Journal of Posthumanism
2026
Volume: 6, No: 2, pp. 89–100
ISSN: 2634-3576 (Print) | ISSN 2634-3584 (Online)
posthumanism.co.uk

DOI: https://doi.org/10.63332/joph.v6i2.3953

Applying Ulrich's Supportive Design Theory (SDT) to Higher Educational Buildings - A Review and Proposal - it

Maryam Aljaidah[1], Roderick Adams[2]

Abstract

Roger Ulrich's Supportive Design Theory (SDT), initially developed for healthcare settings, focuses on three main principles: perceived control, positive distractions, and social support, which aim to alleviate stress and improve well-being. This paper explores the potential implementation of SDT in higher education buildings, highlighting their effectiveness in educational environments. While healthcare design has conventionally emphasised environments that reduce stress to benefit patient outcomes, the impact of physical environments on students' well-being and academic success is often underestimated. By reviewing current research, the paper demonstrates how design elements—including controlling the surroundings (perceived control), engaging aesthetic features (positive distractions), and designated areas for interaction (social support)—can alleviate student stress and improve well-being (Scherer & Leshner, 2021). By drawing parallels between students and patients, this study identifies common stressors, such as sensory overload and feelings of isolation, which SDT principles can address in both scenarios. For instance, strategies used in healthcare settings, which focus on spatial autonomy and sensory comfort, can be adapted to the educational sphere by creating versatile learning spaces and quieter environments (Pereira, Catharine and Marcella Savioli Deliberador, 2018). However, the unique challenges of academic life, which often require balancing individual focus with collaborative efforts, may necessitate specific adjustments to the SDT approach. This discussion supports the relevance of SDT by integrating insights from environmental psychology and educational design, suggesting that thoughtfully designed campuses can not only improve academic performance but also support students' mental health.

Keywords: *Supportive Design Theory; educational buildings; student well-being; academic outcomes; perceived control; positive distractions; social support; environmental psychology; supportive design.*

Introduction

This review aims to validate the applicability of Ulrich's supportive design theory in higher educational settings, employing a comparative method to support its argument. Studies consistently support the idea that both poor and high-quality environments have an impact on teaching and learning. (Higgins et al., 2005). This review aims to validate the applicability of Ulrich's supportive design theory in educational settings, particularly in higher education. The research supports the application of the theory based on the function of the space, its needs, and the type of users, including their desired outcomes. The paper employs a comparative method to support its argument.

The supportive design theory (SDT) developed by Ulrich theorises the extent to which the physical and social healthcare environment influences a patient's well-being, mainly through stress reduction (Suess & Mody, 2018). The core concept of this theory suggests that healthcare settings can improve user health outcomes by effectively alleviating stress, ensuring protection, and enhancing coping strategies (Ulrich, 1991). The theory asserts that cultivating a sense of control over the environmental and physical aspects of surroundings through spatial design,

[1] Architecture & Interior Design Department, College of Engineering, University of Bahrain, Maryam.aljaidah@northumbria.ac.uk
[2] Northumbria School of Design, Northumbria, University, Newcastle upon Tyne, Roderick.adams@northumbria.ac.uk

providing access to positive distractions, and enabling social support can promote well-being among healthcare users (Atkinson & Robson, 2012). It is a well-established theory within the field of design for health settings aimed at examining and addressing patients' needs to develop and enhance strategies that facilitate a supportive design approach (Andrade & Devlin, 2015).
This paper argues for the potential application of the SDT in educational settings and explores how the theory can be applied in higher education buildings. This specific investigation aims to design schools grounded in theories that enhance well-being in relation to interior design, considering its direct impact on learning experiences and academic outcomes.
However, to apply Ulrich's theory, which is extensively and explicitly used in health settings, to educational buildings, it is crucial to address the need for evidence-informed design in educational buildings. Therefore, this paper introduces the theory, then discusses the higher education buildings' physical environment, followed up by the space design factors that could impact higher education learners' well-being, and finally, the parallels between patients in healthcare and students in higher education to signify the possibility of evaluating spaces in educational settings based on the (SDT) that Ulrich mainly proposed for healthcare. The research focuses on patients and students in higher education as its primary target users. While physical factors may still affect other space users, the study aims to be more concise and specific by emphasising these categories only.

The Physical Environments in Educational Buildings

The educational building serves more than merely as a container for students during their study journey; its purpose extends far beyond this notion. Studies have shown the link between the design of physical spaces and various learning activities (Beard & Wilson, 2006; Beckers et al., 2016), as well as their impact on educational outcomes. In students' lives, learning activities are divided into two types: individual activities, which require concentration and focus, and group activities, which necessitate interaction and collaboration (Beckers et al., 2015). Over the past few years, numerous changes have been applied to educational curricula and methods, with new learning methods proposed (Dixon et al., 2022) particularly higher education. One of the most significant changes is the emergence of self-directed learning, which prepares students to take charge of their studies and be accountable for their learning journey (Palaiologos, 2011; Beckers et al., 2016). This has led to a swift transformation in the physical environments of educational buildings, recognising that learning occurs both inside and outside the classrooms (Webb et al., 2008). This underscores the vital impact of physical space design on students' learning experiences and academic journeys. Information and communication technology (ICT) developments suggest that learning can occur anywhere and at any time (Beckers et al., 2016). These advancements reinforce the idea that every area within the school building holds the potential to serve as a learning space and foster environments that support learning and students' well-being.
The physical and social aspects, as discussed by (Sprang et al., 2013), influence students' choices of their favourite or most convenient learning spaces for specific activities. The literature examines how the design of physical spaces impacts students, emphasising the significance of building quality in attracting learners and fostering a sense of belonging. Conversely, poorly designed buildings widen the gap between students and schools (Beckers et al., 2016; Dixon et al., 2022). This highlights the influence of physical space on users, particularly in terms of environmental comfort and aesthetic appeal. Additionally, the social dimension affects how spaces are utilised when the users' needs are considered in the design. For instance, learning activities, whether individual or group-based, may necessitate varying levels of openness or

privacy depending on the school task.
In conclusion, the key considerations within the design process of a building determine whether its spaces effectively meet the needs of students. Achieving this goal involves collaboration between various stakeholders, starting with the architect and designer and extending to the school management and other authorised departments. A thoughtful approach to design can create an environment that supports learning and enhances the overall educational experience and outcomes for students.

Well-Being Impact on Students' Experiences and their Academic Outcomes

Well-being is defined by the World Health Organisation (WHO) as a comprehensive resource for healthy living that incorporates psychological, physical, emotional, and social functioning (Baby et al., 2022). It is a process that is permanently anchored in a specific time and place (White, 2008). Researchers define subjective well-being as life satisfaction, positive emotions, and the absence of negative emotions. Nonetheless, it has been shown to correlate with job performance and economic productivity in adults. However, there is a growing concern about subjective well-being among youth, particularly students (Cárdenas et al., 2022). Research indicates that students with higher levels of well-being tend to achieve better academic results and have more positive learning experiences. Academic performance, or outcomes, produces quality graduates who will lead and contribute to a country's development (Ali et al., 2009; York et al., 2015; Kuh et al., 2006). It is influenced by various factors, including personality traits, peer groups, and the educational environment (Baby et al., 2022). Studies suggest that subjective well-being, especially the absence of depression, is associated with better academic performance (Cárdenas et al., 2022). Well-being and resilience are linked to life satisfaction, creative thinking, and improved learning outcomes (Martin E. P. Seligman Randal M. Ernst & Linkins, 2009). High levels of well-being lead to intrinsic motivation, reduced disciplinary issues, and enhanced academic achievement (Bücker et al., 2018). Specific aspects of well-being, such as gratitude and emotional regulation, have been shown to positively affect academic performance through increased school satisfaction, social integration, and prosocial behaviours (Furlong et al., 2014). Recent research findings by Baby aligned with previous research by (Chattu et al., 2020; Keyes & Shapiro, 2004; Keyes, 1998), indicating a positive correlation between social well-being and academic performance. Highlighting the impact of social well-being on students' physical and psychological health, academic achievement, and personal development. She further noted in his research that socially integrated students, who feel part of their academic community and connected to their peers, are more committed and perform better academically (Baby et al., 2022).

A Comparison between Patients and Students in Higher Education

Patients and students are the primary users in two sensitive sectors of our society: health and education. Both organisations design their environments and establish their rules to benefit these users. The success of these settings relies heavily on the satisfaction derived from patients' and students' experiences and outcomes. The experiences of both groups differ in terms of utilisation, duration of stay, activities, and spatial integration, yet they share key aspects. These shared aspects can be divided into psychological and physical needs, which are influenced by their surrounding environment and the design of space.

The psychological states of hospital patients and higher education students fluctuate between stress, anxiety, depression, apprehension, and fear, alongside the challenge of adapting to new environments. A patient's psychological journey in the hospital begins with diagnosis and continues through treatment and recovery. In contrast, higher education students often

experience worry and fear stemming from their new lifestyle, the responsibilities of academic life, looming deadlines, and concerns about their future careers. Admitted patients frequently live with the worry and stress of medical procedures, which elevates their anxiety levels (Alzahrani, 2021; Tee-Melegrito, 2023). Similarly, university students sometimes suffer from anxiety related to academic demands, social circumstances, and the unfamiliarity of their new environment and life (COMPARE, 2023). Depression is a common issue faced by hospitalised patients (Alzahrani, 2021). Higher education students are often affected by spatial stressors. Stressors can be psychological, related to individuals' lives and demands, or physical, linked to spatial design and environmental quality. In healthcare, psychological stress includes check-ups, treatments, and painful healing processes (Corgan, 2022). Meanwhile, in education, academic stressors involve exams, tests, deadlines, and financial and social pressures (COMPARE, 2023). (Figure 1)

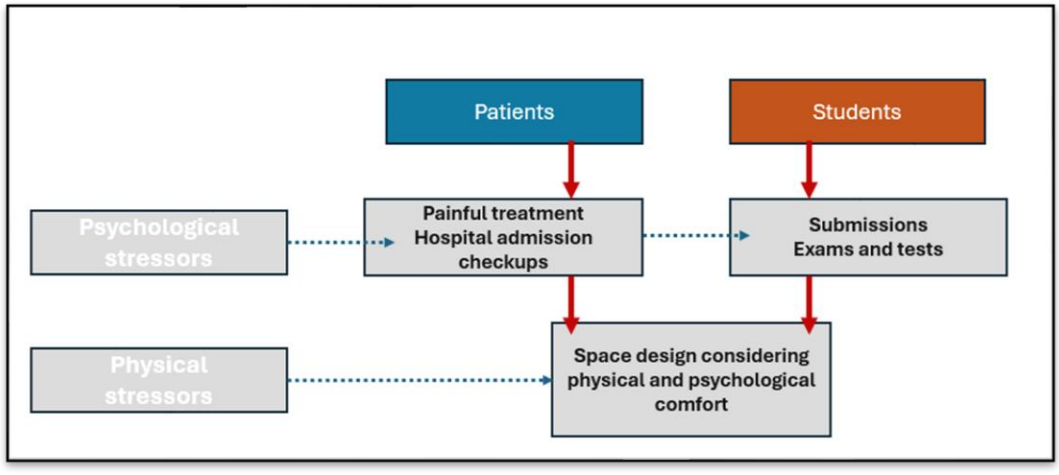

Figure 1- A comparison between healthcare and educational building stressors- by Author

Nonetheless, as health and education users share emotions and feelings, they relate to psychology through psychological studies; they also segment physical needs and desires to enhance their experience and outcomes by improving their well-being. The physical environment is vital to the well-being and mental health of users. Thoughtful space design can promote well-being and alleviate the effects of psychological and physical stressors. Physical stressors include functionality, spatial design and layout, furniture arrangement, colours and textures, and materialisation. This appropriate, well-considered design can be achieved by meeting the users' requirements and desires and mitigating problems (Corgan, 2022).

To facilitate the journeys of both patients and students, a thoughtful space design must be provided that enables them to concentrate on the shared elements contributing to a holistic experience and improved well-being. As previously discussed, both psychological and physical challenges impede the users' experiences. Conversely, common factors that should be addressed to alleviate the negative impact of these journeys and enhance both physical and mental well-being include stress reduction, social support, space personalisation, and overall comfort. Both groups benefit from the design of their environments, which can alleviate stress arising from their personal circumstances in varying contexts. For patients, effective space design can aid and accelerate the recovery process (Douglas Bsc et al., 2004), while for higher education students, it can enhance their usage of the space, improve their overall experiences, and assist

in completing academic assignments (Architects, 2020). Patients and students value social interactions, viewing them as a crucial element in ensuring a successful journey. This interaction promotes the healing process for patients (Ulrich, 1997)and fosters a sense of community among higher education students through the built environment (Dixon et al., 2022). Both patients and students urge the prioritisation of comfort and space personalisation, desiring a degree of control over their environment (Rqitects, 2024). They both seek environmental and physical comfort. Environmental comfort can be achieved by integrating natural light, achieving thermal comfort, ensuring good air quality, and controlling noise levels. Physical comfort is attained by providing flexible, rearrangeable spaces with aesthetically pleasing designs that are sensorily comfortable (Architects, 2020; Douglas Bsc et al., 2004; Rqitects, 2024). Addressing all these factors has a direct correlation to enhancing well-being.

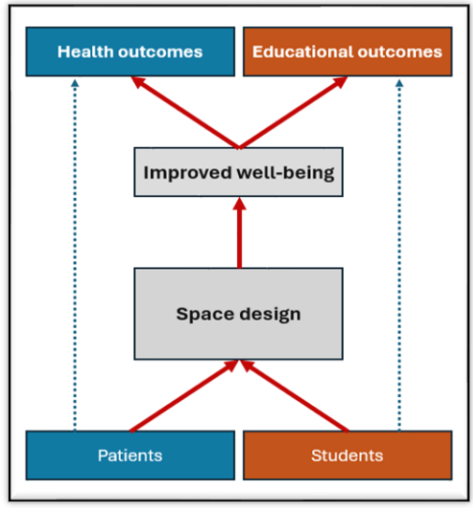

Figure 2- Space design impact on health and educational outcomes- by Author

In conclusion, the commonality between hospital patients and higher education students reveals that both users' well-being, experiences, and outcomes are significantly psychologically and physically influenced by the spatial design of their surrounding environment (Figure 2). While the admission process has an unfavourable impact on patients, studying can also present challenges and difficulties that adversely affect their well-being and experiences. Consequently, the choice was made to adopt the supportive design theory due to its considerable impact on hospital users' well-being and health outcomes. Following this comparison between the two user groups, the argument began to gain some validation due to the similar needs and life stresses they endure.

Supportive Design Theory (SDT): Potential Application in Higher Educational Buildings

Supportive Design Theory (SDT)

In 1991, Roger Ulrich proposed a supportive design for healthcare environments to alleviate stress, preserve patients' well-being, and enhance hospital experiences for all users (Atkinson, 2012). Ulrich highlighted that by adopting certain principles, spatial design can reduce stress and promote healing, in line with the healing environment concept. This approach, which evolved in the 1970s, emphasises the importance of the physical environment for patients' recovery and wellness (Iyendo et al., 2016). The theory emphasises the importance of hospital facilities in reducing stress levels and enhancing the well-being of healthcare users, with a

particular focus on patients (Bae & Asojo, 2020). Ulrich contends that inclusive, supportive space design can enhance patient well-being by integrating elements that foster a sense of control, provide positive distractions, and offer opportunities for social support (van Dellen et al., 2022). The supportive design theory (SDT) principles help elucidate the relationships among all hospital users, including patients, staff, and visitors, with the surrounding physical and social environment. The physical aspect encompasses interior design elements such as furniture, colours and textures, lighting design, materials and finishes, spatial design, circulation, and accessories. Conversely, environmental factors include temperature efficacy, ventilation (both natural and artificial lighting), and acoustics (noise control). Studies have shown that a well-designed physical environment can significantly impact outcomes for hospital users by reducing stress and fatigue, enhancing care delivery, and improving overall health quality.

Recent research suggests that the three principles—perceived control, positive distractions, and social support—may be applicable in educational buildings and could influence students' learning outcomes throughout their academic journey. However, after discussing the physical and educational spaces and the impact of well-being on students. This is followed by an evidence-based comparison between patients in healthcare settings and students in educational environments to identify commonalities between both user groups. The following discussion addresses the SDT principles related to students and educational building design.

Perceived Control (PC)

Sense of control refers to providing flexible environments that influence one's health and life (Fisher, 1990). Patients' loss of control extends beyond hospitalisation and illnesses, including their ability to endure pain or even to sleep and eat. It encompasses controlling the surrounding environment and its effect on patients' well-being. This loss of control has an adverse impact on their well-being, leading to increased stress and poorer health outcomes. (Ulrich, 2000). Users' experiences of the physical and environmental design in hospitals that promote a sense of control over their surroundings are linked to well-being (Andrade & Devlin, 2015). Noisy healthcare environments lacking privacy further undermine control. In contrast, healthcare settings with patient-friendly design elements that consider and enhance the sense of control—such as adjustable lighting, visual privacy, straightforward wayfinding, and temperature and ventilation control—yield better health outcomes and improved well-being (Ulrich, 2000, 1991) This confirms the direct impact of flexible space design, which gives options and choices that promote control, on enhancing well-being. To achieve a supportive space, promoting the patient-friendly design concept is essential as it provides the chance for users, particularly patients, to maintain and adjust the space according to their desires and comfort to (Suess & Mody, 2018), which will positively impact their healing journey.

On the other hand, studies in the field of space design and education stress that a flexible learning environment design has a beneficial impact on students' learning experiences. It tailors' education to individual needs, enhances student engagement in the learning space, promotes well-being, and improves academic results. Nonetheless, satisfaction with learning experiences is linked to students' ability to rearrange furniture to accommodate their learning desires (Knoll, 2015). Flexible educational spaces provide a sympathetic way to facilitate students' learning more enjoyably and effectively. Consequently, they are gaining popularity and becoming a greater priority for educational institutions across the country (Ayers, 2023). This justifies the need for students to practise personal control over their learning environments, which is a common requirement in health and educational contexts.

Positive Distractions (PD)

The term "distraction" refers to diverting attention to something else by preventing the other (Cambridge Dictionary, 2024). Directing hospital users' focus from their discomfort and anxiety to something visually pleasing constitutes a positive distraction. The concept of distraction in healthcare is receiving considerable attention due to its apparent impact on reducing patient stress and enhancing well-being (Iyendo et al., 2016). Exposure to sunlight, pleasant aromas, soothing music, art collections, and designer-inspired furniture and decor alleviates stress and worries, improving patients' well-being and mood by distracting their minds from illness or pain (Iyendo et al., 2016; Dijkstra et al., 2006; Suess & Mody, 2018). Positive distractions, particularly those involving nature-related features, have significantly enhanced well-being and mood while aiding in health recovery (Ulrich, 2000). Research explicitly examining patients' healing processes has discovered that exposure to natural views from hospital windows or artworks portraying natural scenes can lead to quicker hospital discharges or less reliance on pain-relieving medications (Ulrich, 1991). This connection to nature also encompasses its sounds and scents (Andrade & Devlin, 2015).

In contrast, studies indicate that intentional aesthetic design in educational settings can significantly impact student outcomes. Students' satisfaction with their learning environment is closely connected to their perceptions of the facility's aesthetics and spatial design, as well as whether the facility aligns with their individual school-related needs (Knoll, 2015). The appearance of the learning space should be regarded as important as its function, as it is a key factor in attracting students. Teri Wilson-Ruggles, the director of PH Design, noted, "Design makes a huge difference on how people perceive a space" (Dedering, 2024). Visual appearance is all about making a good first impression and creating a welcoming learning space. It occurs when the furniture is nice and comfortable. It also shows when accent design elements are provided that give the space its identity (Dedering, 2024a). Researchers found that considering the various aesthetic elements within the design of learning spaces, such as natural or artificial lighting, colours, materials, and textures, can reflect the institution's identity and enhance students' educational performance. This approach makes the environment more effective and enjoyable while stimulating creativity. All these benefits directly contribute to learners' well-being and mental health (Phoenix, 2024; Dedering, 2024b).

In summary, students in educational buildings require well-designed learning environments that are both aesthetically appealing and sufficiently distracting, much like patients in healthcare settings. This underscores the importance of considering this principle when designing any area within an educational building to beneficially influence learners' well-being, learning process, and outcomes.

Social Support (SS)

Social support is the emotional assistance that an individual receives from others. Reducing healthcare users' stress, enhancing their well-being, and improving patients' health is critical. Although research on social support facilities in health settings is limited, it is generally understood that individuals who receive more social support tend to enjoy better health and experience less stress than those with less support (Ulrich, 2000). Thus, thoughtful design indirectly affects all space users by fostering positive social experiences among various hospital users. For example, incorporating design features that encourage the presence and support of visitors (such as family or friends)—including comfortable waiting areas with a variety of seating options, both private and open spaces, and accessible amenities—can enhance social support for patients and their visitors (Ulrich, 1991). Additionally, creating spaces for staff to

socialise, complete with various seating options for breaks and relaxation, improves social support among staff members (Marcus & Barnes, 1999).
Conversely, studies indicate that well-designed social areas within educational buildings can have a positive impact on students' well-being and performance. Thoughtful social space design has a significant impact on students' well-being, learning experiences, and outcomes. The interactions between the students within those spaces can impact their well-being as they improve their social and emotional skills, foster their sense of belonging, and reduce their stress (Mantooth, 2024). On the other hand, well-designed social spaces can contribute to enhanced learning experiences. This happens when the design offers a range of settings facilitating engagement and socialising among students and provides informal learning opportunities as an extension of the formal learning environment (Haa Design, 2019). This emphasises the intense need for social support consideration within the educational building design to improve students' well-being, performance, experiences, and final outcomes.

Discussion

The role of school buildings has evolved beyond being mere venues for teaching and learning. Current educational practices emphasise interactions between students and their environment, influenced by various factors determining the quality and effectiveness of these experiences. This discussion examines the potential application of Supportive Design Theory (SDT) in educational contexts, focusing on two main aspects: the shared characteristics between healthcare and education users and the impact of well-being on students' learning experiences and academic outcomes.

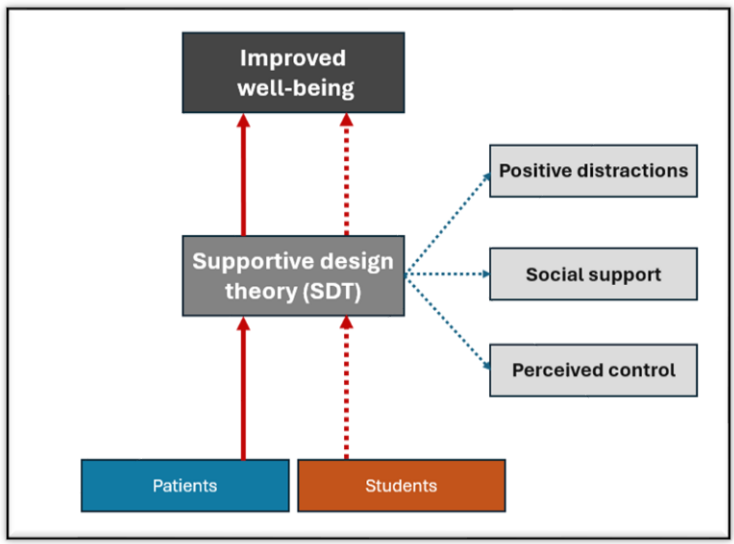

Figure 3- Supportive design theory impact on patients and students' well-being- by Author

Initially developed for healthcare settings, Ulrich's Supportive Design Theory proposes that spatial design can significantly reduce stress and enhance wellness for users, particularly in hospitals (Andrade & Devlin, 2015; Ulrich, 1991, 2000; Ulrich et al., 2018). The theory identifies three key factors contributing to well-being: perceived control, positive distractions, and social support (Figure 3). Recent education research suggests that these factors are just as vital in educational environments. This discussion argues for the relevance of SDT in academic settings by linking user experiences and spatial design to the principles of the theory.

The shared characteristics between healthcare and education suggest that the principles of SDT can inform the design of learning environments in higher education. However, further research is needed to explore this connection and its implications for the comprehensive design of educational spaces.

Applying Ulrich's Supportive Design Theory to educational buildings offers a promising approach to understanding how physical environments impact student well-being and academic performance. By drawing parallels between the two fields, researchers can identify innovative strategies to create supportive learning spaces that both reduce stress and enhance student experiences through improved well-being. When adapted for educational purposes, the core principles of SDT emphasise the importance of providing students with a sense of control, social support, and positive environmental distractions. Research has highlighted that well-designed spaces can enhance students' concentration, alleviate anxiety, and foster positive emotional outcomes. Empirical studies have consistently shown a direct correlation between environmental design and student performance. Educational institutions can develop environments that foster cognitive and emotional growth by incorporating flexible learning spaces, natural elements, adjustable lighting, and areas that encourage social interactions. Implementing SDT principles can transform traditional classrooms into dynamic and supportive learning ecosystems (Figure 2).

However, applying these design principles requires careful consideration of diverse student needs, integrating technology effectively, and adapting teaching methods. While the potential benefits of this approach are significant, ongoing research is necessary to establish comprehensive guidelines for applying SDT in educational settings. Future studies should aim to quantify the impact of supportive design on academic outcomes and student mental health. The intersection of environmental psychology and educational design presents an exciting opportunity to enhance learning experiences. By prioritising student well-being through intentional spatial design, educational institutions can create inclusive, supportive, and effective environments that promote both academic success and personal development.

To conclude, healthcare and educational spaces designed to foster a sense of control, provide social support, and offer access to positive distractions can mitigate stress and enhance the health conditions of patients (Ulrich, 2000) as well as the educational experiences of higher education students. Users in both health and education demand spaces that promote social interaction, control, and aesthetically pleasing design. First, social interaction is evident in studies from both fields, highlighting its crucial role in users' well-being and mental health. In health, Ulrich emphasised the importance of social spaces for all hospital users (Ulrich et al., 2008). Moreover, studies in education highlighted the impact of facilitating social interactions on students' school life (Beckers et al., 2016). Second, control over space, supported by Ulrich (1991) in health environments and Boys (2010) in higher education, reinforces the notion that choice and a sense of freedom through flexible spaces improve user experiences and mental health. Finally, aesthetically pleasing spaces involve a connection to nature and other visual elements. Biophilic and sensory design implications are valuable for patients and learners as sources of inspiration and relaxation. Exposure to nature or natural elements, along with aesthetically appealing features, has been linked to stress reduction and improved well-being and health outcomes for hospital patients (Ulrich et al., 2008). Similarly, in educational environments, studies have demonstrated that incorporating natural elements and visually appealing designs can positively impact learners' academic outcomes (Barrett et al., 2015). Subsequently, interior designers must respond to users' desires and needs, as the inclusion of

the supportive design theory pillars is advocated to create more comforting spaces that enhance well-being and reduce stress. This comparison suggests the potential adoption of SDT in educational settings with the same significance as in healthcare environments.

References

Ali, N., Jusoff, K. & Ali, S. (2009) 'The Factors Influencing Students' Performance at Universiti Teknologi MARA Kedah, Malaysia'. Kamaruzaman Jusoff (Corresponding Author) 2. Najah Mokhtar & Azni Syafena Andin Salamat /Management Science and Engineering 3 (4).

Alzahrani, N. (2021) 'The effect of hospitalisation on patients' emotional and psychological well-being among adult patients: An integrative review', *Applied Nursing Research*, 61p. 151488.

Andrade, C.C. & Devlin, A.S. (2015) 'Stress reduction in the hospital room: Applying Ulrich's theory of supportive design', *Journal of Environmental Psychology*, 41pp. 125–134.

Architects, H.M.C. (2020) *The Architect's Role in University Campus Design | Ideas*.

Atkinson, S. (2012) 'Arts and health as a practice of liminality: managing the spaces of transformation for social and emotional wellbeing with primary school children', *Health and Place*, 18(6), pp. 1348–1355.

Atkinson, S. & Robson, M. (2012) 'Arts and health as a practice of liminality: Managing the spaces of transformation for social and emotional wellbeing with primary school children', *Health Place*,

Ayers, R. (2023) *Boosting Student Success Through Flexible Learning Spaces*.

Baby, S., Fatima, M. & Kaneez, S. (2022) 'Impact Of Social Well-Being On Academic Performance Of Students'. Journal of Positive School Psychology 2022 (8).

Bae, S. & Asojo, A.O. (2020) 'Ambient Scent as a Positive Distraction in Long-Term Care Units: Theory of Supportive Design', *Health Environments Research and Design Journal*, 13(4), pp. 158–172.

Barrett, P., Davies, F., Zhang, Y. & Barrett, L. (2015) 'The impact of classroom design on pupils' learning: Final results ofaholistic, multi-level analysis', *Building and Environment*, 89pp. 118–133.

Beard, C.M. & Wilson, J.P. (2006) *Experiential learning a best practice handbook for educators and trainers*. London [U.A.] Kogan Page.

Beckers, R., van der Voordt, T. & Dewulf, G. (2015) 'A conceptual framework to identify spatial implications of new ways of learning in higher education', *Facilities*, 33pp. 2–19.

Beckers, R., van der Voordt, T. & Dewulf, G. (2016) 'Learning space preferences of higher education students', *Building and Environment*, 104pp. 243–252.

Boys, J. (2010) *Towards Creative Learning Spaces: Re-thinking the Architecture of Post-Compulsory Education*. Routledge.

Bücker, S., Nuraydin, S., Simonsmeier, B.A., Schneider, M. & Luhmann, M. (2018) 'Subjective well-being and academic achievement: A meta-analysis', *Journal of Research in Personality*, 74pp. 83–94.

Cárdenas, D., Lattimore, F., Steinberg, D. & Reynolds, K.J. (2022) 'Youth well-being predicts later academic success', *Scientific Reports*, 12(1), .

Chattu, V.K., Sahu, P.K., Seedial, N., Seecharan, G., Seepersad, A., Seunarine, M., Sieunarine, S., Seymour, K., Simboo, S. & Singh, A. (2020) 'Subjective well-being and its relation to academic performance among students in medicine, dentistry, and other health professions', *Education Sciences*, 10(9), pp. 1–13.

COMPARE, U.N.I. (2023) *Understanding and managing anxiety at university*.
Corgan (2022) *Designing Educational Spaces for Mental and Emotional Health | Corgan*.
Dedering, L. (2024a) *The Impact of Furniture on Both the Utility and Aesthetic Appeal of University Common Spaces – PUPN*.
Dedering, L. (2024b) *The Impact of Furniture on Both the Utility and Aesthetic Appeal of University Common Spaces – PUPN*.
van Dellen, S.A., Wisse, B. & Mobach, M.P. (2022) 'Effects of lactation room quality on working mothers' feelings and thoughts related to breastfeeding and work: a randomized controlled trial and a field experiment', *International Breastfeeding Journal*, 17(1), p. 57.
Dictionary, C. (2024) *distraction*.
Dijkstra, K., Pieterse, M. & Pruyn, A. (2006) 'Physical environmental stimuli that turn healthcare facilities into healing environments through psychologically mediated effects: Systematic review'. Journal of Advanced Nursing 56 (2) p.pp. 166–181.
Dixon, W., Prepared, A., Oliveira, S., Tahsiri, M., Everett, G., Boulter, J., Bradshaw, B., Cameron, C., Gayle, C., Grigoriadou, E., Grigull, A., Hall, I., Hyde, S., James, R., Kidd, D., Kwiatkowski, C., Lawson, H., Payne, T., Routledge, M., et al. (2022) *Campus spaces and places: Impact on student outcomes Review of evidence Treglown / RIBA Client Adviser Office for Students*.
Douglas Bsc, C.H., Douglas, M.R. & Douglas, C.H. (2004) 'Patient-friendly hospital environments: exploring the patients' perspective'. Health Expectations 7.
Fisher, S. (1990) 'The evolution of psychological concepts about the body.', in *Body images: Development, deviance, and change.* [Online]. New York, NY, US: The Guilford Press. pp. 3–20.
Furlong, M.J., Gilman, R. & Huebner, E.S. (2014) *Handbook of Positive Psychology in Schools*. Routledge.
Haa Design (2019) *Case Study Social spaces in the learning environment Introduction and Context*.
Higgins, S., Hall, E., Wall, K., Woolner, P. & Mccaughey, C. (2005) *The Impact of School Environments: A literature review Produced for the Design Council*.
Iyendo, T.O., Uwajeh, P.C. & Ikenna, E.S. (2016) 'The therapeutic impacts of environmental design interventions on wellness in clinical settings: A narrative review'. Complementary Therapies in Clinical Practice 24 p.pp. 174–188.
Keyes, C.L.M. (1998) 'Social well-being.', *Social Psychology Quarterly*, 61(2), pp. 121–140.
Keyes, C.L.M. & Shapiro, A.D. (2004) 'Social Well-Being in the United States: A Descriptive Epidemiology.', in *How healthy are we?: A national study of well-being at midlife.* The John D. and Catherine T. MacArthur foundation series on mental health and development. Studies on successful midlife development. [Online]. Chicago, IL, US: The University of Chicago Press. pp. 350–372.
Knoll (2015) *The Influence of Design on the Learning Environment*.
Kuh, G.D., Kinzie, J., Buckley, J.A., Bridges, B.K. & Hayek, J.C. (2006) *What Matters to Student Success: A Review of the Literature Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success*.
Mantooth, R. (2024) *How Design can Support Social and Emotional Learning | HKS Architects*.
Marcus, C.C. & Barnes, M. (1999) *Healing gardens : therapeutic benefits and design recommendations*. J. Wiley, Cop.
Martin E. P. Seligman Randal M. Ernst, J.G.K.R. & Linkins, M. (2009) 'Positive education:

positive psychology and classroom interventions', *Oxford Review of Education*, 35(3), pp. 293–311.
Palaiologos, G. (2011) *From Pedagogy to Andragogy and Heutagogy: Thinking Distance Education and Self-Directed Learning.*, pp. 1–10.
phoenix (2024) *Harkel Office Furniture Ltd.*
Rqitects (2024) *How Does Hospital Architecture Design Impact Patient Care? - RQitects*.
Sprang, H. Van, Groen, B.H. & Theo (2013) 'Spatial support of knowledge production in higher education', *Corporate Real Estate Journal*, 3.
Suess, C. & Mody, M.A. (2018) 'Hotel-like hospital rooms' impact on patient well-being and willingness to pay: An examination using the theory of supportive design', *International Journal of Contemporary Hospitality Management*, 30(10), pp. 3006–3025.
Tee-Melegrito, R.A. (2023) *Hospital anxiety: Signs, causes, and more*.
Ulrich, D. (1997) 'Human Resource Champions: The Next Agenda for Adding Value and Delivering Results', *The Academy of Management Review*, 23p. 178.
Ulrich, R. (2000) *Effects of Healthcare Environmental Design on Medical Outcomes*.
Ulrich, R. (1991) 'Effects of interior design on wellness: theory and recent scientific research', *Journal of health care interior design*, 3(1), pp. 97–109.
Ulrich, R.S., Zimring, C., Zhu, X., DuBose, J., Seo, H.-B., Choi, Y.-S., Quan, X. & Joseph, A. (2018) 'A review of the research literature on evidence-based healthcare design', *HERD*, 1pp. 61–125.
Ulrich, R.S., Zimring, C., Zhu, X., DuBose, J., Seo, H.-B., Choi, Y.-S., Quan, X., Joseph, A., Bosch, S., Ghannadian, J. & Herndon, M. (n.d.) *A REVIEW OF THE RESEARCH LITERATURE ON EVIDENCE-BASED HEALTHCARE DESIGN*.
Ulrich, R.S., Zimring, C., Zhu, X., DuBose, J., Seo, H.-B., Choi, Y.-S., Quan, X., Joseph, A., Bosch, S., Ghannadian, J. & Herndon, M. (2008) 'A REVIEW OF THE RESEARCH LITERATURE ON EVIDENCE-BASED HEALTHCARE DESIGN', *HEALTH□ENHealth environments research & design journal*, 1pp. 1–65.
Webb, K.M., Schaller, M.A. & Hunley, S.A. (2008) 'Measuring Library Space Use and Preferences: Charting a Path Toward Increased Engagement', *portal: Libraries and the Academy*, 8(4), pp. 407–422.
White, S.C. (2008) *But what is Wellbeing? A framework for analysis in social and development policy and practice 1*.
York, T.T., Gibson, C. & Rankin, S. (2015) *Defining and Measuring Academic Success. Practical Assessment, Research & Evaluation, 20(5).*, 20(5), .