



New Trends and Issues Proceedings on Humanities and Social Sciences



Issue 11 (2016) 130-136

ISSN 2421-8030

www.prosoc.eu

Selected Paper of 5th World Conference on Educational Technology (WCET-2015), 15-17 October 2015, Nicosia, North Cyprus

Attraction factors into space as a required element of physical learning environment. A review

Jesus Miguel Munoz Cantero^a *, Department of Philosophy and Research Methods in Education, University of A Coruna, 87555, Spain. GIACE.

Ricardo García Mira^b, Department of Psychology, Faculty of Education, University of A Coruna, 87555, Spain. Person-Environment Group.

Vicente Lopez-Chao^c, Faculty of Education, University of A Coruna 87555, Spain. GIACE.

Suggested Citation:

Cantero, J., M., M., Mira, R., G. & Lopez-Chao, V. (2016). Attraction factors into space as a required element of physical learning environment. A review. *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 11, pp 130-136. Available from: www.prosoc.eu

Selection and peer review under responsibility of Huseyin Uzunboylu, Near East University, North Cyprus.

©2016 SciencePark Research, Organization & Counseling. All rights reserved.

Abstract

Built environment affects users and so do educational spaces. In recent decades, research on the relationship person-learning environment has increased detailing environmental, spatial and organizational factors that affect performance issue, motivation, attention and retention. This situation deals with the discomfort of students in the classroom and a negative predisposition towards their time spent at educational centres. Therefore, the objective of this study is to investigate factors of attraction to the learning environment to help professionals regarding the design and management of educational spaces. Nature and ICT are among the design factors of learning physical environment that can increase the attraction towards the use of the learning space. The concepts of active learning and the appropriation of space in relation to these factors enhance a positive attitude in students.

Keywords: Attraction factors into space, Learning physical environment, Learning space design

* ADDRESS FOR CORRESPONDENCE: **Jesus Miguel Munoz Cantero**, Department of Philosophy and Research Methods in Education, University of A Coruna, 87555, Spain. GIACE.

E-mail address: munoz@udc.es / Tel: +99 966 67 11

1. Background

During the last years a broad discussion on the importance of space and spatial design principles for learning has taken place (Neto, Vieira, Ribeiro & Pinto, 2013). The JISC report is a case in point “Designing Spaces for Effective Learning, guide for the 21st century”, which explores the relationship between spatial design and learning technologies. EDUCAUSE learning initiative is another example, in 2005, which focused on developing a guide for the design of various elements, assumptions and factors that contribute to successfully create spaces for informal learning. Thus, the overall impression of the learning space is a reflection of the personality of a place, so, aesthetic features such as façade painting, a regular maintenance or replacement of antique furniture, will make students feel more comfortable. Hence the importance of designing physical learning environments that rely on the influence of factors such as student welfare, the quality of teaching and learning, physical interaction and their own academic outcomes and school effectiveness (Mäkelä, Kankaanranta & Helfenstein, 2014).

In the past, the design of the campus was mainly addressed to accommodate formal education activities, which resulted in conventional classrooms and laboratories. However, learning approaches in educational contexts are changing and getting adapted to new needs. A good learning environment is essential to facilitate cognitive and social development of students (Johnson and Lomas, 2005), because their attitude influences their motivation for learning (Wlodkowski, 2008).

In this process of adaptation to active learning methodologies, physical space should allow greater participation of students and teachers. The academic success of students is influenced by numerous variables including physical environment factors. The Steelcase Education Group (2014) conducted a study that verified the positive impact of design influence of classrooms dedicated to active learning, ie those designed for the involvement of students, and determined that intentionally design space provides better teaching and better learning. All this implies that the aesthetic characteristics of school, university and own classrooms can promote a strong sense of belonging which, in turn, generates an enthusiasm for learning (Jarman, Webb & Chan, 2004).

However, the learning environment is not limited to the physical environment, but it also includes the virtual environment. Indeed, over recent years the emphasis has shifted to the development of blended learning environment in relation to the infrastructure, the technology and techniques. Following Warger, EduServe and Dobbin (2009) the learning environment encompasses learning resources and technology, teaching aids, learning methods and the connections between social contexts. Definitively, the learning environment is a combination of teaching methodology, learning spaces, as well as students and teachers who use space in their efforts to complete the process of learning. Therefore, a well-designed physical environment helps students feel valued and integrated, and in turn these positive emotions will improve academic outcomes. The learning environment must go beyond the functional needs in order to satisfy the appetite of individuality and sense of identity. Students require creative and innovative spatial conditions through the introduction of various design elements to traditional standards (Ibrahim and Hafisah, 2013).

It is important to note that a large number of students believe that the image of schools, universities and others are an important indicator of the quality of the place and the education provided by it (El-Hilali, and Hussein Al-Jaber, 2015).

2. The lack of attachment to the educational space

The foregoing also has its negative side, because the quality of educational buildings has been linked to harmful attitudes and bad behaviour of the students, including vandalism, absence, academic failures and disciplinary incidents (Schneider, 2002). However, students are not the only ones affected by the poor quality and vision of learning spaces. It has also been shown that the quality of the

environment affects the attitudes, behaviour and performance of teachers (Dawson & Parker, 1998). Thus, when the school buildings are in poor or inadequate condition there is less likelihood of being a community committed to teaching and learning. Whether students believe that building conditions are unacceptable, their observations will have a negative impact on their attitudes toward the building which also will affect their performance (Ruszala, 2008). Uline and Tschannen-Moran (2008) conducted an investigation following the previous line and the results revealed that when learning occurs in inadequate facilities, academic emphasis is not clear and the learning environment is not perceived as orderly and serious. Educators are seeking to create a cognitive tension enough to challenge students and motivate them to achieve the goals of the learning process, but if the discomfort generated by the space, lack of attachment to it and the bad visual stimulation generates a negative stress, students also respond negatively in the cognitive aspect (Lepine, Lepine & Jackson, 2004).

In this sense, we find the study of student perceptions about the classroom environment LaRoque (2008) showed that when the academic level increased, the level of dissatisfaction with the environment also grew. Another disturbing result according to the study is that the greater the difficulty of understanding the environment, academic achievements were lower. Due to the influence of the physical learning environment in its users, it seems necessary to conduct a review of the factors that create attraction to use the space.

3. Attraction factors into space

3.1. ICT

We live in a society immersed in technological development where progress of the Information Technology and Communication (ICT) has changed our way of life, influencing in turn on numerous areas of knowledge. In education, ICT has proven to be a great support for both teachers and students because the different wireless devices, social networks and virtual media have contributed to the emergence of systems or models of blended learning. They have been given greater importance to the third space located on the Internet to promote student interaction with these new experiences; in which the control or management of the teacher is not always required, since many activities can be resolved looking for tutorials on the network (Duta & Martinez-Rivera, 2014). Immersed in this new technological world the key question is then the extent to which the physical space is still relevant; and even whether it is, what fundamental attributes or features should it have to attract students (Fisher & Newton, 2014).

Regarding technological advances and the need for flexibility in learning spaces, a concept known as "smart classrooms" comes out, which is often confused with a classroom strongly equipped with technology, when there are many more factors that make this type of classrooms. Thereby the constructive, functional and ergonomic design is essential to generate this type of efficient and useful classroom. The ideal scenario is linking architectural design with pedagogical approaches, which the teacher will apply. Therefore, the concept of smart classrooms is based on three pillars: the architectural design of the classroom and ergonomics; functional and justified technology integration, and the last pillar would be the suitable teaching methodology for this kind of space which makes learning more efficient and satisfactory.

Bautista & Borges (2013) established a set of principles that should contain such spaces: physical layout flexibility, that means the distribution and provision of smart classroom and its elements must let fast variations during activities like changing resources or student groups. Adaptability, which means that space can be adapted to the needs of the learners. Comfort, one of the fundamental principles that should be collected, in order to be a comfortable place where they can carry out different activities, but not a relaxing space since it could disperse the minds of students. Multiplicity, which means that this type of classrooms presents features that enable the use of various types of

resources and stimuli. Connectivity, firstly the learning space should have a good network connectivity, and secondly separatedly from the digital connectivity there must be a social connectivity; customization means that you have to allow students to personalize this environment by paying attention to their tastes and needs, within limits.

Undoubtedly, educational centers must take into account many issues related to the different learning styles that may require each student. These personal learning environments are not a new topic for analysis, however, it is worth mentioning the growing importance of access to information via the internet. Because when the network becomes the main source of information we talk about virtual learning environments. Hence the importance of social networks, which can not be ignored because despite generating some problems, it also gives rise to learning opportunities. It is essential to emphasize the experience of Junco, Elavsky and Heirberger (2013) who provided a number of positive results in student participation in the learning process through the use of the Twitter platform. Also, a good use of it increases the participation of students, who join the involvement and motivation of teachers (Istrate, 2013).

However, despite the fact that social networks are increasingly popular among young people, there is research that highlights the negative side of them, by several students when it comes to their use. Turan, Hasan & Yuksel (2013) explored the reasons why students were not using social networks. The data presented were collected in two large state universities in Turkey. They used Facebook to contextualize research and among the main reasons for not using social media was their perception of it as a waste of time, or as a not necessary tool. These reasons emphasized addiction, violation of privacy, sharing too much information and generating family concerns.

Definitively, new technologies offer teachers a variety of resources that perhaps other media can not provide, by the way you interact with the materials and the promotion of the flexible cooperative learning and the interest aroused in students. However, it is essential not to neglect the minority of students who are uncomfortable using them and that educational institutions, scholars and teachers should care about these reasons that may cause discomfort.

3.2. Nature

Nature represents an attractive landscape and involves a factor of attraction for learning spaces, is a source of inspiration for students and teachers, encourages them to appreciate and enjoy their work areas, providing an aesthetic value. The landscape also acts as a safety feature as it helps stabilize psychologically teachers and students and ultimately reduces negative emotions and physical pressure (Tsung, 2009), and develops a renewed interest in learning.

The outdoor learning environments have positive effects on the health of each student and at the same time allows the learner to develop well informed and adapted to the essential connections for an education based on environmental sustainability. Thus that continuous experience with this type of space to develop a bond with nature leading to a proactive and ongoing knowledge of the natural environment, understanding the effects of interaction with it both positive and negative (Cottrell & Raadik-Cottrell, 2010). Environmental education in any case has to start early, because concern about the environment is not only based on affection for it, but it also requires mediation. The practice of sustainable education has expanded over time, it also allows students to analyze the problems of the environment and the quality of it. At the same time the sustainability movement has encouraged changes in behaviors of students in a positive nature (Painter, Fournier, Grape, Grummon, Morelli, Whitmer & Cevetello, 2013).

It is essential to ensure a good connection and integration between educational buildings and outdoor spaces. This concern has been addressed by Shamsuddin, Bahauddin & Abd-Aziz (2012), which agreed on the basis that the integration encourages positive social interaction and fosters intellectual culture in the field of learning spaces. The study proposes the design of new buildings

centered on the creation of open spaces and the improvement of existing ones. The open space should be designed as a place that attracts the user, generating enjoyment of students in the work area and therefore does not involve excessive space. The design goal of these outdoor environments will use the landscape and vegetation as a set of materials that not only respond to physical attractiveness and innovation, but also the quality of the space.

3.3. Security, privacy and appropriation of space

Within this attraction factor into space, it is essential to bring up the idea of the learning environment as a public space in which three interrelated concepts arise: security, privacy and appropriation of space.

The learning environment is one of the main key factors in student motivation, this environment must be available and accessible as to be a safe place for students to be fully concentrated in the learning process (Williams & Williams, 2011). In this sense we can make the following comparison: students, as it happens with consumers in today's market, they make decisions based on the valuations of different products, so we have a student perception of satisfaction in their learning environment. Therefore, there are various factors that influence the level of satisfaction which stresses the security (Zeithaml, Bitner & Gremler, 2009). This dimension implies that the required standards are maintained and that the right skills are delivered during the education process, also including the feeling of comfort and safety with respect to space (Alves & Raposo, 2007).

With the aim that students feel safe within the learning environment two situations must occur: there to be an appropriation of space by the student and that within this public space continue to keep some privacy. The first implies that there is a brand or customization of space by the students so their self-image remains reaffirmed in front of others and sense of creation, order and various aesthetic values are developed (Pol, 1996). The second is clearly linked to the appropriation that requires that the learner has "proper" or "private" places in the learning space, ie a place where he/she can have the selective control of access to, a space where to leave his/her stuff and have it be respected by his/her peers.

The classrooms are impersonal public spaces that are used by multitudes of generations of students, and have have an organization of space increasingly less in relation to the new needs of active learning methodologies. Faced with this situation the appropriation of space by the students produces in them a feeling of affectionate familiarity which gives comfort (Chombart of Lauwe, 1976). Along with this concept, the flexibility and freedom to manage the educational area promotes a positive attitude to the use of these spaces.

4. Conclusion

After analyzing all these studies, we can conclude that there are certain factors of the educational physical environment that certainly influence in attracting students to use learning space such as ICT, nature and safety, privacy and appropriation of space. Other factors also influence the perception of educational space, like the environmental and spatial factors, which should also be taken into account in the question of attraction to the use of space.

It is important to study these factors because they contribute to a broader understanding of their impact on the learning process. The development of an integrated model that connects all the factors relating to the physical learning environment is necessary in order to improve overall understanding of their relationships and improve educational buildings, with the respective improvement of learning outcomes.

References

- Alves, H. & Raposo, M. (2007). Conceptual model of student satisfaction in Higher Education. *Total Quality Management*, 18(5), 571-588.
- Bautista, G., & Borges, F. (2013). Smart Classrooms: Innovation in formal learning spaces to transform learning experiences. *Bulletin of the IEEE Technical Comitee on Learning Technology*, 15(3), 18-21.
- Chombart de Lauwe, P.H. (1956). *Les familles ouvrières en milieu urbain*. Paris: CNRS.
- Cottrell, S., & Raadik-Cottrell, J. (2010). *Benefits of outdoor skills to health, learning and lifestyle: A literature review*. Association of Fish & Wildlife Agencies' North American Conservation Education Strategy.
- Dawson, C., & Parker, J. (1998). A descriptive analysis of the perspective of Neville High School teachers regarding the school renovation. Mid-South Educational Research Association. New Orleans, LA.
- Duta, N. & Martínez-Rivera, O. (2015). Between theory and practice: the importance of ICT in Higher Education as a tool for collaborative learning. *Procedia- Social and Behavioral Sciences*, 180, 1466-1473. doi: 10.1016/j.sbspro.2015.02.294.
- El-Hilali, N., Al-Jaber, S. & Hussein, L. (2015). Student's satisfaction and achievement and absorption capacity in Higher Education. *Procedia- Social and Behavioral Sciences*, 177, 420-427, doi: 10.1016/j.sbspro.2015.02.384.
- Fisher, K., & Newton, C. (2014). Transforming the twenty-first-century campus to enhance the net-generation student learning experience: using evidence-based design to determine what works and why in virtual/physical teaching spaces. *Higher Education Research & Development*, 33(5), 903-920. doi:10.1080/07294360.2014.890566
- Ibrahim, N. & Hafisah, N. (2013). Informal Setting for Learning on campus: Usage and preference. *Procedia- Social and Behavioral Sciences*, 105, 344-351, doi: 10.1016/j.sbspro.2013.11.036.
- Istrate, O. (2013). *Resurse si aplicatii online. Material suport pentru cursurile: Instruire asistata de calculator, Medii virtuale de instruire, Blended Learning*. Universitatea din Bucuresti.
- Jarman, D., Webb, L., & Chan, T. (2004). *A beautiful school is a caring school*. School Business Affairs.
- Johnson, C., & Lomas, C. (2005). Design of the learning space: Learning and design principles. *Educause Review*, 40(4), 16
- Junco, R., Elavsky, C. M. & Heiberger, G. (2013). Putting twitter to the test: Assessing outcomes for student collaboration, engagement and success. *British Journal of Educational Technology*, 44 (2), 273-287. London: Wiley-Blackwell.
- LaRoque, M. (2008). Assessing the perception of the environment in elementary classrooms: the link with achievement. *Educational Psychology in Practice*, 24(4), 289-305. doi:10.1080/02667360802488732
- LePine, J., LePine, M., & Jackson, C., (2004). Challenge and hindrance stress: Relationships with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology*, 89(5), 883-891. doi: 10.1037/0021-9010.89.5.883
- Mäkelä, T., Kankaanranta, M., & Helfenstein, S. (2014). Considering Learners' Perceptions in designing effective 21st century Learning Environments for Basic Education in Finland. *The International Journal of Educational Organization and Leadership*, 20(3), 1-13.
- Neto, P., Vieira, A., Ribeiro, L., & Pinto, M. (2013). The e-learning Café project of the University of Porto: innovative learning spaces, improving students' engagement in active and collaborative learning. *From the field, eLearning Papers*, 34.
- Painter, S., Fournier, J., Grape, C., Grummon, P., Morelli, J., Whitmer, S. & Cevetello, J. (2013). Research on learning space design: present state, future directions. Report from the Recipients of the 2012 Perry Chapman Prize. Society for College and University Planning.
- Pol, E. (1996). La apropiacion del espacio. En Iniguez, L. & Pol, E. (coord.) *Cognicion, representacion y apropiacion del espacio*. Barcelona: Publicacions Universitat de Barcelona.
- Ruszala, J. (2008). *The Condition of the High School Facilities in the Commonwealth of Virginia's Metropolitan School Divisions and the Relationship to Teacher Satisfaction*. Tesis doctoral. Washington, DC: George Washington University.
- Schneider, M. (2002). *Do school facilities affect academic outcomes?* Washington, CD: National clearinghouse for educational facilities.
- Shamsuddin, S., Bahauddin, H. & Abd-Aziz, N. (2012). Relationship between the outdoor physical environment and student's social behaviour in Urban Secondary School. *Procedia- Social and Behavioral Sciences*, 50, 148-160, doi:10.1016/j.sbspro.2012.08.023
- Steelcase Educational. (3 de Mayo de 2014). Diseno del Aula en la implicacion de los Estudiantes. Obtenido de Steelcase: <http://www.steelcase.com/eu-es/>
- Sundstrom, E., Herbert, R., & Brown, D. (1982). Privacy and communication in an open-plan office: A case study. *Environment and Behavior*, 14(3), 543-559. doi:10.1177/0013916582143007
- Tsung, K. (2009). Influence of Limitedly Visible Leafy Indoor Plants on the Psychology, Behavior, and Health of Students at a Junior High School in Taiwan. *Environment and Behavior*, 41(5), 658-692.

Cantero, J., M., Mira, R., G. & Lopez-Chao, V. (2016). Attraction factors into space as a required element of physical learning environment. A review. *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 11, pp 130-136. Available from: www.prosoc.eu

Turan, Z.; Hasan, T. & Yuksel, G. (2013). The Reasons for Non-Use of Social Networking Websites by University Students. Comunicar. *Revista Científica de Educomunicacion*, 41, XXI, 137-145, Doi: [dx.doi.org/10.3916/C41-2013-13](https://doi.org/10.3916/C41-2013-13)

Uline, C., & Tschannen-Moran, M. (2008). The walls speak: the interplay of quality facilities, school climate, and student achievement. *Journal of educational administration*, 46(1), 55-73. doi:10.1108/09578230810849817

Warger, T., EduServe, & Dobbin, G. (2009). *Learning Environments: Where Space, Technology, and Culture Converge*. EDUCAUSE: Learning Initiative

Williams, K. & Williams, C. (2011). Five key ingredients for improving student motivation. *Research in Higher Education Journal*, 12, 104-122.

Wlodkowski, R. (2008). *Enhancing adult motivation to learn: a comprehensive guide for teaching all adults (3rd ed.)*. San Francisco, CA: Jossey-Bass.

Zeithaml, V., Bitner, M., & Gremler, D. (2009). *Service Marketing: Integrating Customer Focus Across the Firm (5th Ed.)*. McGraw Hill international, New York.