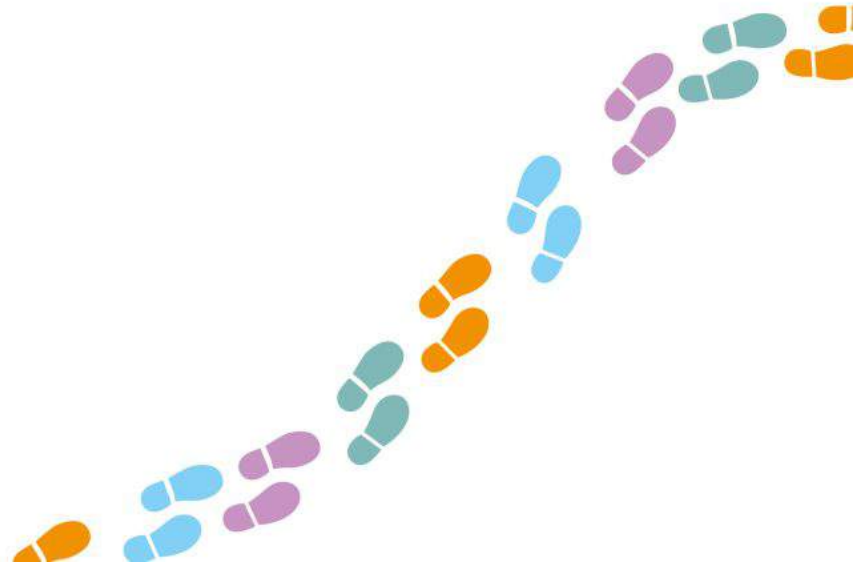


Espacios
educativos:
rediseñar escuelas
para centrar el
aprendizaje en el
alumnado



Los primeros pasos/

Lehen urratsak



Organización de los tiempos

	LUNES	MARTES	MIÉRCOLES	JUEVES	VIERNES
08:50 -09:35	Comunidad de pequeñ@s: Ambientes de aprendizaje Comunidad de median@s y mayores: Actividades diversificadas y multiniveladas obligatorias (parejas/cooperativo).				
09:35 -10:20					
10:10 -10:30	Programas socioemocionales + “aho bizi”				
10:30 -11:05	Comunidad de pequeñ@s: Tejido de aula + Tools Comunidad de median@s y mayores: Ambientes/talleres				Metacognición
11:05 -11:50					
11:50 -12:30	PATIO INCLUSIVO				
12:30-12:40	Programas socioemocionales + “aho bizi”				
12:40 -13:15	Comunidad de pequeñ@s : Procesos Comunidad de median@s y mayores: ABP + Tools				
13:15 -14:00					

ORGANIZACIÓN DE LOS ESPACIOS

Comunidad de pequeñ@s	1º, 2º, 3º de Infantil	Movimiento, Natura, Simbólico, Carpintería, Luces y sombras, Tinkering, Creadora, Huerta
Comunidad de median@s	1º, 2º, 3º de Primaria	Mate-matte, Amalur, Carpintería, Konta-katilu, Lego, Tinkering, Huerta
Comunidad de mayores	4º, 5º, 6º de Primaria	Cocina-creadora, Kalaka, Esperimentos, Botánica, Historia, Radio

Laboratorio de música, Laboratorio aula del futuro y los pasillos

TXIKIEN KOMUNITATEA/

COMUNIDAD DE PEQUEÑOS











































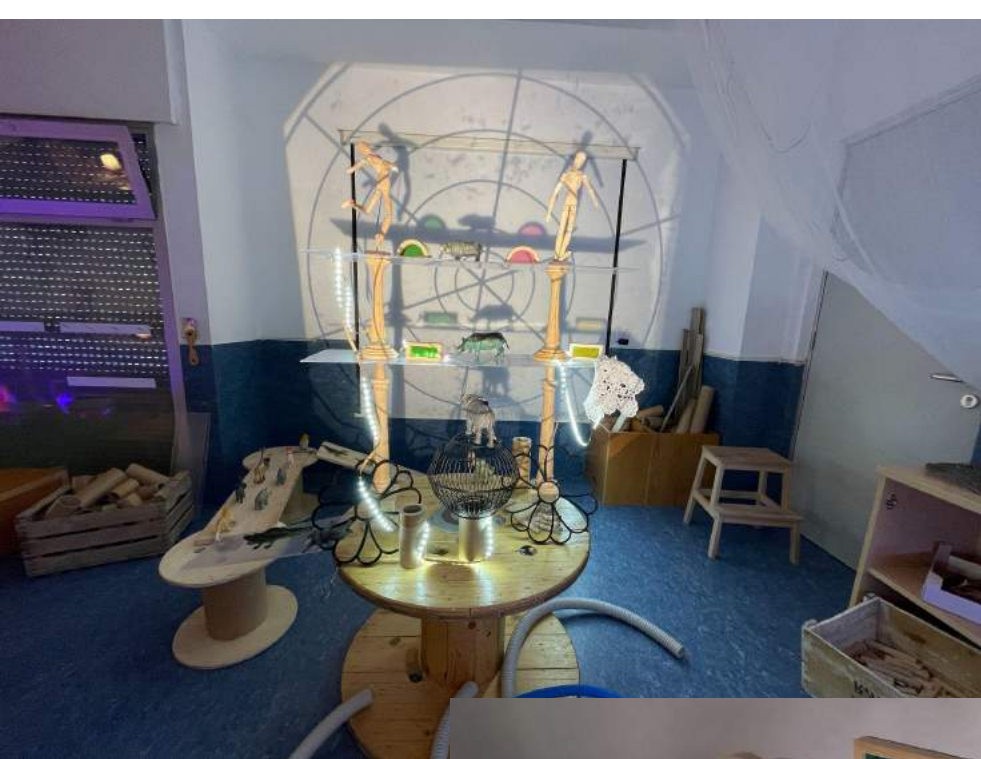








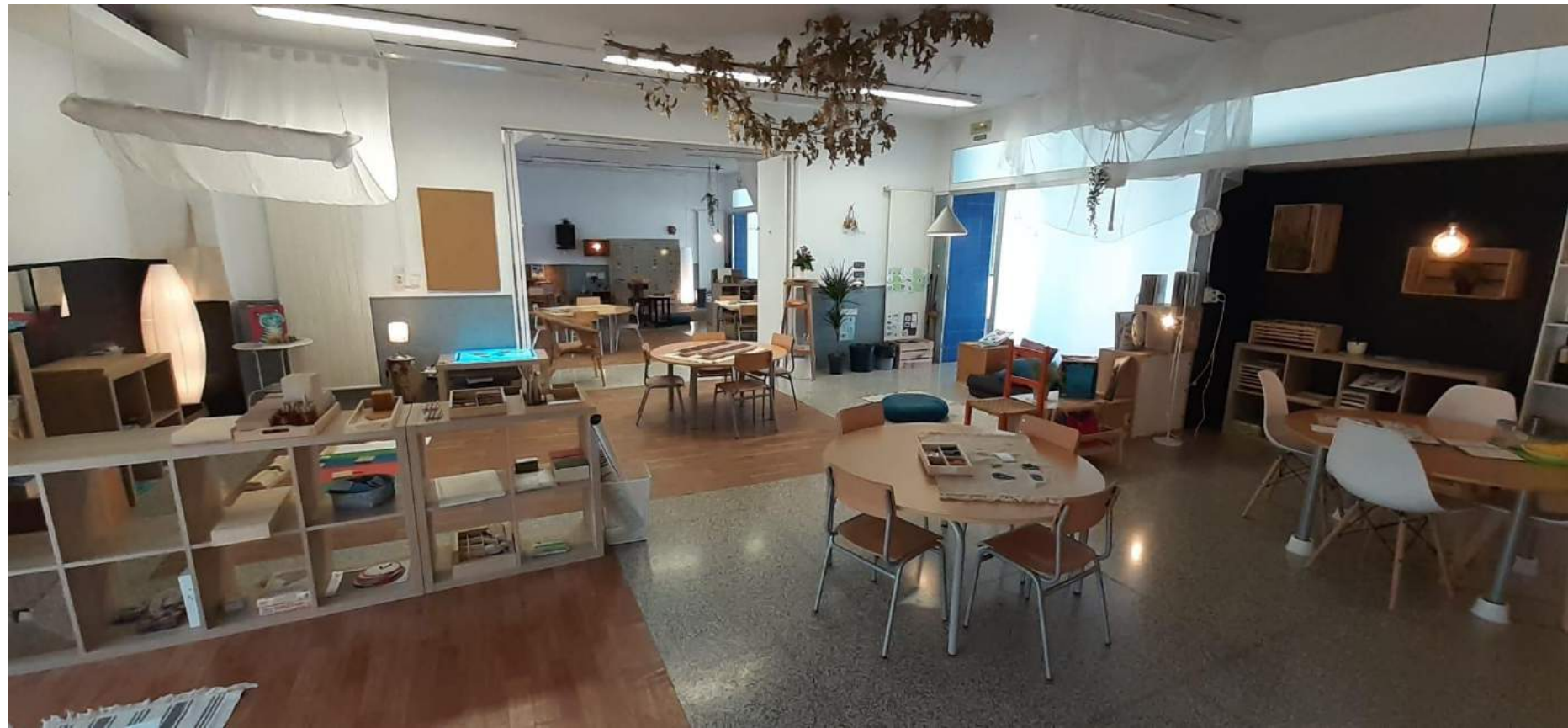


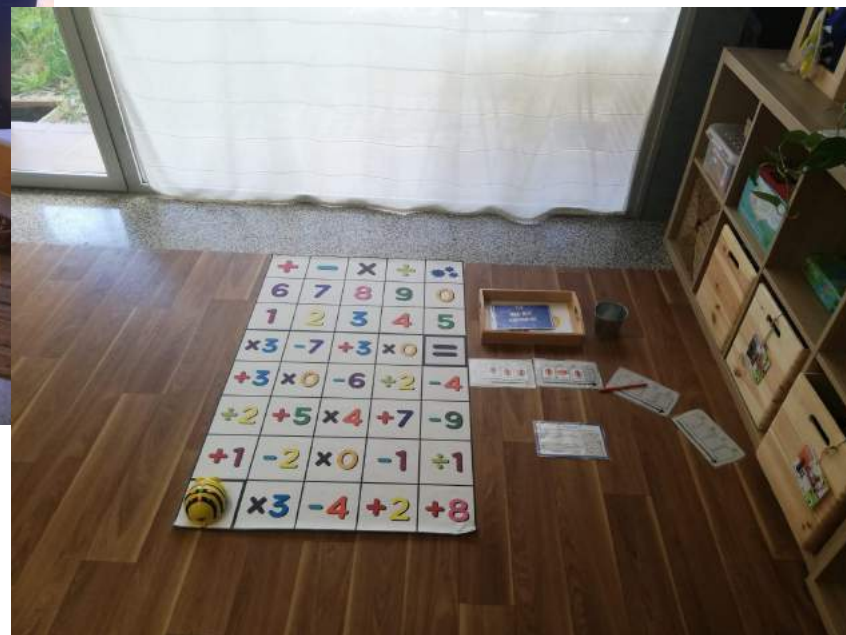




ERTAINEN KOMUNITATEA/

COMUNIDAD DE MEDIANOS

















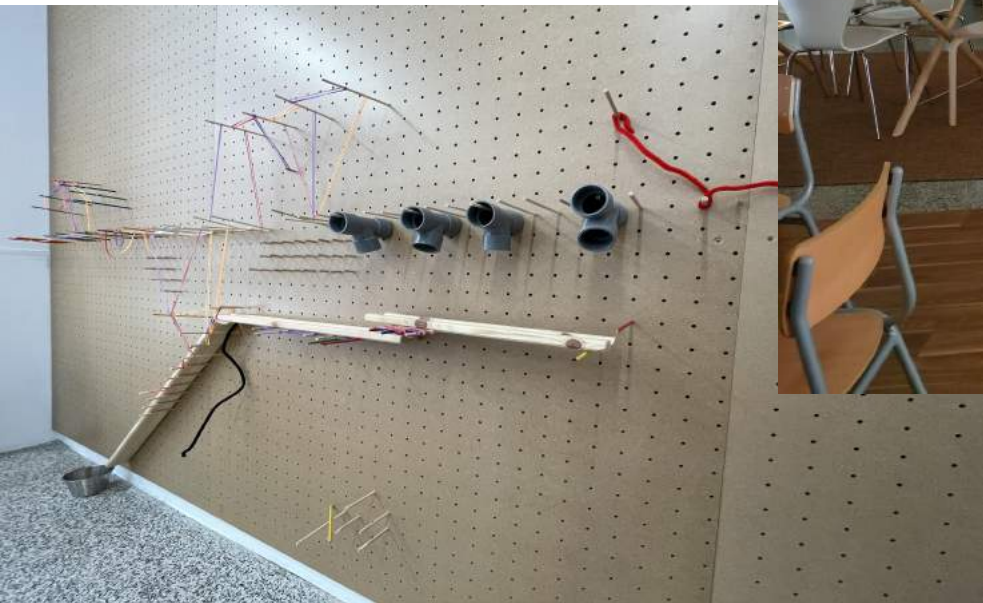
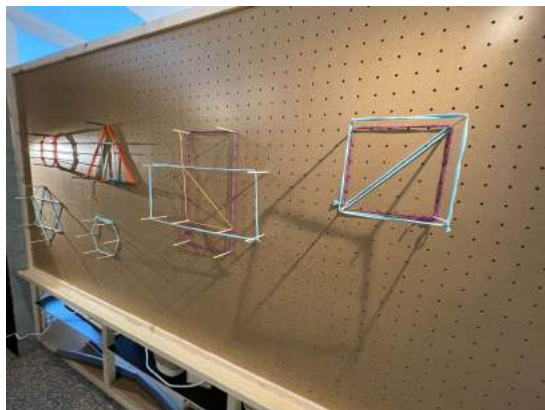














HANDIEN KOMUNITATAI

COMUNIDAD DE MAYORES



















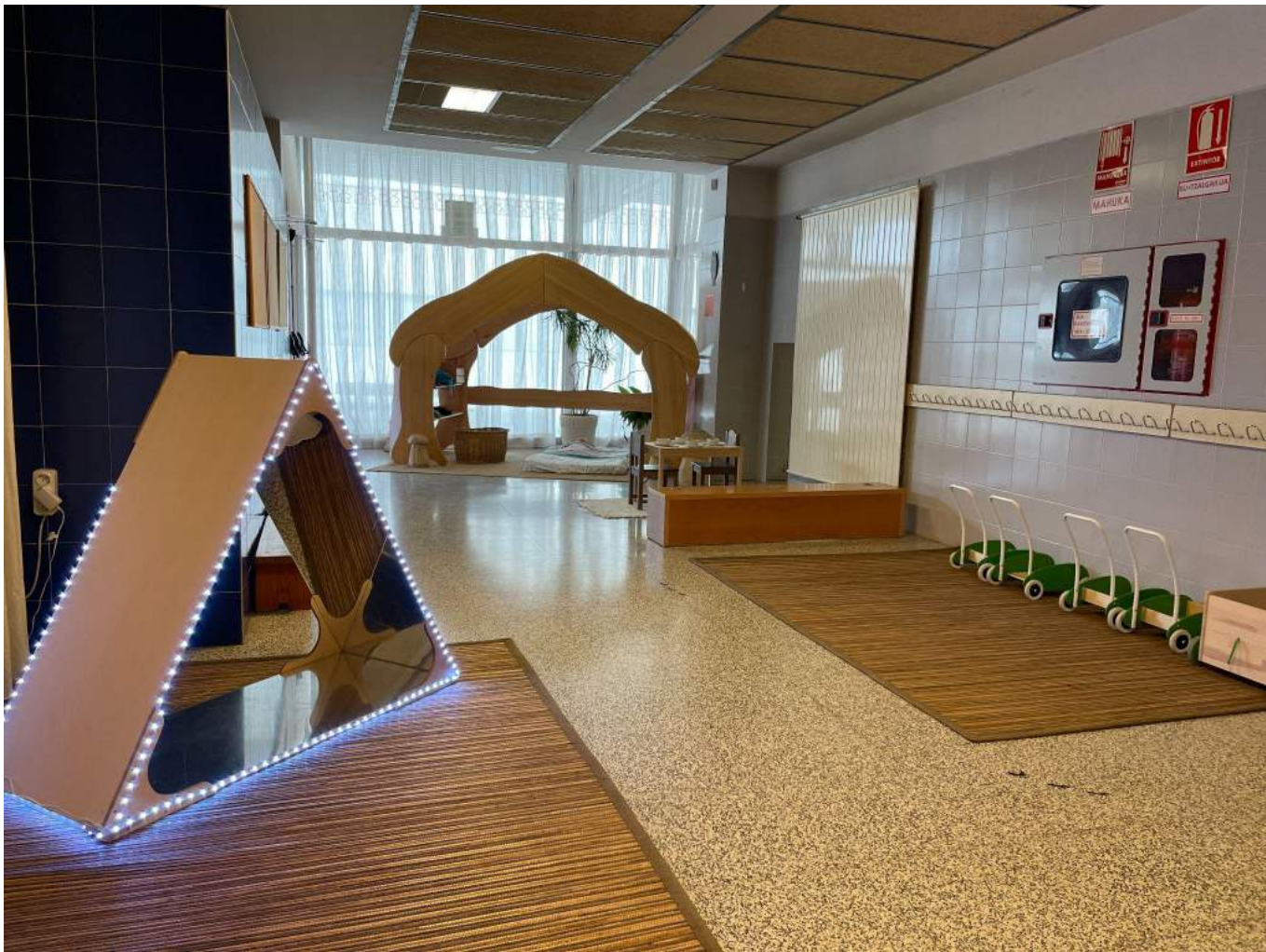






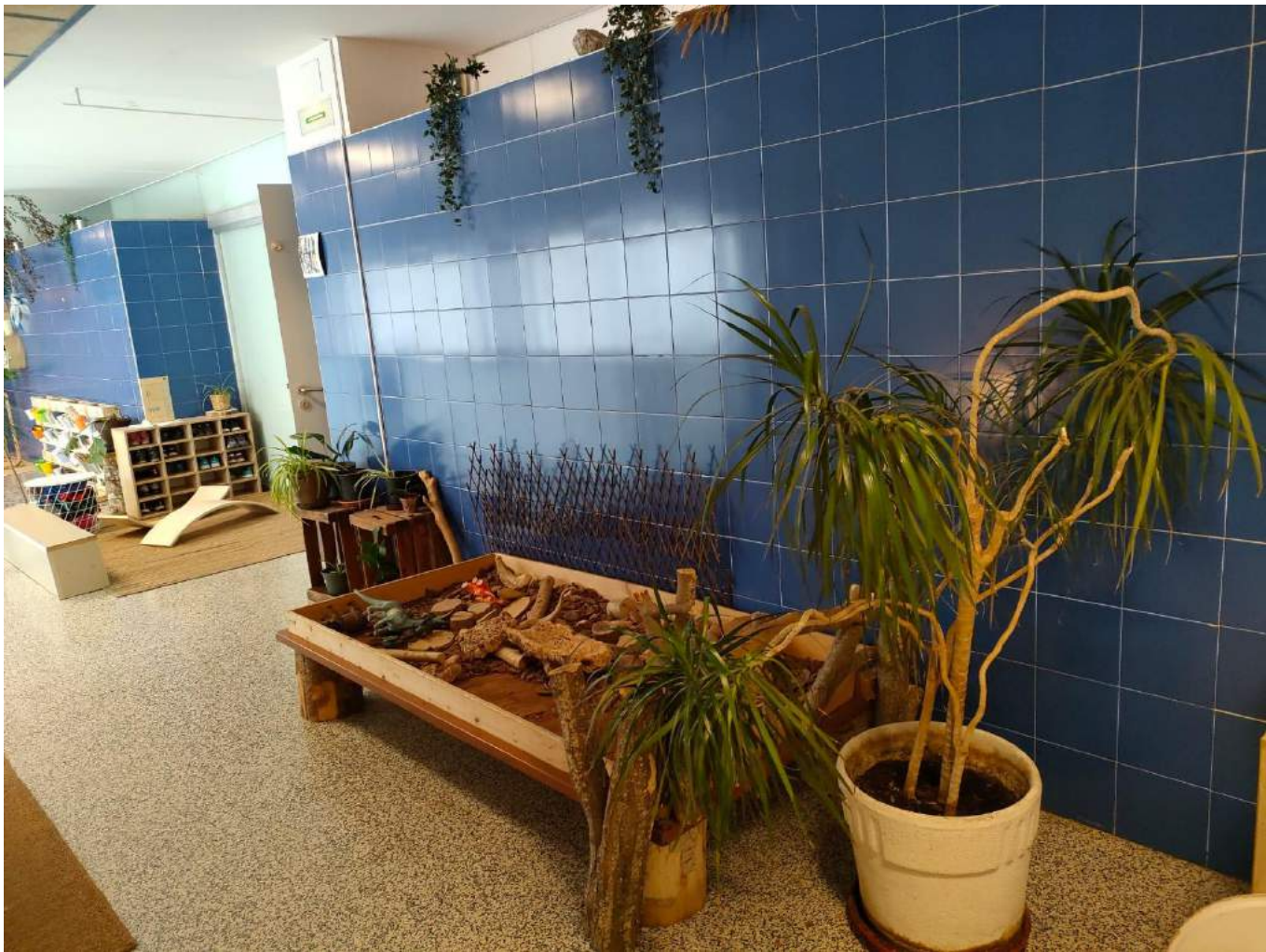
PASABIDEEN KONKISTATZEA/

CONQUISTA DE PASILLOS









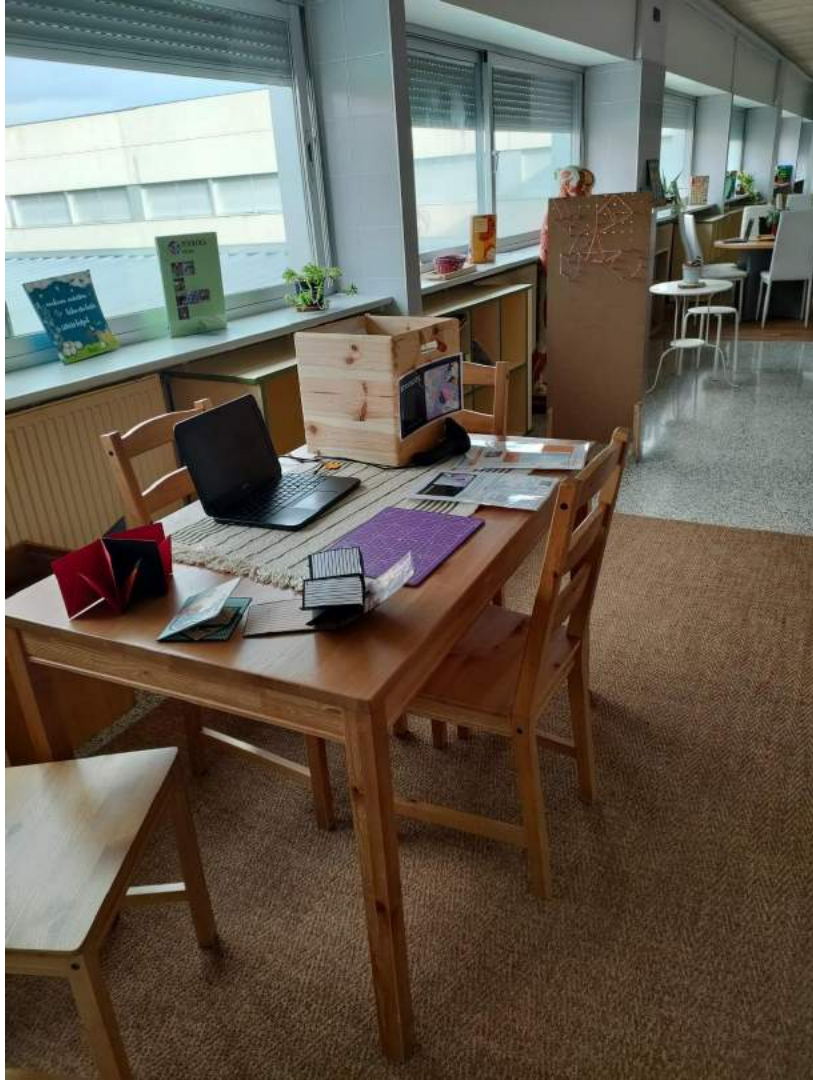














PROIEKTU BERRIAKI

NUEVOS PROYECTOS

ETORKIZUNEKO LABORORATEGI- GELA /

LABORATORIO- AULA DEL FUTURO







ESKOLA IRRATIA/

RADIO ESCOLAR



MUSIKA LABORATEGIA7

LABORATORIO DE MÚSICA





LIBRUTEGIA/

BIBLIOTECA



ESKOLAKO PATIOAKI

PATIO ESCOLAR



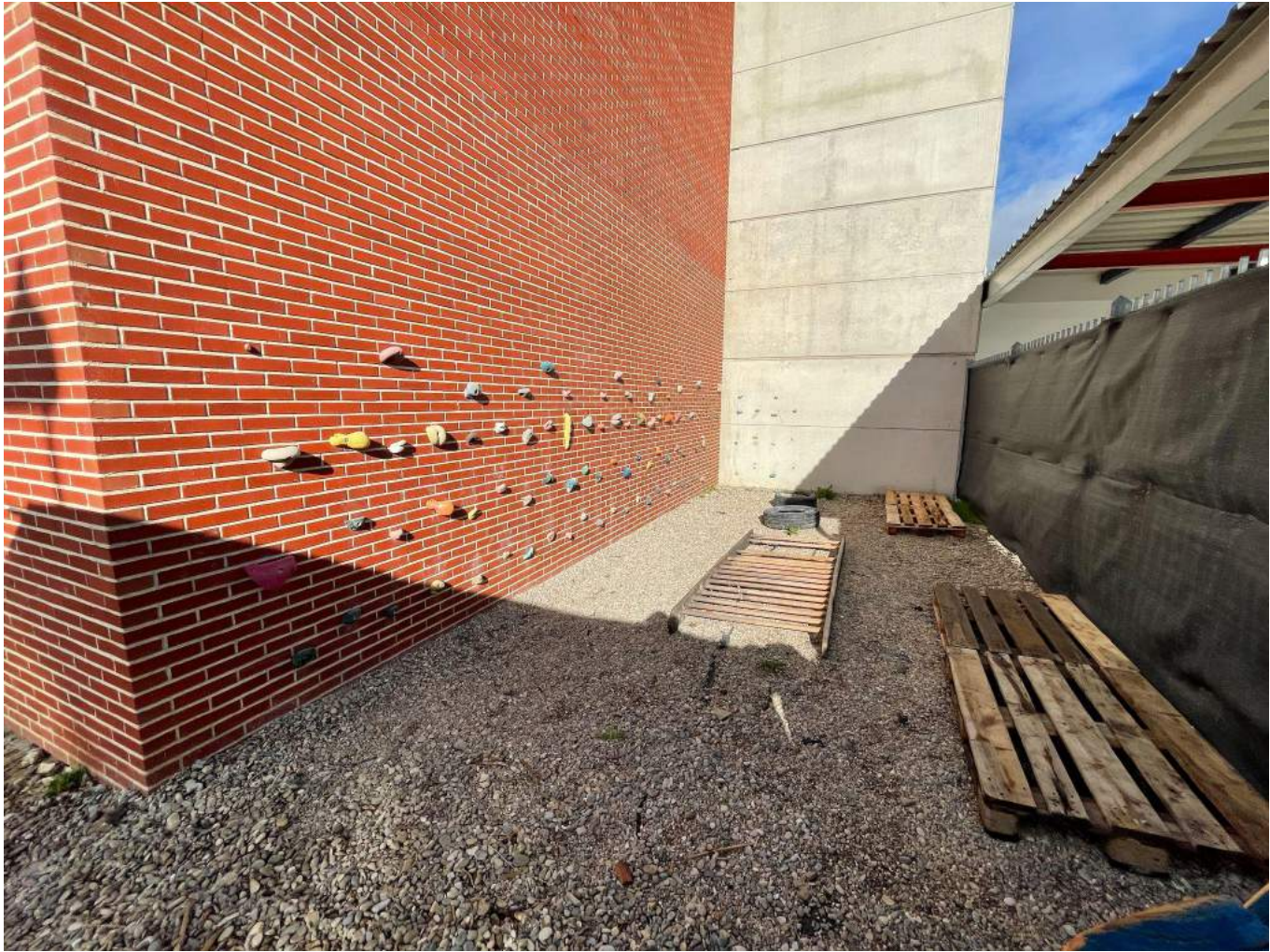
ESKOLA BARATZEA/

HUERTA ESCOLAR













AMBIENTE DE REFERENCIA:

PROPUESTA	DESCRIPCIÓN	MATERIALES	ÁMBITO	COMPETENCIAS	SABERES
	QUÉ ES Y CÓMO SE UTILIZA	DESCRIPCIÓN			
MARCA X SI LA PROPUESTA CUMPLE	MIRADA DUA LAS PROPUESTAS ESTÁN DISEÑADAS DESDE UNA MIRADA INCLUSIVA	TRANSFERENCIA CONEXIÓN, GENERALIZACIÓN A OTRAS DISCIPLINAS (propuestas inter y transdisciplinares)	RIQUEZA MATERIALES Y PRESENTACIONES	PERMEABILIDAD MOTIVACIÓN, INTERÉS, CURIOSIDAD, SORPRESA, ATRACTIVO....	METACOGNICIÓN <input type="checkbox"/> LAS PROPUESTAS PERMITEN LA REFLEXIÓN Y AUTOCORRECCIÓN

SUGERENCIAS PARA EL DISEÑO DE LOS AMBIENTES

Green spaces and cognitive development in primary schoolchildren

Payam Dadvar^{a,b,c,d}, Mark J. Nieuwenhuis^{a,b,c}, Mikel Esnaola^{a,b,c}, Joan Forné^{a,b,c,d}, Xavier Basagaña^{a,b,c}, Mar Alvarez-Pedret^{a,b,c}, Iciar Rivera^{a,b,c}, Mónica López-Vicente^{a,b,c}, Montserrat De Castro Pascual^{a,b,c}, Jason Su¹, Michael Jerrett², Xavier Querol³, and Jordi Sunyer^{a,b,c,h}

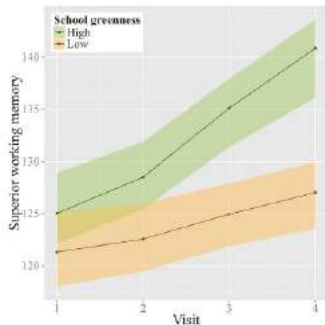
^aCentre for Research in Environmental Epidemiology (CREAL), 08003 Barcelona, Spain; ^bExperimental and Health Sciences, Pompeu Fabra University, 08003 Barcelona, Catalonia, Spain; ^cChair on Epidemiology and Public Health (CEPHEP), 08029 Masplid, Spain; ^dDepartment of Genes and Environment, Division of Epidemiology, Norwegian Institute of Public Health, 0437, Oslo, Norway; ^eDepartment of Geospatial, Institute of Environmental Assessment and Water Research, Spanish National Research Council (ICMID-CSIC), 08034 Barcelona, Catalonia, Spain; ^fEnvironmental Health Sciences, School of Public Health, University of California, Berkeley, CA 94720-7365; ^gDepartment of Environmental Health Sciences, Building School of Public Health, University of California, Los Angeles, CA 90095; and ^hHospital del Mar Medical Research Institute (IMIM), 08003 Barcelona, Catalonia, Spain

Edited by Susan Hanson, Clark University, Worcester, MA, and approved May 15, 2015 (received for review February 18, 2015)

Exposure to green space has been associated with better physical and mental health. Although this exposure could also influence cognitive development in children, available epidemiological evidence on such an impact is scarce. This study aimed to assess the association between exposure to green space and measures of cognitive development in primary schoolchildren. This study was based on 2,593 schoolchildren in the second to fourth grades (7–10 y) of 36 primary schools in Barcelona, Spain (2012–2013). Cognitive development was assessed as 12-mo change in developmental trajectory of working memory, superior working memory, and inattentiveness by using four repeated (every 3 mo) computerized cognitive tests for each outcome. We assessed exposure to green space by characterizing outdoor surrounding greenness at home and school and during commuting by using high-resolution (5 m × 5 m) satellite data on greenness (normalized difference vegetation index). Multilevel modeling was used to estimate the associations between green spaces and cognitive development. We observed an enhanced 12-mo progress in working memory and superior working memory and a greater 12-mo reduction in inattentiveness associated with greenness within and surrounding school boundaries and with total surrounding greenness index (including greenness surrounding home, commuting route, and school). Adding a traffic-related air pollutant (elemental carbon) to models explained 20–65% of our estimated associations between school greenness and 12-mo cognitive development. Our study showed a beneficial association between exposure to green space and cognitive development among schoolchildren that was partly mediated by reduction in exposure to air pollution.

activity are related to improved cognitive development (9). Outdoor surrounding greenness has also been reported to enrich microbial input from the environment (10), which may positively influence cognitive development (10). Through these pathways, exposure to green space, including outdoor surrounding greenness and proximity to green spaces, could influence cognitive development in children, yet the available population-based evidence on the association between such exposure and cognitive development in children remains scarce.

The brain develops steadily during prenatal and early postnatal periods, which are considered as the most vulnerable windows for the effects of environmental exposures (11). However, some cognitive functions closely related with learning and school achievement—such as working memory and attention—develop across childhood and adolescence as an essential part of cognitive maturation (12–14). We therefore hypothesized a priori that exposure to green space in primary schoolchildren could enhance cognitive development. Accordingly, our study aimed to assess the association between indicators of exposure to green space and measures of cognitive development, including working memory (the system that holds multiple pieces of transitory information in the mind where they can be manipulated), superior working memory (working memory that involves continuous updating of the working memory buffer), and inattentiveness in primary schoolchildren. As a secondary aim, we also evaluated the mediating role of a reduction in air pollution as one of the potential mechanisms underlying this association.



Research paper

Impact of views to school landscapes on recovery from stress and mental fatigue

Dongying Li¹, William C. Sullivan¹

¹University of Illinois, Department of Landscape Architecture, 617 3rd Drive, Champaign, IL 61820, United States

HIGHLIGHTS

- The effect of window views on attention and stress were tested using randomized controlled experiment.
- Window views to green landscapes promote high school students' attention restoration.
- Window views to green landscapes speed high school students' recovery from stress.
- Attention restoration and stress recovery are separate pathways.
- Exposure to daylight alone did not improve student performance.

ARTICLE INFO

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Student performance
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Attention restoration

ABSTRACT

Previous research has demonstrated positive associations between the greenness of high school landscapes and school wide academic performance. We do not know, however, if green landscapes cause better performance or if the association between the two is a product of self-selection. If there is a causal relationship, the pathways through which green school landscapes affect student performance remain unclear. We hypothesize that views onto green landscapes help students recover from mental fatigue and stress. To test these hypotheses, we conducted a randomized controlled experiment with 54 high school students at five high schools. Participants were randomly assigned to classrooms without windows or with windows that opened onto a built space or a green space. Participants engaged in typical classroom activities followed by a break in the classroom to which they were assigned. Attentional functioning was measured using Digit Span Forward and Backwards. Physiological stress levels were measured by skin conductance, body temperature, pNNO₂ (the proportion of the number of pairs of successive NNO₂ that differ by more than 50 ns divided by the total number of NNO₂ and LFHF (the ratio between low-frequency peaks and high-frequency peaks). Results demonstrate that classroom views to green landscapes cause significantly better performance on tests of attention and increase student's recovery from stressful experiences. A lack of mediation effect demonstrates that attention restoration and stress recovery are two distinct processes. Implications for school site selection, design and renovation are discussed.
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SUGERENCIAS PARA EL DISEÑO DE LOS AMBIENTES

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Una anàlisi holística i multinivell per identificar l'impacte del disseny d'una aula en l'aprenentatge dels alumnes

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School of the Built Environment, Maxwell Building, University of Salford, Salford M5 4WT, Regne Unit

info article

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Rebut en forma revisada el 21 de setembre del 2012
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Paraules clau:

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Impacte en l'aprenentatge
Model multinivell
Holístic
Multisensorial
Proves

abstracte

L'objectiu d'aquest estudi és comprovar si hi ha indicis per demostrar que el disseny dels edificis escolars influeix en el ritme d'aprenentatge dels alumnes de primària.

S'han desenvolupat hipòtesis per a 10 paràmetres de disseny dins d'un context de neurociència amb tres principis de disseny. S'han comparat amb les dades recollides de 751 alumnes de 34 aules diverses, de set escoles diferents del Regne Unit. El model multinivell desenvolupat explicava el 51% de la variabilitat en els entorns d'aprenentatge dels alumnes durant un any escolar. Ara bé, dintre d'això, s'ha identificat un nivell elevat d'explicació (73%) a nivell de classe, associat totalment a sis paràmetres de l'entorn construït: color, opció, connexió, complexitat, flexibilitat i llum.

Aquest model s'ha utilitzat per preveure l'impacte dels sis paràmetres de disseny en el progrés dels alumnes. En comparar la "millor" i la "pitjor" aula de la mostra, s'ha descobert que tan sols aquests factors tenen un impacte equivalent al progrés típic d'un alumne durant un any. També ha estat possible calcular l'impacte proporcional d'aquests factors de l'entorn en el progrés dels alumnes, dins del conjunt de tots els factors que hi influeixen. De mitjana, hi ha contribuït en un 25%.

Això demostra clarament l'impacte de l'entorn construït en el progrés dels alumnes i ressalta com n'és d'important que els responsables polítics, dissenyadors i usuaris ho tinguin en compte. Malgrat això, degut a l'ampli ventall de factors que formen part d'aquest enfocament holístic, el disseny dels espais d'aprenentatge encara suposa un repte important.

Taula 11

Proporció de l'increment en la progressió de l'aprenentatge dels alumnes relativa a cada factor ambiental

Factor ambiental	Proporció (%)
Color	18
Opció	10
Connexió	26
Complexitat	17
Flexibilitat	17
Llum	12
Total	100

SUGERENCIAS PARA EL DISEÑO DE LOS AMBIENTES

Article

Standing Up for Learning: A Pilot Investigation on the Neurocognitive Benefits of Stand-Biased School Desks

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Received: 13 October 2015; Accepted: 17 December 2015; Published: 22 December 2015

Academic Editor: Rachel Davey

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† These authors contributed equally to this work.

Abstract: Standing desks have proven to be effective and viable solutions to combat sedentary behavior among children during the school day in studies around the world. However, little is known regarding the potential of such interventions on cognitive outcomes in children over time. The purpose of this pilot study was to determine the neurocognitive benefits, *i.e.*, improvements in executive functioning and working memory, of stand-biased desks and explore any associated changes in frontal brain function. 34 freshman high school students were recruited for neurocognitive testing at two time points during the school year: (1) in the fall semester and (2) in the spring semester (after 27.57 (1.63) weeks of continued exposure). Executive function and working memory was evaluated using a computerized neurocognitive test battery, and brain activation patterns of the prefrontal cortex were obtained using functional near infrared spectroscopy. Continued utilization of the stand-biased desks was associated with significant improvements in executive function and working memory capabilities. Changes in corresponding brain activation patterns were also observed. These findings provide the first preliminary evidence on the neurocognitive benefits of standing desks, which to date have focused largely on energy expenditure. Findings obtained here can drive future research with larger samples and multiple schools, with comparison groups that may in turn implicate the importance of stand-biased desks, as simple environmental changes in classrooms, on enhancing children's cognitive functioning that drive their cognitive development and impact educational outcomes.

Keywords: sedentary behavior; physical activity; exercise; executive function; working memory; brain activity; fNIRS; PFC



El tercer profesor: espacios que guían el aprendizaje

29 septiembre, 2017 Jesús C. Guillén

Go to comments

Deja un comentario

“ En las escuelas el espacio educa, se dirige a facilitar el aprendizaje. El diseño inteligente del espacio representa a un nuevo docente en el siglo XXI. Los espacios nos configuran y nos definen. Son, al lado de alumnos y educadores, el tercer profesor.

Alfredo Hernando

Somos conscientes de las nuevas necesidades educativas en los tiempos actuales. Buscar alternativas curriculares, metodológicas o vinculadas a la evaluación resulta imprescindible para atender de forma adecuada la diversidad del alumnado. Como lo es plantearse cuál ha de ser el rol del profesorado y del alumnado en una educación en pleno siglo XXI. Relacionado con esto último, la neurociencia ha demostrado la incidencia directa de las emociones en el aprendizaje. Pero si importante resulta el clima emocional en el aula, también lo es el entorno físico en el que se da el aprendizaje porque afecta a nuestro cerebro. La arquitectura, el diseño y las condiciones físicas de los espacios en los centros escolares son más importantes de lo que creíamos en el proceso de innovación educativa (ver figura 1). Y pueden vincularse a otros factores críticos en la transformación educativa, como los metodológicos. Como dice Rosan Bosch: “El objetivo no es crear espacios bonitos, sino que contribuyan al cambio”.

