A Rationale to Address Physical Spaces and Well-being in Post-Secondary Settings

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Within the Simon Fraser University (SFU) Healthy Campus Community initiative, Physical Spaces has been identified as one of six pillars for action to positively impact student well-being. This initiative is founded in settings-based theory whereby the institution itself is the focus for intervention in order to create campus conditions that are supportive of well-being.

There is a growing body of research that demonstrates a connection between built environments and health status. Building design in health care, the corporate sector and education has intentionally included enhancements in order to create a supportive built environment (Schweitzer, Gilpin & Frampton, 2004). Within the context of education in particular, the quality of physical learning environments has been shown to have a significant and measurable impact on student achievement, productivity, satisfaction and well-being (Earthman, 2002; Hill & Epps, 2010; Lippman, 2010; Young, Green, Roehrich-Patrick, Joseph & Gibson, 2003). Physical space features directly impact psychosocial, mental and physical health. A poorly designed space for example, can result in distracted behavior, inability to focus, irritability, physical discomfort, increased stress levels, and increased blood pressure. In contrast, well designed spaces have the ability to positively impact mood, creativity, social connectedness and learning. In a post-secondary setting, a supportive physical space is important for fostering student well-being and success overall.

The majority of the research on physical spaces in terms of education and well-being has been conducted at the elementary and secondary level; recent research indicates that university and college students are similarly impacted and value physical space characteristics (Hill & Epps, 2010). Studies have found that students in substandard buildings or older classrooms are at a disadvantage in terms of academic performance compared to students in new or upgraded educational facilities (Earthman, 2002; Hill & Epps, 2010). In terms of student satisfaction, physical space features have an impact as evidenced in a study by Hill and Epps (2010):

Classroom features do impact satisfaction and certain aspects of the student evaluation of professors. Students enjoyed coming to class more and were more satisfied in the updated room. Further, the students rated their professors higher in terms of organization in upgraded classrooms, and they also indicated that they were more likely to learn something new each class in upgraded classrooms. (p.77)

Potential Impact on Students

There are a number of ways through which the physical environment influences student well-being and success. A physical space can impact the level of stress that students feel, the degree to which they feel connected to others as well as their ability to cognitively perform. Using literature, as well as qualitative research findings at SFU, key features of physical spaces that impact student learning and well-being have been identified as light, temperature, air quality, furniture, nature, colour, art as well as inclusivity. These aspects of spaces can be thoughtfully considered when upgrading, renovating or creating new spaces within educational environments.
Light

Within learning spaces, light has been proven to impact variations in mood, such as alertness and sleepiness, affecting cognitive performance, comfort and well-being (California Energy Commission, 2003; Griffin, 1990; Heerwagen, 1990). Lighting is essential to support visual performance; however, exposure to optimum levels of natural light in particular has been shown to reduce the impact of environmental stressors as well as support overall well-being. As a result, the strategic use of light and shade, light intensity, type and quality are important considerations in space design.

Temperature

Studies show temperature to be the most influential physical space variable in terms of student achievement and comfort (Earthman, 2002; Graetz & Goliber, 2002). When temperature deviates from comfortable levels it results in a decrease in efficiency and an increase in student complaints due to discomfort as well as distracted behaviors within the learning environment (Earthman, 2002; Graetz & Goliber, 2002). Excessive heat in particular is a well-documented environmental irritant that negatively impacts mood and one’s ability to focus (Graetz & Goliber, 2002).

Air Quality

Research highlights the health benefits associated with good indoor air quality and natural ventilation strategies. A study of student performance found that students in classrooms with operable windows progressed 7-8% faster on standard tests than those with fixed windows (Graetz & Goliber, 2002; Schweitzer et al., 2004).

Colour and Art

Incorporating colour into the classroom results in a welcoming environment that reduces stress, improves visual processing and supports brain development (Dagget, Cobble & Gertel, 2008). Findings have also shown that colour variety creates a supportive environment conducive to learning and student well-being (Englebrecht, 2003). From a psychological standpoint, warm and light colours promote activity whereas cool and deep colours foster passivity and relaxation (Dagget et al., 2008). It is important to note that there are challenges associated with colour choice. Recommendations can vary according to age and task type and human responses to shades are complex and impacted by psychological

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– SFU Student

“Being surrounded by images of nature is soothing and comforting”

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associations. As a result, it is important to consider who will occupy a space and its desired function when choosing a colour. Arts, including visual and musical forms, also have connections to well-being by lowering stress and anxiety levels and promoting a general improvement in mood (Schweitzer et al., 2004).

Nature

Research on built environments has established that buildings that connect people to nature are more supportive of well-being and cognitive performance than environments lacking natural features. There is a growing body of evidence supporting that perceived accessibility to nature is restorative by reducing stress, reducing physical discomfort, lowering anxiety and blood pressure and increasing feeling of contentment (Heerwagen, 2003). Adding indoor plants to a physical space or incorporating views to nature by way of windows or visual imagery has been proven to support well-being, healing and increases performance and satisfaction (California Energy Commission, 2003; Schweitzer et al., 2004; Young et al., 2003). Nature’s presence can come from daylight, fresh air, indoor and outdoor plants, artwork of nature scenes, landscape views and the incorporation of natural materials such as wood.

Inclusivity

Higher education student populations are becoming increasingly diverse across a broad range of characteristics including ability, age, learning style, language and culture to name a few (Burgstahler, 2012). Consequently, it is important to consider the accessibility of physical spaces on campus. The utilization and consideration of universal design principles for physical spaces can make an institution welcoming and inclusive to all.

Furniture

Comfort and health are now intentionally considered with regards to educational furniture design in order to promote well-being and minimize distractions. Poor furniture design can result in muscle fatigue and drowsiness amongst students (Cornell, 2002; Graetz & Goliber, 2002). As a result, furniture needs to be made of non-toxic, supportive materials and as “comfortable, adjustable, intuitive, reconfigurable, technology capable, compressible and attractive” as possible (Cornell, 2002, p. 34).
Furniture also plays a role in fostering social connectedness and interaction, both of which directly impact well-being and are key components in facilitating meaningful learning experiences. Although educational facilitators often have little control over structural design, something as simple as strategic furniture arrangement or flexible furniture can aid in encouraging social interaction and creating environments that are conducive to collaborative learning and psychosocial well-being. Cornell (2002) states that the manner in which objects within a space are arranged predisposes individuals to certain kinds of behavior: a traditional fixed, “eyes forward” arrangement communicates that the setting is not for interaction but listening; clustered furniture implies collaboration and social connection; movable and adjustable furniture conveys thought and concern for the users and their comfort. Furniture choice and arrangement impact student behavior, interaction and well-being and should be considered within higher education environments.

Implications

In recent years there has been an increase in the knowledge base and dialogue in relation to physical spaces within higher education. Changes in social patterns, funding, advances in educational technology and shifts to a more learner-centered pedagogy have been reshaping the educational landscape over the last decade (Radcliffe, 2008). These shifts are resulting in a growing interest in innovation, experimentation and research in terms of learning space design namely in North America, Europe and Australia (Radcliffe, 2008).

Post-secondary instruction is changing in order to meet the needs of current students. Teaching practices now emphasize more collaboration, incorporation of technology and social learning, and require students to be more active physically and mentally. There is also an emerging understanding that meaningful learning takes place outside of the traditional classroom and the concept of learning environments now includes libraries, dining areas, community service sites, study and social spaces. As a result, within post-secondary the physical environment needs to enable informal and formal learning by being flexible, comfortable, technologically accessible and encouraging of interaction. These changes are supportive of both learning and well-being.

Moving forward there is a need to take an active and collaborative design approach in obtaining a greater understanding of the “transactional relationship between learners and their learning environment” (Lippman, 2010, p. 3). “Buildings affect our psyche as well as our bodies; they can be inspiring and supportive of daily activities, or they can deplete the spirits and undermine the best intentions of the designer” (Heerwangen, 2008, p. 620). The success of new spaces within higher education are not just dependent on resources, stakeholder support, design experience and proficiency, but also the involvement of space users such as instructors, students, university staff and community members. The input and interplay between these groups is critical in the creation of meaningful learning experiences.
and successful implementation of effective, sustainable learning spaces that physically and socially contribute to
the development of the whole student (Lippman, 2010).

Physical spaces have “a largely untapped potential as an active contributor to the learning process” (Young et al., 2003, p.5). Physical space characteristics affect student evaluation of teaching and student educational experience overall. Students perceive significant differences in learning facilities in relation to seating, lighting, desk placement and other physical features, and these differences impact “students’ perceptions of the instructors’ organization, their own enjoyment of the class, their perceived level of learning and their general sense of satisfaction” (Hill & Epps, 2010, p. 66). Physical features can also profoundly impact student well-being and learning. Thus, it is imperative that policymakers and administrators invest in the connection between physical spaces and student learning, achievement and well-being. Producing and maintaining optimum learning environments will maximize efforts for institutional progress including gains in reputation, student retention and enrollment. The quality of a physical space impacts the quality of the student learning that takes place within it which has powerful implications for the business of higher education (Earthman, 2004).

Applications

There is an important relationship between physical spaces and student well-being. Considering new space developments or space renovations with a well-being lens is a strategic opportunity for settings-based health promotion action that can have long-term impact. Please visit the Physical Spaces component of the Healthy Campus Community website for detailed suggestions:

http://www.sfu.ca/healthycampuscommunity/physicalspaces.html

At SFU, the following activities have been completed or are currently underway within the Physical Spaces project:

- Health Promotion representative on Burnaby Classroom Renewal Committee (2011 to present)
- Student Health Advisory Committee completes Photovoice project (2011)
- Peer Health Educators collect student feedback and provide input to Facilities Services for the Academic Quadrangle (AQ) 2000 student lounge renovation (2013)
- Peer Health Educators create student survey and engage SFU students in measuring the success of the AQ 2000 student lounge renovation after completion (2013)
- Health Promotion representative on Vancouver Learning Spaces Committee (2014)
- Health Promotion provides ongoing consultation to Build SFU Project (the planning and design of a new student union building) (2014).
- Health Promotion provides feedback to Facilities Services on proposed design scheme for SW AQ 3000 student lounge renovation (2014)
- Health Promotion representative on the Task Force on Flexible Education’s space related working group (2014)

For more information please contact SFU Health Promotion at health_promo@sfu.ca or visit the Physical Spaces website: http://www.sfu.ca/healthycampuscommunity/physicalspaces.html
References


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