

Northumbria Research Link

Citation: Salama, Ashraf (2022) Knowledge spaces in architecture and urbanism - a preliminary five-year chronicle. Archnet-IJAR, 16 (1). pp. 1-25. ISSN 1938-7806

Published by: ArchNet

URL: <https://doi.org/10.1108/ARCH-12-2021-0360> <<https://doi.org/10.1108/ARCH-12-2021-0360>>

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/49575/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



**Northumbria
University**
NEWCASTLE



UniversityLibrary

Salama, A.M. (2022), "Knowledge spaces in architecture and urbanism – a preliminary five-year chronicle", Archnet-IJAR, Vol. 16 No. 1, pp. 1-25.

<https://doi.org/10.1108/ARCH-12-2021-0360>

Knowledge Spaces in Architecture and Urbanism – A Preliminary Five-Year Chronicle

Abstract

Purpose: Commemorating the 15th year anniversary of discourse, knowledge dissemination in architecture and urbanism through the contributions published in Archnet-IJAR: International Journal of Architectural Research, since March 2007, this article aims to capture, unpack, and categorize the key content of published research outputs during the last five years into knowledge spaces.

Design/methodology/approach: While referring to key statistics of various recognized databases in order to highlight the journal growth, development and performance, the approach to the analysis is inspired by Crysler's Writing Spaces: Discourses of Architecture, Urbanism and the Built Environment. This is established through a preliminary conceptual content analysis that enables the development of specific content categories representing knowledge spaces based on the overall contributions to the journal since its inception in 2007 and then mapping the recent contributions, developed over the past five years (2017–2021), to these knowledge spaces. The thrust of the analysis is to instigate a structured understanding of Archnet-IJAR role in the development and dissemination of knowledge in architecture and urbanism.

Findings: The examination of the content and the analysis reveal two broad categories of knowledge spaces: established and evolving. Established knowledge spaces are recognized in terms of theorizing architectural and urban production; the public realm and assessment of designed environments; housing, the informal and the vernacular; urban heritage and historic environments; and architectural and urban politics. Evolving knowledge spaces were acknowledged in terms of architectural education and design pedagogy; collaborative planning and community design; architectural and urban sustainability and resilience; health, wellbeing and engaging with nature; and COVID-19 spatial and pedagogical implications. Characterized by clear definition and at the same time transparent borders, the identified knowledge spaces have the potential of generating further possibilities for future knowledge spaces.

Research limitations/implications: In addition to a holistic analysis based on the scrutiny of contributions as they progressed from submissions to reviews to publishing, future work would involve more systematization, in-depth engagement with metadata and should benefit from IT applications and data mining software packages.

Practical implications: This article is regarded as a cognizance platform and an enabling mechanism for researchers and future contributors to identify the unique particularities of their research, the nature of the content they aim to develop and the way in which that content may contribute to one or more knowledge spaces.

Originality/value: Establishing an understanding of the knowledge spaces which represent contributions published in Archnet-IJAR, the knowledge spaces identified demonstrate diversity and plurality; diversity in ontological interpretations of the nature of reality and plurality and pluri-epistemology in terms of how methods are pursued and the way in which such interpretations are developed, recorded, documented, and communicated. These are knowledge spaces of possibilities and anticipation of growth, evolution and development.

1. Introduction

This article commemorates the 15th year anniversary of discourse, knowledge dissemination in architecture and urbanism through the work published in Archnet-IJAR: International Journal of Architectural Research since March 2007. While the journal does not publish regular editorials associating each edition, it is at a moment in its evolution and development that requires presenting key highlights of growth, performance, and the types of knowledge it has generated. This is given that the latest coverage celebrating a decade of the journal was published, five years ago (Salama *et al.*, 2017) and that the journal has achieved excellent performance since then. Over the past five years, Archnet-IJAR has witnessed its re-birth with its acquisition

by Emerald Publishing, together with the reshaping of advisory and editorial boards, the additional of excellent members of advisors and reviewers, marking a new phase of excellence in architectural and urban research which commenced in Vol. 13 No. 1, March 2019.

The growth and performance of Archnet-IJAR is evident in most metrics developed by various indexing platforms and databases. Notably, it has been included in AHCI—Arts and Humanities Citation Index of the Web of Science (Clarivate Analytics) in December 2019 following its inclusion in ESCI-Emerging Sources Citation Index in 2016. Within SCImago database, it has been consistently included in the first Quartile-Q1 in Architecture and the second Quartile-Q2 in Urban Studies, despite a slight drop in 2017. It has been in the top ten list of journals in Architecture within Google Scholar database. Vitaly, focusing on the growth and performance over the past five years within Scopus database, the steady development is evident when looking at the rankings in Architecture and Urban Studies (Table 1) with Q1 position in the rankings of both architecture and urban studies during 2020.

	CiteScore and Rankings of Archnet-IJAR/Year				
	2017	2018	2019	2020	2021
CiteScore*	1.8	2.1	2.1	2.4	<i>As of December 2021, CiteScore is 2.4. To be announced for the full year of 2021, in July 2022.</i>
Architecture**	18/107	20/117	22/126	22/138	
Urban Studies**	84/153	54/181	53/200	54/215	

*CiteScore in a year counts the citations received in the last four years (including that year) to all classified articles published in those four years, and divides this by the number of publications published in the same four years.
**Rankings in a year for a category (architecture / urban studies) based on the number of total journals included in the database in that year.

Table 1: Archnet-IJAR's CiteScores and Rankings in Architecture and Urban Studies, 2017-2021.
(Source: Scopus: December 2021)

Further metrics within Scopus database during the period 2017-2021 demonstrate the high performance Archnet-IJAR has been able to achieve according to SciVal/ RELX tools developed by Elsevier B.V. products (Table 2). This includes achieving 1.28 in the Field-Weighted Citation Impact (FWCI), which is higher than the world average (1.0). FWCI is the ratio of citations received relative to the world average for the subject field and publication year. This is in addition to the general growth in international collaboration; citation counts; and average citations per publication. The overall reach is significant in terms of numbers of submissions that come from over 50 countries, and as evident in the number of citing countries—98 overall and 81 during the past five years--that represent over 60% of recognized countries and territories. This performance is a result of a rigorous review process, conducted by the journal editorial team and an excellent multigenerational cohort of expert reviewers representing all corners of the world, where acceptance rates have dropped dramatically from 35% in 2010 to 17% in 2016 and, more recently, to slightly over 10% in 2020.

While the preceding figures are important in the sense of demonstrating performance and representing growth and development, the type and nature of knowledge disseminated and published is much more important to address, categorize, unpack, and reflect upon. In principle, this is demonstrated through the profile of contributors in terms of backgrounds and affiliation and contributions in terms of the contexts they tack and speak to. Archnet-IJAR is genuinely international and aims at strengthening ties between scholars, academics, and practitioners from the global north and the global south with contributors and readers reaching across the boundaries of cultures and geographies. It aims to capture and disseminate two broad knowledge areas that include:

- *Architectural and Design Research:* involves a range of topics that include architectural pedagogy and design studio teaching practices; architectural and sustainable design; design methods and architectural theories; architectural criticism; design and project programming; environment-behavior studies; application of information technologies; post occupancy and facility performance evaluation; and social and cultural factors in design.
- *Cities and Urban Research:* involves a range of topics that include governance and political factors contributing to the shaping of communities, cities and urban regions; community planning; sustainable urban conservation; environmental planning and eco development; housing policy; planning, and design; new urbanism; everyday urbanism; sustainable development; urban design assessment; and urban studies.

Performance of Archnet-IJAR							
Relevant Metrics	Overall Since inclusion in Scopus in 2011	Overall (2017-2021)	Performance/Year (2017-2021)				
			2017	2018	2019	2020	2021
Scholarly Output	481	247	38	62	44	50	53
Citation Count	2213	801	249	245	131	79	97
Citations per Publication	4.6	3.3	6.6	4	3	1.6	1.8
Field-Weighted Citation Impact	1.12	1.28	1.51	0.91	0.84	0.66	2.48
Number of Citing Countries	98	81	59	56	43	31	30
International Collaboration (%)	15.8	18.2	23.7	12.9	22.7	14	20.8

- Citation Count: total citations received by publications.
- Citations per Publication: the average number of citations received per publication.
- Field-Weighted Citation Impact: the ratio of citations received relative to the world average for the subject field, and publication year (FWCI world average is 1.0).
- Number of Citing Countries: the number of countries represented by the publications citing articles in Archnet-IJAR.
- International Collaboration (%): the extent publications have that international co-authorship.

Table 2: Archnet-IJAR Performance in Selected Metrics in 2017-2021 – as of December 2021.
(Source: 2021 Elsevier B.V. SciVal, RELX Group)

There have several attempts to unpack the nature of content published within the two preceding knowledge areas which were outlined in earlier review articles (Salama et al., 2017) to represent research fields as well as in earlier editorials that endeavored to develop thematic analysis to unveil specific topics, contents, methodological approaches relevant to the content published in an edition (Salama, 2019-a&b). However, in this article the aim is to establish specific categories representing knowledge spaces based on the overall contributions to the journal since its inception in 2007, then map the recent contributions, published over the past five years, to these knowledge spaces to ascertain a more lucid and reasoned understanding of Archnet-IJAR role in the development and dissemination of knowledge in architecture and urbanism.

2. Approach to Analysis

In meeting the premise of this article, an approach to analysis is developed in a manner that echoes the work of C. Greig Crysler in his book *Writing Spaces: Discourses of Architecture, Urbanism and the Built Environment, 1960–2000*, published in 2003 (Crysler, 2003). Crysler crystallized the writing spaces of five major journals over several decades. Yet, the analysis presented here does not go to the same level of scoping or reflection. The analysis follows the two broad areas identified within the scope of Archnet-IJAR which continues to publish latest research findings that aim to advance knowledge while establishing a bridge between theory and design, academia and practice, and findings and policy implications, in architecture and urbanism. Yet, the past five years prove further maturity where spheres of inquiry can be clearly defined into knowledge spaces that manifest rigor and discipline, logic and reason, creativity and innovation, depth and breadth of the questions and issues raised by and examined within a reasonable volume of contributions.

The review aims at establishing specific categories of knowledge spaces based on the overall contributions to the journal over 15 years, then scrutinizing recent contributions, developed over the past 5 years, to these knowledge spaces (Figure 1). The classification involves two broad categories portrayed as established and evolving knowledge spaces. The established knowledge spaces have been identified based on their sustained presence since the journal was founded in 2007 and until the present. These were recognized in terms of theorizing architectural and urban production; the public realm and assessment of designed environments; housing, the informal, and the vernacular; urban heritage and historic environments; and architectural and urban politics. On the other hand, the evolving knowledge spaces have been identified based on number of submissions which demonstrates growing interest and concomitantly, the number of publications. These were recognized in terms of architectural education and design pedagogy; collaborative planning and community design; architectural and urban sustainability and resilience; health, wellbeing, and engaging with nature; and Covid-19 spatial and pedagogical implications.

The established knowledge spaces have been outlined by demonstrating the characteristics of a selection of recent contributions which were utilized as examples for the purpose of delineating the nature and scope of each knowledge space and the way in which it manifests over recent years. The evolving

knowledge spaces were identified based on the number of submissions and publications; this was followed by developing a narrative for each knowledge space determined through the examination of key contents, contexts, approaches to investigation, and major findings.

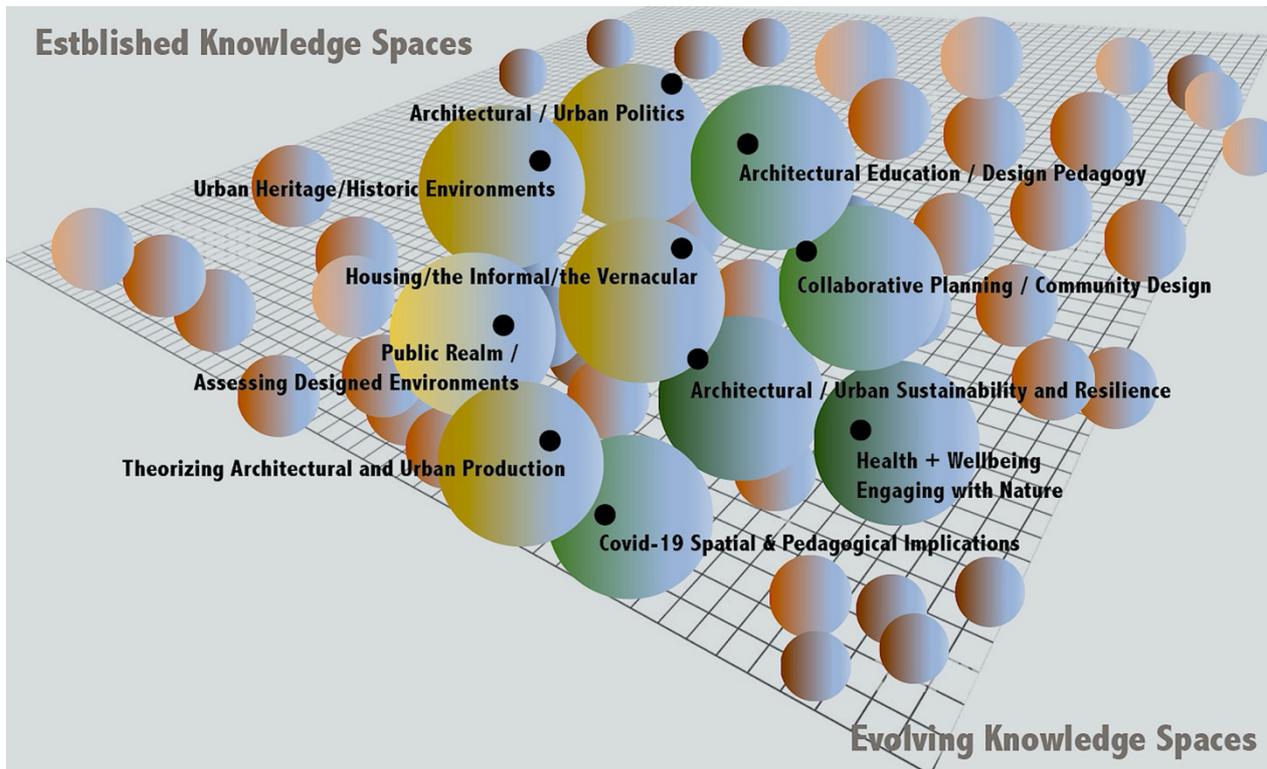


Figure 1: Established and Evolving Knowledge Spaces within Archnet-IJAR.

3. Overview of Established Knowledge Spaces

An outline of the selected contributions to the five established or already evolved knowledge spaces is presented. Contributions were utilized as examples for the purpose of portraying the nature and the scope of each knowledge space and the way in which it manifests over recent years.

3.1 The Space of Theorizing Architectural and Urban Production

Interpreting and theorizing architectural and urban production is a knowledge space within which many contributions fall. It involves constructing anecdotes either for already built works or for the process of designing them. Examples of recent contributions to this knowledge space include the work of (Allahham, 2019), which scrutinizes the transformation of the semiological meaning of the contemporary mosque, with a special focus on grand state mosques; the work of (Kiyanenko, 2019) which interrogates western authors and their ideas related to environmental design research (EDR) and the way in which they have impacted Russian architectural discourse; the work of (Alaily-Mattar *et al.*, 2021) which utilizes a methodological strategy and a conceptual impact model that unravels the contextual impacts of star architecture projects; the work of (El-Ashmouni, 2021) which probes the notion of cultural tourism and museums as institutions, and the associated socio-political authority, changes of visual realms and normative contexts; and the work of (De Paris *et al.*, 2021), that explores the concepts of adaptability and flexibility and the associated factors that enhance the effectiveness of indoor environments.

3.2 The Space of the Public Realm and Assessment of Designed Environments

The knowledge space addressing the public realm and assessment studies of built environments (building and urban environments) seems to be very well-established given the intensity of contributions which vary in purpose, scope, scale, and approach to investigation. Examples of recent contributions include the work of

(Heathcott, 2019) which places emphasis on polychromatic visual form in examining the temporality and modularity of Mexico City's street markets; the work of (Azzali, 2020) which identifies best practices and successful examples used during and after mega-events, in the contexts of London, Sochi, and Rio de Janeiro, to transform event sites and venues into livable public open spaces (POS) that contribute to a vibrant city life; the work of (Hollander and Anderson, 2020) which explores the relationship between urban facades and affective feelings through an empirical study that responds to the question of how do people perceive edge conditions in urban environments; and the work of (Vukovic *et al.*, 2021) which adopts a quality of urban life perspective in the structured assessment of three public open spaces in Belgrade. Notably, key contributions that advance methods or expand the boundaries of the knowledge space include the work of (Drista and Bilorja, 2021) which articulates a critical review of studies that map the urban environment using continuous physiological data collection and concludes with conceptual model that aims to mitigate urban stress at the city and the user levels; and more recently the work of (Tahroodi and Ujang, 2021) which establishes an understanding of the interrelations between the visual and physical accessibility attributes of path structure and their impacts on the intensity of passive social interaction across urban parks in Kuala Lumpur, Malaysia.

3.3 The Space of Housing, the Informal, and the Vernacular

There has been a consistent interest in contributing to the knowledge space of housing, the informal, and the vernacular. However, more contributions appear to be in the area of contemporary housing, formal and informal, while the vernacular seems to be embedded in other spaces of knowledge including urban heritage and historic and traditional environments. Recent contributions to this knowledge space include the work of (Gur and Dülgeroğlu Yüksel, 2019) which offers a systematic categorization of contemporary housing typologies in Istanbul, developed during the 20th century; in the same context -- the work of (Turkoglu *et al.*, 2019) which examines residential satisfaction in formal and informal neighborhoods; and the work of (Cho, 2020), which goes along the same approach but in the context South Korea and with a focus on single-mother households. Exclusively focusing on informal settlements and informality are two contributions of note, for example – the work of (Požani, 2019) which focuses on urban form in informal settlements and develops a conceptual framework that consider the context in which informality takes place, the characteristics of the settlement and the houses included therein, the dwellers of those houses, and the process through which a settlement is designed and transformed over time. This is a robust approach that provides important insights into the understanding of the contemporary vernacular. More recently, another relevant contribution of (O'Brien *et al.*, 2020) that examines the incremental housing process developed at Villa Verde, by the Chilean architecture firm Elemental/ Alejandro Aravena, and generates important critiques of the potential challenges of this approach to self-help and social housing, despite the attentions and global recognition it has received.

3.4 The Space of Urban Heritage and Historic Environments

Since its early years, Archnet-IJAR has been a space for developing this knowledge space which focuses on urban heritage and historic environments where three special issues have been developed in 2008 on *public baths in the Mediterranean* by Magda Sibley, in 2015 on *the contemporaneity of the built heritage* by Remah Gharib, and in 2017 on *architectural and urban heritage in the digital era* by M. G. Abdelmonem. Recent contributions that strengthen this knowledge space include the work of (Furlan *et al.*, 2019) which examines the authenticity of place-making and associated issues of the visual and spatial character development in the context of the regenerated historic district in Msheireb, Downtown Doha, Qatar; the work of (Sharif, 2020) which offers an enunciation of an actor-network theory inspired ethnography for recording heritage buildings in the context of Irbid, Jordan; the work of (AlSadaty, 2020) which places emphasis on the Egyptian network of historic indoor markets with special reference to Port Said city markets that are in critical need for serious intervention; the work of Kudumovic (2021) which examines the historic core of Sarajevo, its physical attributes, sensory experience, and activities towards potential revitalization efforts. Also recently, the work of (Daher, 2021) goes a step further beyond discussing a specific case or building typology and provides a critical assessment of the trajectory and nature of the production of knowledge on cultural heritage in the Arab world. His assessment of the field of cultural heritage is centered on both historic evolution and on current practices in an effort to understand the nature and politics of that evolution.

3.5 The Space of Architectural and Urban Politics

The knowledge space of spatial, architectural, and urban politics is best conveyed through two special issues published in 2019 and 2020. The first is entitled *The City (Re)shaped: Exploring the Nexus Between Politics, Memory and Urbanism in the Built Environment* (Selim, 2019) which is premised on the fact that there is growing importance in research over economic growth, urban performance, and prosperity of cities across

many regions and that policy and decision makers have acknowledged the role of cities in the sustainable development process. The second is entitled *Borders, Interfaces, and Intersections in Architecture and Urbanism* (Soygenis, 2020) which also engages with use politics at various scales. It identifies three relevant themes that include the dichotomy of boundary as a spatial element that separates or bounds; the in-between spaces of private and public in housing; and intangible boundaries between nature and the built environment. The two special issues have generated 25 contributions to this knowledge space from Europe, the Mediterranean, and the Middle East. An additional important contribution to this space can be seen in the work of (Abdelwahab, 2019) which espouses Foucauldian discourse on institutions of “knowledge and authority” to approach the power relations between the actors involved in the “event” of the construction of Naguib Mahfouz (Noble Prize Winner for Literature) Square which occupies an important part of Gamaet-Aldowel-AlArabyia street. The work involves demonstrates an engagement with spatial politics in a study of an urban event in the context of Greater Cairo, Egypt.

4. Preliminary Characterization of Evolving Knowledge Spaces

A narrated analysis of the contributions to the five evolving knowledge spaces is offered. These were identified based on the number of submissions and publications. Each narrative is demonstrated by discussing key issues, contexts, approaches or methods, and major findings. Yet, in preliminary matrices this is encapsulated to address themes (topics/issues) and contexts (regions/countries).

4.1 The Space of Architectural Education and Design Pedagogy

A spectrum of issues has been investigated within the space of architectural education and design pedagogy. A selection of contributions is identified to articulate this space as shown in Table (3).

Addressing active learning strategies, (Sgambi *et al.*, 2019) highlight the importance of active experiences which can lead to improving the teaching of technical subjects, such as structural engineering within the architectural curriculum. Their work demonstrates the relationship between active learning and the educational outcomes mandated by the overall provision. This work is advanced by the same authors through analyzing the entire integrated teaching activity undertaken as part of the Master of Science “Architecture and Building” at the School of Architecture, Urban Planning, and Construction Engineering of the “Politecnico di Milano,” Milan, Italy (Garavaglia *et al.*, 2020). Focusing on technology and design, (Saghafi and Crowther, 2021) examine the integration of design studio and technology subjects in the context of the University of Tehran in Iran and Queensland University of Technology, Brisbane, Australia. Their work reveals similarities in terms of the overall aim of content delivery. Yet, the Iranian program appears to have a stronger focus on knowledge delivery while the Australian program seems to have a stronger focus on the application of knowledge and skills, particularly within the design studio projects.

In the context of Technion’s Haifa, (Bar-Sinai *et al.*, 2020) develop a pedagogical protocol and iterative framework for digital ground-scaping using robotic tools. The framework is tested through intensive workshop sessions. Situating relevant conditions, they reflect on several pedagogical and professional practice strategies. (Aramouny, 2021) presents an experiment at the American University of Beirut – Lebanon, which calls for hybridization between the approaches of digital fabrication and analogue making to amalgamate the digital design process and material know-how. This advances the case for the innovative use of cement-based products with a view towards environmentally responsive and bio-integrated materials.

(Ceylan and Soygenis, 2019) examine the social aspects of sustainability by articulating a case study in the context of Istanbul, Turkey, where the outcome of the student work is evaluated to reflect the effects of the built environment on social sustainability. Examining the wisdom of design-build projects in schools of architecture in Canada and United States, (Verderber, 2021) offers a post occupancy evaluation approach to develop learnings from the experience of design-build projects. Through assessments of three open-air pavilion structures from the viewpoint of 161 respondents, degree of satisfaction and everyday uses, Verderber examines factors that include functionality, community context, materiality, and aesthetics, explaining that the three pavilions were viewed as tectonically sound and aesthetically iconic and were regarded to be valued additions to their immediate physical context and local community.

<i>Knowledge Space:</i> Architectural Education and Design Pedagogy	
Themes (Topics/Issues)	Contexts (Countries/Regions)
A design studio experience - impacts of social sustainability	Turkey
A pedagogical protocol for iterative robotic fabrication on remote grounds	Israel
Active learning for the promotion of students' creativity and critical thinking: An experience in structural courses for architecture	Belgium, Italy
Assessing the post-occupancy performance of educational design/build	Canada, United States
Assessment, learning and power in the architectural design studio jury	United Arab Emirates
Collaborative architectural design studio environment	Pakistan
Competencies urban planning students need to succeed in professional practices:	Egypt
Impacts of architectural education on entrepreneurial intentions	Turkey
Integrating technology subjects with design studio teaching	Australia, Iran
Living labs as a pedagogical teaching tool for green building design and construction in hot-arid regions	Egypt
Materiality and digital technologies: concrete experiments for the built environment	Lebanon
Methodological research in architecture and allied disciplines	Open
Reconceptualizing the design studio in architectural education: Distance learning and blended learning as transformation factors	Spain
Successful thesis proposals in architecture and urban planning	Open
The role of structures in architecture: the multidisciplinary experience of active learning in a Master of Science	Italy
The university as agent of change in the city: Co-creation of live community architecture	United Kingdom
Towards transformative learning methods for interdisciplinary postgraduate education for sustainable development (ESD)	United Kingdom
Variance in student and teacher roles in the contemporary Australasian architecture design studio context	Australia

Table 3: Themes, topics, issues, and contexts included in the knowledge space: architectural education and design pedagogy.

Testing a studio pedagogy instigated through an experiment of a joint design studio held between two departments of architecture in the context of Pakistan, (Qureshi, 2020) captures the effectiveness, efficiency, and impacts of this collaboration. (Musa, 2020) assesses the architectural design jury practice in the University of Sharjah-UAE while exploring its role as an assessment tool and the associated factors and power relations that undermine it. She calls for reforming the jury system and recommends experimenting with supporting tools that focus on student empowerment and learning enhancement rather than on pure evaluation. Similar, focusing on the role of educators in an Australian context, (Iftikar *et al.*, 2021) examine an array of roles that both teachers and students adopt in the design studio process; they highlight the fact that these roles change over time within the semester or throughout the academic session. Their work reveals that these changes correspond with the progress and stages of the design project and offer lessons on how to better relate to student needs.

Extending to other allied fields such as planning and engineering, the work of (Megahed *et al.*, 2020) explores the competencies and skills required of future urban planning professionals to meet the real-world challenges of professional practice. They present a validated model of competencies resulting from scanning the expectations of Egyptian students and new graduates versus requirements of practicing urban planning. In a different context at the University of Strathclyde, Glasgow, Scotland, (Grierson and Munro, 2018) discuss the relationship between education for sustainable development (ESD) and interdisciplinarity within architecture and engineering in higher education, presenting a case study of the Sustainable Engineering (SE) postgraduate program. Their work provides insights into the practices and outcomes of a specific long-standing program, discussing learnings and opportunities for benchmarking with similar programs in the United Kingdom, Europe, and beyond.

The space of education and pedagogy appears to have flexible boundaries in terms of scope where issues related to research are debated from an educational perspective. (Salama, 2019c) provides insights into methodological research in architecture and allied disciplines and unpacks aspects that include philosophical positions, frames of reference, and spheres of inquiry. Similarly, (Abdellatif and Abdellatif, 2020) articulate what constitutes a successful thesis proposal (TP) and present key lessons that aim to enhance the quality of the TP writing in architecture, planning and related disciplines. Furthermore, from an entrepreneurial perspective, (İlerisoy *et al.*, 2021) respond to the question of whether architectural education can have a positive impact on entrepreneurship attitudes, and whether it encourages managerial skills. Their work postulates and validates that core courses in architectural education have an impact on individuals' entrepreneurial intentions.

Earlier work published during 2017 and 2018 engages with this knowledge space in various contexts. For example, (Masdéu and Fuses, 2017) develop the case for distance and blended learning as transformational factors in the architectural design studio in a Spanish context; (Sara and Jones, 2018) develop an approach that calls for the co-creation of live community architecture through utilizing the University of West of England as agent of change in the city; and (Dabaieh *et al.*, 2018) advance the utilization of living labs in green building design in an Egyptian context.

4.2 The Space of Collaborative Planning and Community Design

Several topics and experiences have been explored within the space of collaborative planning and community design (Table 4) since the influential work of Henry Sanoff which was published in *Archnet-IJAR* in 2008 (Sanoff, 2008).

(Kennedy, 2017) presents a review of more than 40 reports to characterize the charrette process introduced through the Scottish government program by focusing on charrette commissioning, construction, and delivery as detailed in post-completion reports. Her work reveals eight charrette characteristics that depict design and implementation aspects and concludes with a charrette-descriptor index that provides a preliminary means to distinguish between different charrette approaches and processes. In the same context, the work of (AlWaer *et al.*, 2021a) aims to broaden the understanding of what takes place in collaborative planning following design-led events, drawing on interviews with professionals and lay participants in events held across Scotland over the past decade. In meeting their objective, they identify a comprehensive framework for the stages included in the collaborative planning process and then develop a critique of issues towards ensuring that the aspirations and concerns expressed by the stakeholders are acted upon and delivered. This includes subsequent decision-making and delivery, follow-on support, resourcing, and funding, among other governance issues. Along the same line of effort, (AlWaer *et al.*, 2021b) advance their work and identify three factors determining the successful implementation of decisions reached at design-led events. These include: a shared follow-on plan, an agreed action program for delivering this, and a properly constituted and resourced delivery vehicle that can monitor and evaluate progress.

Going beyond policy analysis and the development of guidance, (Pasalar and Hallowell, 2019) present a bottom-up participatory process in the context of Raleigh, North Carolina, for uncovering the identity of an urban district to ensure that its community goals and future branding are consistent. Their work reveals strong association between a growing economy and factors related to livability and identity, such as walkability, proximity, connectivity and availability of amenities, and their role in branding efforts. Likewise, but in different context and for a different user group, focusing on refugees and migrants, the work of (Paidakaki *et al.*, 2021) explores social resilience and examines the role of community architects in building socially resilient refugee camps in the context of Greece. Since these camps represent transient and heterogeneous communities with unique vulnerabilities, they recommend that community architects should be able to make long lasting improvements by thinking holistically, designing flexible structural solutions that leverage existing expertise and resources within communities, and by offering technical guidance to other organizations through administrative, financial, and design expertise.

In a Danish context, (Hjort *et al.*, 2019) develop a design strategy that considers the systematic use of interdisciplinary knowledge through a transparent decision-making process which is participatory in nature. They identify relevant design parameters that should be considered in the development of collaborative design decision making. Their work demonstrates the way in which architects can integrate knowledge, skills and values from other disciplines such as environmental psychology and active living research to enhance the quality of decision-making process for the development of future sport and recreation projects.

Speaking to learning environments and utilizing action research methodology and a participatory workshop in a real active learning classroom with future users, (Kepez and Ust, 2020) aim to develop an understanding of the characteristics of classroom settings and examines those that are most desired by high school students and teachers. The key question that this work tries to answer in the context of Istanbul, Turkey, is whether students and teachers will differ from each other with respect to their preferences—when engaged in designing an active learning classroom. Relatedly, (Ghaziani, 2021) evaluates the different ways in which children are involved in designing schools and identifies spatial design trends from the perspective of the children. Her findings highlight the importance of involving children in the school design process that could then inform the decision-making processes of architects and designers.

<i>Knowledge Space:</i> Collaborative Planning and Community Design	
Themes (Topics/Issues)	Contexts (Countries/Regions)
A grassroots research approach for branding urban districts	United States
An investigation into decision-making and delivery activities following design-led events in collaborative planning	United Kingdom
Co-design in the architectural process	South Africa
Collaborative design of an active learning classroom with high school students and teachers	Turkey
Design-led events in collaborative planning: improving post-event planning and delivery	United Kingdom
How can community architects build socially resilient refugee camps	Greece
Planning of sport and recreational facilities informed by interdisciplinary knowledge: An attempt to make a systematic and transparent design strategy	Denmark
Primary school design: co-creation with children	Open
Scotland's approach to participatory planning: Characterizing the Charrette	United Kingdom
Utilizing social networking services as a collective medium to support design communication in team collaboration	South Korea

Table 4: Themes, topics, issues, and contexts included in the knowledge space: collaborative planning and community design.

The implications of co-design as a means of improving the social relevance of architecture are discussed in the work of (Combrinck and Porter, 2021) that discourses the lack of opportunity for meaningful co-design processes in the current professional Master of Architecture program in South Africa since it is largely modelled on the professional work stages of the South African Council for the Architecture Profession (SACAP), which assumes the authority of the architect. Their work challenges this approach through several pedagogical experiments. On the other hand, in a learning setting but focusing on collaborative technologies that support design communication among members of design teams, the work of (Kim *et al.*, 2020) validates the potential of social networking as a collective medium that encourages design communication among student designers at the conceptual stage of design in a studio course. Their work reveals that various social networking platforms support students' communication of design ideas and exploration of problems and allow for a better articulation of problems and solutions.

4.3 The Space of Architectural and Urban Sustainability and Resilience

The architectural and urban sustainability and resilience is a wide-ranging knowledge space with many contributions either exclusively focused on aspects relevant to this knowledge space directly or situated within other knowledge spaces with key elements relevant to sustainability or resilience (Table 5).

Not limited by a specific context, (Sijakovic and Peric, 2021) conduct a comprehensive analysis of a spectrum of sources including academic articles, guidance and policy documents and global reports on climate change. The analysis categorizes the results into strategies, objectives, and principles and advances the discussion by providing tangible design components that help reduce CO₂ emissions while decreasing the vulnerability index of urban systems. In the context of Australia, (Dupre and Bischeri, 2020) call for exploring certain elements related to resilience, especially with respect to the role of architecture in contributing to community resilience against climate change. Their effort places emphasis on the current state of the art of community resilience in rural towns and examines architectural strategies for facilitating resilience. The findings reveal policy implications including the need for a greater consultation among the different stakeholders, the potential of the architectural discipline to play an active role in supporting community resilience, and the need to integrate place-based and identity-related factors into a community framework for enhancing resilience.

Reporting on one of the latest projects in Chicago that symbolizes the city's long history and serious commitment to urban sustainability, (Al-Kodmany, 2021) pieces together various aspects of the newly completed Chicago Riverwalk, Illinois. He explains the design process that transformed an outmoded infrastructure and derelict riverbanks into an attractive gathering civic space, a linear urban park, and a functional transportation corridor. Similarly in the context of the United States, (Behbehani and Prokopy, 2017) explore the environmental awareness, attitudes, and behaviors of residents of a low-income LEED-certified, multifamily, heritage-listed housing development in Indiana. Their findings convey that the LEED features the residents valued in hierarchical order were location, the building's historic and renovated characteristics, its energy conservation system, and the cleanliness and upkeep of the premises, and valued non-LEED features were security and privacy. The study also suggests that residents were highly aware of the value of their property in terms of its historic significance, public image, presence in the neighborhood and among their social networks.

<i>Knowledge Space:</i> Architectural and Urban Sustainability and Resilience	
Themes (Topics/Issues)	Contexts (Countries/Regions)
A life cycle assessment of a 'minus carbon' refugee house: global warming potential and sensitivity analysis	Sweden
Adaptation of international sustainability rating tools to Bahrain: A comparative analysis of eleven systems	Bahrain
Ibn Khaldun's 'ilm al 'umran: a model for planning the sustainable city in the Arab region	Arab Region
Informing sustainable building design: The importance of visualizing technical information and quantifying architectural decisions	Denmark
Optimization of the shading efficiency in the urban spaces in hot arid climate regions	Oman
Smart management of the reconstruction process of post-conflict cities	Open
Sustainable architectural design: towards climate change mitigation	Open
The appropriation of built heritage and pro-environmental behaviors: A case study of LEED-certified low-income multifamily housing	United States
The architecture of resilience in rural towns	Australia
The Chicago Riverwalk: urban sustainability lessons	United States

Table 5: Themes, topics, issues, and contexts included in the knowledge space: architectural and urban sustainability and resilience.

Two articles of note are related to the European context. (Landgren *et al.*, 2019) define the impact of visually communicating engineering knowledge to architects in an interdisciplinary design team and to delineate how quantifying architectural design decisions have an impact during the early phases of sustainable design process. Their findings assert that visual communication by engineers increases the level of technical knowledge in design decisions made by architects and that this would enable designing buildings with low environmental impact while maximizing acceptance of the architects' proposals by the engineers. The work of (Dabaieh *et al.*, 2020) assesses the carbon impact for a minus carbon experimental refugee house in Sweden using life cycle assessment (LCA) as a tool for this experiment. The results demonstrate that using local plant-based materials such as straw, reeds and timber, together with clay dug from nearby the construction site, can significantly reduce the carbon footprint of temporary shelters, and can further attain a negative carbon impact of 226.2 kg CO₂ eq/m².

Addressing the Middle Eastern context, several articles contribute to shaping this knowledge space and speak to policy, practice guidance, and simulation. To develop lessons for the sustainable Arab city, (El-Kholei, 2019) interrogates the work of Ibn Khaldun—known to be the founder of urban sociology. The study reveals that many of Ibn Khaldun's concepts have lost their accuracy, meanings, and intentions in the course of translating his work. El-Kholei argues, and rightly so, that Ibn Khaldun's writings are sensitive to the realities of the Arab region, its geography, environment, history, religion, and culture, and can support efforts for localizing sustainable development. Calling for the need for a customized sustainability rating tool, (Al Khalifa, 2019) assesses the relevance of 11 sustainability-rating systems including LEED, Green Globes, BREEAM, DGNB, SBTool, WELL, CASBEE, Green Star, HQE, GSAS and the Pearl Rating System (PRS) to the context of Bahrain. The study concludes that LEED is the most comprehensive, international, and adaptable sustainability-rating system and that the PRS is the most accessible and is more relevant to the Bahraini context.

From a technical perspective, two additional contributions can be referred to within this space. (Assem *et al.*, 2020), develop and implement an approach for the smart management of post-conflict city reconstruction efforts. Their work integrates building information modeling and geographic/ geospatial information systems in a platform that allows for real-time analysis, reporting, strategic planning, and decision making for managing reconstruction operations and projects with effective coordination and collaboration across all parties involved. The work of (Khudhayer *et al.*, 2019) identifies the proportional limits of the urban space to maintain feasible shades for pedestrian activities by using an assessment tool to calculate the shading efficiency of urban space in relation to various physical qualities. Both studies are experimental and utilize relevant software packages.

4.4 The Space of Health, Wellbeing, and Engaging with Nature

Contributions to the knowledge space of health, wellbeing, and engaging with nature vary in focus, approach, and the user population they address (Table 6).

(Rice, 2019), from a perspective focusing on professional practice, postulates that there is an increasing need for greater harmonization of the architectural profession and public health. Nonetheless,

there is a lack of knowledge on whether designers of the built environment are changing their practices to deliver healthier buildings or urban habitats. Focusing on the British context, the key finding is that almost no requirements for the compulsory inclusion of health across institutions and agencies that have the power to execute and mandate the scope of architectural profession, training, education, practice, or knowledge, asserting that there is very little progress made in all these areas. From an experiential perspective, (Asfour, 2020) discusses environments that produce a spatial experience with which children and young adults can interact, giving them a great sense of positive energy that translates into actual healing. Articulating several cases that arguably provide the right moods with a sustainable vibe, Asfour’s work reveals the importance of a spatial experience design approach in producing meaningful architecture that better connects with the user.

Focusing on Autism, (Irish, 2019) conducts an experiment in a school environment, in the Midwest - United States, with children who have autism spectrum disorder (ASD) and documents the process as a model that other researchers could apply to similar studies in other contexts. Arguing that to date there has been little evidence-based experimental research that examines how the environment affects this special group, the study concludes by reviewing the key lessons learned from the process of conducting the experiment. Likewise, building on her earlier work on understanding the characteristics of the environment that enable sensory experiences and sensory learning (Love, 2018), (Love, 2019) assesses a teaching model she has developed and delivered over a period of 5 years, conceived as an experimental studio for first-year interior architecture university students. Her work examines the content, process, teaching style and students feedback with a focus on transitioning between environments for people with autism in an effort to advance design of autism schools. Earlier contributions related to autism with a focus on children include the work of (Mostafa, 2018) on designing and assessing schools and the associated tool ASPECTSS. Moreover, other special populations such as older adults have been discussed by (McIntyre & Harrison, 2017) in her study on the impacts of the built environment design on opportunities for wellbeing in care homes in the context of the United Kingdom.

Predicated on the postulation that appropriating the environment has the potential to create an enhanced experience for users, the work of (Sheykhmaleki *et al.*, 2021), addresses autistic children at the public space scale. Their work aims to establish an understanding of the most predominant design strategies through a prioritization process that place emphasis on the needs of autistic children in public spaces. The findings convey that acoustical and visual control, legibility, safety and security, and predictable spaces, are highly significant.

Knowledge Space: Health, Wellbeing, and Engaging with Nature	
Themes (Topics/Issues)	Contexts (Countries/Regions)
An application of measuring visual and non-visual sensorial experiences of nature for children within primary school spaces: Child–nature–distance case studies in Glasgow, Scotland	United Kingdom
Complexity, patterns, and biophilia	Open
Curriculum development in health and the built environment: creating a multidisciplinary platform to enhance knowledge and engagement	United States
Design approach to rehabilitation: Developing therapy assistive products for children with Hemiplegic Cerebral Palsy	Sri Lanka
Designing for autism: An ASPECTSS Post Occupancy Evaluation of learning environments	Open
Evidence-based design: Documenting a research experiment in a school environment with children with autism spectrum disorder	United States
Healing architecture: a spatial experience praxis	Egypt, Lichtenstein
Prioritizing public spaces architectural strategies for autistic users	India
Sensory spaces: sensory learning - An experimental approach to educating future designers to design autism schools	United Kingdom
Studio teaching experiments – spatial transitioning for autism schools	United Kingdom
The effects of built environment design on opportunities for wellbeing in care homes	United Kingdom
The nature and extent of healthy architecture: the current state of progress	United Kingdom

Table 6: Themes, topics, issues, and contexts included in the knowledge space: architectural and urban sustainability and resilience.

A unique study relevant to children as an important user group is developed by (Perera and Ranasinghe, 2018) to explore the way in which design methodology can be utilized to develop therapy assistive products for rehabilitation of children with disability, Hemiplegic Cerebral Palsy. Developing therapy assistive products requires comprehensive understanding of therapeutic aspects, design constraints, and careful integration of the two disciplines—design and therapy. Consequently, practicing multidisciplinary and participatory design approaches seems to be imperative. While this study is not architectural in the strict

sense of 'scope,' it seems to be very relevant to architecture in terms of process, design thinking and establishing links with health and wellbeing.

From an educational perspective at a curriculum development level, (Gharipour and Trout, 2020) raise the question of how to develop an active learning pedagogy to foster a multidisciplinary learning environment that is practice-based and well considers human-centered approaches to improve the capability of built and natural environments to promote health and healing. Their work outlines the process of preparing a new multidisciplinary course on health and the built environment (HBE) at the School of Architecture and Planning at Morgan State University in Baltimore, USA, as an effort to challenge the barriers of discipline-specific pathways to learning in architecture.

(To and Grierson, 2020) measure children's experiences of nature within three primary school spaces at various areas in Glasgow, Scotland. Utilizing an approach that links children's multiple layers of sensory modalities with key attributes of the spatial environment to determine the level of naturalness that children experience, in both indoor and outdoor spaces, the examination reveals that children's experiences are significantly influenced by several factors that pertain to the urban setting, the overall master planning, architectural features, and indoor spatial qualities. Earlier contributions to the knowledge space of health, wellbeing, and engaging with nature, with a focus on engaging with nature, were part of a special issue developed by (Salingaros, 2014) entitled: *Complexity, Patterns, and Biophilia*. A key contribution in that issue was that of (Ryan *et al.*, 2014) on biophilic design patterns and the associated nature-based parameters for health and wellbeing, a contribution that has made significant academic impact receiving more than 270 citations.

4.5 The Space of Covid-19 Spatial and Pedagogical Implications

The highly contagious coronavirus and the rapid spread of Covid-19 disease have generated a global public health crisis that instigated academic interest and warranted significant and rapid research in this knowledge space (Salama, 2020). A special issue of Archnet-IJAR was published in March 2020 to reflect the growing interest in understanding the implications of Covid-19 condition and its impact on professional practice, education, and research (Table 7), and, most important, on designing future-built environments (Maturana *et al.*, 2021).

While some contributions speak to the particularities of their contexts, others address regional or global parameters. Despite this, three dominant themes are identified. The first theme is the accelerated adoption of digital, online and distance technologies in architectural pedagogy, education in general, employment, business, commerce, services, and leisure. This is reflected upon in each contribution. The second theme is adaptive design—in architecture and urbanism—needed to address and contribute to the new set of restrictions and conditions. For example, (Putra, 2021) synthesizes the social distance message and looks to traditional housing for a design approach that supports the control of infectious diseases through health and well-being and culture. At the intersection of the two themes is a third one. For instance, the university campus where (Deshmukh, 2021) sets the global context for the engine of the global knowledge economy. At a pedagogical level, (Ceylan *et al.*, 2020) address the unique social-spatial aspects of architectural pedagogy while (Varma and Jafri, 2021) provide an educator's discernment in addressing the provoked acceleration of digital-online education particular to design teaching in architecture.

The unavoidable move to the virtual world is most clearly exemplified by design studio teaching. (Alnusairat *et al.*, 2021) examine the value which first year students give to hand drawing, model making and presentational studio teaching compared to fourth year students in the context of Covid-19. On the other hand, for the forms and structures of administration for higher education and the design of the curriculum, (Soccio *et al.*, 2021) provide a model for the pre- and post-Covid university through a student-centered teaching and learning approach. In essence, university education, and architectural education in particular, the university campus, the public space and building design for teaching and learning present an enormous challenge. The tools and knowledge to assess what should be online become essential rational tools for a new and better teaching/learning model. Teaching experience as well as student experience of the online campus must be kept in constant assessment, enhancement, and betterment. Ceylan *et al.*, (2021) utilize a qualitative approach to evaluate first-, second-, third- and fourth-year students of architectural design studios during the Covid-19 learning environment.

The imposed need for the adaptation, redesign and the new design of educational facilities questions many pedagogical assumptions about the users involved in teaching and learning and presents new challenges and potential solutions. The audit and evaluation of existing building infrastructure for education must be the starting point. (Güzelci *et al.*, 2021) develop an assessment matrix for existing educational facilities and building adaptation rather than rebuilt. Concomitantly, their work addresses questions of social and environmental sustainability.

Knowledge Space: Covid-19 Spatial and Pedagogical Implications	
Themes (Topics/Issues)	Contexts (Countries/Regions)
A blended learning strategy: reimagining the post-Covid-19 architectural education	<i>Egypt</i>
An evaluation of online architectural design studios during Covid-19 outbreak	<i>Turkey</i>
Architecture students' perceptions of online design studios during Covid lockdown	<i>Jordan</i>
Architecture, urbanism, and health in a post-pandemic virtual world	<i>Open</i>
Covid-19 and "the trinity of boredom" in public spaces: urban form, social distancing, and digital transformation	<i>Open</i>
Covid-19 responsive teaching of undergraduate architecture programs	<i>India</i>
Design tactics for enhancing the adaptability of primary and middle schools to the new needs of post pandemic reuse	<i>Portugal/Turkey</i>
Emerging living styles post-Covid-19: housing flexibility as a fundamental requirement for apartments buildings	<i>Saudi Arabia</i>
How our homes impact our health: using a Covid-19 informed approach to examine urban apartment housing	<i>Canada</i>
Post-pandemic residential environment in Amman	<i>Jordan</i>
Questioning the use of the balcony in apartments during the Covid pandemic process	<i>Turkey</i>
Social integration through social connection in everyday life. Residents' experiences during the Covid-19 pandemic	<i>Sweden</i>
Speculations on the post-pandemic university campus - a global inquiry	<i>Open</i>
"Stay at home" for addressing Covid-19 protocol - learning from the traditional Balinese house	<i>Indonesia</i>
The feasibility of integrating architecture health indicators using a building information model (BIM) computer system	<i>United Kingdom</i>
The impact of the outbreak of Covid-19 on typologies of places in post-pandemic Cairo	<i>Egypt</i>
The new normal or the forgotten normal: contesting Covid-19 impact on contemporary architecture and urbanism	<i>Open</i>
The role of the built environment in supporting people with disabilities work life	<i>Australia</i>
Well-coordinated: learner-focused coordination tactics beyond the pandemergency	<i>Australia</i>

Table 7: Themes, topics, issues, and contexts included in the knowledge space: Covid-19 spatial and pedagogical implications.

The adaptative and redesign of architectural and urban projects covers a range of social-spatial questions of equity, access, and social justice in the design of cities, public spaces, homes, and institutional buildings. In this respect, (Aydin and Sayar, 2021) examine this in-between architectural space, the balcony, for its public-private, domestic-work socializing-health potentials and pitfalls. Other contributors examine the housing crisis through the fastest growing form of housing in a Canadian context. (Peters and Halleran, 2021) explore at the quality of life in mid- and high-rise apartments and the rights to light (and air) as pre- and post-Covid health concerns. The adaptation or rebuilding of facilities becomes a question for post-Covid architectural practice. In this respect, (Rice, 2021) assesses the contribution of building information and project management to this encounter building on his earlier work.

The intricate challenges relevant to the spaces between buildings, the interiors of buildings themselves, and the thresholds in between instigate further questions on sustainable built environments and a just society. (Martel *et al.*, 2021) investigates the successes and failures of universal access in city design. The contemporary approaches that address work, home, leisure, and mobility as a relationship augmented by digital, online, and virtual spatial relationship holds a critical pre-Covid 19 lesson in citizenship. The sustenance of family life under a new a better normal and housing adaptations is explored in the work of (Arroyo *et al.*, 2021) which provides a unique case study of a young refugee/third aged housing development and the impact of social distancing imposed by the pandemic in the context of Sweden.

Within the Middle Eastern context, several contributions to this knowledge space manifest the growing need to know how we live, how we can adapt and of which habits, routines and customs will make our new normal better and which we cannot live without. In the context of Jeddah (Bettaieb and Alsabban, 2021) examine the changing psychological, socio-cultural conditions enforced by Covid restrictions and how they impact on existing and traditional spatial practices. In a similar manner, (Abd Elrahman, 2021) studies new living models of adaptive, spontaneous urban and architectural design tactics. Similarly, (Alraouf, 2021) interrogates the practice of architecture and city planning before the Covid-19 and contests its accountability towards the city and the community.

More recently, the knowledge space of Covid-19 spatial and pedagogical implications is further advanced through the work of (Abed, 2021) which examines residential environments in the context of Amman, Jordan. At an urban level and based on the growing body of knowledge in this space, (Abusaada and Elshater, 2021) develop a conceptual view on the notion of boredom in public spaces while interrogating the trilogy of urban form, social distancing, and digital transformations. At an educational level, (Megahed and

Hassan, 2021), reimagine the post Covid-19 architectural education by proposing and validating a blended strategy.

5. Conclusion: A Space for Ten Knowledge Spaces

The examination of the recent work published in Archnet-IJAR: International Journal of Architectural Research, especially over the past five years has enabled the generation of ten knowledge spaces which were considered into two categories: established knowledge spaces that draw from earlier contributions and evolving knowledge spaces that represent continuous and growing areas. Archnet-IJAR. continues to make recognizable effort in further articulating the established knowledge spaces and in advancing and expanding those that are evolving. Palpably, some spaces extend beyond their boundaries and in some instances are assimilated into other spaces while in other cases are integrated into, or stay at the margins of, other spaces.

The established knowledge spaces were acknowledged in terms of theorizing architectural and urban production; the public realm and assessment of designed environments; housing, the informal, and the vernacular; urban heritage and historic environments; and architectural and urban politics. They have been outlined by demonstrating characteristics of a selection of recent contributions. The evolving knowledge spaces were acknowledged in terms of architectural education and design pedagogy; collaborative planning and community design; architectural and urban sustainability and resilience; health, wellbeing, and engaging with nature; and Covid-19 spatial and pedagogical implications.

A significant spectrum of issues is included within the space of architectural education and design pedagogy. These range from assessing learning experiences to integration of ITC and material technology into design teaching and from collaboration and social sustainability to exploring the role educators could and should play to enhance student learning experiences. Methodologically, these issues are scrutinized through a range of techniques that include descriptive and comparative analysis; case study approaches; workshops and group interaction sessions; post occupancy assessments; attitude surveys; interviews; and Delphi techniques. Contexts addressed in this knowledge space over recent years include Australia; Belgium; Canada; Egypt; England; Israel; Italy; Lebanon; Pakistan; Scotland; Spain; Turkey; and United Arab Emirates.

Several topics have been explored within the space of collaborative planning and community design. The space seems to have gained momentum over the past five years, despite its presence within the architectural and planning community since the late 1960s, and within Archnet-IJAR since its inception in 2007. The growth shows contributions covering municipal policies, various scales from urban environments to buildings, various typologies from learning environments to recreational facilities, refugee camps, and urban interventions. Moreover, some contributions place emphasis on educational implications and utilization of digital technologies, and relate to sustainable development, in the participatory process. This knowledge space is characterized by diverse methodological approaches that include policy and content analysis; economic analysis, urban mapping; attitudes surveys and interviews; action research and participatory workshops; and experimental testing in physical settings. Contexts covered in the analysis include Denmark; England; Greece; Scotland; South Africa; South Korea; Turkey; and United States (North Carolina).

The architectural and urban sustainability and resilience knowledge space addresses a spectrum of issues that range from general guidance to architects and planning professionals to examining the role of architecture in contributing to social and community resilience, to examining existing buildings or urban projects, covering economic, social, and environmental dimensions. Testing, experimenting, and the utilization of information technology and software packages are a characteristic of some contributions to this knowledge space, especially around environmental sustainability, and smart construction management. Methodologies vary depending on the nature of investigation and range from review of classical literature, review of projects and guidance documents, to semi structured interviews, simulation, numerical and criteria-based assessments, and case studies. Contexts covered in the analysis include the Arab Region; Australia; Bahrain; Balkans; Denmark; Oman; Sweden; and United States (Illinois and Indiana).

A growing body of knowledge asset that the design of the built environment is a factor of health. Contributions to the knowledge space of health, wellbeing, and engaging with nature address timely and critical issues with health and wellbeing as priorities architects and planners need to effectively engage with in their designs. Issues range from critiquing the regulatory frameworks that organize the profession to logical argumentation using examples of successful environments that contribute to healing. Autism--as it relates to learning and urban environments for children--appears to be central to the discussions within this knowledge space. Interest in generating educational implications whether at curriculum or studio levels is growing together with other user and building types such as the elderly in care homes. Methods utilized in this space of knowledge include systematic mapping; structured reviews; thematic analysis; attitude surveys; case studies; action research; and systematic observations. Strikingly, examining the engagement with nature, though a rising area within this knowledge space, does not seem to have acquired sufficient momentum. Contexts

addressed in this knowledge space include Egypt; India; Lichtenstein; Sri Lanka; United Kingdom; and United States.

The contributors to the knowledge space on Covid-19 spatial and pedagogical implications have analyzed, conjectured, tested, and applied methods resulting in three themes, the first theme is the accelerated adoption and use of digital, online and distance technologies in architectural education; the second theme is related to adaptive design needed to consider the new set of restrictions and conditions as they apply to a number of building and place typologies; and the third theme is about the future of the university campus. Methods range from attitude surveys and interviews to conceptual modelling, and from systematic observations to case study approaches. Contexts addressed within this knowledge space include Australia; Canada; Egypt; India; Indonesia; Jordan; Portugal; Saudi Arabia; Sweden; Turkey; United Kingdom.

The preliminary characterization of the evolving knowledge spaces reveals qualities that are exclusive to each in terms of content and other characteristics shared by more than one knowledge space in terms of methods or approaches to investigation. Evidently, each knowledge space while representing a unique knowledge component in architecture and urbanism, it has great potential of overlaps with other spaces such as for example pedagogical aspects linking to sustainability or health or collaboration or collaborative approaches linking to the public realm and assessment of designed environments. This represents uniqueness of the knowledge space definition as well as in being borderless and open without demarcations so that it can generate further knowledge spaces.

Some of the contributions to the present issue of Archnet-IJAR (16.1) have been included in this review as examples to demonstrate the sustained contributions to various knowledge spaces such as the work of (Abusaada and Elshater, 2021); (Megahed and Hassan, 2021); (De Paris *et al.*, 2021); and (Tahroodi and Ujang, 2021). In this context, one should note that other contributions are also enabling further development of knowledge spaces such as the work of (Thai *et al.*, 2021) that relates to the housing knowledge space and the work of (Alani and Kahera, 2021) that relates to the assessment of designed environments knowledge space. In maintaining and exceeding the unique and shared qualities of the ten knowledge spaces Archnet-IJAR will continue to support the interested contributors working closely with them to disseminate their research work in the most efficient and effective manner, mainly within the identified knowledge spaces, but without limitations for expanding into further knowledge spaces that broaden the scope while at the same time deepen the content of knowledge spaces and represent knowledge gaps that warrant such an expansion.

References

- Abd Elrahman, A.S. (2021), "The fifth-place metamorphosis: the impact of the outbreak of COVID-19 on typologies of places in post-pandemic Cairo", Archnet-IJAR, Vol. 15 No. 1, pp. 113-130. <https://doi.org/10.1108/ARCH-05-2020-0095>
- Abdellatif, M. and Abdellatif, R. (2020), "Successful thesis proposals in architecture and urban planning", Archnet-IJAR, Vol. 14 No. 3, pp. 503-524. <https://doi.org/10.1108/ARCH-12-2019-0281>
- Abdelwahab, M.A. (2019), "De-commemoration of an urban street in Egypt: the case of Gameat-Aldowel-Alarabyia street", Archnet-IJAR, Vol. 13 No. 2, pp. 459-474. <https://doi.org/10.1108/ARCH-02-2019-0042>
- Abed, A. (2021), "Post-pandemic residential environment in Amman", Archnet-IJAR, Vol. 15 No. 3, pp. 605-616. <https://doi.org/10.1108/ARCH-01-2021-0007>
- Abusaada, H. and Elshater, A. (2021), "COVID-19 and "the trinity of boredom" in public spaces: urban form, social distancing and digital transformation", Archnet-IJAR, ahead-of-print. <https://doi.org/10.1108/ARCH-05-2021-0133>
- Al Khalifa, F.A. (2019), "Adaptation of international sustainability rating tools to Bahrain: A comparative analysis of eleven systems", Archnet-IJAR, Vol. 13 No. 1, pp. 169-193. <https://doi.org/10.1108/ARCH-12-2018-0022>
- Al-Kodmany, K.M. (2021), "The Chicago Riverwalk: urban sustainability lessons", Archnet-IJAR, Vol. 15 No. 3, pp. 449-466. <https://doi.org/10.1108/ARCH-03-2021-0070>
- Alaily-Mattar, N., Bartmanski, D., Dreher, J., Koch, M., Löw, M., Pape, T. and Thierstein, A. (2021), "Unpacking the effects of star architecture projects", Archnet-IJAR, Vol. 15 No. 2, pp. 269-284. <https://doi.org/10.1108/ARCH-05-2020-0092>
- Alani, M. and Kahera, A.I. (2021), "The reestablishment of Mosul's city fabric: an approach to computational hybridization", Archnet-IJAR, ahead-of-print. <https://doi.org/10.1108/ARCH-04-2021-0103>
- Allahham, A. (2019), "Metamorphosis of mosque semiotics: From sacred to secular power metaphorism – the case of state mosques", Archnet-IJAR, Vol. 13 No. 1, pp. 204-217. <https://doi.org/10.1108/ARCH-11-2018-0001>
- Alnusairat, S., Al Maani, D. and Al-Jokhadar, A. (2021), "Architecture students' satisfaction with and perceptions of online design studios during COVID-19 lockdown: the case of Jordan universities", Archnet-IJAR, Vol. 15 No. 1, pp. 219-236. <https://doi.org/10.1108/ARCH-09-2020-0195>
- Alraouf, A.A. (2021), "The new normal or the forgotten normal: contesting COVID-19 impact on contemporary architecture and urbanism", Archnet-IJAR, Vol. 15 No. 1, pp. 167-188. <https://doi.org/10.1108/ARCH-10-2020-0249>
- AlSadaty, A. (2020), "Port Said historic markets: a tool for urban revitalization", Archnet-IJAR, Vol. 14 No. 3, pp. 543-557. <https://doi.org/10.1108/ARCH-02-2020-0022>

- AlWaer, H., Rintoul, S. and Cooper, I. (2021a), "Design-led events in collaborative planning: improving post-event planning and delivery", *Archnet-IJAR*, Vol. 15 No. 3, pp. 774-799. <https://doi.org/10.1108/ARCH-03-2021-0057>
- AlWaer, H., Rintoul, S. and Cooper, I. (2021b), "An investigation into decision-making and delivery activities following design-led events in collaborative planning", *Archnet-IJAR*, Vol. 15 No. 3, pp. 752-773. <https://doi.org/10.1108/ARCH-10-2020-0246>
- Aramouny, C. (2021), "Materiality and digital technologies: concrete experiments for the built environment", *Archnet-IJAR*, Vol. 15 No. 3, pp. 872-886. <https://doi.org/10.1108/ARCH-11-2020-0256>
- Arroyo, I., Montesino, N., Johansson, E. and Yahia, M.W. (2021), "Social integration through social connection in everyday life. Residents' experiences during the COVID-19 pandemic in SällBo collaborative housing, Sweden", *Archnet-IJAR*, Vol. 15 No. 1, pp. 79-97. <https://doi.org/10.1108/ARCH-10-2020-0236>
- Asfour, K.S. (2020), "Healing architecture: a spatial experience praxis", *Archnet-IJAR*, Vol. 14 No. 2, pp. 133-147. <https://doi.org/10.1108/ARCH-03-2019-0055>
- Assem, A., Abdelmohsen, S. and Ezzeldin, M. (2020), "Smart management of the reconstruction process of post-conflict cities", *Archnet-IJAR*, Vol. 14 No. 2, pp. 325-343. <https://doi.org/10.1108/ARCH-04-2019-0099>
- Aydin, D. and Sayar, G. (2021), "Questioning the use of the balcony in apartments during the COVID-19 pandemic process", *Archnet-IJAR*, Vol. 15 No. 1, pp. 51-63. <https://doi.org/10.1108/ARCH-09-2020-0202>
- Azzali, S. (2020), "Challenges and key factors in planning legacies of mega sporting events: Lessons learned from London, Sochi, and Rio de Janeiro", *Archnet-IJAR*, Vol. 14 No. 2, pp. 203-218. <https://doi.org/10.1108/ARCH-04-2019-0093>
- Bar-Sinai, K.L., Shaked, T. and Sprecher, A. (2020), "A pedagogical protocol for iterative robotic fabrication on remote grounds", *Archnet-IJAR*, Vol. 14 No. 3, pp. 453-468. <https://doi.org/10.1108/ARCH-09-2019-0214>
- Behbehani, L. and Prokopy, L. (2017), "The appropriation of built heritage and pro-environmental behaviors: A case study of LEED-certified low-income multifamily housing", *Archnet-IJAR*, Vol. 11 No. 1, pp. 67-82.
- Bettaieb, D.M. and Alsabban, R. (2021), "Emerging living styles post-COVID-19: housing flexibility as a fundamental requirement for apartments in Jeddah", *Archnet-IJAR*, Vol. 15 No. 1, pp. 28-50. <https://doi.org/10.1108/ARCH-07-2020-0144>
- Ceylan, S. and Soygeniş, M.D. (2019), "A design studio experience: impacts of social sustainability", *Archnet-IJAR*, Vol. 13 No. 2, pp. 368-385. <https://doi.org/10.1108/ARCH-02-2019-0034>
- Ceylan, S., Şahin, P., Seçmen, S., Somer, M.E. and Süher, K.H. (2021), "An evaluation of online architectural design studios during COVID-19 outbreak", *Archnet-IJAR*, Vol. 15 No. 1, pp. 203-218. <https://doi.org/10.1108/ARCH-10-2020-0230>
- Cho, M. (2020), "Residential satisfaction among low-income single-mother households: the case of residential welfare facilities in South Korea", *Archnet-IJAR*, Vol. 14 No. 3, pp. 359-378. <https://doi.org/10.1108/ARCH-09-2019-0218>
- Combrinck, C. and Porter, C.J. (2021), "Co-design in the architectural process", *Archnet-IJAR*, Vol. 15 No. 3, pp. 738-751. <https://doi.org/10.1108/ARCH-06-2020-0105>
- Crysler, C. G. (2003), *Writing spaces: Discourses of architecture, urbanism and the built environment*, 1960–2000. London: Routledge/Taylor and Francis.
- Dabaieh, M., El Mahdy, D., and Maguid, D. (2018), "living labs as a pedagogical teaching tool for green building design and construction in hot-arid regions", *Archnet-IJAR*, Vol. 12 No. 1, pp. 338-355.
- Dabaieh, M., Emami, N., Heinonen, J.T. and Marteinsson, B. (2020), "A life cycle assessment of a 'minus carbon' refugee house: global warming potential and sensitivity analysis", *Archnet-IJAR*, Vol. 14 No. 3, pp. 559-579. <https://doi.org/10.1108/ARCH-11-2019-0258>
- Daher, R.F. (2021), "The fragmentary production of knowledge on cultural heritage on the Arab world: From an orientalist vision to a scarce engagement with epistemological and theoretical spheres", *Archnet-IJAR*, Vol. 15 No. 3, pp. 839-853. <https://doi.org/10.1108/ARCH-01-2021-0018>
- De Paris, S., Lacerda Lopes, C.N. and Neuenfeldt Junior, A. (2021), "The use of an analytic hierarchy process to evaluate the flexibility and adaptability in architecture", *Archnet-IJAR*, ahead-of-print. <https://doi.org/10.1108/ARCH-05-2021-0148>
- Deshmukh, J. (2021), "Speculations on the post-pandemic university campus – a global inquiry", *Archnet-IJAR*, Vol. 15 No. 1, pp. 131-147. <https://doi.org/10.1108/ARCH-10-2020-0245>
- Dritsa, D. and Biloria, N. (2021), "Mapping the urban environment using real-time physiological monitoring", *Archnet-IJAR*, Vol. 15 No. 3, pp. 467-486. <https://doi.org/10.1108/ARCH-02-2021-0041>
- Dupre, K. and Bischeri, C. (2020), "The architecture of resilience in rural towns", *Archnet-IJAR*, Vol. 14 No. 2, pp. 187-202. <https://doi.org/10.1108/ARCH-07-2019-0178>
- El-Ashmouni, M.M. (2021), "Gazing at Egypt's museums: toward a new internationalism", *Archnet-IJAR*, Vol. 15 No. 3, pp. 823-838. <https://doi.org/10.1108/ARCH-10-2020-0214>
- El-Kholei, A.O. (2019), "Ibn Khaldun's 'ilm al 'umran: a model for planning the sustainable city in the Arab region", *Archnet-IJAR*, Vol. 13 No. 2, pp. 276-293. <https://doi.org/10.1108/ARCH-01-2019-0004>
- Furlan, R., Petruccioli, A. and Jamaledin, M. (2019), "The authenticity of place-making: Space and character of the regenerated historic district in Msheireb, Downtown Doha (state of Qatar)", *Archnet-IJAR*, Vol. 13 No. 1, pp. 151-168. <https://doi.org/10.1108/ARCH-11-2018-0009>
- Garavaglia, E., Basso, N. and Sgambi, L. (2020), "The role of structures in architecture: the multidisciplinary experience of active learning in a master of science", *Archnet-IJAR*, Vol. 14 No. 3, pp. 469-488. <https://doi.org/10.1108/ARCH-08-2019-0187>
- Gharipour, M. and Trout, A.L. (2020), "Curriculum development in health and the built environment: creating a multidisciplinary platform to enhance knowledge and engagement", *Archnet-IJAR*, Vol. 14 No. 3, pp. 439-452. <https://doi.org/10.1108/ARCH-09-2019-0212>
- Ghaziani, R. (2021), "Primary school design: co-creation with children", *Archnet-IJAR*, Vol. 15 No. 2, pp. 285-299. <https://doi.org/10.1108/ARCH-07-2020-0132>

- Grierson, D. and Munro, K. E. (2018), "Towards transformative learning methods for interdisciplinary postgraduate education for sustainable development (ESD): A case study", *Archnet-IJAR*, Vol. 12 No. 1, pp. 209-227.
- Gür, E.A. and Dülgeroğlu Yüksel, Y. (2019), "Analytical investigation of urban housing typologies in twentieth century Istanbul", *Archnet-IJAR*, Vol. 13 No. 1, pp. 93-111. <https://doi.org/10.1108/ARCH-12-2018-0047>
- Güzelci, O.Z., Şen Bayram, A.K., Alaçam, S., Güzelci, H., Akkuyu, E.I. and Şencan, İ. (2021), "Design tactics for enhancing the adaptability of primary and middle schools to the new needs of postpandemic reuse", *Archnet-IJAR*, Vol. 15 No. 1, pp. 148-166. <https://doi.org/10.1108/ARCH-10-2020-0237>
- Heathcott, J. (2019), "Architecture, urban form, and assemblage aesthetics in Mexico City's street markets", *Archnet-IJAR*, Vol. 13 No. 1, pp. 72-92. <https://doi.org/10.1108/ARCH-12-2018-0027>
- Hjort, M., Martin, W.M. and Troelsen, J. (2019), "Planning of sport and recreational facilities informed by interdisciplinary knowledge: An attempt to make a systematic and transparent design strategy", *Archnet-IJAR*, Vol. 13 No. 2, pp. 349-367. <https://doi.org/10.1108/ARCH-11-2018-0002>
- Hollander, J.B. and Anderson, E.C. (2020), "The impact of urban façade quality on affective feelings", *Archnet-IJAR*, Vol. 14 No. 2, pp. 219-232. <https://doi.org/10.1108/ARCH-07-2019-0181>
- Iftikhar, N., Crowther, P. and Osborne Burton, L. (2021), "Variance in student and teacher roles in the contemporary Australasian architecture design studio context", *Archnet-IJAR*, Vol. 15 No. 3, pp. 683-702. <https://doi.org/10.1108/ARCH-01-2021-0020>
- İlerisoy, Z.Y., Aycı, A., Aycı, H. and Kınacı, E.B. (2021), "Impacts of architectural education on entrepreneurial intention: a case study of senior architects from six universities in Turkey", *Archnet-IJAR*, Vol. 15 No. 3, pp. 719-737. <https://doi.org/10.1108/ARCH-11-2020-0269>
- Irish, J.E.N. (2019), "Evidence-based design: Documenting a research experiment in a school environment with children with autism spectrum disorder", *Archnet-IJAR*, Vol. 13 No. 1, pp. 25-38. <https://doi.org/10.1108/ARCH-12-2018-0029>
- Kennedy, A. (2017), "Scotland's approach to participatory planning: Characterising the Charrette", *Archnet-IJAR*, Vol. 11 No. 2, pp. 101-122.
- Kepez, O. and Ust, S. (2020), "Collaborative design of an active learning classroom with high school students and teachers", *Archnet-IJAR*, Vol. 14 No. 3, pp. 525-541. <https://doi.org/10.1108/ARCH-11-2019-0262>
- Khudhayer, W.A., Shaaban, A.K. and Abdul Sukor, N.S. (2019), "Optimization of the shading efficiency in the urban spaces in hot arid climate regions", *Archnet-IJAR*, Vol. 13 No. 2, pp. 444-458. <https://doi.org/10.1108/ARCH-12-2018-0038>
- Kim, M.J., Hwang, Y.S. and Hwang, H.S. (2020), "Utilising social networking services as a collective medium to support design communication in team collaboration", *Archnet-IJAR*, Vol. 14 No. 3, pp. 409-421. <https://doi.org/10.1108/ARCH-02-2020-0025>
- Kiyanenکو, K. (2019), "Environmental design research in Russian architecture: Western roots and national forms of existence", *Archnet-IJAR*, Vol. 13 No. 2, pp. 260-275. <https://doi.org/10.1108/ARCH-03-2019-0048>
- Kudumovic, L. (2021), "Bascarsija (Bashcarshiya), Sarajevo's historic core: evaluating the qualities of its open spaces", *Archnet-IJAR*, Vol. 15 No. 3, pp. 524-538. <https://doi.org/10.1108/ARCH-08-2020-0170>
- Landgren, M., Jakobsen, S.S., Wohlenberg, B. and Jensen, L.B. (2019), "Informing sustainable building design: The importance of visualizing technical information and quantifying architectural decisions", *Archnet-IJAR*, Vol. 13 No. 1, pp. 194-203. <https://doi.org/10.1108/ARCH-12-2018-0025>
- Love, J.S. (2018), "Sensory spaces: sensory learning - An experimental approach to educating future designers to design autism schools", *Archnet-IJAR*, Vol.12 No. 3, pp. 152-169.
- Love, J.S. (2019), "Studio teaching experiments – spatial transitioning for autism schools", *Archnet-IJAR*, Vol. 13 No. 1, pp. 39-57. <https://doi.org/10.1108/ARCH-11-2018-0019>
- Martel, A., Day, K., Jackson, M.A. and Kaushik, S. (2021), "Beyond the pandemic: the role of the built environment in supporting people with disabilities work life", *Archnet-IJAR*, Vol. 15 No. 1, pp. 98-112. <https://doi.org/10.1108/ARCH-10-2020-0225>
- Masdéu, M. and Fuses, J. (2017), "Reconceptualizing the design studio in architectural education: Distance learning and blended learning as transformation factors", *Archnet-IJAR*, Vol. 11 No. 2, pp. 6-23.
- Maturana, B., Salama, A.M. and McInnery, A. (2021), "Architecture, urbanism and health in a post-pandemic virtual world", *Archnet-IJAR*, Vol. 15 No. 1, pp. 1-9. <https://doi.org/10.1108/ARCH-02-2021-0024>
- McIntyre, L.J. and Harrison, I.R. (2017), "The effects of built environment design on opportunities for wellbeing in care homes", *Archnet-IJAR*, Vol. 11 No. 1, pp. 138-156.
- Megahed, G., Elshater, A. and Afifi, S.M.Z. (2020), "Competencies urban planning students need to succeed in professional practices: Lessons learned from Egypt", *Archnet-IJAR*, Vol. 14 No. 2, pp. 267-287. <https://doi.org/10.1108/ARCH-02-2019-0027>
- Megahed, N. and Hassan, A. (2021), "A blended learning strategy: reimagining the post-Covid-19 architectural education", *Archnet-IJAR*, ahead-of-print. <https://doi.org/10.1108/ARCH-04-2021-0081>
- Mostafa, M. (2018), "Designing for autism: An ASPECTSS Post Occupancy Evaluation of learning environments", *Archnet-IJAR*, Vol. 12 No. 3, pp. 308-326.
- Musa, M. (2020), "Assessment, learning and power in the architectural design studio jury: a case from the United Arab Emirates", *Archnet-IJAR*, Vol. 14 No. 3, pp. 489-502. <https://doi.org/10.1108/ARCH-01-2020-0009>
- O'Brien, D., Carrasco, S. and Dovey, K. (2020), "Incremental housing: harnessing informality at Villa Verde", *Archnet-IJAR*, Vol. 14 No. 3, pp. 345-358. <https://doi.org/10.1108/ARCH-10-2019-0237>
- Paidakaki, A., De Becker, R., De Reu, Y., Viaene, F., Elnaschie, S. and Van den Broeck, P. (2021), "How can community architects build socially resilient refugee camps? Lessons from the Office of Displaced Designers in Lesbos, Greece", *Archnet-IJAR*, Vol. 15 No. 3, pp. 800-822. <https://doi.org/10.1108/ARCH-11-2020-0276>
- Pasalar, C. and Hallowell, G.D. (2019), "A grassroots research approach for branding urban districts", *Archnet-IJAR*, Vol. 13 No. 2, pp. 331-348. <https://doi.org/10.1108/ARCH-03-2019-0047>

- Perera, G.Y.A.S.I. and Ranasinghe, W.M.N.D. (2018), "Design approach to rehabilitation: Developing therapy assistive products for children with Hemiplegic Cerebral Palsy", *Archnet-IJAR*, Vol. 12 No. 2, pp. 307-318.
- Peters, T. and Halleran, A. (2021), "How our homes impact our health: using a COVID-19 informed approach to examine urban apartment housing", *Archnet-IJAR*, Vol. 15 No. 1, pp. 10-27. <https://doi.org/10.1108/ARCH-08-2020-0159>
- Pojani, D. (2019), "The self-built city: theorizing urban design of informal settlements", *Archnet-IJAR*, Vol. 13 No. 2, pp. 294-313. <https://doi.org/10.1108/ARCH-11-2018-0004>
- Putra, I.D.G.A.D. (2021), "'Stay at home' for addressing COVID-19 protocol: learning from the traditional Balinese house", *Archnet-IJAR*, Vol. 15 No. 1, pp. 64-78. <https://doi.org/10.1108/ARCH-09-2020-0187>
- Qureshi, H. (2020), "Collaborative architectural design studio environment: An experiment in the studio of Architectural Design-I", *Archnet-IJAR*, Vol. 14 No. 2, pp. 303-324. <https://doi.org/10.1108/ARCH-12-2018-0049>
- Rice, L. (2019), "The nature and extent of healthy architecture: the current state of progress", *Archnet-IJAR*, Vol. 13 No. 2, pp. 244-259. <https://doi.org/10.1108/ARCH-11-2018-0005>
- Rice, L. (2021), "Healthy BIM: the feasibility of integrating architecture health indicators using a building information model (BIM) computer system", *Archnet-IJAR*, Vol. 15 No. 1, pp. 252-265. <https://doi.org/10.1108/ARCH-07-2020-0133>
- Ryan, C.O., Browning, W.D., Clancy, J. O., Andrews, S.L., and Kallianpurkar, N.B. (2014), "Biophilic design patterns: Emerging nature-based parameters for health and well-being in the built environment", *Archnet-IJAR*, Vol. 8 No. 2, pp. 62-76.
- Saghafi, M.R. and Crowther, P. (2021), "Integrating technology subjects with design studio teaching: comparing curriculum of architecture education in Australia and Iran", *Archnet-IJAR*, Vol. 15 No. 3, pp. 652-667. <https://doi.org/10.1108/ARCH-08-2020-0160>
- Salama, A.M. (2019a), "Prospects for research in architecture and urbanism", *Archnet-IJAR*, Vol. 13 No. 1, pp. 2-7. <https://doi.org/10.1108/ARCH-02-2019-0029>
- Salama, A.M. (2019b), "Understanding built environment realities: Between conceptual frameworks and experimental fieldworks", *Archnet-IJAR*, Vol. 13 No. 2, pp. 238-243. <https://doi.org/10.1108/ARCH-06-2019-0142>
- Salama, A.M. (2019c), "Methodological research in architecture and allied disciplines: Philosophical positions, frames of reference, and spheres of inquiry", *Archnet-IJAR*, Vol. 13 No. 1, pp. 8-24. <https://doi.org/10.1108/ARCH-01-2019-0012>
- Salama, A.M. (2020), "Coronavirus questions that will not go away: interrogating urban and socio-spatial implications of COVID-19 measures", *Emerald Open Research*, Vol. 2, p. 14. <https://doi.org/10.35241/emeraldopenres.13561.1>
- Salama, A.M., Remali, A.M. and Rahimian, F.P. (2017), "A decade of architectural and urban research published in Archnet-IJAR: International Journal of Architectural Research", Vol. 11 No. 1, pp. 06-28.
- Salingaros, N. (2014), Complexity, patterns, and biophilia. *Archnet-IJAR*, Vol 8 No. 2, pp. 5-7.
- Sanoff, H. (2008), "Multiple views of participatory design", *ArchNet-IJAR*, Vol. 2 No. 2, pp. 57-69.
- Sara, R. and Jones, M. (2018), "The university as agent of change in the city: Co-creation of live community architecture", *Archnet-IJAR*, Vol. 12 No. 1, pp. 326-337.
- Selim, G. (2019), "The City (Re)shaped: Exploring the Nexus Between Politics, Memory and Urbanism in the Built Environment", *Archnet-IJAR*, Vol. 13 No. 3, pp. 477-482. <https://doi.org/10.1108/ARCH-11-2019-217>
- Sgambi, L., Kubiak, L., Basso, N. and Garavaglia, E. (2019), "Active learning for the promotion of students' creativity and critical thinking: An experience in structural courses for architecture", *Archnet-IJAR*, Vol. 13 No. 2, pp. 386-407. <https://doi.org/10.1108/ARCH-11-2018-0018>
- Sharif, A.A. (2020), "Transfer ethnography: the recording of a heritage building", *Archnet-IJAR*, Vol. 14 No. 2, pp. 289-302. <https://doi.org/10.1108/ARCH-02-2019-0039>
- Sheykhsaleki, P., Yazdanfar, S.A.A., Litkouhi, S., Nazarian, M. and Price, A.D.F. (2021), "Prioritising public spaces architectural strategies for autistic users", *Archnet-IJAR*, Vol. 15 No. 3, pp. 555-570. <https://doi.org/10.1108/ARCH-07-2020-0142>
- Sijakovic, M. and Peric, A. (2021), "Sustainable architectural design: towards climate change mitigation", *Archnet-IJAR*, Vol. 15 No. 2, pp. 385-400. <https://doi.org/10.1108/ARCH-05-2020-0097>
- Soccio, P., Tregloan, K. and Thompson, J. (2021), "Well-coordinated: learner-focused coordination tactics beyond the pandemergency", *Archnet-IJAR*, Vol. 15 No. 1, pp. 237-251. <https://doi.org/10.1108/ARCH-10-2020-0227>
- Soygenis, S. (2020), "Interfaces/intersections in architecture and urbanism", *Archnet-IJAR*, Vol. 14 No. 1, pp. 1-4. <https://doi.org/10.1108/ARCH-03-2020-218>
- Tahroodi, M. F. and Ujang, N. (2021), "Engaging in social interaction: relationships between the accessibility of path structure and intensity of passive social interaction in urban parks", *Archnet-IJAR*, ahead-of-print. <https://doi.org/10.1108/ARCH-04-2021-0100>
- Thai, H.M.H., Stevens, Q. and Rogers, J. (2021), "Mapping and measuring spatial connectivity of the pathways to home-based businesses within informal urban contexts", *Archnet-IJAR*, ahead-of-print. <https://doi.org/10.1108/ARCH-02-2021-0034>
- To, P.T. and Grierson, D. (2020), "An application of measuring visual and non-visual sensorial experiences of nature for children within primary school spaces: Child-nature-distance case studies in Glasgow, Scotland", *Archnet-IJAR*, Vol. 14 No. 2, pp. 167-186. <https://doi.org/10.1108/ARCH-05-2019-0139>
- Türkoğlu, H., Terzi, F., Salihoğlu, T., Bölen, F. and Okumus, G. (2019), "Residential satisfaction in formal and informal neighborhoods: the case of Istanbul, Turkey", *Archnet-IJAR*, Vol. 13 No. 1, pp. 112-132. <https://doi.org/10.1108/ARCH-12-2018-0030>
- Varma, A. and Jafri, M.S. (2021), "COVID-19 responsive teaching of undergraduate architecture programs in India: learnings for post-pandemic education", *Archnet-IJAR*, Vol. 15 No. 1, pp. 189-202. <https://doi.org/10.1108/ARCH-10-2020-0234>
- Verderber, S. (2021), "Assessing the post-occupancy performance of educational design/build: the thinking while doing initiative", *Archnet-IJAR*, Vol. 15 No. 3, pp. 703-718. <https://doi.org/10.1108/ARCH-09-2020-0176>
- Vukovic, T., Salama, A.M., Mitrovic, B. and Devetakovic, M. (2021), "Assessing public open spaces in Belgrade – A quality of urban life perspective", *Archnet-IJAR*, Vol. 15 No. 3, pp. 505-523. <https://doi.org/10.1108/ARCH-04-2020-0064>

author's accepted manuscript