8</td>
<td>35</td>
</tr>
</tbody>
</table>

Validity and Reliability

To assess the validity of the survey instrument, the questions were submitted to panels of experts both from the administrative/recruitment aspect and the facilities/operations aspect of higher education. Two groups reviewed questions related to the most important factors relative to choosing or rejecting a college. Group 1 was made up of four persons involved in admissions and recruitment at various Kentucky colleges. Group 2 included six persons involved with facilities management and operations who reviewed questions involving facility-related factors. The results of their reviews are included in Tables 4 and 5.

Kappa values of 0.7 or above were considered sufficient for analysis. There was some discrepancy between the two groups on Questions 1 and 2. However, the determination was made that the birth year and type and size of institution, as asked in these questions, would provide the desired demographic information to evaluate the data. Also, the initial survey proposed, in Question 3, to ask students how many total colleges
they considered, and applied to, during the college selection process. Based on the experts’ reviews, this question was removed from the survey instrument.

Table 4

*Content Validity Index Results – Group 1 (4 experts)*

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>What year were you born?</td>
<td>0.667</td>
</tr>
<tr>
<td>Q2</td>
<td>Indicate the type of institution in which you are enrolled.</td>
<td>0.200</td>
</tr>
<tr>
<td>Q3</td>
<td>How many total colleges did you consider, and apply to, during your college selection process?</td>
<td>0.667</td>
</tr>
<tr>
<td>Q4</td>
<td>Select the most important factors you considered when choosing a college.</td>
<td>1.000</td>
</tr>
<tr>
<td>Q10</td>
<td>How would you rank the importance of each facility element?</td>
<td>1.000</td>
</tr>
<tr>
<td>Q11</td>
<td>Select if you rejected the facility because… the facility was not present, the facility was inadequate, the facility was not being maintained?</td>
<td>1.000</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td>0.756</td>
</tr>
</tbody>
</table>

Upon review of the data for validity and the Kappa values obtained, the survey was determined to be adequate and appropriate and would measure what was intended with the modifications mentioned.
Table 5

*Content Validity Index Results – Group 2 (6 experts)*

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>What year were you born?</td>
<td>0.080</td>
</tr>
<tr>
<td>Q2</td>
<td>Indicate the type of institution in which you are enrolled.</td>
<td>0.816</td>
</tr>
<tr>
<td>Q3</td>
<td>How many total colleges did you consider, and apply to, during your college selection process?</td>
<td>0.273</td>
</tr>
<tr>
<td>Q4</td>
<td>Select the most important factors you considered when choosing a college.</td>
<td>1.000</td>
</tr>
<tr>
<td>Q5</td>
<td>Which is your primary method of study?</td>
<td>0.816</td>
</tr>
<tr>
<td>Q6</td>
<td>What were the top technology and other learning tools you considered absolutely necessary for the college to provide for your college experience?</td>
<td>0.816</td>
</tr>
<tr>
<td>Q7</td>
<td>Which classroom would you prefer? With or without windows?</td>
<td>0.816</td>
</tr>
<tr>
<td>Q8</td>
<td>Which color of classroom accent wall would you most prefer? Blue, white, plum, or yellow?</td>
<td>0.816</td>
</tr>
<tr>
<td>Q9</td>
<td>Which classroom seating style would you prefer? Tables and chairs, chairs with desks, rolling chairs with desks?</td>
<td>0.816</td>
</tr>
<tr>
<td>Q10</td>
<td>How would you rank the importance of each facility element?</td>
<td>1.000</td>
</tr>
<tr>
<td>Q11</td>
<td>Select if you rejected the facility because… the facility was not present, the facility was inadequate, the facility was not being maintained?</td>
<td>1.000</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td>0.750</td>
</tr>
</tbody>
</table>

Reliability of the survey instrument was confirmed using a test-retest process. A freshman class of 24 students at Western Kentucky University was asked to complete a paper version of the survey instrument. A week later, the same questions were administered to the same class of students. Both times the students were asked for input on the quality and clarity of the questions and the instrument itself. No problems or difficulties were noted by the students. Kappa values were determined from the test-retest results and are presented in Table 6.
During analysis of the test results from the first and second test, several questions presented Kappa values that would be considered only fair to moderate in agreement (0.2-0.6), but were determined to be adequate for the survey as they related to previous studies, as well as provided useful information for college administrators and facilities managers. There also were a few low Kappa values (< 0.2), exhibiting low confidence in the question, which required modification.

1. The question regarding classroom colors had a typographical error that caused confusion and some students only chose one color, causing an error in the Kappa calculation (Question 12). The typographical error was corrected in the final version of the survey.

2. The list included classrooms (Question 16) and the library (Question 17), both of which provided low Kappa values. Upon consideration, these facilities remained unchanged in the final survey due to their direct correlation to earlier similar studies.

3. The list of facilities used in the survey originally included a visual arts center (Question 18). Since the test-retest did not show significant agreement, the visual arts center was removed from the instrument.

4. The initial survey instrument separated open space between indoor and outdoor space (Questions 23 and 24). Since the test-retest data showed little significance separately, the two were combined into one item, open space—multipurpose for community and group activity.
5. Similar to Item 4, student recreation and student exercise facilities (Questions 25 and 26) showed little significance separately so were combined into one item.

6. Biking/hiking trails (Question 29) were originally included in the list of facilities but were removed when little significance was shown in the test-retest results.

Table 6

*Test-Retest Results*

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Which is your primary method of study? (Q5)</td>
<td>0.276</td>
</tr>
<tr>
<td>10</td>
<td>Which classroom would you prefer? With or without windows? (Q7)</td>
<td>0.640</td>
</tr>
<tr>
<td>11</td>
<td>Which color of classroom accent wall would you most prefer? Choose two: Blue, white, plum, or yellow? (Q8)</td>
<td>0.674</td>
</tr>
<tr>
<td>12</td>
<td>Which color of classroom accent wall would you most prefer? Choose two: Blue, white, plum, or yellow? (Q8)</td>
<td>0.000</td>
</tr>
<tr>
<td>13</td>
<td>Which classroom seating style would you prefer? Tables and chairs, chairs with desks, rolling chairs with desks? (Q9)</td>
<td>0.697</td>
</tr>
<tr>
<td>14</td>
<td>Ranking (Q10) – Facilities for my major</td>
<td>0.302</td>
</tr>
<tr>
<td>15</td>
<td>Ranking (Q10) – Technology</td>
<td>0.259</td>
</tr>
<tr>
<td>16</td>
<td>Ranking (Q10) – Classrooms</td>
<td>0.063</td>
</tr>
<tr>
<td>17</td>
<td>Ranking (Q10) – Library</td>
<td>0.171</td>
</tr>
<tr>
<td>18</td>
<td>Ranking (Q10) – Visual arts center</td>
<td>-0.010</td>
</tr>
<tr>
<td>19</td>
<td>Ranking (Q10) – Performing arts center</td>
<td>0.420</td>
</tr>
<tr>
<td>20</td>
<td>Ranking (Q10) – Residence halls</td>
<td>0.309</td>
</tr>
<tr>
<td>21</td>
<td>Ranking (Q10) – Dining Facilities</td>
<td>0.595</td>
</tr>
<tr>
<td>22</td>
<td>Ranking (Q10) – Student center</td>
<td>0.340</td>
</tr>
<tr>
<td>23</td>
<td>Ranking (Q10) – Open space – indoor</td>
<td>0.041</td>
</tr>
</tbody>
</table>

(continued)
Table 6. Test-Retest Results (continued)

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Ranking (Q10) – Open space – outdoor</td>
<td>0.123</td>
</tr>
<tr>
<td>25</td>
<td>Ranking (Q10) – Student recreation facilities</td>
<td>0.045</td>
</tr>
<tr>
<td>26</td>
<td>Ranking (Q10) – Student exercise facilities</td>
<td>0.102</td>
</tr>
<tr>
<td>27</td>
<td>Ranking (Q10) – Varsity athletic facilities</td>
<td>0.197</td>
</tr>
<tr>
<td>28</td>
<td>Ranking (Q10) – Intramural sports facilities</td>
<td>0.417</td>
</tr>
<tr>
<td>29</td>
<td>Ranking (Q10) – Biking/hiking trails</td>
<td>0.185</td>
</tr>
<tr>
<td>30</td>
<td>Ranking (Q10) – Bookstore on campus</td>
<td>0.290</td>
</tr>
<tr>
<td>31</td>
<td>Ranking (Q10) – Public transportation</td>
<td>0.220</td>
</tr>
<tr>
<td>38</td>
<td>Rejected facility (Q11) – Residence halls</td>
<td>0.806</td>
</tr>
<tr>
<td>39</td>
<td>Rejected facility (Q11) – Dining Facilities</td>
<td>0.513</td>
</tr>
<tr>
<td>40</td>
<td>Rejected facility (Q11) – Student center</td>
<td>0.597</td>
</tr>
<tr>
<td>41</td>
<td>Rejected facility (Q11) – Open space – indoor</td>
<td>0.704</td>
</tr>
<tr>
<td>42</td>
<td>Rejected facility (Q11) – Open space – outdoor</td>
<td>0.692</td>
</tr>
<tr>
<td>43</td>
<td>Rejected facility (Q11) – Student recreation facilities</td>
<td>0.583</td>
</tr>
<tr>
<td>44</td>
<td>Rejected facility (Q11) – Student exercise facilities</td>
<td>0.674</td>
</tr>
<tr>
<td>45</td>
<td>Rejected facility (Q11) – Varsity athletic facilities</td>
<td>0.592</td>
</tr>
<tr>
<td>46</td>
<td>Rejected facility (Q11) – Intramural sports facilities</td>
<td>0.896</td>
</tr>
<tr>
<td>47</td>
<td>Rejected facility (Q11) – Biking/hiking trails</td>
<td>0.793</td>
</tr>
<tr>
<td>48</td>
<td>Rejected facility (Q11) – Bookstore on campus</td>
<td>0.685</td>
</tr>
<tr>
<td>49</td>
<td>Rejected facility (Q11) – Public transportation</td>
<td>0.688</td>
</tr>
</tbody>
</table>
CHAPTER IV: FINDINGS AND RESULTS

Introduction

With the desire to garner as many responses as possible, an e-mail requesting participation was sent out to the entire freshman class of the six participating Kentucky universities: Western Kentucky University, The University of Kentucky, Eastern Kentucky University, Morehead State University, Centre College, and Georgetown College. The initial e-mails were sent in March 2019, with additional follow-up e-mails continuing through April 2019. The e-mail, sent to over 9,600 students, requested the students’ participation in the study and provided a link to the Qualtrics website (see Appendix B). Data were extracted from the Qualtrics website in May 2019 and indicated 374 students had responded to the survey. Of those 374 responses, 224 had completed the survey.

Data Analysis

For this research study, separate analyses were conducted for quantitative and qualitative components for the research questions (RQ) listed previously. The primary goal of the study was to answer the following questions: What type of facilities are most important to you in choosing a college? and How can college leadership enhance recruitment efforts of current and future generations through the facilities offered?

Results

In evaluating the data obtained from the survey instrument, each question was analyzed in terms of the related research question. In all cases, results were evaluated relative to student age and college type and size.
In terms of age, of the 224 completed surveys, 174 students provided their birth year. As Table 3 illustrates, the large majority of students, 89%, were born in 1999 and 2000 (based on those who reported their birth year).

When looking at college type and size, standard ranges were developed and partnered with the colleges’ status as a public or private school. Size was divided into those with enrollment greater than 25,000 being categorized as large, those between 10,000 and 25,000 being medium, and those less than 10,000 as small colleges. Based on these criteria, the schools included in the survey were:

- Large Public Universities: University of Kentucky
- Medium Public Universities: Eastern Kentucky University, Western Kentucky University
- Small Public Universities: Morehead State University
- Small Private Universities: Georgetown College, Centre College

The data indicated that 42% (95 students) were from the large university, 38% (86 students) from medium universities, 16% (35 students) from small private colleges, and 4% (8 students) from the small public university.

**RQ1: What are the top considerations students view as being most influential in the college selection process?**

For RQ1, students were asked to select their top five most important factors for choosing a college or university to attend. A list of 33 choices related to academics, facilities, activities, and other college information that was provided. This list included indoor and outdoor features of campus facilities.
Overall, the five most important factors were determined by ranking the calculated percentages of students who selected the factor. The most important factors chosen were: (a) a strong major in the field of interest; (b) location of institution—nearness to home; (c) pleasant and attractive campus/surroundings; (d) location of institution—city, state, etc.; and (e) preparation for a career (see Figure 1). A comparison of influential factors based on birth year and college type can be found in Appendix C. Those factors determined to be least important were calculated similarly and all garnered less than 5% of the student selections. They included biking/hiking trails (0.4%), sophisticated technology (2.2%), availability of intramural sports activities (2.7%), bookstore on campus (3.1%), visual and/or performing arts center (3.6%), open space—multipurpose for community (3.6%), availability of public transportation (4.0%), excellent academic advising (4.5%), student recreation facilities (4.9%), and student exercise facilities (4.9%).

When looking back at the results of the 2007 study by Reynolds and Valcik, many similarities were apparent. Having a strong major in the student’s field of interest was the most influential factor, but location has become more significant for this generation. Excellent teachers, preparation for a career, and accessible professors were in the top 10, but at slightly lower levels of significance. One interesting finding in these results related to small, private colleges. While the top 10 factors remained very similar, academic resources seemed to play a more significant role. Excellent teachers, accessible professors, and challenging courses ranked higher at the small, private colleges (refer to Appendix C for more information).
While overall quality of the facilities was within the top 10, having an attractive campus has moved up in the rankings since the Reynolds and Valcik study in 2007. Recommendations from friends or family also has moved into the top 10 within that time frame. These findings are consistent with generational information that indicates the current generation of students tends to be more family-oriented, are concerned with comfort and security, and consider college a necessary step in their path to a productive career.

This analysis also gauged those items students considered the least significant. A decade ago (Reynolds and Valcik, 2007) the availability of intramural sports activities and visual and/or performing arts centers was low on the list of significant items and still is. Those dropping in significance since the Reynolds and Valcik survey in 2007 include sophisticated technology, a bookstore on campus, open space, student exercise facilities, and student recreation facilities.

![Figure 1.](image)

*Figure 1.* Top five most influential factors for college selection. The most influential factors were determined by ranking the percentage of students who chose each particular factor. The question was answered by 224 students (n = 224).
RQ2: What campus facilities do students identify as being most important in the college selection process?

To identify the most important campus facilities for RQ2, students were asked to rate a list of 14 common university facilities. The list included the following:

- Facilities for my major
- Technology
- Classrooms
- Library
- Residence halls
- Performing arts center
- Dining facilities
- Student center
- Open space—multipurpose for community and group activity
- Student recreation/exercise facilities
- Varsity athletic facilities
- Intramural sports facilities
- Bookstore on campus
- Public transportation

Looking more closely at the significance of facilities, students were asked to rank the list on a Likert scale from 1 to 5 (1 = Very Unimportant, 2 = Unimportant, 3 = Somewhat Important, 4 = Important, 5 = Very Important).

A simple evaluation of the data revealed “Facilities for my major” was ranked as somewhat important, important, or very important by 94.5% of students responding.
This factor was followed by “Technology,” “Residence halls,” “Classrooms,” “Dining facilities,” and “Library” all ranking as somewhat important, important, or very important by over 85% of the students. Table 7 presents a ranking of the 14 facilities based upon the mean of the chosen values.

In comparing this significant facilities list to that of Reynolds and Valcik (2007), dining facilities have moved up and displaced exercise facilities in terms of ranking. This finding, having quality dining facilities on campus, may be in response to current students’ concerns for security by staying in the closer and safer campus surroundings.

Table 7

*Rank Order of Student Ratings of Facilities’ Importance*

<table>
<thead>
<tr>
<th>Facility</th>
<th>Mean</th>
<th>No. of students responding (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities for my major</td>
<td>4.4</td>
<td>219</td>
</tr>
<tr>
<td>Technology</td>
<td>4.1</td>
<td>218</td>
</tr>
<tr>
<td>Residence halls</td>
<td>3.9</td>
<td>218</td>
</tr>
<tr>
<td>Classrooms</td>
<td>3.8</td>
<td>219</td>
</tr>
<tr>
<td>Dining facilities</td>
<td>3.8</td>
<td>218</td>
</tr>
<tr>
<td>Library</td>
<td>3.7</td>
<td>217</td>
</tr>
<tr>
<td>Recreation/exercise facilities</td>
<td>3.6</td>
<td>218</td>
</tr>
<tr>
<td>Student center</td>
<td>3.5</td>
<td>216</td>
</tr>
<tr>
<td>Open space</td>
<td>3.5</td>
<td>217</td>
</tr>
<tr>
<td>Public transportation</td>
<td>3.3</td>
<td>216</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>3.3</td>
<td>217</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td>2.7</td>
<td>217</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td>2.5</td>
<td>216</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>2.4</td>
<td>217</td>
</tr>
</tbody>
</table>

Additional analyses indicated (as found in Appendix D) three overall factors affect a student’s evaluation of a university: academic-related facilities, student living...
facilities, and activity-related facilities. Academic-related facilities included technology, classrooms, and libraries and corresponded directly to those items most important to this generation: preparation for a career, job security, and independence. Student living facilities, as seen in residence halls and dining facilities, related to this generation’s desire for college to feel like home: comfortable, safe, and secure. While activity-related facilities did not seem to relate to all students and did not play a big role in the decision process, but they often were a large part of the college tradition and “branding.” All students may not play sports, but they may identify with the teams on a personal level.

**RQ3:** What classroom features (i.e., windows, seating, colors) are most important to students in the college selection process?

RQ3 was addressed through three photo-illustrated questions on the survey:

- Choosing a classroom with or without windows,
- Choosing classrooms based on the color of walls, and
- Choosing a classroom based on the type of furniture/seating provided.

**Windows.** Question 6 on the survey asked, Given all technology and learning aids being equal, which classroom would you prefer? Figure 2 illustrates that the question included pictures of a classroom with no windows and a classroom with windows.
Figure 2. Survey illustration for preference related to classroom windows. Shown is a classroom without windows and a classroom with windows.

Results for the question regarding windows revealed a strong preference to having windows in the classroom, as illustrated in Figure 3. A complete comparison of these results can be found in Appendix C.

Figure 3. Student preference related to the presence of windows in the classroom. The preference for having windows in the classroom was determined by comparing the percentage of students who did, or did not, want windows. The question was answered by 223 students ($n = 223$).

This finding is in agreement with previous studies as reported in the literature that express students’ preference for windows and that windows have a positive impact on
student success. Direct sunlight was said to provide a warm and friendly atmosphere. And Lei (2010) noted that well-lit rooms were conducive to active learning.

**Color.** Survey Question 7 asked, Given all technology and learning aids being equal, which two classrooms would you most prefer? The illustrations provided pictures of a classroom with a blue accent wall, a classroom with all white walls, a classroom with a plum accent wall, and a classroom with a yellow accent wall as shown in Figure 4. The blue and plum colors were similar to those cool colors found by Wang (2003) to be most preferred. The white color was chosen as representative of many current, monotone, neutral classrooms. And the yellow color was presented as a warm color choice that is said to stimulate brain activity.

In selecting color preferences overall, well over half of the students preferred the blue color (58.5%), with the next most preferred color being white, at 39.3%, as shown in Figure 5. A comparison of the results for color preferences can be found in Appendix C.
Figure 4. Survey illustration for preference related to classroom wall color. The four pictures present a classroom with an accent wall color of either blue, white, plum, or yellow.

Figure 5. Student preference related to classroom wall colors. The preference for the color of an accent wall in a classroom was determined by comparing the percentage of students who chose the different colors presented: blue, white, plum, or yellow. The question was answered by 223 students ($n = 223$).
Herzog and Valcik (2007), Lei (2010), and Kurt and Osueke (2014) reported colors in the classroom can have a psychological impact on student behavior, learning, and success. Lei went on to say light colors have a calming effect, bright colors have a gloomy effect, and multiple-color patterns facilitate pondering/thinking during class time. Kurt and Osueke found more color was shown to affect moderate arousal and increase memory retention. However, the use of large areas of white was considered boring and uninteresting. The study recommended balancing complexity and unity avoiding large, one-color areas (Kurt & Osueke, 2014). Wang’s study in 2003 indicated student wall color preferences in the “cool color” palette (blues and violets). This finding was consistent with the findings of the current study, as blue is the favored color choice.

The current study did not survey students for color preferences related to other areas outside of classrooms, but the importance of the emotional impact of colors should be taken into consideration based on the activities planned for the spaces. Fabris (2014) suggested the use of non-neutral colors in community areas and Nugent (2012), likewise, recommended the use of moderate amounts of inviting colors. Kurt and Osueke (2014) recommended these environments should include colors in changing hue, saturation and brightness, and changing temperatures. They recommended the use of warm and cool colors with a complement of the dominant color to a degree.

**Furniture.** Survey Question 8 asked, Given all technology and learning aids being equal, which classroom seating styles do you prefer? The illustrations for this question, as seen in Figure 6, were pictures of tables and chairs, chairs with desks, and rolling chairs with desks.
In rating classroom furniture preferences, the results showed that, overall, students preferred the rolling chairs with desks with tables and chairs coming in at a close second as shown in Figure 7. Less than 10% of students showed a preference to the “old style” of chairs with attached desks. A full comparison of these results can be found in Appendix C.

Many researchers; including Kent (2009), Veltri et al. (2006), McLaughlin & Faulkner (2012), Fabris (2012), and Weber-Bezich (2014) agreed students need furnishings that allow for group interaction and creativity in keeping with newer pedagogical methods. Traditional classrooms with straight rows and chairs facing forward are not conducive to student interaction, teamwork, or developing interpersonal skills (Kent, 2009). Easily movable furniture allows students to enjoy a more participatory, informal learning environment with relaxed, informal physical facilities where they can meet, discuss, and learn from one another (McLaughlin & Faulkner, 2012). This desire is reflected in the results of the current study.
**Figure 6.** Survey illustration for preference related to classroom seating styles. The pictures provide images of classrooms with different student furniture: tables with chairs, chairs with desks, and rolling chairs with desks.

<table>
<thead>
<tr>
<th>Furniture Type</th>
<th>Percentage of All Students Responding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling Chairs with Desks</td>
<td>46.6%</td>
</tr>
<tr>
<td>Chairs with Desks</td>
<td>8.1%</td>
</tr>
<tr>
<td>Tables and Chairs</td>
<td>45.2%</td>
</tr>
</tbody>
</table>

**Figure 7.** Student preferences related to classroom furniture. The preference for type of furniture in a classroom was determined by comparing the percentage of students who chose one of the three options. The question was answered by 221 students ($n = 221$).
RQ4: What common learning resources (i.e., computer availability, internet availability, hardcopy reference materials) are important to students in the college selection process?

To determine students’ preferences related to study resources, the survey asked whether students used:

- Books, paper, and pen for reference, taking notes, and study
- Computer for reference, but paper and pen for taking notes and study
- Electronic equipment used only for reference, taking notes, and study

This question was developed to discern just how much current students rely on electronic equipment versus hardcopy study materials and physically writing out information as these preferences can have a bearing on facilities and technology design. As students evaluate the various facilities within the campus, how they learn and study may be part of the consideration process. If using only a laptop or tablet, the student requires much less desktop space but needs quality WiFi access and most likely an electrical power source. The student using only books, pens, and paper needs a place to spread out their materials, and little else. By far, the most common answer was using the computer for reference but still using pen and paper for taking notes and studying. In this case the student requires not only a larger desktop area, but also WiFi access and a power source. This information has implications in classroom design as well as the design of other facilities like libraries, residence halls, and other common areas. Figure 8 presents the results for this question. A complete comparison of the results can be found in Appendix C.
Figure 8. Student preferences related to learning resources. The preference for type of learning resources was determined by comparing the percentage of students who chose one of the three options. The question was answered by 222 students ($n = 222$).

RQ5: What technology features do students deem most important in the college selection process?

RQ5 was addressed through a question on the survey allowing students to select their top three preferred technology and learning tools. Fifteen choices of common technology and learning aids were provided. As illustrated in Figure 9, of the 15 choices, having WiFi in campus buildings was by far the most desired. Following at a distant second and third were having student-accessible printers situated around campus and having WiFi in all outdoor spaces. Those items in which students showed the least interest were having video-only projection equipment in classrooms and having a “smartboard” in classrooms. Refer to Figure 9 for all rankings and to Appendix C for more detailed information related to these preferences.
The most important technology-related factors were determined by ranking the percentage of students who chose each particular factor. The question was answered by 221 students ($n = 221$).

**RQ6: What facilities’ element is the primary reason students reject a college in the selection process?**

For this final research question, RQ6, students were asked to consider the 14 common campus facilities and to relate whether they were the cause of a decision to reject the college from consideration. If the particular facility had been a cause for rejection of a university, the student could specify whether the rejection was because they did not have the facility, the facility was inadequate, or it was poorly maintained.

The most common reason students reported rejecting a school from consideration was related to the facilities for their major; primarily either the college did not have the facility or the college’s facility was not considered adequate. Following as a close second were residence halls. In this case, students rejected the university primarily because the residence halls were considered inadequate or were poorly maintained. Inadequate and/or poorly maintained technology and dining facilities also ranked high as...
reasons for rejecting a university. Those facilities having the least impact on rejections were performing arts centers, intramural sports facilities, and bookstores on campus.

Table 8 presents the list of the 14 campus facilities and information related to them being cause for rejection of an institution.

Table 8

*Comparison of Causes of Rejection of an Institution*

<table>
<thead>
<tr>
<th>Facility</th>
<th>Total number of rejections</th>
<th>Not having the facility</th>
<th>Inadequate facility</th>
<th>Poorly maintained facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities for my major</td>
<td>137</td>
<td>55</td>
<td>55</td>
<td>27</td>
</tr>
<tr>
<td>Residence hall</td>
<td>132</td>
<td>12</td>
<td>63</td>
<td>57</td>
</tr>
<tr>
<td>Technology</td>
<td>88</td>
<td>18</td>
<td>48</td>
<td>22</td>
</tr>
<tr>
<td>Dining facilities</td>
<td>81</td>
<td>13</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td>Classrooms</td>
<td>80</td>
<td>10</td>
<td>36</td>
<td>34</td>
</tr>
<tr>
<td>Public transportation</td>
<td>79</td>
<td>27</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td>Recreation/exercise facilities</td>
<td>75</td>
<td>16</td>
<td>31</td>
<td>28</td>
</tr>
<tr>
<td>Library</td>
<td>72</td>
<td>15</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Student center</td>
<td>72</td>
<td>18</td>
<td>34</td>
<td>20</td>
</tr>
<tr>
<td>Open space-multipurpose</td>
<td>71</td>
<td>13</td>
<td>39</td>
<td>19</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td>70</td>
<td>17</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>66</td>
<td>13</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>63</td>
<td>13</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td>59</td>
<td>14</td>
<td>30</td>
<td>15</td>
</tr>
</tbody>
</table>
CHAPTER V: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The primary goal of this research study was to answer the question, What type of facilities are most important to you in choosing a college?, as well as to provide insights for the question, How can college leadership enhance recruitment efforts of current and future generations through the facilities offered?

Significant Facilities

Each of the research questions and their corresponding questions on the survey instrument were developed to provide insight into what facilities are of most importance to current and future students of higher education. With this information, efforts in recruitment and facilities management can be focused more directly on those areas of most impact.

Students were first asked what aspects of the university were the most significant as they were making decisions. The responses indicated a strong major in their field of interest, the location of the institution (nearness to home), pleasant and attractive campus/surroundings, the location of the institution (city, state, etc.), and their preparation for a career were of greatest significance.

In looking at previous studies and making comparisons, the significance of the location of the institution has seemed to fluctuate over time. Chapman (1981) reported that over 50% of freshmen attended a college within 50 miles of home. In 2007, Reynolds and Valcik reported the location of the institution was an important consideration. In this current study, location was one of the most important, at least at the public universities surveyed. Nearly 64% of the responding students noted the
location of the institution as important. However, consistent with an earlier study by Choy et al. (1998), private college students ranked location as less significant, with only 40% selecting it as important.

In an additional step, students were asked to rate specific campus facilities. The analysis of the rankings revealed students considered facilities related to academic resources (technology, classrooms, and library) and student living arrangements (residence halls and dining facilities) as being most important. The findings were confirmed by additional responses in which students were asked what facilities caused them to reject a college from further consideration. The lack of facilities for the students’ major, or those facilities being inadequate, were the primary causes for rejection of a college. Inadequate or poorly maintained residence halls were also indicated as causes for rejection as were technology and dining facilities. This information is fairly consistent with that reported by Reynolds and Valcik in 2007.

The data also provided insight into those facilities that were not particularly significant to students: a performing arts center, intramural sports facilities and varsity athletic facilities. To a lesser extent, a bookstore on campus and the availability of public transportation were not ranked as important.

Five questions in the survey asked for preferences on specific design-/planning-related items: classroom windows, colors, classroom furniture, technology, and learning aids. Students’ responses revealed that:

- Classrooms with windows are preferred by students over those without windows.
- Blue is a preferred accent color in classrooms.
• Flexible and easily movable furniture is preferred over more traditional classroom furnishings.

• The majority of students utilize electronic equipment for reference and document preparation but still prefer pen, paper, and hardcopy reference materials for taking notes and study.

• The availability of WiFi on campus, particularly in all buildings, is by far the most important technology required by students. Also, the need for having student-accessible printers located around the campus is significant.

Enhancing Recruitment Through the Facilities Offered

Leaders in higher education must recognize the impact of facilities on recruitment efforts. As Hoover (2010b) said, “Looks matter a lot to the beholder, and first impressions do much to shape future action” (p. 37). Making an impression is more than just making sure the floor is shiny and the grass is cut. Recruitment is not affected by just the housekeeping and maintenance of the facilities. Planning, design, and operations endeavors also must take the needs and desires of potential students into consideration. These endeavors are a group effort, often impacting many divisions of the university on a nearly daily basis. Each institutional person must recognize the goal of facilities is to support the primary mission of the university, which is to provide a quality education. Facilities should provide a place that encourages and empowers the institution as a whole to ensure that goal.

Facilities Operations and Management

In 1987, Kealy and Rockel reported the most significant recruitment effort is the college visit not necessarily a tour, but a chance to experience the campus. Ruffalo Noel
Levitz (2017) suggested open houses and campus visit days, including overnights and weekend days, are very effective recruitment efforts. Whatever method is chosen, when a prospective new student arrives on the college campus, they want to see those areas of campus that are most significant in their decision-making process:

- Facilities for their major
- Classrooms
- Libraries
- Residence halls
- Dining facilities

Since WiFi availability was shown to be of high importance, it can be expected that they will try it out to see how well it works while they are on campus.

They want to see clean and sparkling hallways, rooms, offices, and restrooms. They are not impressed by *Out of Order* or *Temporarily Closed* signs, overflowing trash cans, or weeds rather than blooms in the flower beds. These examples illustrate the impact of nonverbal communication and that the “nonverbal messages are often seen as more truthful than verbal or written messages” (Strange & Banning, 2001, p. 17). Facilities personnel and college leadership must constantly be looking through “new eyes” at their surroundings for items that could send the wrong message to prospective students.

In this current study, 67% of the respondents reported pleasant and attractive campus/surroundings and the overall quality of the campus facilities are important factors when making their college selection. Students desire more than just a clean and properly working facility; all facilities must be considered “adequate” in their eyes. They will
reject a college from consideration if they are not. The term “adequate” to this generation of students may not have the same connotations as it did for university administrators who attended college many years ago. Current students expect colleges to offer the same safe, secure, and comfortable surroundings they experience at home (Twenge, 2017). College leadership must remain abreast of these expectations (through routine surveys and research studies) and include them in a university-wide continuous improvement program.

A continuous improvement program is a recommended ongoing process for keeping facilities up to date and attractive to prospective students. This program includes routine updates and improvements, as well as serving as a basis for determining more extensive renovations or enhancements that would be presented in a facilities improvement plan.

Also highly recommended was the facilities improvement plan, or what Kaiser and Klein (2010) referred to as a Capital Development Plan. This plan takes an in-depth look at all college facilities: their history, condition, and needs. It is a research document that compiles information which is then analyzed and evaluated to ultimately develop a priority list of repairs, improvements, upgrades, additions, and deletions that are needed over the next 5- to 10-year period, including taking related costs into consideration. At this point, administrators might contemplate Boylan’s (2005) recommendations:

- Do not assume the architects will know everything they need to know about the particularities of the kinds of teaching and research done at the present and planned for the future. Do not assume the faculty and staff know what they need or what the options are. Do enough research so that
you know the questions to ask and how to maximize the likelihood that the building or renovation will achieve its full potential. (p. 1)

In other words, get everyone involved: administrators, facilities operations managers, academic representatives, information technology staff, students, architects, and engineers. Each entity has their own viewpoint that should be taken into consideration during the planning and design process. As Kaiser and Klein stated, “stewardship is a fully shared institution-wide responsibility of the academic, research, and student affairs leadership, along with the financial and facilities leadership” (p. 24).

This study offers some specific facilities-related information that may be beneficial during planning and design, as well as the day-to-day operations. These items include:

- Students are most interested in the facilities related to their major. Make sure these are easily identifiable and locatable so that they can examine them during their visit. Wayfinding is important, both inside buildings and out. Finding and observing the facilities should be easy for the student, particularly those listed of greatest concern, as should be the case for all potential students including those with special needs, i.e., vision impairment or mobility.

- Classrooms are an important facility during the college selection process. They should be comfortable, have good accessibility to the instructor, and offer flexibility. Easily movable furniture is suggested to serve a variety of pedagogical methods and encourage interaction and creativity. Preferably, the classrooms should have windows for natural light and be painted in light, neutral colors with contrasting areas or patterns of cool colors (preferably a
blue, based on data from this survey and others) to enhance learning and mood. Flexibility and adaptability should be primary considerations to enhance utilization rates and ensure long-term usability.

- Libraries are still considered important to today’s students, not necessarily because of reference materials available, but because they provide a place to stretch out and work, whether it be alone or in a group. Areas should be arranged for single students as well as for group activities, for casual sitting and reading, and for spreading out on a table. Libraries also are places where color comes into play, and their psychological and emotional impacts should be taken into consideration using calm, relaxing tones with areas of contrast to encourage the thought process.

- Residence halls and dining facilities are the students’ home-away-from-home, and they want them to feel that way. Residence halls need to have user-friendly kitchen and laundry facilities, preferably in close proximity to gathering areas for small group activities. They also need to have small, well-lit nook-type areas for reading and study. Comfort is important, so sitting areas and rooms should be homey and relaxed. Dining facilities need to be located near residential areas and have space available for group dinners as well as quick single meals. Color also is important for both facilities and should be chosen based on the activities associated with the specific area and effect desired; bright, warm colors can have a positive impact in social areas. Additionally, safety and security are of primary concern for students and their
parents. Items like security cameras, controlled access, and clear emergency
response information and equipment should be visible and readily accessible.

- Today’s students do not know a time without internet and smartphones. They
come to campus with multiple devices and are continuously connected. Few
students need access to a public computer as in a computer lab or library, but
high quality WiFi is absolutely necessary throughout the college campus.

Technology must be designed such that excellent service is provided to
students even when they are using a laptop, a tablet, and a phone
simultaneously. Ample electrical outlets also are a necessity for electronic
equipment, particularly in high device use areas. While the survey responses
indicated the majority of students continue to use pen and paper to take notes,
it is likely the need for additional power outlets in classrooms will be a
necessity for future designs.

**Administration and Cooperation**

While much of the information found in this study seems to be acknowledged by
administrators and managers of higher education institutions, the relationship between
facilities and recruitment also appears to be somewhat nebulous leaving some
disconnects in the processes related to facilities and recruitment. The survey allowed for
communication with various college staff who provided feedback for consideration as
well. For instance, the importance of residence halls and dining facilities is well-
recognized; of particular concern for colleges were older facilities that make recruiting
efforts more difficult when students are comparing colleges with brand new buildings.
However, the importance of the facilities being in good working order, attractive, and
clean is well-known. What may or may not have been recognized was which facilities are most important to prospective students, where the primary focus should be on facilities related to the students’ major, classrooms, libraries, residence halls, and dining facilities. Taking into consideration that campus tours are not the only visits potential students make to a campus, the facilities must be maintained on a daily basis, not only during special events. Thus, at a time when universities are cutting budgets, inevitably including maintenance and housekeeping in the cutbacks, more is being expected in order to improve recruiting efforts. Budget constraints can only help to emphasize the importance of cooperation, communication, and planning throughout the institution to provide the best impression while keeping associated costs under control.

Surprisingly few of the college leadership reported any regular, ongoing efforts to discuss expectations for and between facilities and recruitment staff. Most reported only a work order system and a calendar of events for sharing plans. Often, little is shared between the various divisions of the institutions and key information is lost. A routine communication process between departments is recommended to present information on recruitment and related issues, particularly to share feedback between all offices after major events. In addition to observations shared between divisions, developing a short student survey to identify items of concern may be advantageous. The survey could be developed for students who are considering the college (i.e., those who have applied) to gauge their judgment of quality, both academic and facilities-related. Of particular interest would be those who do not select the college in order to see what facilities did not meet their standards and why. Additionally, interdepartmental brainstorming sessions to openly discuss how to best address the needs and problems that have been identified
are suggested. These ideas can then be used in developing a continuous improvement program and facilities improvement plan as previously discussed.

A final recommendation, given the knowledge gained and shared, is that universities must find ways to use all of their resources to their best advantage. As Belfield and Thomas (2000) said, “how resources are used matters at least as much as how many resources are available” (p. 250). Resources include not only monetary, but human resources as well. In the recruitment effort, leadership would be wise to recognize the value of its people, not only those hired to recruit new students, but all who serve the students and their families on a daily basis. Interaction with students, visitors, faculty, and staff is yet another area of interconnection between recruitment and facilities operations. Facilities operations personnel often are the most visible people on campus and quite possibly see the most as well. Leaders can use this knowledge base as they communicate with others, encouraging collaboration and cooperation throughout the campus. As students visit college campuses looking at the facilities and the academic programs, they will take notice of those who work well together. That is the “feel” they are looking for: a place where people are helpful, friendly, and welcoming. It feels like home.
REFERENCES


http://www.pkal.org/documents/FacilitiesPeopleAndPlanning.cfm


Hoover, E. (2010b, August 22). Campus tours go Disney: The traditional college visit has gotten more interesting. And more manipulative. *Washington Monthly*, 42(9, 10), 35. Retrieved from https://saa-primo.hosted.exlibrisgroup.com/primo-


Martinez, M., & Wolverton, M. (2009). Enriching planning through industry analysis:
The authors perform an “industry analysis” for higher education, using the five
forces model of M.E. Porter. *Planning for Higher Education Journal, 38*(1), 23-
30. Retrieved from https://saa-primo.hosted.exlibrisgroup.com/primo-
explore/fulldisplay?docid=TN_eric
EJ877487&context=PC&vid=WESTKY&search_scope=default_scope&tab=default_tab&lang=en_US

112(3/4), 178-182. doi:10.1108/03074801111117078

university facilities. *Journal of Facilities Management, 10*(2), 140-149.
doi:10.1108/14725961211218776

Hoboken, NJ: John Wiley & Sons, Inc.

comprehensive guide.* New York: Guilford Press.

Saddle River, NJ: Prentice-Hall, Inc.

Miller, L. (2012, November). The library and the campus visit: Communicating value to
prospective students and parents. *College & Research Libraries News, 73*(10),
586-589. Retrieved from https://saa-primo.hosted.exlibrisgroup.com/primo-
explore/fulldisplay?docid=TN_proquest1220983014&context=PC&vid=WESTKY&search_scope=default_scope&tab=default_tab&lang=en_US


Showers, R. (2016, March 21). 7 things admissions needs to know about generation z. Retrieved from Brazen website:
https://www.brazen.com/blog/category/universities/


Steelcase Education Solutions. (2014, April). New study shows classroom design is key contributing factor in college students’ enrollment decisions. *PR Newswire.* Retrieved from


Twenge, J. M. (2017). *IGen: Why today's super-connected kids are growing up less rebellious, more tolerant, less happy-- and completely unprepared for adulthood (and what this means for the rest of us)*. New York: Atria Books.


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APPENDIX A

QUALTRICS SURVEY QUESTIONNAIRE
IMPLIED CONSENT DOCUMENT

Project Title: The Impact of Campus Facilities on the Recruitment of the New Generation of Students in Higher Education

Investigator: Lucinda McDonald, EDLD Student at WKU,
Lucinda.mcdonald905@topper.wku.edu

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your agreement to participate in this project.

You must be 18 years old or older to participate in this research study.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have. You should keep a copy of this form for your records.

1. Nature and Purpose of the Project: This research is being conducted to determine if campus facilities affect current student's opinions and decisions.
2. Explanation of Procedures: We ask that you complete a brief online questionnaire. It is estimated that the questionnaire will only take about five minutes to complete.
3. Discomfort and Risks: There are no foreseeable risks associated with this research project and the probability and magnitude of harm or discomfort anticipated in the research is very minimal.
4. Benefits: While you may not benefit directly from participation in this study, it is hoped that the knowledge gained through your participation will help other students in the future.
5. Confidentiality: The survey does not contain any identifiable information, anonymity is assured, and all data will be reported in the aggregate.
6. Refusal/Withdrawal: Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Your continued cooperation with the following research implies your consent.

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Robin Pykan, Human Protections Administrator
TELEPHONE: (270) 745-3360
What year were you born?
[ ]

Please indicate the type of institution in which you are enrolled.
- [ ] Small Public University (<10,000 students)
- [ ] Small Private University (< 10,000 students)
- [ ] Medium Public University (10,000-25,000 students)
- [ ] Medium Private University (10,000-25,000 students)
- [ ] Large Public University (>25,000 students)
- [ ] Large Private University (>25,000 students)

When you were selecting a college to attend, what did you consider the most important factors? Please select the top five most important factors you considered when choosing a college.

- [ ] Strong major in field of interest
- [ ] Preparation for a career
- [ ] Customizable education
- [ ] Challenging courses
- [ ] Hands-on learning internships
- [ ] Excellent teachers
- [ ] Accessible professors
- [ ] Preparation for graduate school
- [ ] Excellent academic advising
- [ ] Prestige of the institution
- [ ] Recommendation from friends or family
- [ ] Location of institution (City, State, etc.)
- [ ] Location of institution (nearness to home)
- [ ] Climate/weather
- [ ] Pleasant & attractive campus/facilities
- [ ] Open space - outdoor
- [ ] Current/modern facilities for major
- [ ] Sophisticated technology
- [ ] Well-equipped classrooms
- [ ] Library facilities with study areas
- [ ] Visual &/or performing arts center
- [ ] Overall quality of campus facilities
- [ ] Modern residence halls with community kitchens & laundries
- [ ] Variety of dining options on campus
- [ ] Open space - indoor, multipurpose for community
- [ ] Student recreation facilities
- [ ] Student exercise facilities
- [ ] Extracurricular opportunities
- [ ] To play intercollegiate athletics
- [ ] Availability of intramural sports activities
- [ ] Biking/hiking trails
- [ ] Bookstore on campus
- [ ] Availability of public transportation

Which of these do you prefer as your primary method of study? Select one.

- [ ] I use only my book, paper, and pen for reference, taking notes, and study
- [ ] I use my computer for reference, but paper and pen for taking notes and study
- [ ] I use only electronic equipment for taking notes and study
When considering which college to attend, what were the top technology and other learning tools you considered absolutely necessary for the college to provide for your college experience? Select a maximum of three.

- Computer connected projection equipment in classroom
- Video only projection equipment in classroom
- Overhead projector in classroom
- Chalkboard/whiteboard in classroom
- "Smartboard" in classroom
- WiFi in all buildings
- WiFi in outdoor areas
- Public computers in campus public areas
- Open computer labs
- Hardcopy handouts in classes
- Public computers in library facilities
- Books and other hardcopy reference materials in central library facilities
- Books and reference materials in specific majors' library facilities
- Centralized student printing
- Student-access printers at locations around campus

Given all technology and learning aids being equal, which classroom would you prefer? Select one.

- Classroom with no windows
- Classroom with windows

Given all technology and learning aids being equal, which two classrooms would you most prefer?

- Classroom - Blue
- Classroom - Plum
- Classroom - White
- Classroom - Yellow
Given all technology and learning aids being equal, which classroom seating styles would you prefer? Select one.

<table>
<thead>
<tr>
<th>Tables and Chairs</th>
<th>Chairs with Desks</th>
<th>Rolling Chairs with Desks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Below is a list of common campus facility elements. For each element indicate:
1. The extent the facility was IMPORTANT to you in considering a college.
2. If the facility NOT BEING PRESENT significantly influenced your rejection of a college.
3. If the facility being INADEQUATE significantly influenced your rejection of a college.
4. If the facility NOT BEING MAINTAINED significantly influenced your rejection of a college.

<table>
<thead>
<tr>
<th></th>
<th>As you consider a college, how would you rank the importance of each element?</th>
<th>I rejected a college because ...</th>
<th>I rejected a college because ...</th>
<th>I rejected a college because ...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low 2 3 4 High</td>
<td>it did not have the facility</td>
<td>the facility was inadequate</td>
<td>the facility was poorly maintained</td>
</tr>
<tr>
<td>Facilities for my major</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Technology</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Classrooms</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Library</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Residence Halls</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dining facilities</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Student center</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Open space - multipurpose for community &amp; group activity</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Student recreation/exercise facilities</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Public transportation</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
APPENDIX B

PARTICIPATION REQUEST E-MAIL
Dear First-Year Student,

We need your help. As part of a doctoral dissertation research project at Western Kentucky University, we want your opinions.

Every college and university is interested in attracting students to their campus. To do this, they need to know what you are looking for – and what you’re not.

We have prepared a short survey to allow you to tell us what was most important to you when you were searching for your perfect fit school.

We hope the information collected will provide valuable information for admissions offices, student services, first-year centers, facilities managers, and administrators – information they can use to make improvements and plan for the future.

Won’t you help? It will only take you about 5 minutes to complete the online questionnaire. Just go to -

https://wkucos.qualtrics.com/jfe/form/SV_e34fBsjYkiloA6N

Thank you for your help.

Cindy McDonald
Educational Leadership Doctoral Program
Western Kentucky University
APPENDIX C

DATA AND ANALYSIS OF SURVEY RESPONSES
Figure C1. Top 10 most influential factors for college selection based on birth year of the students responding.
Figure C2. Top ten most influential factors for college selection based on college type of the students responding.
### Summary of Ranking of Facilities

<table>
<thead>
<tr>
<th>Facilities for my major</th>
<th>Technology</th>
<th>Classrooms</th>
<th>Library</th>
<th>Residence halls</th>
<th>Performing arts center</th>
<th>Dining facilities</th>
<th>Student center</th>
<th>Open space</th>
<th>Recreation/ exercise</th>
<th>Varsity athletic facilities</th>
<th>Intramural sports</th>
<th>Bookstore on campus</th>
<th>Public transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Unimportant</td>
<td>5</td>
<td>5</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>77</td>
<td>13</td>
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<td>17</td>
<td>16</td>
<td>70</td>
<td>64</td>
<td>23</td>
</tr>
<tr>
<td>2 - Somewhat Unimportant</td>
<td>7</td>
<td>7</td>
<td>19</td>
<td>19</td>
<td>11</td>
<td>43</td>
<td>10</td>
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<td>25</td>
<td>25</td>
<td>32</td>
<td>44</td>
<td>34</td>
</tr>
<tr>
<td>3 - Somewhat Important</td>
<td>23</td>
<td>43</td>
<td>47</td>
<td>57</td>
<td>40</td>
<td>52</td>
<td>52</td>
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<td>61</td>
<td>55</td>
<td>45</td>
<td>61</td>
<td>34</td>
</tr>
<tr>
<td>4 - Important</td>
<td>44</td>
<td>76</td>
<td>65</td>
<td>52</td>
<td>57</td>
<td>17</td>
<td>65</td>
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<td>60</td>
<td>61</td>
<td>61</td>
<td>61</td>
<td>34</td>
</tr>
<tr>
<td>5 - Very Important</td>
<td>140</td>
<td>87</td>
<td>77</td>
<td>76</td>
<td>95</td>
<td>28</td>
<td>78</td>
<td>60</td>
<td>54</td>
<td>61</td>
<td>61</td>
<td>61</td>
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<table>
<thead>
<tr>
<th>Facilities for my major</th>
<th>Technology</th>
<th>Classrooms</th>
<th>Library</th>
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<th>Student center</th>
<th>Open space</th>
<th>Recreation/ exercise</th>
<th>Varsity athletic facilities</th>
<th>Intramural sports</th>
<th>Bookstore on campus</th>
<th>Public transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.4</td>
<td>4.1</td>
<td>3.8</td>
<td>3.7</td>
<td>3.9</td>
<td>2.4</td>
<td>3.8</td>
<td>3.5</td>
<td>3.5</td>
<td>3.6</td>
<td>2.7</td>
<td>2.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Median</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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</tr>
<tr>
<td>Mode</td>
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<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.957</td>
<td>0.963</td>
<td>1.153</td>
<td>1.196</td>
<td>1.199</td>
<td>1.373</td>
<td>1.137</td>
<td>1.262</td>
<td>1.203</td>
<td>1.214</td>
<td>1.472</td>
<td>1.269</td>
<td>1.238</td>
</tr>
<tr>
<td>Variance</td>
<td>0.916</td>
<td>0.926</td>
<td>1.330</td>
<td>1.431</td>
<td>1.437</td>
<td>1.885</td>
<td>1.294</td>
<td>2.166</td>
<td>1.611</td>
<td>1.532</td>
<td>1.875</td>
<td>1.875</td>
<td>1.875</td>
</tr>
</tbody>
</table>

### Important vs. Unimportant

<table>
<thead>
<tr>
<th>Facilities for my major</th>
<th>Technology</th>
<th>Classrooms</th>
<th>Library</th>
<th>Residence halls</th>
<th>Performing arts center</th>
<th>Dining facilities</th>
<th>Student center</th>
<th>Open space</th>
<th>Recreation/ exercise</th>
<th>Varsity athletic facilities</th>
<th>Intramural sports</th>
<th>Bookstore on campus</th>
<th>Public transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Responses</td>
<td>219</td>
<td>218</td>
<td>219</td>
<td>217</td>
<td>218</td>
<td>217</td>
<td>218</td>
<td>217</td>
<td>218</td>
<td>217</td>
<td>217</td>
<td>217</td>
<td>217</td>
</tr>
<tr>
<td>Percentage of Students Responding as Very Important, Important, or Somewhat Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - Very Important</td>
<td>63.9</td>
<td>39.9</td>
<td>35.2</td>
<td>35.0</td>
<td>43.6</td>
<td>12.9</td>
<td>35.8</td>
<td>27.8</td>
<td>24.9</td>
<td>28.0</td>
<td>16.6</td>
<td>8.3</td>
<td>19.4</td>
</tr>
<tr>
<td>4 - Important</td>
<td>20.1</td>
<td>34.9</td>
<td>29.7</td>
<td>24.0</td>
<td>26.1</td>
<td>7.8</td>
<td>29.8</td>
<td>26.4</td>
<td>27.6</td>
<td>28.0</td>
<td>15.7</td>
<td>13.4</td>
<td>24.9</td>
</tr>
<tr>
<td>3 - Somewhat Important</td>
<td>10.5</td>
<td>19.7</td>
<td>21.5</td>
<td>26.3</td>
<td>18.3</td>
<td>24.0</td>
<td>23.9</td>
<td>24.1</td>
<td>28.1</td>
<td>25.2</td>
<td>20.7</td>
<td>28.2</td>
<td>29.5</td>
</tr>
<tr>
<td>Sum</td>
<td>94.5</td>
<td>94.5</td>
<td>86.3</td>
<td>85.3</td>
<td>88.1</td>
<td>44.7</td>
<td>89.4</td>
<td>78.2</td>
<td>80.6</td>
<td>81.2</td>
<td>53.0</td>
<td>50.0</td>
<td>73.7</td>
</tr>
</tbody>
</table>

| Percentage of Students Responding as Unimportant, or Somewhat Unimportant | | | | | | | | | | | | | |
| 2 - Somewhat Unimportant | 3.2        | 3.2        | 8.7     | 8.8            | 5.0                     | 19.8             | 4.6            | 13.0       | 11.5                | 11.5                   | 14.7           | 20.4                | 15.7                | 14.8                |
| 1 - Unimportant         | 2.3        | 2.3        | 5.0     | 6.0            | 6.9                     | 35.5             | 6.0            | 8.8        | 7.8                 | 7.3                    | 32.3           | 29.6                | 10.6                | 15.7                |
| Sum                    | 5.5        | 5.5        | 13.7    | 14.7           | 11.9                    | 55.3             | 10.6           | 21.8       | 19.4                | 18.8                   | 47.0           | 50.0                | 26.3                | 30.6                |

*Figure C3. Summary of rating of facilities.*
Figure C4. Preference for windows in the classroom by birth year and college type of the students responding.
Figure C5. Preference for wall color in the classroom by birth year of students responding.
### Figure C6

Preference for wall color in the classroom by college type of the students responding.

<table>
<thead>
<tr>
<th>College Type</th>
<th>Blue</th>
<th>White</th>
<th>Plum</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (n = 223)</td>
<td>58.7</td>
<td>39.5</td>
<td>26.5</td>
<td>52.6</td>
</tr>
<tr>
<td>Large Public (n = 95)</td>
<td>62.1</td>
<td>41.1</td>
<td>27.4</td>
<td>32.9</td>
</tr>
<tr>
<td>Medium Public (n = 85)</td>
<td>57.6</td>
<td>37.6</td>
<td>32.9</td>
<td>28.2</td>
</tr>
<tr>
<td>Small Public (n = 8)</td>
<td>50.0</td>
<td>37.5</td>
<td>25.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Small Private (n = 35)</td>
<td>54.3</td>
<td>40.0</td>
<td>31.4</td>
<td>20.0</td>
</tr>
</tbody>
</table>
**Figure C7.** Preference for furniture in the classroom by birth year of the students responding.
Figure C8. Preference for furniture in the classroom by college type of the students responding.
Figure C9. Preference for learning resources by birth year of the students responding.
Figure C10. Preference for learning resources by college type of the students responding.
Figure C11. Preference for technology by birth year of the students responding.
Figure C12. Preference for technology by college type of the students responding.
APPENDIX D

IMPORTANT FACILITIES FACTOR ANALYSIS
Exploratory Factor Analysis

After the initial review, an Exploratory Factor Analysis (EFA) was completed using Stata. In Table D1, the skewness and kurtosis for each question is presented. Skewness indicates a level of prejudice toward one end of the scale or the other (most data plotting either to the right or left of the center of a graph). Skewness should be in the range of -2.0 to 2.0. Kurtosis, on the other hand, looks at the horizontal plot. If each answer to a question had the same number of responses, the line formed on the graph would be straight and horizontal; respondents were equally divided on the question. However, if the majority of respondents were undecided on a question, there would be a high peak at the center of the graph. Kurtosis should be in a range of -7.0 to 7.0. In this study, both skewness and kurtosis were within the desired ranges.
Table D1

**Summary of Survey Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities for my major</td>
<td>219</td>
<td>4.401</td>
<td>0.959356</td>
<td>1</td>
<td>5</td>
<td>0.920364</td>
<td>-1.71874</td>
<td>5.496995</td>
</tr>
<tr>
<td>Technology</td>
<td>218</td>
<td>4.069</td>
<td>0.964742</td>
<td>1</td>
<td>5</td>
<td>0.930728</td>
<td>-0.970998</td>
<td>3.704734</td>
</tr>
<tr>
<td>Classrooms</td>
<td>219</td>
<td>3.813</td>
<td>1.156006</td>
<td>1</td>
<td>5</td>
<td>1.33635</td>
<td>-0.755775</td>
<td>2.754085</td>
</tr>
<tr>
<td>Library</td>
<td>217</td>
<td>3.733</td>
<td>1.198953</td>
<td>1</td>
<td>5</td>
<td>1.437489</td>
<td>-0.621641</td>
<td>2.496074</td>
</tr>
<tr>
<td>Residence halls</td>
<td>218</td>
<td>3.945</td>
<td>1.201649</td>
<td>1</td>
<td>5</td>
<td>1.443961</td>
<td>-1.028111</td>
<td>3.18682</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>217</td>
<td>2.429</td>
<td>1.376292</td>
<td>1</td>
<td>5</td>
<td>1.89418</td>
<td>0.576986</td>
<td>2.146135</td>
</tr>
<tr>
<td>Dining facilities</td>
<td>218</td>
<td>3.849</td>
<td>1.139983</td>
<td>1</td>
<td>5</td>
<td>1.29956</td>
<td>-0.861058</td>
<td>3.116458</td>
</tr>
<tr>
<td>Student center</td>
<td>216</td>
<td>3.514</td>
<td>1.264834</td>
<td>1</td>
<td>5</td>
<td>1.599806</td>
<td>-0.466834</td>
<td>2.200683</td>
</tr>
<tr>
<td>Open space - multipurpose</td>
<td>217</td>
<td>3.502</td>
<td>1.206174</td>
<td>1</td>
<td>5</td>
<td>1.454856</td>
<td>-0.449665</td>
<td>2.358091</td>
</tr>
<tr>
<td>Recreation/exercise facilities</td>
<td>218</td>
<td>3.578</td>
<td>1.21658</td>
<td>1</td>
<td>5</td>
<td>1.480066</td>
<td>-0.520706</td>
<td>2.365315</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td>217</td>
<td>2.696</td>
<td>1.474986</td>
<td>1</td>
<td>5</td>
<td>2.175585</td>
<td>0.238435</td>
<td>1.670429</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td>216</td>
<td>2.505</td>
<td>1.272235</td>
<td>1</td>
<td>5</td>
<td>1.618583</td>
<td>0.363175</td>
<td>2.100207</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>217</td>
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<td>1.240702</td>
<td>1</td>
<td>5</td>
<td>1.539341</td>
<td>-0.239941</td>
<td>2.139392</td>
</tr>
<tr>
<td>Public transportation</td>
<td>216</td>
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<td>1.372479</td>
<td>1</td>
<td>5</td>
<td>1.883699</td>
<td>-0.31365</td>
<td>1.872241</td>
</tr>
</tbody>
</table>

In the process of performing the EFA, the analytical program can provide several methods for determining relationships within data. The *Pattern Matrix* is considered the most important of these methods, as it provides a rather straight-forward and visual method of determining patterns or “clumps” of related factors. The first step in the process is to determine Eigenvalues for each possible factor and then look for any values greater than 1.0.
As can be seen in the Scree plot in Figure D1, the first three factors have the biggest impact on the graph. Past that point, the line begins to level out and show little change. This is verified by the Stata program which also indicated three factors at levels above 1.0; Factors 1, 2 and 3. A factor analysis is then repeated based on a Maximum Likelihood of three factors. Table D2 presents factor loadings for the three factors.
Table D2

**Factor Loadings**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities for my major</td>
<td>0.1513</td>
<td>0.0492</td>
<td>0.3048</td>
<td>0.8818</td>
</tr>
<tr>
<td>Technology</td>
<td>0.3731</td>
<td>0.2745</td>
<td>0.4407</td>
<td>0.5912</td>
</tr>
<tr>
<td>Classrooms</td>
<td>0.4699</td>
<td>0.2656</td>
<td>0.6265</td>
<td>0.3162</td>
</tr>
<tr>
<td>Library</td>
<td>0.3760</td>
<td>0.3583</td>
<td>0.5637</td>
<td>0.4125</td>
</tr>
<tr>
<td>Residence halls</td>
<td>0.5982</td>
<td>-0.0889</td>
<td>-0.0590</td>
<td>0.6307</td>
</tr>
<tr>
<td>Performing arts center</td>
<td>0.3123</td>
<td>0.3696</td>
<td>0.0466</td>
<td>0.7637</td>
</tr>
<tr>
<td>Dining facilities</td>
<td>0.9452</td>
<td>-0.2280</td>
<td>-0.0554</td>
<td>0.0515</td>
</tr>
<tr>
<td>Student center</td>
<td>0.6812</td>
<td>0.2890</td>
<td>0.0691</td>
<td>0.4475</td>
</tr>
<tr>
<td>Open space - multipurpose</td>
<td>0.5760</td>
<td>0.2632</td>
<td>0.0764</td>
<td>0.5931</td>
</tr>
<tr>
<td>Recreation/exercise facilities</td>
<td>0.5202</td>
<td>0.4554</td>
<td>-0.1007</td>
<td>0.5119</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td>0.3700</td>
<td>0.5202</td>
<td>-0.3763</td>
<td>0.450</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td>0.3735</td>
<td>0.7075</td>
<td>-0.3767</td>
<td>0.2182</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>0.3932</td>
<td>0.4554</td>
<td>0.1723</td>
<td>0.6083</td>
</tr>
<tr>
<td>Public transportation</td>
<td>0.4123</td>
<td>0.2279</td>
<td>0.0810</td>
<td>0.7715</td>
</tr>
</tbody>
</table>

The next step in the process was to determine what the three factors actually represented. This was completed by reviewing the questions and comparing them to the factor loading results. In an effort to find ways to interpret the data to get clear results, a rotation of the factor structure was performed. There are several methods of performing a rotation; but in looking for factors that are correlated, an oblique rotation was used. For
this study, an oblique rotation was completed, with all numbers below 0.3 being
eliminated as insignificant. The results are shown in Table D3.

Table D3

*Rotated Factor Loadings (< 0.3 results eliminated)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities for my major</td>
<td>0.3957</td>
<td></td>
<td></td>
<td>0.8818</td>
</tr>
<tr>
<td>Technology</td>
<td>0.6694</td>
<td></td>
<td></td>
<td>0.5912</td>
</tr>
<tr>
<td>Classrooms</td>
<td>0.8950</td>
<td></td>
<td></td>
<td>0.3162</td>
</tr>
<tr>
<td>Library</td>
<td>0.8502</td>
<td></td>
<td></td>
<td>0.4125</td>
</tr>
<tr>
<td>Residence halls</td>
<td></td>
<td>0.6434</td>
<td></td>
<td>0.6307</td>
</tr>
<tr>
<td>Performing arts center</td>
<td></td>
<td>0.3480</td>
<td></td>
<td>0.7637</td>
</tr>
<tr>
<td>Dining facilities</td>
<td></td>
<td>1.0803</td>
<td></td>
<td>0.0515</td>
</tr>
<tr>
<td>Student center</td>
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<td></td>
<td>0.4475</td>
</tr>
<tr>
<td>Open space - multipurpose</td>
<td></td>
<td></td>
<td></td>
<td>0.5931</td>
</tr>
<tr>
<td>Recreation/exercise facilities</td>
<td></td>
<td>0.5558</td>
<td></td>
<td>0.5119</td>
</tr>
<tr>
<td>Varsity athletic facilities</td>
<td></td>
<td>0.8227</td>
<td></td>
<td>0.4509</td>
</tr>
<tr>
<td>Intramural sports facilities</td>
<td></td>
<td>1.0097</td>
<td></td>
<td>0.2182</td>
</tr>
<tr>
<td>Bookstore on campus</td>
<td>0.4267</td>
<td>0.3418</td>
<td></td>
<td>0.6083</td>
</tr>
<tr>
<td>Public transportation</td>
<td></td>
<td></td>
<td></td>
<td>0.7715</td>
</tr>
</tbody>
</table>

*It is generally considered that the best loadings are greater than 0.7. Two values, technology and residence halls, were below that number, but barely; Therefore, they were retained in the analysis. The loading for facilities for my major, performing arts center, student center, student recreation/exercise facilities, and bookstore on campus were well*
below the 0.7 threshold and were removed from further analysis. Based on the data as amended, the following questions loaded to Factor 1: technology, classrooms, and library. Those loading to Factor 2 were varsity athletic facilities and intramural sports facilities. Factor 3 factors included residence halls and dining facilities. There were no cross-loaded items in this data. From this information, it appears that Factor 1 was related to academic facility resources, Factor 2 is related to sports facilities, and Factor 3 is related to student living facilities.

With factors determined, a summary of data for the three factors was completed, as presented in Table D4. Cronbach’s alpha was considered adequate reliability for the three factors, although Factor 2 related to activities was slightly less.

Table D4

Summary of Factor Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min Value</th>
<th>Max Value</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic resources</td>
<td>216</td>
<td>11.625</td>
<td>2.759023</td>
<td>3</td>
<td>15</td>
<td>0.7811</td>
</tr>
<tr>
<td>Activities</td>
<td>217</td>
<td>6.267</td>
<td>2.315905</td>
<td>2</td>
<td>10</td>
<td>0.6377</td>
</tr>
<tr>
<td>Student living</td>
<td>218</td>
<td>7.794</td>
<td>2.089816</td>
<td>2</td>
<td>10</td>
<td>0.7436</td>
</tr>
</tbody>
</table>

Confirmatory Factor Analysis

At this point, it was desired to confirm the hypothesis by using Structural Equation Modeling (SEM). The first step in this process was to draw an illustration of the model within Stata.
The model was then analyzed utilizing the data from the survey and the results included in the model presented as Figure D3.

Figure D3. Structural equation model with analysis results.

Figure D4 presents the standardized loadings (column labeled “Coef.”), standard errors (column labeled “Std. Err.”), and p-values for all factor loadings, from Stata.
<table>
<thead>
<tr>
<th>Measurement</th>
<th>Q91_2</th>
<th>Q91_3</th>
<th>Q91_4</th>
<th>Q91_10</th>
<th>Q91_11</th>
<th>Q91_12</th>
<th>Q91_13</th>
<th>Q91_14</th>
<th>Q91_15</th>
<th>Q91_16</th>
<th>Q91_17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
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<td>1.647144</td>
<td>1.378027</td>
<td>3.564815</td>
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<td>.935185</td>
<td>1.357984</td>
<td>3.837963</td>
<td>.5561297</td>
<td>.2820288</td>
<td>.3131197</td>
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<td>.0824402</td>
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<td>Coef.</td>
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<td>.0816566</td>
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<td>Std. Err.</td>
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<td>49.19</td>
<td>48.19</td>
<td>42.24</td>
<td>42.91</td>
<td>5.74</td>
<td>49.60</td>
<td>69.52174</td>
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<td>.8917005</td>
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<td>0.000</td>
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<td>1.053217</td>
<td>3.403235</td>
<td>.3887045</td>
<td>.8943461</td>
<td>.368631</td>
<td>.4448684</td>
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<tr>
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<td>[95% Conf. Interval]</td>
<td>4.193489</td>
<td>2.029225</td>
<td>1.702836</td>
<td>3.726395</td>
<td>1.065804</td>
<td>1.821622</td>
<td>3.989616</td>
<td>.6952174</td>
<td>.5287815</td>
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</table>

**Figure D4.** Stata factor analysis results.
The next step in the evaluation was to complete a “Goodness of Fit” for the data. Goodness of Fit is reflected in three different values: Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI). RMSEA compares the difference between the covariance matrix from the data and the covariance matrix from the model. For RMSEA, lower values are better; < 0.08 is adequate, but < 0.05 is very good. CFI and TLI compare the fit of the proposed model to the fit of a model with no related variables (null model). Statistics above 0.95 are considered a very good fit. Goodness of Fit results are presented in Table D5. In looking at these results, the RMSEA is good, and the TLI and CFI are very good.

Table D5

*Goodness of Fit Results*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
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<tr>
<td>RMSEA</td>
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<td>CFI</td>
<td>0.975</td>
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<td>TLI</td>
<td>0.952</td>
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</table>

This model indicates three basic factors may affect a student’s interpretation of a university: academic-related facilities, student living facilities, and activity-related facilities. Academic-related facilities include technology, classrooms, and libraries and correspond directly to those items most important to this generation: preparation for a career, job security, and independence. Student living facilities, as seen in residence halls and dining facilities, relate to this generation’s desire for college to feel like home: comfortable, safe, and secure. While activity-related facilities may not seem to relate to all students and may not play a big role in the decision process, they are a large part of
the college tradition and “branding.” All students may not play sports, but they identify with the teams on a personal level.