

LAPORAN KEGIATAN

**DISEMINASI HASIL PENELITIAN PADA SRIWIJAYA INTERNATIONAL CONFERENCE ON
ENGINEERING, AND TECHNOLOGY**

**IDENTIFYING THE TRANSFORMATION OF SPACE
FUNCTION IN RESIDENTIAL DURING A PANDEMIC**



Anisa, ST, MT

**PROGRAM STUDI ARSITEKTUR
FAKULTAS TEKNIK UNIVERSITAS MUHAMMADIYAH JAKARTA
TAHUN AJARAN 2021/2022**

LEMBAR PENGESAHAN

Nama Laporan : **DISEMINASI HASIL PENELITIAN PADA SRIWIJAYA
INTERNATIONAL CONFERENCE ON ENGINEERING, AND
TECHNOLOGY**

Pelaksanaan Kegiatan : 25-26 Oktober 2021 | Semester Ganjil 2021/2022

Penyelenggara kegiatan : Fakultas Teknik Universitas Sriwijaya

Judul Makalah : **IDENTYING THE TRANSFORMATION OF SPACE FUNCTION IN
RESIDENTIAL DURING A PANDEMIC**

Pembuat Laporan : Anisa, ST, MT

Jakarta, Januari 2022

A handwritten signature in blue ink, appearing to be 'Anisa', written in a cursive style.

Anisa, ST, MT



UNIVERSITAS MUHAMMADIYAH JAKARTA
FAKULTAS TEKNIK
PROGRAM STUDI ARSITEKTUR

Jalan Cempaka Putih Tengah 27 Telp. 4244016, 4256024, Fax 4256023 Jakarta Pusat 10510

SURAT TUGAS

No. : 19/ F.4.1.6-UMJ / X / 2021

Ketua Program Studi Arsitektur Fakultas Teknik Universitas Muhammadiyah Jakarta dengan ini menugaskan kepada dosen prodi Arsitektur :

No	Nama	NIDN
1	Anisa, ST, MT	0324037701
2	Finta Lissimia, ST, MT	0312039001

Untuk mempresentasikan dan mempublikasikan hasil penelitian pada Sriwijaya International Conference on Engineering and Technology dengan paper berjudul **Identifying The Transformation of Space Functions in Residential during a Pandemic** yang diselenggarakan secara daring pada tanggal 25-26 Oktober 2021.

Demikian surat tugas ini disampaikan mohon dapat dilaksanakan sebaik-baiknya. Atas perhatian dan kerjasamanya kami ucapkan terimakasih.

Wassalamu'alaikum wr wb

Jakarta, 22 November 2021

Ketua Program Studi Arsitektur FT-UMJ



Lutfi Prayogi, S.Ars, M.Urb Plan



**Sriwijaya International
Conference on Engineering
and Technology**

October 25th – 26th, 2021
Palembang – South Sumatera
Indonesia

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	Dinas PUPR Kota Palembang		PMI Kota Palembang
	Kopiloka Palembang		

PREFACE RECTOR**WELCOME FROM THE RECTOR OF UNIVERSITAS SRIWIJAYA**

I am delighted and honoured to greet you all at the Sriwijaya International Conference on Engineering and Technology 2021 (SICETO 2021). In today's world, globalization has created a highly competitive environment in all areas. In order to create a positive and sustainable future, this flourishing competition should address the harmony and balance between human demands and environmental quality. In the situations of the coronavirus disease (COVID-19) pandemic, the process of developing technology and research should continue even though it is very slow.

A balance between human development and innovation to improve the quality of life and its harmony with nature must be maintained as a means to achieve a sustainable future. Today, researchers and industry experts collaborate to create and develop technologies that we can enjoy and are also expected to influence the sustainable future better.

During our struggle to fight the COVID-19 virus, we must maintain positive thoughts to continue to do creative research and innovation. The ever-growing innovations of our experts and researchers have given us an ever-increasing treasure trove of new, workable ideas.

Innovative thinking requires more than just amazing ideas. Resources, skills, technology, information, tools, approaches, and much more are required for innovation. But, above all, innovations necessitate the participation of people. People are at the heart of any desire for change, whether to improve quality of life, better living conditions, or just make life easier and more pleasant.

This conference is about understanding the underlying features that have the potential to impact the world and society, thinking ahead to potential global challenges, and uncovering innovations connected to industry prospects. Furthermore, this conference is expected to bring together interdisciplinary people to accelerate activities in many areas simultaneously. This is what makes the conference exceptional this year in terms of potential impact from this networking.

I extend my sincere thanks to the Faculty of Engineering, Universitas Sriwijaya, supporting parties and institutions for their participation and contributions in SICETO 2021. Furthermore, I would like to express my deepest gratitude to all the organizing committees, which dedicating their personal time to ensure that every one of us has an outstanding conference program over the next several days. May the conference be successful, stimulating, fruitful, and enjoyable.

Prof. Dr. Ir. Anis Saggaff, MSCE., IPU.
Rector of Universitas Sriwijaya

PREFACE DEAN**WELCOME FROM THE DEAN OF FACULTY OF ENGINEERING
UNIVERSITAS SRIWIJAYA**

Welcome to the Sriwijaya International Conference on Engineering and Technology 2021 (SICETO 2021). The Faculty of Engineering Universitas Sriwijaya is proud that we held an international conference of this grand scale this year. This biennial two-day conference emphasizes the importance of establishing connections among national and international front-liners, thinkers, academics, executives, government and business officials, practitioners, and leaders from all over the world to share knowledge and best practices part of a global network.

Srivijaya Empire is kingdom that flourished between the 7th and the 13th centuries, largely in what is now Indonesia. The kingdom originated in Palembang and soon extended its influence and controlled the Strait of Malacca. Srivijaya's power was based on its control of international sea trade. It established trade relations with the states in the Malayu Archipelago and with China and India. Srivijaya continued to grow; by the year 1000, it controlled most of Java, By the end of the 12th century, Srivijaya had been reduced to a small kingdom, and Malayu had taken its dominant role in Sumatra. A Javanese kingdom, Majapahit, soon came to dominate the Indonesian political scene.

Palembang is the capital city of the South Sumatra province of Indonesia. Currently, this city, the oldest existing city in Indonesia, dates back to the 7th century. Palembang was incorporated into Dutch East Indies in 1825 after the abolishment of the Palembang Sultanate. Palembang was chartered as a city on 1 April 1906. Palembang today is the second largest city in Sumatra and the ninth largest city in Indonesia.

Gentlemen! Today we are gathering in Palembang both offline and online during the COVID-19 pandemic that is still hitting. During this pandemic, let's always take care of ourselves by following the health procedures that have been set to avoid the coronavirus that is still spreading. This SICETO 2021 seminar is the first seminar held at the Faculty of Engineering, University of Sriwijaya. We are committed to maintaining this tradition by carrying it every two years. We believe that after two years, we will produce many research results that need to be shared with our colleagues in other institutions.

I am hopeful that the intellectual discussion will lead to future collaborations between universities, research institutes, and industry both locally and internationally. It is envisaged that topics concerning innovations for the betterment of human life and the environment will receive special attention. Let's make this conference an international media for exchanging knowledge, experience, and research and the review of progress and discussion on the state of the art and future trend of prospective collaboration and networking in the broad field of eco-based technology development.

My deepest appreciation to our sponsors supported parties and various contributors for their never-ending supports of this conference. I would also like to convey my gratitude to all of our distinguished speakers for making the time to share their knowledge with us. To our fellow researchers and practitioners from Indonesia and overseas, welcome and enjoy your stay in Palembang. I would also like to invite all participants in expressing our appreciation to all members of the SICETO 2021 organizing committee for their hard work in making this conference another success.

Prof. Dr. Eng. Ir. Joni Arliansyah, M.T.

Dean Faculty of Engineering Universitas Sriwijaya

CHAIRMAN, ORGANIZING COMMITTEE**WELCOME ADDRESS****Sriwijaya International Conference On Engineering And Technology 2021
(Siceto 2021)**

Good morning everyone. Welcome to the Sriwijaya International Conference On Engineering And Technology 2021. I am Barlin Oemar, a lecturer in the department of mechanical engineering at Universitas Sriwijaya. As the chair of the committee, I will not be able to stand here, in front of all of you today, if not for the wonderful committee members on the organizing committee who have been with me from the start.

We envision four key values as the building bricks of the foundation on which we will construct our effort and hard work in order to make this conference a reality: rigor, impact, prestige, and service. These essential ideals are achieved through various components of the conference.

For accuracy, we ensured it through double-blind peer review and clear criteria for acceptance of abstracts. These criteria filtered more than 200 unique papers to 159, whose full papers were subsequently selected by outstanding reviewers from a variety of backgrounds. This careful selection process makes the conference the best forum to discuss various topics in the scientific field.

Participants in this seminar came from various scientific fields from 17 countries.

consisting of :

- 29 papers from Civil and Structural Engineering
- 10 papers from Electrical and Electronic Engineering
- 18 papers from Chemical Engineering and Science
- 71 papers from Mechanical Engineering
- 8 papers from Architecture
- 2 papers from Mining Engineering
- 1 papers from Geological Engineering
- 13 papers from Education Science
- 7 papers from Natural Science
- 18 other

and all accepted papers at SICETO 2021 will be published at AIP conferences.

As for service, we deliver our best through the committee who takes the participants' best interests at heart; taking care of the participants throughout the conference; as well as appreciating and recognizing outstanding papers by awarding best paper.

This conference is the result of the hard work, support, and dedication of a number of parties. We wish to thank all the committee members who together make the conference possible. The committee has been working throughout the year to propose sessions, review a record number of submissions, answer queries, arrange the schedule, and response to last-minute requests. We also want to thank Universitas Sriwijaya, Palang Merah Indonesia, Asosiasi Peneliti Sriwijaya, Kopiloka Sumsel, Dinas Pekerjaan Umum dan Perumahan Rakyat Kota Palembang and Lubuklinggau, Dinas Perumahan dan Pemukiman Kota Palembang, BAPEDDA Litbang Lubuklinggau, Department Civil Engineering Universitas Bangka Belitung; for their contribution in SICETO 2021. Last but not least, we thank all the authors and reviewers who are the backbone of this conference.

Thank you for being here with us. We value your presence at this conference. Enjoy the conference.

Barlin Oemar, S.T., M. Eng., Ph.D.

Chairman, Organizing Committee



**Sriwijaya International
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Time Zone Map

 Jakarta, Indonesia WIB (UTC +7)	Mon, 25 Oct 2021	09:00
 Kuala Lumpur, Malaysia MYT (UTC +8)	Mon, 25 Oct 2021	10:00
 Tokyo, Japan JST (UTC +9)	Mon, 25 Oct 2021	11:00
 Taipei, Taiwan CST (UTC +8)	Mon, 25 Oct 2021	10:00
Bangladesh Standard Time, BST BST (UTC +6)	Mon, 25 Oct 2021	08:00
 London, United Kingdom* BST (UTC +1)	Mon, 25 Oct 2021	03:00
 New Delhi, India IST (UTC +5:30)	Mon, 25 Oct 2021	07:30
Australian Eastern Time, AET* AEDT (UTC +11)	Mon, 25 Oct 2021	13:00
 UTC	Mon, 25 Oct 2021	02:00
Turkey Time, TRT TRT (UTC +3)	Mon, 25 Oct 2021	05:00
 Cairo, Egypt EET (UTC +2)	Mon, 25 Oct 2021	04:00
 Riyadh, Saudi Arabia AST (UTC +3)	Mon, 25 Oct 2021	05:00
 Bangkok, Thailand ICT (UTC +7)	Mon, 25 Oct 2021 Holiday: Chulalongkorn Day	09:00
 Tehran, Iran IRST (UTC +3:30)	Mon, 25 Oct 2021	05:30

Conference Program

**SRIWIJAYA INTERNATIONAL CONFERENCE ON ENGINEERING AND
TECHNOLOGY (SICETO) 2021**

Faculty of Engineering, Universitas Sriwijaya

The Zuri Hotel Palembang-Indonesia, 25 -26th October 2021,

ZOOM Cloud Meeting/Google Meet

Day 1: Monday, 25 October 2021		
Time (GMT +7)	Agenda	Venue
08.00-08.50	Registration offline- Zoom entrance online	Ballroom The Zuri
08.50-09.30	Fanfare (Video Looping Teaser SICETO, Unsri & FT Unsri Profile + Safety Induction), By TV-Committee	
	Opening Ceremony, By Master of Ceremony	
	The Singing of Indonesian Anthem Indonesia Raya, Conductor by Ainun Khairunnisak	
	Palembang Traditional Dance, By CO ₂ MED Student	
	Reporting Speech from Chairman SICETO, Barlin, Ph.D	
	Opening Remarks from Rector of Universitas Sriwijaya, By Prof. Ir. Zainuddin Nawawi, Ph.D., IPU (Vice Rector for Academic Affairs)	
	Momento & Photo Session, Vice Rector/Dean to Keynote Speakers	
09.30-09.55	Bridging to Plenary Session (on Site Coffee Break)	
09.55-10.00	Recall/ Plenary Session and Introducing Moderator, by Master of Ceremony	
	Plenary Session 1	
10.00-10.30	Opening and Introducing Keynote Speakers, Moderator: Dr. Leily Nurul Komariah	Ballroom The Zuri
	Keynote Speaker Prof. Dr. Setijo Bismo, DEA.	
10.30-11.00	Keynote Speaker Prof. Dato. Dr. Hassan Basri	
11.00-11.30	Keynote Speaker Balia Akhmad, M.M.	
11.30-12.00	Question and Answer, By Dr. Leily Nurul Komariah	
12.00-13.30	Lunch & Prayer -Break Time	
13.30-15.00	Conference: Break-Out Room/Parallel Session 1	The Zuri 1, 2, 3, 4, 5, 6, 7
15.00-15.30	Coffee Break	
15.30-17.00	Conference: Break-Out Room/Parallel Session 2	The Zuri 1, 2, 3, 4, 5, 6, 7
End of Conferece Day 1		

Day 2: Tuesday, 26 October 2021		
Time (GMT +7)	Agenda	Details
08.00-08.50	Registration offline- Zoom entrance online	Ballroom The Zuri
09:00-09:10	Opening Ceremony, By Master of Ceremony	
09:10-09:20	Speech from Dean of Faculty of Engineering, By Prof. Dr.Eng., Ir. Joni Arliansyah	
09:20-09.30	Momento and Photo Session	
09:30-09.35	Bridging-Introducing Moderator	
09:35-09:40	Opening & Introducing Keynote Speakers, Moderator: Bazlina Dawami Afrah, MT., M.Eng	Ballroom The Zuri
09:40-10.10	Keynote Speaker Prof. Dr. Eng. Kuwat Triyana, M.Sc.	
10:10-10:40	Keynote Speaker Dipl-Ing. Ir. Amrifan Saladin Mohruni, Ph.D.	
10:40-11.10	Keynote Speaker Khalid M. Saqr, Ph.D.	
11:10-12:00	Question and Answer, By Dr. Leily Nurul Komariah	
12:00-13:30	Lunch and Prayer-Break Time	
13.30-15.00	Conference: Break-Out Room/Paralel Session 3	The Zuri 1, 2, 3, 4, 5, 6, 7
15.00-15.30	Coffee Break	
15.30-16.30	Conference: Break-Out Room/Parallel Session 4	The Zuri 1, 2, 3, 4, 5, 6, 7
16:30-17:00	Closing Ceremony- Palembang & Unsri Video Virtual Tour	Ballroom The Zuri
	Clinic (Q&A) for AIP Proceedings- Publication, By Amir Arifin, Ph.D/Gunawan, Ph.D	
	Awarding for Best Presenter & Best Paper Announcement By Irsyadi Yani, Ph.D	
	Closing Remarks By Dr. Bhakti Yudho (Vice Dean of Faculty of Engineering for Academic Affairs)	

Conference: Break-Out Room/Parallel Session 4

Tuesday, 26 October 2021

ROOM		R1	R2	R3
MODERATOR		Maya Fitri Oktarini	Imroatul Chalimah Juliana	Rosidawani
15.30	15.40	179_CIV M. Rosyidi, Sahid Bismantoko, Asep Haryono, Umi Chasanah, Suci Putri P, Tri Widodo, Novi Irawati, Sinung Nugroho, Mulyadi Sinung H	223_CIV Lolom Evalita Hutabarat, Hicca Feby Putri Siahaan, Agnes Sri Mulyani	129_CIV Mentari S Sitorus, Ilham Nurhuda and Yulita Arni Priastivi
15.40	15.50	181_CIV Ritnawati Makbul, A. Nurfadilah Ruslan, Erdawaty, Asri Mulya Setiawan	254_CIV Febrinasti Alia, Sakura Yulia Iryani and Lisa Purnama Putri	132_CIV Adya Aghastya, Rusman Prihatanto, Natriya Faisal Rachman, Wahyu Tamtomo Adi, Septiana Widi Astuti, Willy Artha Wirawan
15.50	16.00	190_CIV Fatmawaty Rachim, Fitriah, Erniati Bachtiar, Ritnawati Makbul	258_CIV Citra Indriyati, Fahira Rhomianti Putri and Arifin Daud	141_CIV Bimo Brata Adhitya, Anthony Costa, Arie Putra Usman and M. Nazrey Athallah Yuandra
16.00	16.10	213_CIV Anisa, Finta Lissimi, Ratna Dewi Nur'aini, Ashadi and Munirah Radin Mohd Mokhtar	147_CIV Ani Firda and Dimitri Yulianti	222_CIV Jhon Cipta D. Hulu, Lolom Evalita Hutabarat, Risma Simanjuntak
16.10	16.20	219_CIV Willy Barasa, Wimpie A. N. Aspar, Dwi A. Purnomo, Muhammad A. B. Nadi, Thiya Fiantika and Suci P. Primadiyanti	229_CIV Rosidawani, Hanafiah, Yakni Idris, Resendra Adhitama and Muhammad Hidayate	



**Faculty of Engineering
Universitas Sriwijaya**



Sriwijaya International Conference on Engineering and Technology (SICETO)

Faculty of Engineering Universitas Sriwijaya

Jalan Sriwijaya Negara, Bukit Besar, Palembang-Sumatera Selatan

Website : <https://siceto.conf.unsri.ac.id> | E-Mail : siceto@ft.unsri.ac.id

Palembang, October 8th, 2021

Number : 0098/C/SICETO/2021
Events : Acceptance Letter

Dear author(s)

We are pleased to inform you that the manuscript in SICETO 2021, after the peer review, your paper:

TITLE : Identifying the Transformation of Space Functions in Residential During a Pandemic
AUTHOR : Anisa, Finta Lissimia, Ratna Dewi Nur'aini, Ashadi and Munirah Radin Mohd Mokhtar
PAPER ID : 213_ARC

has been **ACCEPTED** and **SELECTED** with content unaltered to publish in **AIP Proceeding publication Scopus index year 2021**.

Again, thank you for working with SICETO 2021. I believe that our collaboration will help to accelerate the global knowledge creation and sharing one step further. SICETO 2021 looks forward to your final publication package. Please do not hesitate to contact me if you have any further questions.

Sincerely,


BARLIN, Ph.D.

Dept. of Mechanical Engineering,
Faculty of Engineering, Universitas Sriwijaya, Indonesia



Sriwijaya International Conference on Engineering and Technology (SICETO)

Faculty of Engineering Universitas Sriwijaya

Jalan Sriwijaya Negara, Bukit Besar, Palembang-Sumatera Selatan

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REGISTRATION, PROOF OF PAYMENT AND VIDEO PRESENTATION

Dear author(s),

PAPER ID	: 213_ARC
TITLE	: Identifying the Transformation of Space Functions in Residential During a Pandemic

This is a follow up to complete your registration, you need make the payment of **IDR 1.500.000,-** to the following bank account and upload the proof of payment in the OJS SICETO system at copyediting section.

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Bank:	Bank Negara Indonesia (BNI) 46
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Please write the description of the transaction as SICETO2021-(Your paper ID). The payment needs to be made no later than 11 October 2021. Should you require an invoice, please contact us at siceto@ft.unsri.ac.id.

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To ensure your paper can be published **AIP proceeding publication Scopus index year 2021**, please make sure that you have revised your paper based on the comments from the



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The participants are required to prepare of **7-minutes video presentation**. Make sure your video has a good resolution (at least 720p), your voice is clear, and avoid using any background music. It is preferred that your presentation video contains the presenter's face together with the slides you are presenting. Please refer to the following YouTube video on how to record PowerPoint presentation and your face using your webcam: https://youtu.be/Mu6UwK5F_KI (optional).

For the background video conference can be download in: <https://bit.ly/37KoyGv>.

Once you have recorded your presentation video, please share your google drive video link in the SICETO OJS at copyediting section.

On the conference day, the link of remote video meeting sessions will be created based on the topic of your presentation. In each session, the session chair will be playing back your pre-recorded presentation video according to the schedule (which will be provided a few days before the symposium). You need to be present in the session. After the video playback is finished, there will be a 3-minute Q&A session. This is the only interactive session between the presenter and other participants in the session. The process is repeated for every presenter.

Note: We accept if you want uses another video editing system.

SUMMARY

Should you have any questions, please feel free to contact us at siceto@ft.unsri.ac.id or send us a WhatsApp message at [+62823 7865 0027](https://wa.me/6282378650027) and or phone number [+62831 9469 2231](https://wa.me/6283194692231).

Sincerely,

SICETO 2021 TEAM

Faculty of Engineering

Universitas Sriwijaya, Indonesia.

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Title of Conference: Sriwijaya International Conference on Engineering and Technology (SICETO) 2021

Name(s) of Editor(s) Barlin, Dendy Adanta, Zulkarnain

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Identifying the Transformation of Space Functions in Residential During a Pandemic

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Abstract. The COVID-19 Pandemic began to emerge at the end of 2019, which affected the order of human life. One of the causes of this change is that all activities initially carried out outside the home have completely changed with the Work From Home (WFH) and School From Home (SFH) systems into activities carried out at home. Humans are restricted from meeting and gathering to reduce the impact of the spread of the virus. Occupancy is a place where all family members carry out activities. Occupancy must be able to be used functionally and meet comfort for smooth activities in it. This study aims to identify and describe changes in space function in residential areas during the pandemic. The research method used is descriptive qualitative. Data were taken purposively on six residential areas in Jakarta, Bogor, Tangerang, and Bekasi. The results of this study are that there are changes related to the function of the space in the dwelling caused by changes and increased activities. Several additional activities are accommodated in the room during the pandemic, including work, study, and self-isolation. This change occurs in the function but does not affect the architectural form of the dwelling. In general, this process can be regarded as an adaptation of space function to meet the needs arising from the COVID-19 pandemic. Residence or house as a place of family activity has made a positive response that meets the needs of its users.

INTRODUCTION

Residential is a place where all family members will carry out their activities. Like other buildings, housing must also be used functionally and meet comfort for the smooth running of activities. The COVID-19 Pandemic, which emerged at the end of 2019, has changed the existing order in different lives. This suddenly changing order covers all aspects of daily human life. We can see that starting from work, education, even buying and selling has changed. One of the derivative causes of this change due to COVID is that all activities originally carried out outside the home have entirely changed because WFH and SFH have become activities inside the home. It happens to reduce the impact of the spread of the virus, and humans are minimized to meet and gather.

Teaching and learning activities that were previously carried out at school have turned into learning activities at home. Physical classes turn into virtual classes. Learning activities that used to be at school from morning to evening have become school activities at home. No longer meet the teacher/teacher directly, but meet the teacher/teacher online. Work activities that were initially in the office also turned into working at home. If under normal conditions, morning activities together at home are then continued with activities outside the home, in a pandemic, the activity of going to work will be non-existent.

The teaching and learning activities and work are clear evidence of the sudden changes that occurred during the pandemic directly related to housing. Generally, there are no study rooms and workspaces in simple housing

because these two activities are mostly carried out outside the home. Studying at home in normal times is usually done in the room at night in preparation for school the next day. Working at home at normal times is only done in preparation for the next day's work. So this causes in simple dwellings there is no workspace. While the study room in a simple residence usually blends with the room.

It is the background of the importance of conducting research related to changes in the form and function of simple residential spaces during the pandemic. The simple residential layout was initially designed only to meet basic human needs in space. The basic needs in the accommodated space are activities to receive guests, rest, cook, family gathering, and self-cleaning activities. It is not stated in the definition that there is space in a simple residence used for work and formal study. That is why there are changes in activities or rather the sudden addition of activities that change the form and function of space in simple dwellings.

This study aims to identify and describe the transformation of the function of space in housing during the pandemic. After conducting this research, it is hoped that there will be findings related to the function and form of space adapted to pandemic conditions so that the residence remains the only comfortable place for all human activities.

METHODS

This study uses a qualitative descriptive method to identify and describe the transformation of space functions in residential areas during the COVID-19 pandemic. The steps taken in this research include three stages. First, identify the function of space in the dwelling before a pandemic occurs. Second, identify the function of space during the pandemic. The third is interpreting the transformation of the function of space to get a conclusion.

The data were taken by purposive sampling, namely, taking case studies with a purpose. The case studies in this research are six medium-sized simple houses with an area of less than 54 m². The criteria for taking case studies include: (1) There are changes in activities that affect the function of space as a result of the pandemic; (2) Case studies can be observed and interviewed for data related to space activities and functions before the pandemic; (3) The case study is a simple building with a medium area in Jabodetabek (Greater Area Jakarta consists of several cities such as Jakarta, Bogor, Depok, Tangerang, Bekasi).

RESULT AND DISCUSSION

Architecture and Covid-19 Pandemic

This pandemic has resulted in the Indonesian government issuing a policy of carrying out social distancing and social restrictions that impact learning activities carried out in their respective homes called Learning From Home (SFH). One of the technological tools that are very suitable for use for this SFH facility is a gadget [1]. The challenges faced by parents in accompanying children to learn must be to overcome the child's mood, condition a pleasant learning atmosphere, and divide time between work and accompanying children to study [2]. The role of parents in learning activities from home is to accompany and motivate children in doing the tasks assigned by the teacher. Collaboration between parents and teachers must be compact and need good planning for effective learning activities [2]. The family has the function of dealing with and preventing the spread of disease outbreaks and implementing a healthy lifestyle [3].

According to [4], the function in architecture is related to meeting the needs of human activities. Functional buildings can meet the overall needs of human activities properly and on target. The house is a building designed as a residence as well as a place for family development. In addition, most people also function as a place of business such as stalls, shops, salons, and other businesses to increase family income [5]. The house is also defined by Rapoport [6] as a process of living influenced by its occupants' activities and behaviour patterns. Changes in the design of the house will occur when residents feel uncomfortable in carrying out activities in it.

Since the COVID-19 Pandemic, the slogan "Stay at home" is directed at individuals and groups to leave the house only for very urgent needs. So there have been several changes related to changes in human habitation. which has an essential effect on the behaviour and lifestyle of users. These changes are mainly related to (1) Considering the inside-out relationship; (2) Individual daily life activities such as work, entertainment, sleeping, eating, family gatherings, and communication with others through virtual emptiness and accumulation within a particular spatial framework and limited to the level of space/component/source of the material; (3) Changes in behaviour due to the nature of the political, social and cultural changes that have occurred and the resulting changes in housing

requirements for both individual and family property [7]. COVID-19 restrictions are changing the workplace, study, commerce, and recreation. The architecture must be able to adapt to these changes. The accelerated adoption of online, digital, and remote technologies has forced the built environment discipline to respond immediately [8].

Residential Functions and Activities before the Pandemic

This section is the initial stage of the analysis, which is to identify and describe the residential functions and activities before the pandemic. Of the 6 case studies, three were observed directly, and the other 3 data were collected through interviews with homeowners. Case study 1 (from now on referred to as K1) is a simple house with an area of 32.5 m² inhabited by two people, namely husband and wife. This house, before the pandemic, was used for daily activities without any additional business activities. Likewise, the case study of 2 houses with an area of 36 m², which six people inhabit, is only used for daily activities. Father and mother work outside the home, children go to school. Case 3, case 4, and case 6 activities at home are the same as in case 2, mothers and fathers work outside while the children go to school. As for case study 5, which is inhabited by five people, only the father and mother work outside while the children (toddlers) are at home with their grandmothers.

TABLE 1. Residential Functions and Activities before the Pandemic

Case number	Area (m ²)	Number of Occupants	Activity before the Pandemic	Room Function before the Pandemic
K1	32,5	2	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom
K2	36	6	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom
K3	45	5	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom
K4	49,2	2	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom
K5	51,75	4	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom
K6	40	6	Receiving guests, cooking, eating, relaxing, resting	Living room, Bedroom, dining room and kitchen, bathroom

Residential Functions and Activities during the Pandemic

The second stage of this analysis is to identify and describe activities and functions during the pandemic. During the COVID-19 Pandemic, activities in residential areas have changed. In detail, these changes will be identified and described further in this section. The new activity during the pandemic in case study 1 is online lectures. One of the users is currently studying so that the lectures are carried out online during the pandemic. The place to do online lectures is the room, with a sitting position below using the help of a portable table. The new activity during the pandemic in case study 2 is SFH (School from Home) Online learning from home because two children do online learning at the high school and college. The room used is the living room.

In case study 3, out of 5 users, four carry out additional activities, namely SFH learning from home at the elementary level and WFH carried out by the father and mother. The two children do school online in the living room and terrace. While the father works from the room and the mother works moving places between the room and the living room. Case study 4, additional activity is online teaching which is carried out in the back room. Children in case study 5 were not yet in school age, and their parents worked outside the home, so neither SFH nor WFH was found. The new activity found is self-isolation in one of the rooms originally part of the living room. In case 6, the additional activity is SFH for two children in elementary school, while one of the parents works outside the home.

TABLE 2. Residential Functions and Activities during the Pandemic

Case number	Area (m ²)	Number of Occupants	New activity during the pandemic	Used space/room
K1	32,5	2	Online lecture	Bedroom

K2	36	6	SFH and online lecture	Living room
K3	45	5	SFH, WFH, and online teaching	Living room, terrace, room
K4	49,2	2	Online teaching	Bedroom
K5	51,75	4	self isolation	Living room (divided into bedroom)
K6	40	6	SFH	Terrace and living room

Space Function Transformation

This section is the final stage of the analysis, namely interpreting the transformation of the function of the residential space during the pandemic. This section continues the identification and description of space activities and functions before and during the pandemic. In research [9] states that an environment can experience changes in form and function. The process of change can be related to the socio-cultural activities of the community. Physical changes in an environment will be influenced by non-physical changes, including social and cultural changes in society and political and economic changes [9].

The transformation has the same meaning as alteration, conversion, revolution, renovation, and makeover. Where has the same meaning is change and renewal non-physical change factors influence physical changes in the form of changes in the culture of residents or the community itself, social changes, and economic and political changes [9]. Thus, the meaning of transformation is a process of a gradual change from a form to a new form that is influenced by physical and non-physical factors, namely in the form of cultural, social, economic, and political changes by considering aspects of space and time [9]. Transformation is defined as the addition, subtraction, and displacement of a primary element in the built environment [10]. According to Loecx and Vermeulen, transformations can be observed through historical interpretation (diachronic analysis) and network /present conditions (synchronic analysis).

Meanwhile, according to [1], several things that can be observed in the process of environmental change are: (1) Changes occur little by little or continuously; (2) Changes are unpredictable and know when they start and when they end, depending on the underlying forces; (3) The change process does not take place in stages but is comprehensive and continuous; (4) Change has a close relationship with the value system of the supporting population. The context in this study follows the theory put forward by Alexander that what is observed in this process is a change that cannot be predicted and is known when it starts and when it ends. This pandemic is something that is beyond expectations and estimates. As Megahed [7] reveals, the COVID-19 pandemic is a big shock, but the positive news is that the importance of science's role in society is increasing. Architecture deals with the design of interdisciplinary engineering research results and integrated technologies.

All the case studies studied felt a sudden change, precisely starting in March 2020, since the school was implemented at home. Work is also done at home. In contrast, the initial needs for residential design were not designed to work and study full time. Learning activities are usually done at home before the pandemic is studied to prepare for school the next day. Meanwhile, learning and schooling are carried out at home during the pandemic—the school with the same material but differently. Schools at home are faced with gadgets that are used to receive explanations from teachers who are (perhaps) in their respective homes. The character of the activities is different from the usual learning because studying at school, which is replaced by studying at home, still has a formal character. Children are in uniform and orderly with a schedule. Because the character of the activity is formal, space is also needed to support this activity. So the findings from the room used by the majority are the living room because the living room is usually used for activities that are different from other rooms.

Another new activity that appears during the pandemic is working from home (WFH), in a simple house or a house with a medium area usually not provided a special place to work. Work naturally occurs outside the home, so that in the design of the house, there is no need for work activities. In the six-house case studies studied, the space used for work is a room because work requires a calm atmosphere, and there is no circulation across the space. In essence, the space used for work must be conducive to calm and support concentration. It is a challenge for medium-sized dwellings because, besides having no space with specific used for work, they also have to share space with SFH activities held inside the house. Specifically used for work, they also have to share space with SFH activities held inside the house.

The interpretation of the transformation of the function of space in housing during a pandemic is discussed using two theories, namely the theory of Alexander and Habraken. Alexander [1] states that four observable changes have

been mentioned above. Of the four things, there are two that were found in this study, (1) Changes cannot be predicted, and it is known when it starts and when it ends, depending on the underlying forces; (2) The process of change does not take place in stages but is comprehensive and continuous. Changes due to the COVID-19 pandemic occurred suddenly and unpredictably, causing a sudden adaptation process from the existing environment. It means that if the need to study and work from home was not considered at the beginning of the design, the transformation required to accommodate these activities is necessary during this pandemic. The occupants have the option to choose the space to accommodate additional functions. These options, among others, relate to the nature of space, the character of space, and the size of space. For example, for WFH activities, the selected space is a quiet, private room but also looks polite to conduct online activities. Meanwhile, for SFH activities, the selected space has different criteria according to its level. For example, if online learning is at the kindergarten level, the space is more flexible; the important thing is that children want to learn. As for elementary school age, in a common room (such as the living room) that can be monitored by parents. In contrast to students who study online, they will choose a private place such as a room.

Meanwhile, according to Habraken's theory, transformation can be observed based on form, territorial order, and cultural order. The observed transformation is based on changes in the cultural order, focusing more on implicit things such as changes in mindset, perspective, changes in people's behaviour, and the emergence of agreements among the community [10]. Based on Habraken's explanation, it can be interpreted that the transformation that occurs in the function of the residential space studied occurs suddenly, without prediction, and cannot be predicted with certainty when it will end. It can be seen that there is a change in the territorial and cultural order. At the same time, the order of form does not change. Territorial order occurs because of the addition of activities and functions to existing spaces. For example, the activities in the living room initially were receiving guests. Still, since the pandemic, visiting activities have been minimized (some of the case studies did not accept guests), and the space has increased to function as a study/schoolroom. Territorially private activities eventually extended to the living room. Public activities then shift towards the outside (terrace and courtyard). The cultural order transformed home for daily activities to a home for all daily activities. School and work are finally done at home. However, small and limited virtual space, working and schooling from home is a new culture due to the pandemic. Learning is designed in such a way that it can replace schools as usual. The order of form does not occur because, physically, the dwelling has not changed. Only 1 case study experienced physical changes but not permanently, namely by insulating the living room into an isolation room for families affected by COVID-19. As an illustration, the image below shows the differences between rooms with and without additional functions.



Figure 1. Room with additional activity and function

When presented in tabular form, it can be seen that there are generally two spaces that increase in function, namely the living room and the Bedroom.

TABLE 3. Room with additional activity and function

Case number	Area (m ²)	Number of Occupants	New activity during the pandemic	Room with additional function	Room with transformed function
K1	32,5	2	Online lecture	Bedroom	-
K2	36	6	SFH and online lecture	Living room	-
K3	45	5	SFH, WFH, and online teaching	Living room, terrace, Bedroom	-
K4	49,2	2	Online teaching	Bedroom	-
K5	51,75	4	self isolation	-	Living room (divided into Bedroom)
K6	40	6	SFH	Terrace and living room	-

Another research conducted regarding major changes was carried out by Weerasinghe [11], related to transformations caused by major changes, namely after the earthquake and tsunami. Weerasinghe's research aims to observe the arrangement of coastal housing settlements after the earthquake and tsunami that occurred in Sumatra in 2004. The study focused on the resettlement program but also observed the adaptations made by the community to these events [11]. It is in line with the research; namely, there is a big change due to the COVID-19 pandemic, creating new habits and orders in daily life. In essence, the existence of a major event can cause architectural transformation. However, this transformation does not always come to physical form, but transformations can occur in activities and functions in physical form, as was done in this study.

CONCLUSION

Based on the problem formulation and research objectives that have been mentioned in the background, it can be concluded from this research:

1. Identification of the activities and functions of the space in the dwelling results in the addition of activities and functions in the residential space due to new habits and arrangements related to WFH and SFH/BDR.
2. The order transformation occurred culturally and territorially but did not reach the physical order because the new habits and orders could already be accommodated with the existing space.
3. The space in the residence that is transforming is the living room and Bedroom. In terms of shape, size, atmosphere, and comfort, the two spaces meet the additional activities and functions criteria.

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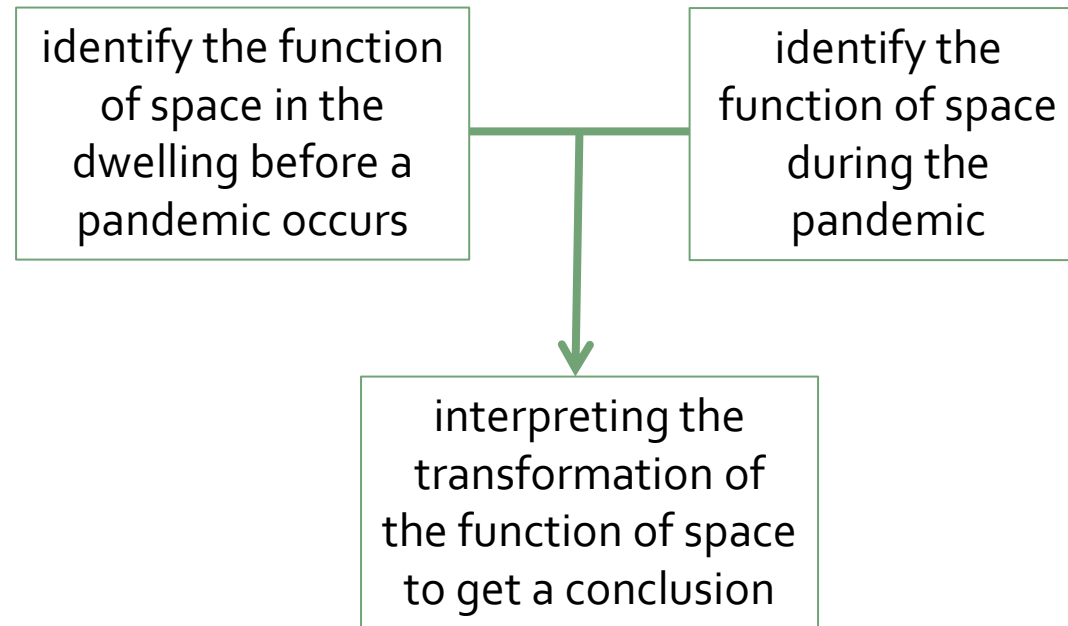


Introduction

- Residential is a place where all family members will carry out their activities. Like other buildings, housing must also be used functionally and meet comfort for the smooth running of activities.
- The COVID-19 pandemic, which emerged at the end of 2019, has changed the existing order in different lives. This suddenly changing order covers all aspects of daily human life. We can see that starting from work, education, even buying and selling has changed.
- One of the derivative causes of this change due to COVID is that all activities originally carried out outside the home have entirely changed because WFH and SFH have become activities inside the home. This happens because to reduce the impact of the spread of the virus, humans are minimized to meet and gather.
- This study aims to identify and describe the transformation of the function of space in housing during the pandemic.

Methods

- qualitative descriptive method
- The steps taken in this research include 3 stages.



- The data were taken by purposive sampling, namely taking case studies with a purpose. The case studies in this research are 6 medium-sized simple houses with an area of less than 54 m².
- The criteria for taking case studies include: (1) There are changes in activities that affect the function of space as a result of the pandemic; (2) Case studies can be observed and interviewed for data related to space activities and functions before the pandemic; (3) The case study is a simple building with a medium area in Jabodetabek (Greater Area Jakarta consists of several cities such as Jakarta, Bogor, Depok, Tangerang, Bekasi).

Space Function Transformation

- This section continues the identification and description of space activities and functions before and during the pandemic. In her research, Susanti states that an environment can experience changes in form and function. The process of change can be related to the socio-cultural activities of the community. Physical changes in an environment will be influenced by non-physical changes, including social and cultural changes in society and political and economic changes
- The transformation has the same meaning as alteration, conversion, revolution, renovation, and makeover. Where has the same meaning is change and renewal (Pratiwi)
- according to Alexander, several things that can be observed in the process of environmental change are: (1) Changes occur little by little or continuously; (2) Changes are unpredictable and know when they start and when they end, depending on the underlying forces; (3) The change process does not take place in stages but is comprehensive and continuous; (4) Change has a close relationship with the value system of the supporting population.

- The interpretation of the transformation of the function of space in housing during a pandemic is discussed using 2 theories, namely the theory of Alexander and Habraken.
- Alexander states that 4 observable changes have been mentioned above. Of the 4 things, there are two that were found in this study, (1) Changes cannot be predicted and it is known when it starts and when it ends, depending on the underlying forces; (2) The process of change does not take place in stages but is comprehensive and continuous.
- The occupants have the option to choose the space to accommodate additional function. These options, among others, relate to the nature of space, the character of space and the size of space. For example, for WFH activities, the selected space is a quiet, private room but also looks polite to conduct online activities.
- For SFH activities, the selected space has different criteria according to its level. For example, if online learning is at the kindergarten level, the space is more flexible, the important thing is that children want to learn. As for elementary school age, in a shared room (such as the living room) that can be monitored by parents. In contrast to students who study online, they will choose a private place such as a room.

- According to Habraken's theory, transformation can be observed based on form, territorial order, and cultural order. The observed transformation is based on changes in the cultural order, focusing more on implicit things such as changes in mindset, perspective, changes in people's behavior, and the emergence of agreements among the community.
- Based on Habraken's explanation, it can be interpreted that the transformation that occurs in the function of the residential space studied occurs suddenly, without prediction and cannot be predicted with certainty when it will end.
- It can be seen that there is a change in the territorial and cultural order. In contrast, the order of form does not change. Territorial order occurs because of the addition of activities and functions to existing spaces.
- The activities in the living room initially were receiving guests. However, since the pandemic, visiting activities have been minimized (some of the case studies did not accept guests), and the space has to accommodate study/schoolroom function. Territorially private activities eventually extended to the living room. Public activities then shift towards the outside (terrace and courtyard).
- The cultural order transformed home for part of daily activities to a home for all daily activities. School and work are finally done at home. Although small and limited virtual space, working and schooling from home is a new culture due to the pandemic. Learning is designed in such a way that it can replace schools as usual. The order of form does not occur because physically the dwelling has not changed.

Case number	Area (m ²)	Number of Occupants	New activity during the Pandemic	Room with additional function	Room with transformed fuction
K1	32,5	2	Online lecture	Bedroom	-
K2	36	6	SFH and online lecture	Living room	-
K3	45	5	SFH, WFH and online teaching	Living room, terrace, Bedroom	-
K4	49,2	2	Online teaching	Bedroom	-
K5	51,75	4	<u>self isolation</u>	-	Living room (divided into bedroom)
K6	40	6	SFH	Terrace and living room	-

Conclusion

Based on the problem formulation and research objectives that have been mentioned in the background, it can be concluded from this research:

1. Identification of the activities and functions of the space in the dwelling results in the addition of activities and functions in the residential space due to new habits and arrangements related to WFH and SFH.
2. The order transformation occurred culturally and territorially but did not reach the physical order because the new habits and orders could already be accommodated with the existing space.
3. The space in the residence that is transforming is the living room and bedroom. The 2 spaces in terms of shape, size, atmosphere, and comfort meet the additional activities and functions criteria

Thank You

Rekaman Presentasi

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