Aligning Academic Library Space With Millennials' Learning Styles

"The University of Southern California's Leavey Library logged 1.4 million visits last year. That remarkable statistic illustrates how much a library can become part of campus life when it is designed with genuine understanding of the needs of Net Generation (Net Gen) students."
(Lippincott, 2005, 13.1)

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- Need to Align with Learning
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Introduction

"The first thing that I will emphasize is the extent to which spaces and roles are two sides of the same coin. I will seek to make the case that throughout this period, library practice and the nature of library architecture and space have been symbiotically related with spatial capabilities and constrains both enabling practice and restricting our practice" (Hickerson, 2014, p. 15)

(Keynote address – Designing Libraries in he 21st Century, University of Calgary, 2014)

Introduction

- **Technology has resulted in more modernization than transformation.**
- **There is an apparent disconnect between the culture of library organizations and that of the Millennial Students.**
- **Since much of the learning in higher education institutions takes place outside the classroom, the library can play a critical role in learning.**

Introduction

“It may be time to look at the new group of students entering higher education, “Millennials”, in terms of their characteristics, their abilities, and their values so that we can facilitate their learning” (McGlyn, 2005, p. 13).

“New learning space design paradigms must adapt to student learning styles” (Acker & Miller, 2005)

Introduction

Millennials learn and interact differently from their predecessors.

"Academic libraries have been changing their study space into learning spaces in response to the evolving needs of students. This has involved consideration of differing learning styles, the use of technology by the students, how students interact with each other, and where students chose to work." (McNamara, 2012, p. 40).

Today, we need to observe how students interact with universities and identify their learning process and style.

Introduction

The challenge of evolving pedagogy to meet the needs of Net-savvy students is daunting, but educators are assisted by the fact that this generation values education.

These students learn in different ways. However, they are very education oriented.

They think and communicate differently also.

Introduction

The Ohio State University Experiment
Center for Academic Transformation
(Acker & Miller, 2005, p. 2)

3 GROUPS

- Lecture
- Small group discussion
- Independent on-line learning

Different Space Configurations

Results

- Grades increased
- Drop-outs decreased from 20% to 12 %
- Satisfaction went up
- Student cost fell

Introduction

“Predominant views that knowledge and authority are socially constructed and that understanding is based on individual experience and interpretation, place higher education institutions, and the academic libraries within them, in a position where they have to reconsider their place and interactions with all the other players in information and learning environments.” (Sukovic, Litting, & England, 2011, p. 70)

Introduction

“Academic libraries are at a significant turning point with regard to space. The “Googlization” of print collections over the coming decade means that for the first time in their history, libraries may be able to contemplate a future without significantly adding more shelving space. It may take years to fully absorb the transformative nature of this change, but it will necessitate a rethinking of library space. It may now be possible to consider transitioning libraries from being primarily for the storage of books to primarily supporting learning” (Acker & Miller, 2005).

WHO ARE THE MILLENNIALS

Who are the Millennials?

- Net Generation (NetGen)
- Gen Y
- Me Generation
- Digital Natives
- Grew up with technology from their earliest years
- Born between 1982 and 2002

"They are joined by a set of common practices, including the amount of time they spend using digital technologies, their tendency to multitask, their tendency o express themselves and relate to one another in ways mediated by digital technologies, and their patterns of using the technologies to access and use information, and create new knowledge and art forms" (Palfrey & Grasser, 2008, p. 4).

Who are the Millennials?

- The first to grow up with digital and cyber technologies
- Use varied forms of communication
- Prefer and require immediacy
- Multitasking is a way of life
- Autonomy and independence
- Emotional and intellectual open
- Move toward greater inclusion and diversity
- Assertive, confident
- Free expression…strong views
- Innovators – always pushing the boundaries of technology
- Non-stop connectivity, interactivity, and collaboration
- Want to construct their own knowledge
- They figure things out themselves
- They identify with their parents (Strong bonds)
- Strong drive to succeed in life
- Gravitate toward group activity
- Goal oriented
- Positive attitude
- Greater sense of social awareness
- Can-do attitude – expect to make decisions
- Hard-workers – strong need to achieve
- Value leisure over work

Who are the Millennials?

- They have great expectations
- They expect customization
- They utilize new communication modes
- Expect services 24/7
- Internet is a source of research, interactivity, and socializing
- Zero tolerance for delays
- They want to do meaningful work
- Community conscious
- For them, doing is more important then knowing
- Staying connected is essential
- Increasingly high levels of anxiety and stress
- Technological proficiency
- Ambitious
- Short attention span
- Expects accommodations
- Not accustomed to negative feedback
- Gravitate toward group activity
- Believe “its cool to be smart”
- Positive attitude
- Goal oriented
- Expect immediate feedback

Who are the Millennials?

- Millennial students are social and team oriented, comfortable with multitasking, and generally positive in their outlook, and have a hands-on "let's build it" approach – all encouraged by the IT resources available to them" (Brown, 2005, p. 12.2)

- Appreciate:
  Teamwork
  Structure – structured activities that permit creativity
  Experiential experiences
  Use of technology

- Grew up in a time of economic prosperity
- Most protected generation in terms of government regulations and consumer safety
- They are used to being indulged as a result of changing child-rearing practices
- Used to being consulted in decision-making by heir parents
- They are expected to excel
- Feel completely entitled (individual attention; extra help; provision of resources
- Highly adaptable to technology

Who are the Millennials?

Impact of Internet on Millennial's College Experience (Jones, 2002)

- 79% - Has a positive influence
- 60% - Has improved their relationships with classmates
- 56% - Has improved their relationships with professors
- 19% - Communicate with professors through e-emails more then face-to-face
- 55% - Use e-mails to arrange meetings
- 75% - Use e-mails to clarify assignments
- 89% - Has received class announcements through e-mails
- 73% of students say they are more likely to conduct research by using the Internet than by going to the library.
- Two-thirds claimed they can find valid information from the Web.

Who are the Millennials?

Information-age Mindset (Oblinger, 2003)

- Computers aren't technology
- The Internet is better then TV
- Reality is no longer real
- Doing is more important than knowing
- Learning more closely resembles Nintendo than logic
- Multitasking is a way of life
- Typing is preferred to handwriting
- Staying connected is essential
- There is zero tolerance for delays
- Consumer and creator are blurring

Implication

They assess offer before making a decision!

The University's library vis-à-vis other spaces

NEED TO ALIGN WITH LEARNING

Need to Align with Learning

- **Given these characteristics, this generation demands a new learning paradigm (Skiba & Barton, 2006, p. 2).**

- **Faculty are realizing that traditional classroom teaching is no longer effective with millennials. Students have changed radically.**

- **They require a learner-centered pedagogy – a constructivist learning paradigm.**

- **Millennials focus on understanding, constructing knowledge using discovery methods, and active engagement; want tailored and option rich learning; view the teacher as a mentor.**

Need to Align Space with Learning

> **"Libraries need to understand the style of their net generation students to provide environments conducive to engagement and learning; these include how libraries present access to their collections and licensed materials, how they instruct students, how they promote services, and how they configure their spaces" (Lippencott, 2010, p. 27).**

> **Since education is the core mission of higher education, learning and the space in which it takes place are the utmost importance. In order to best serve the educational enterprise, we must design learning spaces that optimize the convergence of the Net Generation, current learning theory, and information technology. (Brown, 2005, 12.1)**

Need to Align Space with Learning

> **"The ability to succeed is the ability to adapt. It's about embracing and leading change, drawing on support from those around you. We must create an active learning environment not only by maximizing space but also by ensuring it is sympathetic to the developing pedagogy and to students' expectations" (Ball et al, 2007).**

Need to Align Space with Learning

> "In the library there is a need to develop knowledge of the customers, most importantly in the design and construction of learning spaces to serve the learning and research related needs of the university's own undergraduate students.

> "Appropriate learning spaces help not only to encourage students' learning but also the library to develop its services by offering its facilities as learning spaces for students, departments, and the whole university community" (Tevaniemi, Poutanen, & Lahdemaki, 2015, p. 305).

Need to Align Space with Learning

> **"The emergence oft he learning commons as a central element in contemporary library design offers an opportunity to transform the library's role on campus from a provider of information to a facilitator of learning" (Holmgren, 2010, p. 177).**

> **"Today's academic research librarians understand and appreciate that spaces not only inspire creativity, reflection, exploration, and innovation but also impact learning. […] The conceptualization and creation of libraries designed for learning reflect an increasing focus on student-centered design on our campus" (Spencer & Watstein, 2016, pp. 389-90).**

LEARNING STYLES

Learning Styles

Learning and learning theory are now emerging as essential factors in library space planning (Bennett, 2015)

Learning Theories

Constructivism

- **Knowing now means using a well-organized set of facts to find new information and solve novel problems.**
- **Learners construct knowledge**

- ✓ **Contextual**
- ✓ **Active**
- ✓ **Social**

Learning Styles

Kolb's Learning Cycle

Kolb (1983) proposes that learning is more effective when it takes place within an ever ascending spiral, beginning with concrete experiences, which elicits reflection which evolves into practice, or better, active experimentation fostering further abstract conceptualization. According to Kolb's experiential learning theory, in-depth learning takes place as the student makes his way through each cycle.

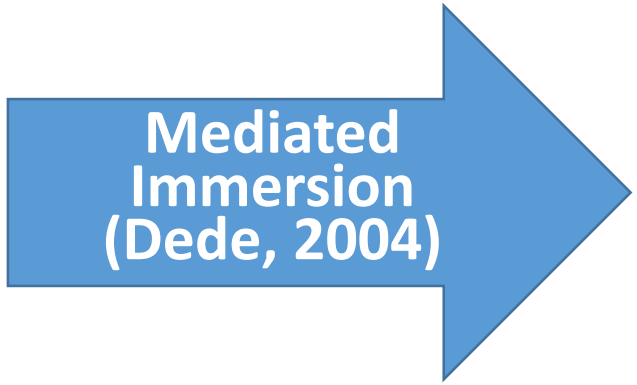
Learning Styles

Mediated Immersion (Dede, 2005)

- Experiences shape our brains (Neuroplasticity)
  - Playing baseball, flying kites, Barbie, jumping rope vs Nintendo, Playstation
  - Student's brains are shaped differently from ours as a result of how we grew up
  - The thinking patterns have changed – continuous technological stimulus

- Fluency in multiple media – simulation-based virtual settings
- Communal learning involving diverse, tacit, situated experience
- A balance among experiential learning, guided mentoring and collective reflection
- Expression through nonlinear, associational webs of representations (rather then linear stories)
- Co-design learning experiences personalized to individual needs and preferences
- Impact of technology on learning styles…learning based on seeking, sieving and synthesizing
- Multitasking

Learning Styles



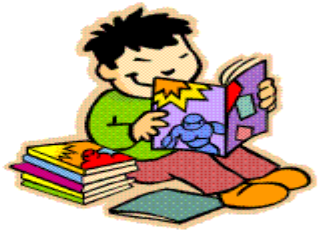
- Fluency in multiple media and in simulation-based virtual settings;
- Communal learning involving diverse, tacit, situated experience with knowledge distributed across a community;
- A balance among experiential learning, guided mentoring, and collective reflection;
- Expression through non-linear, associational webs of representations;
- Co-design of learning experiences personalized to individual needs and preferences
- Distributed learning which combines face-to-face teaching with synchronous and asynchronous mediated interaction.
- Use of MUVEs in the context of gaming

Learning Styles

Neil Fleming – VARK Learning Model

Technically, an individual's learning style refers to the preferential way in which the student absorbs, processes, comprehends and retains information. VARK is an acronym that refers to the four types of learning styles: *Visual, Auditory, Reading/Writing Preference, and Kinesthetic*. The VARK model acknowledges that students have different approaches to how they process information, referred to as "preferred learning modes.

Learning Styles

Visual	Musical/Auditory	Verbal	Physical/Kinesthetic
			
* You prefer using pictures, images, and spatial understanding.	* You prefer using sound and music.	* You prefer using words, both in speech and writing.	* You prefer using your body, hands and sense of touch.
Logical/Mathematical	**Social**	**Solitary**	
			**What is your learning style?**
* You prefer using logic, reasoning and systems.	* You prefer to learn in groups or with other people.	* You prefer to work alone and use self-study.	

Learning Styles

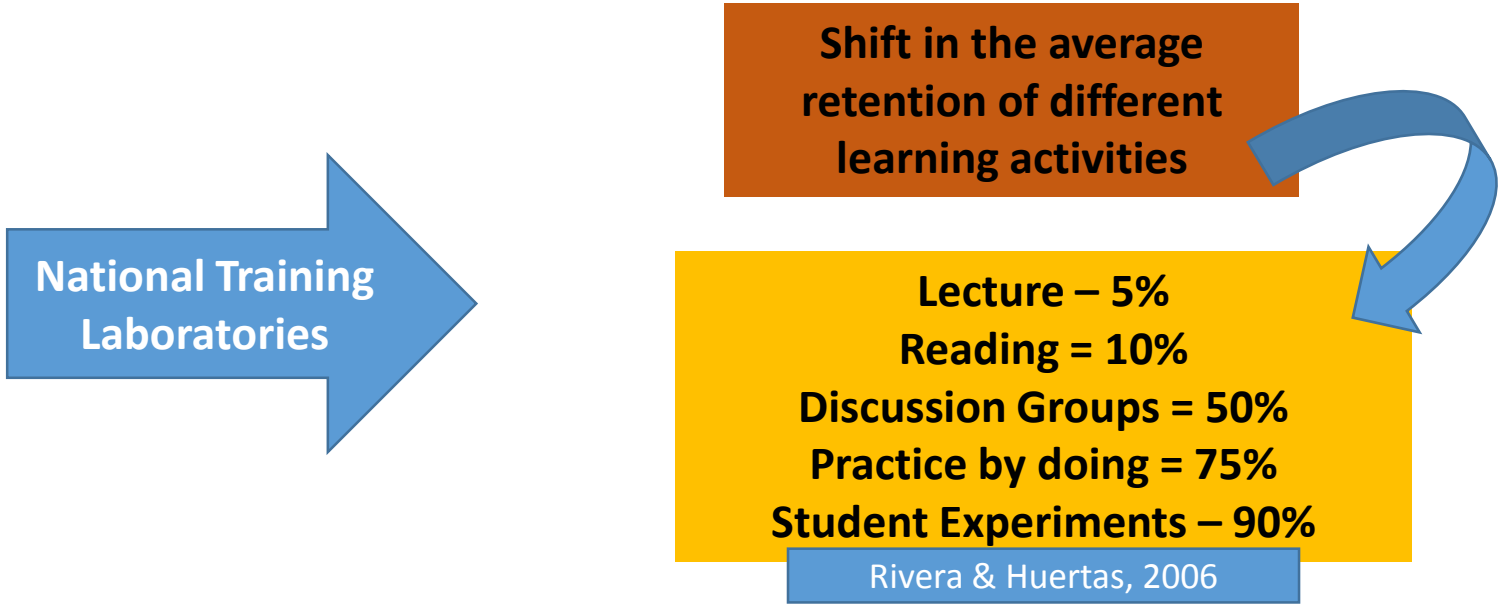
- **All of these theories emphasize active exploration, experimentation, criticism, analysis = Active Learning**

- **Millennials (Net Generation) students are experiential…learn by doing rather than listening. They need to be active with respect to heir own learning process and assessment.**

- **Learning is strengthened through social interactions, interpersonal relations, and communication with others.**

Learning Styles

- **Millennial students are social and team oriented, comfortable with multitasking, and generally positive in their outlook, and have a hands-on "let's build it" approach – all encouraged by the IT resources available to them" (Brown, 2005, p. 12.2)**



Learning Styles

Tend toward independency and autonomy in their learning style

More assertive information seekers and shapes how they approach learning in the classroom

Learning Styles

The Five Rs (Bart, 2011)

- ***Research-based methods*** (Use of multimedia, collaboration with peers
- ***Relevance*** (apply information)
- ***Rationale*** – They need structure and rationale for assignments
- ***Relaxed*** – Less formal learning environments – informally interact
- ***Rapport*** – Tutors need to show interest and willingness to connect

Learning Styles

- They make conscious choices about what learning techniques work best for them:
  - Reading lecture notes online
  - Viewing interactive media (i.e. Power Point presentations, digital images, videos, etc.
  - Working in group (Barnes & Marateo, 2007)
- Need self-directed learning opportunities
- Autonomous learning styles
- Learning by interactivity (social interactions)
- Assignment choices that use different resources to crate personally meaningful learning experiences
- Hands-on learning
- Inquiry-based approach to learning
- Use of media in many different formats
- Discussion based
- Communal learning involving diverse, tacit, situated experience
- Collective reflection
- Learn in short segments

Learning Styles

- Experiential learning – learning by doing through technology (WebQuests)

  - Consistent multitasking
  - Need for independence and involvement
  - Need for instant gratification

- Use Internet as a tool for learning
- Preference for digital literacy
- Learn through visual images – Feel comfortable with image-rich environments (different from texts).
- Visualization
- Simulations ("The use of simulation technologies to engage learners in a process that provides the interaction they desire with the feedback they need in real-time situations" – (Skiba & Barton, 2006).
- Case analysis
- Participatory learning

Learning Styles

- Work in teams – peer and social interactions
- Gaming
- IM
- Blogging
- Facebook, etc.

- Engage in cooperative learning exercises
- Empower them to be decision makers
- Allow them to analyze their own learning strategies
- Active seekers of information
- Self-reliant, curious, intellectually open
- Variety of environment types
- Movable walls with easy access to whiteboards
- Informal learning spaces…gathering spots
- Spaces where students can linger, meet, and talk informally
- Simultaneous presentations

Learning Styles

The Student Learning Experience at Bournemouth University
(Beard & Dale, 2010, p. 487)

- **Problem-based learning**
- **Independent learning**
- **Critical thinking**
- **Collaborative learning**
- **Reflecting**
- **Social construction of knowledge**
- **Assessing learning**

Learning Styles

MAIN LEARNING STYLES

- **Teamwork - Collaborative**
- **Experiential activities**
- **Visual-Kinesthetics**
- **Structure**
- **Use of technology (Technology is part of their environment/**
- **Multitasking**
- **Simulations**
- **Games**

Learning Styles

Student-centered approach

- Different from collection/materials
- Different from access
- Different from use (statistics)

- Blend in-person interactions and virtual interactions

Learning Preferences

Dissertation – Regina M. Bailey. Capella University. 2012.

A mixed-methods study to explore how replacing traditional teaching methods with engaged learning activities affects millennial college student attitudes and perceptions about learning.

RESULTS

- Freedom to design own learning
- Prefer to be engaged, actively involved
- Desire real-world, hands-on experiences
- Prefer to learn in a variety of ways collaboratively
- Predominant style is audio-visual-kinesthetic style

SPACES NEEDED BY MILLENNIALS

Spaces Needed

The resources used in higher education are increasingly digital and delivered via the network.

+

Network connectivity is increasingly portable.

These two developments make it possible for learning to happen informally, in areas outside the traditional classroom – the library, for example.

Spaces Needed

Librarians have the opportunity to rethink and redesign the library's spaces to support, encourage, and extend students' learning environment.

Spaces Needed

Formal and informal study areas
Informal Group study areas
Individual areas
Casual and moveable furniture
Computing and associated facilities
Use of zones
Flexible learning laboratories
Laptop benches
Work in group without surrounding noise
Communal spaces
Social spaces – learning through networking
Group study rooms
Multifunctional learning spaces

Spaces Needed

- Virtual Spaces (Virtual Commons)
  - Is any location where people can meet using networked digital devices. In its widest sense = synchronous, highly interactive functions (blogs, cat, wikis, etc.) + asynchronous functions (e-mail and discussion threads). (Students inhabit more than one virtual space at a time = multitasking)

- Spaces which offer work-stations that provide some applications that support the social aspects of learning, including instant messaging or chat, virtual whiteboards, shared screens, and a wide variety of resources to challenge students' imaginations.

- Collaborative workspace, either in group-study rooms or at tables in public areas where talking is clearly encouraged and where students can work together on assignments or group projects, in a technology-rich environment.

Spaces Needed

- Millennial studies do not always work in groups or with technology, these students still benefit from some traditionally configured spaces for quiet contemplation and study in libraries.

- Collaborative Spaces with university-wide services:
  - Writing Center
  - Tech/IT Help Center
  - Student Success
  - Subject Specific Tutoring Center
  - Research Assistance Desk

- Places where project-based, hands-on discovery unfolds
- Makerspaces (Collaborative learning environments where people come together to share materials and learn new skills).
- Face-to-face education space
- Living space
- Meeting space
- Production space
- Space for concentration (Quiet …contemplative spaces)

Spaces Needed

Interactive learning environment
Workstations equipped with a wide array of software
Multimedia production areas (projects)
Areas for expertise assistance
Multiuser workstation areas
Centers for teaching excellence
Instructional support services
Spaces where social and academic interests can intersect
Spaces that promote community
Space for videoconferencing
Collaborative, Problem solving, Task-based learning approach
Group learning
Third places for relaxation
Semi-enclosed pods for group activities
Flexible, multi-purpose spaces
Tables in sheltered locations
Self-governing informal learning spaces
They want to create their own working space
Quiet study space

Spaces Needed

University of Technology at Sydney Library
(Booth, Schofield, & Tiffen, 2012, p. 36)

- **Orientation spaces (stimulate and inform)**
- **Spaces designed for extended hours**
- **Merged physical and digital identity and access**
- **Collaborative spaces for shared learning and discovery**
- **Dedicated spaces for researchers, students and industry partners**
- **Flexible, robust spaces that can be easily adapted for multiple purposes**

Spaces Needed

Hong Kong University of Science and Technology
(Chan & Wong, 2013)

SPACES

- Group Study Zone
- Open Study Zone
- Refreshment Zone
- Teaching Zone
- Creative Media Zone

Spaces Needed

Bogor Regis Learning Resource Centre
University of Chichester, UK
(Ellison, 2016, p. 299)

- **Zone A – IT Teaching Rooms**
- **Zone B – Café**
- **Zone C – Group and social learning, group study rooms & booths**
- **Zone D – Quiet areas - Individual working**
- **Zone E – Silent study - study carrels**

Spaces Needed

Nanyang Technological University's Library Space Components
(Choy & Goh, 2016)

- **Collaborative Space**
- **Sanctuary Space**
- **Interaction Space**
- **Community Space**

CONCLUSION

Conclusion

These spaces project a comfortable, relaxed environment, a celebration of technology, and an invitation to communicate…try to think of your library as an environment rather than a facility – a place of interaction, learning, and experiencing rather than a place for storage and equipment.

Conclusion

Design principles should include terms such as analyze, create, criticize, debate, present, and classify.

Spaces to accommodate interactive tools that enable exploration, probing, and examination. Include set of applications installed on the computer that controls the room's displays. Equip spaces with devices that can capture classroom discussion and debate.

Well-designed and integrated physical layouts and IT "tools set" will find a ready audience with NetGen students.

Conclusion

This scenario show NetGen students and faculty engaged in learning practices that are leveraged by IT, a process that requires either improving current practices or creating new ones.

The scenario suggest the importance of integrating all learning spaces, formal and informal.

Perhaps the most challenging aspect of these new learning spaces is the need for a more ubiquitous and integrated learning environment….one that serves better the mobile Net Gen who desires to construct their own knowledge through experiential and networked learning.

"The starting point for rethinking learning spaces to support Millennial students begins with an underlying vision for the learning activities these spaces should support. This vision should be informed by learning theory, as well as by recognition of the characteristics of the students and faculty who use these spaces." (Brown, 2005, p. 12.20)

Conclusion

Librarians need to become designers of learning experiences

As librarians plan for the future, they need o think carefully about how to provide the best learning environment, linking the physical space, technology, library services, and content to Millennial users' educational needs and work styles" (Lippincott, 2005, p.28)

"Librarians need to consider whether they would be satisfied to offer a heavily used study hall or computer lab to students or whether they want to design a complete learning environment that includes in-person and virtual services to complement the physical space and technology" (Lippincott, 2010, p. 35).

The introduction of learning space into facility design must be done with maximum flexibility and the adaptation of space must be considered for the long term.

Conclusion

"Investing in the development of learning spaces allows better space utilization, better responsiveness to the changing needs of students and faculty, the more cost-effective application a academic technologies and resources, and higher levels of student satisfaction" (Acker & Miller, 2005).

Conclusion

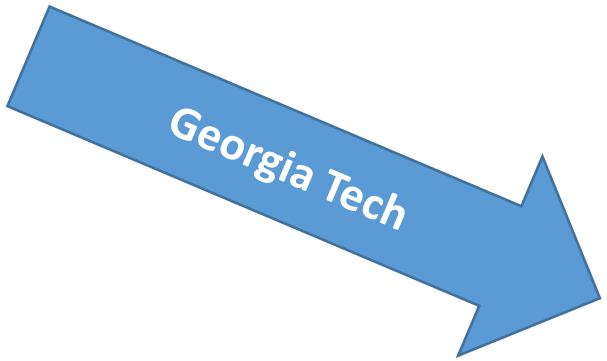
"Changing library systems o reflect changes in users' expectations and their modern ways of encountering information is a complex task, and a task made more difficult by the traditional attitude of librarians as custodians and protectors of the past and its artefacts" (Sukovic, Litting, & England, 2011, p. 72).

Conclusion

Oblinger (2006) highlighted the need for "pedagogy to lead design by considering what is required for the learning activities that will result in the required learning outcomes, suggesting that if students are provided with the necessary spaces and tools, they can construct their own understanding."

In order for spaces to contribute to learning, they need a clearly stated pedagogic purpose. In this way, services and facilities could work together towards the philosophies underpinning the space, rather than just occupying the spaces. (Kehrwald et al. (2013).

Conclusion



"The Library renewal is not a break from tradition, but a bold rethinking of past conventions, an acknowledgement that research and teaching are changing, and a necessary reshaping, to ensure that the Library continues to be a creative partner and essential force in the fulfillment of the Georgia Tech mission" (Bennett, et al., 2014, p.8)

Conclusion

"Most academic libraries are organized based on library functions rather than the primary missions of their college or university. Library strategy needs to continually aligned to the university's academic plan and ensure that it supports the principal teaching and learning missions of the institution" (Franklin, 2008)

Conclusion – Metrics of Success

Many libraries had also stated that their key statistics regarding the number of people who visit and work in the spaces were the only starting point for the construction of their own learning spaces (Stuart, 2009).

"The majority of academic libraries have become known more for their learning spaces and facilities than for their collection" (Fallin, 2016, p.315).

The measure of an academic library is now the quality and range of its services, or the size and scope of its collection. It suggests a change in the metric of heir success. (Spiro & Henry, 2010).

This change is important if academic libraries want to maintain their relevancy within the University it serves.

Conclusion – Metrics of Success

"It is not enough simply to develop measures and to collect statistics related to library networked resources and services."

"Academic libraries should develop a process to identify and to operationalize library outcomes that contribute to institutional outcomes." (Fraser, McClure, & Leahy (2002).

"Usage figures, such as gate counts and head counts" (usage statistics) "are no longer sufficient to demonstrate the role of the academic library within the campus ecosystem" … "student outcome metrics – may …be shared …" (Thorpe, A., Lukes, R., Bever, D. J., & He, Y., 2016, p. 387).

Conclusion – Metrics of Success

There are considerable problems in defining and collecting library use data. Rather than being influenced by library inputs or the amount of student use, improvements in persistence and retention are more likely to result from the challenge of a student's academic program and the "complex interrelationships between these factors and the professional library staff" Emmons & Wilkinson, 2011, p. 146).

Conclusion – Metrics of Success

“By 2024, academic libraries will be academic commons, no longer repositories for information but spaces designed to enhance student learning and facilitate collaboration” (Holgrem & Spencer, 2014, p. 9).

Conclusion

“Cooperation carried out recently with different learning bodies and user-focused plans for learning space designs are what changes or renovations should be based upon” (Tevaniemi, Poutanem, & Lahdemaki, 2015, p. 308)

“Students need to feel they are a part of the institution, empowered by using its resources, and at ease and welcomed in their educational environment. The concept of the “library as a place” that supports students’ academic and social integration is an important one”. (Zhong & Alexander, 2007, p. 146)

Scenarios

Conclusion (Scenario 1)

Glasgow Caledonian University – Saltire Centre
(Appleton, Stevenson, & Boden, 2011, p. 349)

The primary objective was to create such a place, which would serve as an inspirational learning space with a variety of seating styles and good information technology (IT) support.

Social spaces to encourage debate, discussion and conversation.

Flexibility to be able to create a number of micro-environments that can be adapted for either quiet or group study at different times of the academic year.

Incorporated a range of different student services in a single building from a combined information desk.

The need for privacy in an open space was catered for by the use of screens, canopies, utility walls, and inflatable igloos, to screen off areas for consultation, interviews and academic support.

Conclusion (Scenario 2)

A Day at The Library
(Brown, 2005, pp. 12.5-12.17)

Martin arrives at the first floor of the library and goes to a set of rooms collectively called the Learning Commons. At the threshold of the commons is the peer-tutoring room, a place where students can drop in and receive peer-based help with writing, research, or IT issues. Martin stops by to ask about incorporating MPEG-4 audio files into a PowerPoint presentation he's due to give next week for an anthropology course. At the same time, he is able to get some questions answered about relevant online journals for his research project in psychology.

Martin checks the time and heads to a work team pod – a small, horseshoe shaped table with a computer and large display – where he meets classmates from his chemistry course. The pod enables the work group to share the display and collectively work on materials. Martin works for an hour with three other students, reviewing drafts for their essays, checking online materials, and revising the Web site they are putting together for their collaborative project on the molecular properties of the surfaces of liquids.

Once the meeting is complete, he locates a free spot, pulls his laptop out of his backpack, and spends the half hour before his next team meeting doing a wide variety of thins, including chatting with half a dozen friends about their party plans for the weekend. At the same time, he senses an e-mail to one of the TAs for the chemistry course, asking for clarification of an assignment. He also browses the Web, zeroing in on a Web site at another college that is relevant to his anthropology course work, as well as seeing if the latest CD from his favorite band is available through the Music Store. In a few minutes, he has purchased several tracks from it and downloaded them onto his computer.

Conclusion (Scenario 2 cont.)

A Day at The Library
(Brown, 2005, pp. 12.5-12.17)

Martin checks the time again. It's 10:00pm., and there's still a great deal to get done. He divides his time across several course assignments, numerous chat sessions, and reading (both from print and online). After a time, feeling drowsy, he goes to the Midnight Café, buys a soda and some chips, and returns to his work.

At 11:30 p.m., Martin packs his gear and heads to another part of the commons, the Media studio, which offers a number of stations for students to use for more advanced work with video and audio. Martin is working with a team of four other students on an assignment for a film studies course. Their task is to find clips from a set of films that illustrate a particular filming technique and to explain why it is effective. They rendezvous at a group station and spend the next hour reviewing films and identifying the clips they will use. They ask the student consultant on duty about whether it would be better to collect these in a single clip or as separate clips. By 12:45 a.m. Martin and his teammates have made their selections and given themselves tasks for the next phase of the assignment.

Martin calls up a Web page from the library that contains a form for reserving one of the small group study rooms, where the group wants to meet with a professor the following day. While walking back to his dorm, Martin prepares for the drill session by listening to some language lab audio files, which are streamed from the language lab server to his wireless iPod II.

Most Valued Spaces (Study Results)

AUTHORS	Individual Carrels/ Quiet Areas	Group Study Areas Collaborative	Social Areas	Communal Areas	Computers
Oliveira, Silas M. (2016)	X	X			
May, F. & Swaby, A. (2016)	X	X		X	X
Thomas, et al. (2015)	X	X			X
DeClercq & Crantz (2014)	X				
Montgomery, S. E. (2014)	X	X	X		
Harop, D. (2013)	X	X			
Norton, et al. (2013)	X	X			X
Yoo-Lee, Lee, Velez (2013)	X		X		

Summary

Common attributes relevant to libraries

- **Ethnically/racially more diverse**
- **Internet savvy**
- **Always connected to social media**
- **Tendency to multitasking**
- **Learning by doing**

Summary

- **Millennials often do their academic work either with or around their friends or classmates.**
- **They make ample use of technology and digital content and work on schoolwork late in the day and into early morning.**
- **While students are intensely engaged in social learning and using technology, they also want to enjoy the library as a contemplative oasis.**
- **They need flexible work spaces in order to construct their own knowledge.**

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Note: If you would like a copy of any of these, please let me know (silas@Andrews.edu, 269-471-6263)