

Evaluating architectural design schemes for Anganwadi Centre in Ajjarkad, Karnataka, India by architectural students through community participatory methods

Susan Ang¹, Nandineni Ramadevi² and Norwina Mohd Nawawi³

¹ School of Architecture and Built Environment, Deakin University, Geelong, Australia

² Manipal School of Architecture and Planning, Manipal Academy of Higher Learning, Manipal, India

³ Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia

susan.ang@deakin.edu.au, nandineni.rd@manipal.edu,
norwina@iium.edu.my

Abstract Anganwadi is a holistic health and education initiative that provides basic health care, nutrition and educational programs to rural mothers and children. It is part of the Indian Government's Integrated Child Development Services (ICDS) Scheme, introduced in 1975 and is today one of the largest child development initiatives in the world. The early developmental years of children aged 0-6 years spent in an Anganwadi or equivalent early learning centre influences children's physical, emotional and intellectual development. A child not only engages in active learning but also engages in passive learning from its physical and environmental surroundings for which is manifested in the architectural design of the building. A collaboration between architecture students from three universities in India, Australia and Malaysia as well as the office of the Deputy Director of Women and Child Welfare, Udupi District was initiated in 2018 for the proposed design of a purpose-built Anganwadi centre for Ajjarkad, Karnataka. The project was executed through a student global learning program known as iDiDe (Intercultural dialogue through design). This study evaluates the seven design schemes created with Ajjarkad community input and co-design participatory methods based upon sustainable integrated architectural parameters, including space efficiency, environmental resilience, children physical rating scale and cultural value. The issue of "fit for purpose" and "architecture design robustness" and subsequent construction of an Anganwadi centre are rarely interrogated at an integrated design level. In evaluation, this paper discusses the synthesis of architectural design, the pedagogy and cultural attributes that aid the formulation of architectural design parameters for Anganwadi building. The study found that through co-design participatory methods, the design process was shaped through community engagement and the outcomes thus satisfied the stakeholders as fit for purpose.

Keywords: Intercultural dialogue through design, Anganwadi, participatory method

1. Introduction

India is home to more than 1.34 million Anganwadi Centres (AWC). The term ‘Anganwadi’ means ‘courtyard shelter’ in the Indian language. It offers a typology of social architecture initiated as part of the Indian Government’s national health scheme as per the Integrated Child Development Services (ICDS). Anganwadi Centres cater to 84 million children (ICDS, 1975) across the nation. In the Indian state of Karnataka alone, there are 61,000 Anganwadi with 5.5 million beneficiaries (ICDS, 1975). Anganwadis play a vital role in the communities. Original intentions of Anganwadi centres (AWC) are to make social health and welfare, early learning education support and medical services accessible to India’s poorest communities, typically located in remote and difficult to reach locations. The centre strengthens the fabric of rural community neighbourhoods and boosts foremost learning skills, creativity, self-determination, and health outcomes for children. It also serves as a pathway for awareness of people’s rights through interactive learning, vocational training, and educative camps on a sense of safety and security, and building strong connections within the community. The centres run programmes tailored to educate and support young women aged sixteen and above and provide maternal health care needs to lactating mothers. In the state of Karnataka, local governance is led and managed by Gram Panchayat (local government). Funding allocations for new AWCs sit around INR 8 Lakhs, (Approximately \$11.5K USD) although in direct consultation with the Gram Panchayat in the Udupi district, there was a clear preference for the centre to cost around INR 5 Lakhs approximately \$7K USD) due to funding cuts and uncertainties. This could only be achieved through local builders using local materials, low cost techniques and with volunteer contribution.

At this reduced cost plan for a new AWC, the Gram Panchayat let it be known that many centres can only be sustained with the support of the local villagers. Not uncommonly, national level government initiatives such as the AWC scheme relies heavily upon on ground support coming from informal community based organizations, primarily comprised of volunteer effort. The local community who comprise senior women, mothers, grandmothers who are connected to the families of the Anganwadi centre) take up much of this contribution to keep these centres running, with some engaged formally as Anganwadi workers and teachers.

In reviewing several different approaches to Anganwadi centre designs to understand the value of community engaged processes and their relationship to maternal health welfare and children's early learning, it was observed that government initiated reports (none of which were publicly accessible) had been conducted on assessment of the operational aspects of the services in relation to health and nutrition run in existing centres across the country, but very little heed was paid towards how the physical infrastructure component of these centres played a role in promoting community education and children's learning. The communal spaces where children spend most of their day were reduced to just one single room. The authors found informal sources of media news articles frequently featured how Anganwadis had or had not delivered on the full intentions of the original initiatives. There was an absence of research conducted on the design and construction of Anganwadi buildings. Upon visiting and conducting context analysis research of three existing case studies of AWCs located in Ajjarkad, Udupi, as part of a larger research study, the authors noted that the each of the three building premises were inadequate. The physical layouts lacked spatial accommodation that could cater to major functions understood to be critical to an AWC. These were: 1/private space for dispensing of maternal care and the nursing of lactating mothers; 2/secure kitchen storage; and 3/child friendly spaces that enabled children's play and early learning.



Figure 1: Photo taken from Anganwadi case study visit undertaken by iDiDe team, 2018. Source: Photo by N. Manepure, 2018

With more than a million Anganwadi centres in operation today, and plans for thousands more, there is wide scale opportunity to appreciate the critical role AWCs plays in initiating and enabling

community education and community health. In 2018, the design for a purpose design Anganwadi centre for Ajjarkad, Udupi, India was undertaken as a university-led built environment design education program education program iDiDe or “i-dee-dee” stands for “Intercultural Dialogue through Design” and is an international collaborative learning program founded by Ang. (Ang, 2017). Architecture students from three universities from Australia, Malaysia and India. The outcomes were seven design proposals for a resilient design for an Anganwadi centre in Udupi, Karnataka. The proposals were a collaborative effort including stakeholders in the design conception stages for a more informed result. With the need to consider the design aspect of AWCs that have too often been overlooked, this study analysed the quality of the physical environment of iDiDe’s design proposals to explore what design features could impact the needs of women and children who are the primary users of an Anganwadi Centre. This paper explored university intervention in facilitating community participation in architectural design and construction of Anganwadi Centre and focused upon evaluation of the physical attributes of spatial design and accommodation of design proposals for a new Anganwadi Centre to be located in Ajjarkad, Udupi. The target audience for this research will be architects, educators and children. This research will assist a global audience interested in social policies in the awareness of the Indian government’s ICDS initiative and architects and educators to view the state of Anganwadi with more consideration and appreciate the role design has in facilitating community participation. The outcomes of our evaluation showed that all seven iDiDe Anganwadi designs addressed key spatial needs of the Anganwadi program and the requirements of the Anganwadi community in Ajjarkad. They showed that the strong relationship of spatial layout and physical attributes in these co-designs have positive impact upon Anganwadi users. Additionally, the university educational agenda through collaboration with local government in the design of Anganwadi Centre offered real capacity and potential to achieve community engagement and possible future community ownership.

2. Literature Review

2.1 Current scenario and the need for community centred design approaches in AWCs

The scope of literature review conducted that informed this study included understanding the concept of Anganwadi and its role in serving the communities in India. Literature surrounding community participation in design was consistent in demonstrating evidence of participatory methods as an emergent trend for addressing community aid and engagement. A precedent international project known as the The Anganwadi Project or TAP project which began 2006 as a partnership between local not for profit organization and an international not for profit organisation led by Australian architects offered useful insight into the impacts of interventions in the space of construction and design of Anganwadi Centres.

2.2 Understanding the concept of India's Anganwadi centres (AWC): Facilities for infants that serve rural and urban communities alike

As per the Government of India initiatives, the ICDS under the Ministry of Women and Child Development and the WCD department in each state has been in place since 1975. It was restructured under the 12th Five-Year Plan to ensure holistic development of children aged six and below. The aim was to reduce anaemia and child mortality rate by giving supplementary nutrition specially to malnourished children and to improve early learning outcomes. The food is to be distributed to children up to six years, pregnant women and nursing mothers in the neighbourhood (Source: Media article by Shradha Chettri, June 2017, Indian Express). The perception of providing a package of services is primarily based upon the consideration that the overall impact will be much greater if the different services develop in an integrated manner since the efficacy of a particular service depends upon the support it receives from the related services. For better governance in the delivery of the Scheme, convergence is one of the key features of the ICDS Scheme. This convergence is in-built in the Scheme which provides a platform in the form of Anganwadi Centres for providing all services under the Scheme (ICDS, 2009). Basic health-care activities including contraceptive counselling and supply, nutrition education and

supplementation, as well as pre-school activities are included. The ICDS Scheme offers a package of six services as listed below:

1. Supplementary Nutrition
2. Pre-school non-formal education
3. Nutrition & health education
4. Immunization
5. Health check-up and
6. Referral services

Anganwadi Centres are used not only as early learning centres but quite quickly become vibrant community hubs, for young and old to meet. These centres provide the community with public spaces, gardens, and beautiful multi-purpose spaces especially for women and young girls for their education needs. They have also been a home to health clinics and used as a street school as well. The program provides essential developmental services to children (0 to 6 years), and bring maternal health care services to pregnant women and lactating mothers. AWCs perform as the early learning childcare and maternal health centre in rural communities. A study conducted by the National Institute of Public Cooperation and Child Development (NIPCCD) in 2006, based on a sample of 750 AWCs found that there has been considerable reduction in percentage of severely undernourished children and significant improvement in birthweight of babies. However, uptake of immunisation and other health services is still limited by ignorance and superstition. The majority of AWCs had access to safe drinking water, although only 41% had toilets. In 1992 merely 43% of AWCs were accommodated in pucca (permanent well-engineered) structures, which had increased to 75% by 2006. However, the report does not discuss what proportion of the total population is served by AWCs and ICDS and what proportion of the population is missing out. A report dated 31st March 2015, showed that 13,46,186 AWCs are operational across 36 States/UTs, covering 1022.33 lakh(102.2million) beneficiaries under nutrition (women and children) and 365.44 lakh (36.5 million) children between 3-6 years under pre-school component (Integrated Child Development Services, 2009) whereas the 2011 Census shows 158.8 million children in the age group of 0-6 years (India, 2011). Independent research in 2012 showed that the number of beneficiaries through Anganwadi has increased from 12,12,000 children aged 0-3 years and 12,22,000 children aged 3-6 years in 2001 to 17,75,881 and 16,03,856 children respectively in 2010. This

covers 74.70% of children in the 0-3 age group and 67.90% of the 3-6 age group. Yet there are still too many children who have not been provided with an AWC (Shashidhar, Maiya & Ramakrishna, 2012)

Based on the information as of 31 March 2015, from among 12.15 lakh AWCs/ mini-AWCs, about 81.19 % AWCs are running from the pucca buildings and remaining 18.81% from kutcha buildings (temporary non-engineered structure made of non-traditional materials); 30.62% running from Government owned buildings; 21.62% running from school premises; 4.54% running from Panchayat buildings; 32.56% running from rented including 5.90% from AWWs/ AWHs house; 9.79% running from others; 0.87% running from open space. 65.91% AWCs are having drinking water facilities within the premises and 50.01% AWCs have toilet facilities (Integrated Child Development Services 2009). Since Anganwadi Centre is a focal point for activities of ICDS programme it has always been emphasised that as far as possible AWC should be built with community involvement and low-cost design using local materials and indigenous construction techniques. Further, it should be owned and maintained by community/village panchayat/urban local bodies. This type of centre is also required to organise other activities related to different women's programmes, as a forum for youth activities and use for meetings of frontline workers and also for gathering of mothers and children. Ministries of Rural Development and Panchayati Raj may play a major role in collaboration with State Governments to provide this facility. Voluntary organisation(s) working in the field of rural development can also act as a catalyst in mobilising the community. AWCs are operated by a number of different organisations including: ICDS, State Governments, the World Bank, and NGOS (Integrated Child Development Services, 2006). Initially the program was intended to garner much local participation, through the use of local women as Anganwadi Workers and Anganwadi helpers (AWH) as volunteers with honoraria. This did not eventuate, with users seeing AWCs as essentially government-provided services, but it was hoped, with the introduction of local self-government (Panchayati Raj Institutions) in 1992 that this would improve. A study in Kashmir in 2014 showed a low level of awareness of the ICDS services provided by AWCs, however this paper is not well referenced (Shabanakhrshid, 2014).

2.3 Literature surrounding community participation in design

According to Sanoff (2006), community design has been defined as a movement for discovering the possibility of people's involvement in shaping and managing their environment. He further defined community architecture as an activist term used in England, which embraces community planning, community design, community development and other forms of community technical aids. Social architecture, according to Sanoff (2006), is also used for the same concept in the United States but creates to bring critical awareness among citizens on the needs of the community. Community participation, on the other hand, is defined to cover all the scales and techniques in reference to the processes involving professionals, families, community groups and government officials in shaping the environment. Another approach, i.e. facilitation, uses participatory methods for both problem definition and design solution generation through design assistance techniques. Facilitation, according to Sanoff (2006), is a means of bringing people together to govern what they wish to do and helping them find ways to work together in deciding how to do it. As the industry players in the built environment, architects hold the responsibility to design and create an environment for people to live in. These designs influenced people's culture and identity of a place (iDiDe project 2013 in Abdul Latip, Mohd Ariffin and Ang, 2013). Palliyaguru et al (2018) indicated that experiences from the iDiDe programme at an iDiDe project called Building Ampara in 2016, where disparities between real community needs and top down policy driven development initiatives in combination with sporadic volunteer and funding efforts by both local and international not for profit organisations, provided a clear and critical need to empower rural communities to achieve United Nation's Sustainable Development Goals 2015-2030. Although there are many views on the definitions of sustainable development, the most widely accepted definition by Du Pisani, J.A. (2006), p.89, "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*"

Ali and Nsairat (2009) in Palliyaguru, et al (2018) elaborate that sustainable development includes three broad components i.e. social, environmental and economic, often known as the 'triple bottom line', which brings environmental responsibility, social awareness and economic profitability objectives to the fore in the built environment and

facilities for the wider community. Anthony (2002) highlighted the need for diversity in schools of architecture and to go beyond affirmative action requirements to promote a climate that values differences and manages diversity for the 21st century. Mobility and exposure to different cultures and environment, as accorded by Berardi (2013), and Long et.al. 2010, thus support the effort of iDiDe and the choice of Anganwadi as educational project. The pre-school not only provides education and a sanctuary for or children, and allows their older siblings to attend school. It further provides a resting place and a social centre for rural mothers who walk many miles to bring their older children to school and wait while they attend (Extracts from personal notes made by the authors during the context analysis of three case study visits of operating AWCs in Udupi, Karnataka in 2018).

The Anganwadi Centre is not new phenomena. As mentioned in the introduction, Anganwadis have existed since 1975 as a holistic health and education initiative that provides basic health care, nutrition and educational programs to rural mothers and children. Hence the adoption of Anganwadi Women and Children (AWC) as the project for iDiDe to educate young architects and professional in the built environment, as the case study for participatory approach to design, may provide the necessary linkage for stakeholder engagement as interactive, and intercultural outcome that considers the sensitivity and needs of the target community. A design brief described in subsequent section will highlight the required standards and design considerations that will influence the design of the built environment and children outcomes. influence of culture in design, benefits of sustainable design. Challenges of design participation practice lie in the approach to the design process and in recapturing the aesthetic processing of design in order to produce better designs to pass on to future generations a stock of capital assets that will allow the quality of life to be maintained (Broome, 2005) for ‘sustainable development’ (Brundtland Report, 1987).

2.4 Lessons learnt from ‘The TAP’ Project in Ahmedabad

‘These projects have not just been about a building, but about strengthening a community through dedication to a project and love.’ **Ciara Tapia** (TAP volunteer) (Source:

<https://www.anganwadiproject.com/bholu-anganwadis> date accessed 3 May 2019)

The “TAP” (The Anganwadi Project) was a partnership between an international not-for-profit organisation with a local not-for-profit organisation known as Manav Sadhna and Rural Development Trust. TAP was founded in 2006 in a coincidental meeting of the two co-founders, Jane Rothschild, a former Director of Architects Without Frontiers and Designer, Jodie Fried. TAP has worked with slum communities of Ahmedabad since 2007 alongside local builders. The initial project was the re-building of one small school and a partnership that led to the founding of The Anganwadi Project. In 2011, the Anganwadi Project became an independently incorporated not-for-profit association and appointed Board of Directors. TAP has built over 16 Anganwadis which have positively affected the lives of more than 500 children. These projects have been achieved through the work of volunteer architects and designers. However, TAP could not undertake this work without the collaboration of the Indian project partners, Manav Sadhna and Rural Development Trust. (<https://www.anganwadiproject.com/> date accessed 15 February 2019)

These TAP projects have seen incredible benefits in the lives of the local children. The challenge identified by the TAP lies in understanding the needs, wants and wishes, through community participation, similar case studies and developing Innovative sustainable design ideas to fulfil the aspirations of the users through low-cost construction techniques, local materials and working skills. The acute shortage of AWCs across states creates the need to ramp up construction so that 4 lakh AWCs can have children-friendly buildings by 2019. The need is compounded by the fact that 32.56% of existing AWCs operated out of rented buildings while 18.81% do not even have pucca buildings. These facts are commensurate with the observation of the case study visits made by the authors during the iDiDe Anganwadi Ajjarkad project. Running the centres on rented accommodation raised issues of lack of space and hurdles in check-up for the women beneficiaries. More than 50% of AWCs in NCT of Delhi, Jammu & Kashmir, Andhra Pradesh and Bihar were reported as not having their own premises. To address these concerns, WCD has specified that the new centres should have the infrastructure, like a sitting room for children, a kitchen and a minimum of 600 square feet space for playing, once again reflecting the same

observations by the iDiDe Anganwadi team. As per Ministry's regulation, child-friendly toilets and drinking water facility are the basic minimum requirements for the effective functioning of an AWC. The absence of these basic amenities creates unhygienic conditions and adversely affects the quality of services provided to the intended beneficiaries. Such conditions can result in high absenteeism and low enrolment. The Demand for Grants Report (2015-16) of the Ministry of WCD observes that in terms of toilet facilities in AWCs, barring a few States like Nagaland, Uttarakhand and UTs like Chandigarh, Delhi, Daman and Diu and Lakshadweep, almost all the States have a long way to go to achieve this target. From 13.42 lakh operational AWCs in the country, only 6.48 lakh AWCs have one toilet in the premises. An even lesser number of Anganwadis have drinking water facilities. Despite a consistent increase in the allocations over the last three years, the allocation for 2015-2016 for ICDS has been reduced by 45% from INDR 15128.77 in the previous year to INDR 8335.77. It remains to be seen whether the Ministry can meet its targets to ensure the required infrastructure and delivery of services in the Anganwadi centres. With the deteriorated state of Anganwadi centres identified by the TAP project and through various media reports across India, the physical infrastructure of these centres was identified as a spatial criterion that needs priority address. The lived experiences of TAP teams and iDiDe teams highlighted the mismatch of aforesaid objectives and many challenges associated with design and construction of Anganwadi Centres.

3. Methodology

3.1 Intercultural dialogue through Design (iDiDe) Community Design Methodology

Collaborative Design Studio requires participation of individuals, coordination of information and tasks to work in teams. Team organization is one of the most important activity in collaborative studios (Chiu, 2002). Collaborative Design studio could be inter/multi-disciplinary, inter-institutional or cross-cultural. Lawson (2005) states that "*collaborative design studio provides an opportunity to advance cultural competence through a reflective, interactive design process*". Research suggests that cultural and experiential hurdles in collaborative

studios, can be overcome through engagement techniques (Lawson, 2005).

The concept of Intercultural Dialogue through Design (pronounced “i-dee-dee”) or iDiDe materialized in the years 2007-2008 by architect and senior academic Susan Ang of the School of Architecture and Built Environment, Deakin University, Australia (Ang, 2017). Emergence of such a concept was a response to the need to inculcate architectural students towards developing global citizenship and to have better understandings of world cultures outside of their own, ultimately with the objective of preparing students to be responsible future architects. The collaborative studio of iDiDe Anganwadi in 2018 along with cultural immersion for the benefit of the students was carefully planned to achieve the design of Anganwadi Centre. Quick paced design charrettes were introduced in the studio to enable cultural differences among students and community to be addressed, which were initially affecting the proposals (Lawson, 2005). The students as participants were led by faculty staff and exposed to conducting context site analysis, engagement with stakeholders, work on the design project as a team, and present the outcome as stages of the design development to stakeholders and assessing panelists. Integrated with the learning experience, the students experience cultural immersion of local culture and study architecturally significant sites situated in the host destination. The interaction with the stakeholders contributed to the process of developing the final criterion of the design as a design outcome. The accompanying faculty staff and facilitators of the programme attended research workshop as collaborators to ongoing research as well as provide the necessary input to the design development of the student’s project. With iDiDe’s growing stature as a global community engagement brand, it has positioned itself as a robust model for global engagement in Asia. Future iDiDe programmes will continue to refine the model of international mobility in conjunction with its academics, practice and government partners to be of service to the community through projects similar to the Anganwadi Centre.

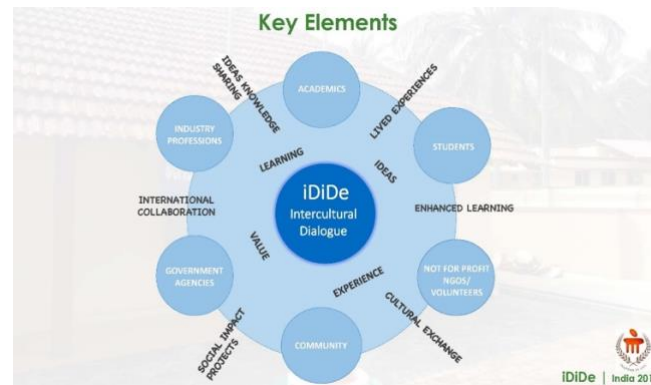


Figure 2: The iDiDe Model of Collaborative design and education for sustainable built environments. Source: Ang, S. (2017)

iDiDe (refer Figure 2 above) in summary is a collaborative intercultural and international workshop involving participants of diverse cultural backgrounds is able to drive the agenda to not only activate but witness cultural knowledge exchange and shared understandings among participants. Each site and project context demands a call to take up active interaction and the mediation of difference in situations that are both real and significant for all architecture design students, incorporating personal, interpersonal, cultural and social orientations. All in all, the process seeks to encourage cultural exchange of knowledge through design engagement, design collaboration and through cultural immersion that would be life rewarding experience even beyond architecture and built environment.

In 2018, Faculty of Architecture, Manipal Academy of Higher Education approached the Ministry of Women and Child Development (MWCD) Udupi district to discuss how a meaningful partnership could be forged around new designs for Anganwadi Centres and that university involvement for education purposes could transpire into meaningful contribution to community empowerment. The Deputy Minister of MWCD identified that an AWC was operating on a portion of the existing Ajjarkad School, and there was a need for a separate building and infrastructure and to create a stand-alone Anganwadi for the Ajjarkad community. The project was deemed an appropriate educational project for the iDiDe program where students led by faculty academics and professional architects would undertake a design evaluation that included assessment of an existing AWC that operated on a portion of the existing Ajjarkad school and a community stakeholder led design brief for the

new centre. The iDiDe Anganwadi Project aimed to propose several options for sustainable and innovative design for the new AWC. The design was to respond to the integrated development of mother and child with the social, emotional, physical well-being of a supportive and healthy environment. Further, the design of a new AWC for Ajjarkad would demonstrate systematic and holistic design approaches and adopt vernacular style and local methods of construction as a priority design strategy. The project method is an integrated one that aims to adopt sustainable principles at a holistic level (Refer Figure 4 and Figure 5 below).

iDiDe teams were made up of 35 students from three Universities along with mentors, collectively worked in teams of 5 and produced 7 design proposals for the AWC at Ajjarkad. The students gave due value to the culture and context of the community and faced the challenges posed by the government and the community collaboratively through User participation in design. Preliminary requirements were disseminated to the participants prior to their arrival in Manipal, India as pre-project reference which will be further explained in the next section. Detail requirements of the project were delivered at site and as lecture input in the host university. The designs explored the effects, responses, and practicality of adaptable, accessible and aesthetic architecture through design as a key deliverable. Assimilation of precedent case studies and stakeholder views are reflected in order to support and complement the design challenges encountered while planning the project. The key spaces (but not necessarily limited) to be part of the proposed design included play and recreation area, space for food storage and preparation, health care facilities and other supporting amenities (landscape, services etc.) A land area of 120 sq. m. was provided and a budget of Rs 8,00,000/- was specified by The Deputy Director of Women and Child Welfare, Udupi District, for the proposed development.



Figure 4: The Anganwadi Project Methodology adopted in iDiDe - design considerations. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)

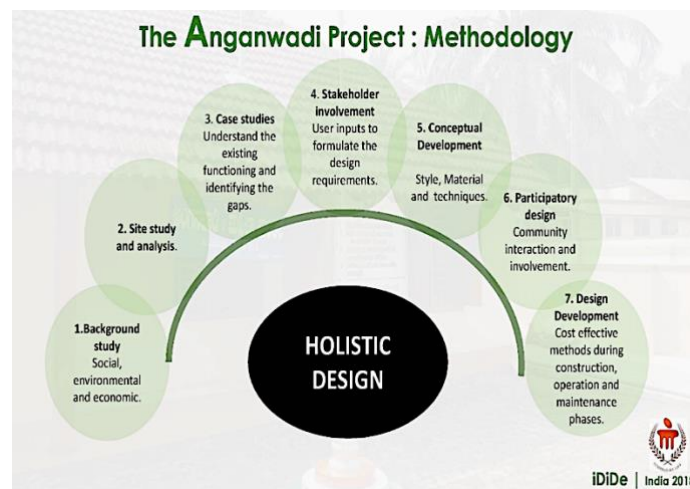


Figure 5: The Anganwadi Project Methodology adopted in iDiDe. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)

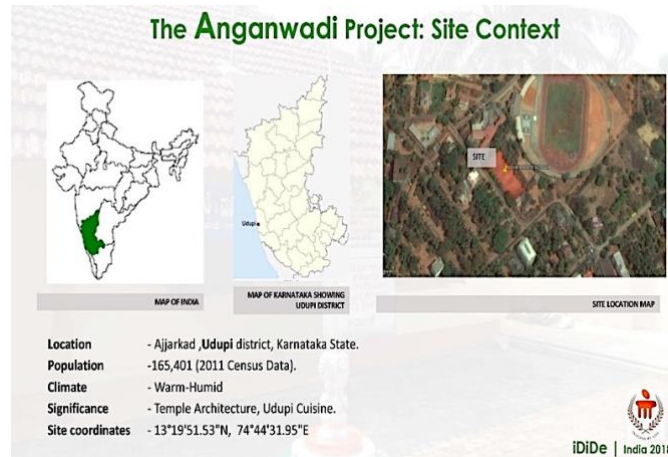


Figure 6: The Anganwadi Project Site Context in Ajjarkad, Udipi District, Karnataka, India. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)

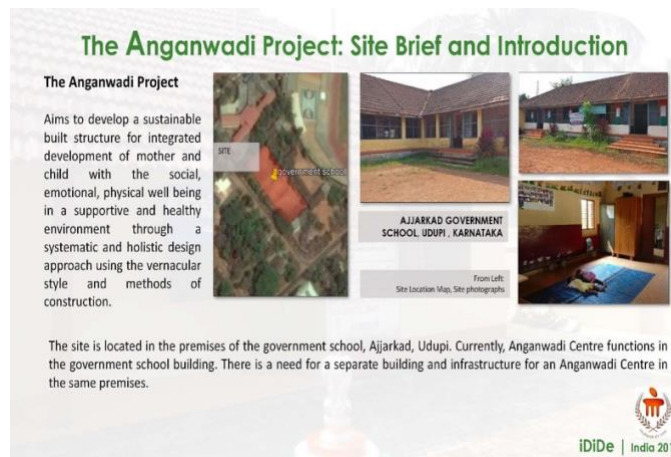


Figure 7: Introduction to The Anganwadi Project and site conditions. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)



Figure 8: Site for Anganwadi at Ajjarkad, Udipi, India. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)

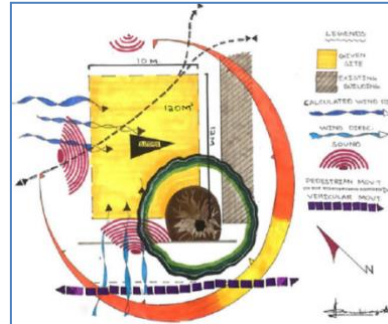


Figure 9: Site Analysis Plan. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)

The project site is located in Ajjarkad suburb of the main town of Udipi within an existing school ground (Refer Figure 3). The site coordinates - $13^{\circ}19'51.53''$ N, $74^{\circ}44'31.95''$ E, Population -165,401 (2011 Census Data); Climate - Warm-Humid. The design process started with the students doing a thorough research on AWCs, its systems, stakeholders and beneficiaries to understand the constraints to overcome in planning and construction. The teams conducted site context analysis and met the people from the community as well as the beneficiaries informally to assess the needs and requirements for the project. To complement the study, the students visited a few AWCs in the region as case studies to understand if the design and function was conducive to the community and the users. Further, the students conducted hands-on-workshops for the children and community to make them feel at ease as well as to understand their needs and aspirations to be reflected in the proposed AWC designs (Refer Figure 10 below).

Preliminary designs and models were prepared and presented in the community to the Government representatives, stakeholders and beneficiaries for their comments. All of them participated actively and suggested certain changes and expressed other requirements and needs to be incorporated, while appreciating the overall design. Thorough revision was done onto the designs under the mentorship of the faculty and professionals from the industry.



Figure 10: Hands-on-workshop activity to promote engagement between iDiDe architecture design students with Ajjarkad Anganwadi children. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018).



Figure 11: Stakeholder input was sought through iDiDe teams presentation of design ideas. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018)


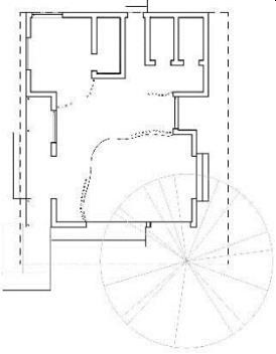

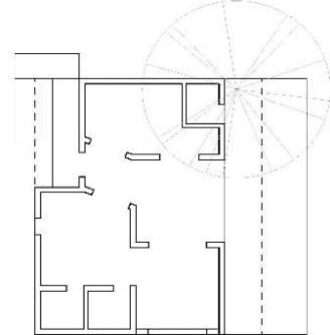
Following a thorough evaluation of the proposals of AWCs by the community, the changes were incorporated in the design and finally seven proposals were exhibited for the public in a formal event at Manipal Academy of Higher Education, involving the University officials, Government officials, students, community stakeholders and beneficiaries, to take them forward for construction aided by the


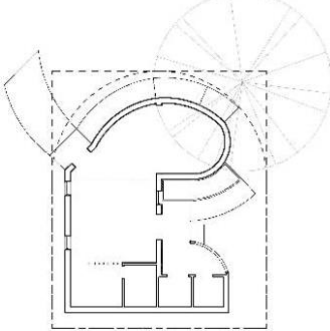

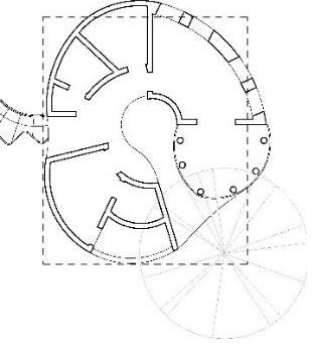

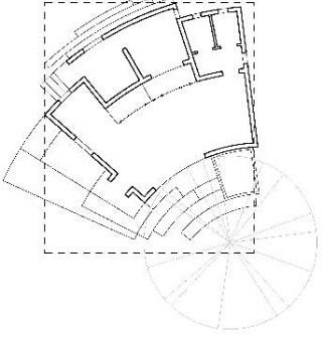
Government. The event received a wide coverage with all the dignitaries appreciating the outcome of the rigorous collaborative studio process. The officials expressed the need and significance of such collaborative studios for social outreach projects and the mutual benefit for academia, industry, Government and community.


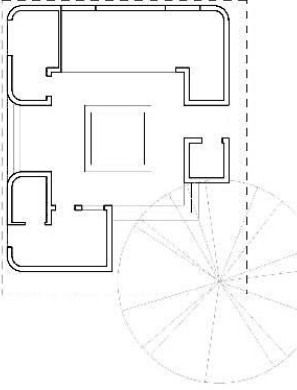

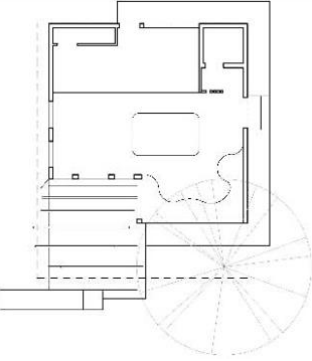
3.2 Evaluation of iDiDe Anganwadi design concepts

All designs restricted themselves to the recommended plot area of 120 sq.m to meet stringent budget constraints. The functional requirements incorporated in the program brief were (1) Play and recreation area (2) Food storage and preparation area (3) Maternal health care facilities and (4) Supporting service amenities. The students' designs adhered to sustainable built structure guidelines. The seven design proposals are summarised in Table 1 below with an explanation of how the concepts were derived.

Table 1: Evaluation of seven iDiDe design concept ideas for Anganwadi in Ajjarkad. Source: iDiDe Deakin University, Manipal Academy of Higher Education and International Islamic University Malaysia (2018) reproduced in Sukanya Mishra, original thesis supervised by Ang (2018) in completion of Master of Architecture degree, Deakin University

Design Proposal 3D View	Plan View (Not to scale)	Concept
<p>Design 1: “Chinnara Mane”</p> 		<p>The concept was inspired by a guiding principle of comfort and security of home with the use of local materials. The roof profile adopted vernacular style and was inspired from the leafy canopy of the existing tree.</p>
<p>Design 2: “Abhivrd’dh”</p> 		<p>The design responded to the core behavior and climate. Patterns. Subsequent spatial configurations, roof profiling, are based on this core concept where the roof acted as a water harvesting strategy to collect and store water for the needs of the centre.</p>

<p>Design 3: “Seridamane”</p> 		<p>The design concept was driven by the functionality of spaces where the children’s area reflected a more playful shape and introduced a fluidity in the space through organic shapes to minimize unsafe sharp angular building corners.</p>
<p>Design 4: “Kuti”</p> 		<p>A form that stood proud and offered uniqueness was the main inspiration for the design. A child’s fingerprint inspired the overall form and layout and allowed the building spaces to form a natural curvilinear shape and framed indoor, semi-open and open spaces within.</p>
<p>Design 5: “Trikona”</p> 		<p>The design takes the symbolism of the existing tree on the site, and centred the building around it. The word “Trikona” meaning triangle, refers to Growth, Nourishment and Knowledge. Three points of the building touch the site boundary encouraging connectivity with the adjacent existing school buildings.</p>

<p>Design 6: “Khulaapan”</p> 		<p>The concept of the design offered segregation of dedicated function driven spaces through transition, and focus on visual connectivity to strengthen and promote the children’s engagement with the outside spaces. The tiled roof design unified the segregation of spaces and created in between circulation /corridor spaces that offered informal play and learning spaces.</p>
<p>Design: “Sahasa”</p> 		<p>The design focusses upon the essential concepts for a sustainable Anganwadi Centre which were Safety, Fit for Purpose, Functionality, Aesthetics, Accessibility, Sustainability. The design integrated holistic elements of children’s development throughout the building featuring colourful and child friendly architecture experience through play and adventure.</p>

4. Findings and Discussion

In this paper, it is proposed that understanding of meanings about participation is critical to design, particularly in regard to cross-cultural design. Societies and groups based on other value systems hypothesize

“participation” differently, and this understanding directly affects the intercultural design process (Winschiers-Theophilus, 2012). In the iDiDe Ajjarkad Anganwadi project, the cultural aspects of the design were created by understanding the needs of the stakeholders, i.e. rural children, parents, teachers, community physicians and the centre management. The integrated patterns of human behaviour as users were explored by being in close interaction and direct engagement with the community. The design proposals produced by teams of architecture student offered creative, sensitive, situation specific, and contextually defined synergies of the proposed design solutions with its environment. The concepts derived by the seven design proposals demonstrated synthesis of architectural design, the pedagogy and cultural attributes that aided the formulation of architectural design parameters for the proposed Anganwadi centre. The evaluation performed offered analysis of how the designs responded to the community needs and how they synthesised the design brief throughout the collaborative and participatory methods.

This paper has been dedicated to elaborate on the design methodology adopted in the iDiDe collaborative design programme, rather than the design outcome, as it was more important to assess the approach in meeting the community needs and feedback received from the stakeholders throughout the process as the first paper that reported on the research outcomes of iDiDe’s efforts in instigating community centred design. As such, further levels of analysis, which might evaluate design performance criteria are excluded in the scope of this paper, and a future paper will look to expanding upon that. Similarly, this paper has also excluded the learning outcomes of the students.

As previously mentioned, very little formal research has been done on construction and design of Anganwadi Centres and the authors will put forward that this is the first research study on this topic. In that light, it became very important for this paper to highlight and raise awareness of the potential scale of impact Anganwadis have upon India, and that a community participatory approach to the process community stakeholders have opportunity to provide input into the outcomes created better engagement amongst the communities. The intervention of universities who entered the scene with a primary educational agenda in providing learning experience for architecture students have also proven to be worthwhile with the seven designs produced being “out of the box” from previous Anganwadi buildings which can be said to lack inspiration and responsive to children’s learning needs and climatic conditions. In

the context of University research, the authors have concluded that academic led research is fundamental to sustainable development and to progress as new method in social architecture research. The field of “sustainability and higher education” (SHE) is a late comer to the research field. The Anganwadi project learning engagement outcomes which included community sustainability, designing in the Indian context, collaboration across cultures and integrated design have merely been summarised briefly here. Future papers are planned to share this research.

5. Conclusion

This paper’s most valuable contribution to the field of knowledge in relation to Anganwadi and designs for children is in the original content created and collected on ground through the iDiDe programme and from the lived experiences of the authors. As mentioned earlier, there are very little peer-reviewed research publications available to inform this topic and most of the available sources of knowledge are informal or published in media or through private organisation websites. Further, design research, especially that which regards participation in design, is being conducted by other experts such as psychologists, sociologists and anthropologists, who are more concerned with the effects and influence of design rather than its forms. Through co-Design participatory methods, the design process was shaped through community engagement and the outcomes thus satisfied the stakeholders as fit for purpose. Sanoff, H (2008), a seminal source of reference for this research study stated that, “*experiences in participation processes show that the main source of user satisfaction is not the degree to which a person’s needs have been met, but the feeling of having influenced the decisions*”. Hence, the re-emergence of the epitome of a participatory democracy at the national level is effective, only if people have been prepared for participation at the local level, such as the workplace and community; as it is at this level that people learn self-governance and perhaps self-reliance.

To conclude this educational paper, the reflections on the iDiDe Anganwadi design method are offered below:

An intensive community engagement through the iDiDe participatory approach in this context enabled the student architects to include

cultural behaviour such as hygiene, ablutions, storage, gender separation and intangible operational cultures of the community. These cultural frameworks were shaped by understanding the needs of the stakeholders which result in the formation of unique spaces, forms, colours, textures, tectonic styles, material choices and the desired environment in the Anganwadis. (Co-Author and iDiDe Academic Norwina Mohd Nawawi, 2018).

“Such an experience with the stakeholders or the co-design approach reframes the minds of the student designers to plan with a sense of purpose that touches the heart and soul of the real people with real needs.” (Co-Author and iDiDe Academic Nandineni, 2018).

References

1. Abdul Latip, N.S., Mohd Ariffin, N.A & Ang, S. (2013) Cultural Emersion 2013-Intercultural Dialogue Through Design, Department of Architecture, Kulliyah of Architecture and Environmental Design, International Islamic University Malaysia. (unpublished).
2. Ang, S. and Sharman, M. (2018) Anganwadi Ajjarkad Udupi-iDiDe India 2018-Exhibition Catalogue.
3. Ang S., Karunasena G., Palliyaguru R. (2018) Intercultural Dialogue Through Design (iDiDe) as a Platform for Built Environment Education for Sustainability in Rural Developing Contexts: Building Ampara, Sri Lanka. In: Leal Filho W., Rogers J., Iyer-Raniga U. (eds) Sustainable Development Research in the Asia-Pacific Region. World Sustainability Series. Springer, Cham
4. Ang, S. (2017) Intercultural dialogue through design (iDiDe): A model of intercultural collaboration and student engagement. In R. Tucker (Ed.), Collaboration and student engagement in design education (Vol. 11, pp. 230–256). IGI Global.
5. Ang, S. “iDiDe Overview”, Issue date: 5 November 2017 SRR 367 and SRR 767 Built Environment Study Tour 2017, Deakin University Unit Guides (published as part of course work content)
6. Ang, S. (2018) January. Collaboration and Dialogue, Exhibition Catalogue, Intercultural Dialogue through Design, Anganwadi, Ajjarkad, Udupi, Manipal University Press, India.
7. Anthony, K. (2002) Designing for Diversity: Implications for Architectural Education in the Twenty-first Century, *Journal of Architectural Education*, 55:4, 257-267, DOI: 10.1162/104648802753657969
8. Berardi, U. (2013). Clarifying the new interpretations of the concept of sustainable building. *Sustainable Cities and Society*, 8, 72-78.

9. Broome, J., Should We Value Population?, *The Journal of Political Philosophy*: Volume 13, Number 4, 2005, pp. 399–413
10. Brundtland Report (1987) Report of the World Commission on Environment and Development. Our Common Future. UN Documents: Gathering a Body of Global Agreements has been compiled by the NGO Committee on Education of the Conference of NGOs from United Nations web sites with the invaluable help of information & communications technology
11. Chiu. M.L. (2002) March. An organizational view of design communication in design collaboration, *Design Studies*, Volume 23, Issue 2, March 2002, Pages 187-210, Elsevier Science Ltd.
12. Datta, S, Boratne, A, Cherian, J, Joice, Y & Vignesh, J. (2010) 'Performance of Anganwadi centres in urban and rural area: a facility survey in coastal South India', *Indian Journal of Maternal and Child Health*, vol. 12, no. 4, p. 9.
13. Keiichi Satō (Ed) *Design Integrations: Research and Collaboration*, intellect Books, 2009.
14. India OGD, (2018) Anganwadi Centres, Government of India, retrieved 02 June 2018, <https://data.gov.in/dataset-group-name/anganwadi-centers>
15. Integrated Child Development Services, MoWaCD, Government of India, (2009), Integrated Child Development Services (ICDS) Scheme, Ministry of Women and Child Development, retrieved 29 June, 2018, <http://www.icsd-wcd.nic.in/icsd.aspx>
16. Lawson, L. (2005) January. Dialogue through Design: The East St. Louis Neighbourhood Design Workshop and South End Neighbourhood Plan, *Landscape Journal*, vol. 24 no. 2 157-171, lj.upress.org
17. Lee, Y. (2008) Design participation tactics: the challenges and new roles for designers in the co-design process. *Co-design*, 4(1), pp.31-50.
18. Malik, A, Bhilwar, M, Rustagi, N & Taneja, DK (2015) 'An assessment of facilities and services at Anganwadi centres under the Integrated Child Development Service scheme in Northeast District of Delhi, India', *International Journal for Quality in Health Care*, vol. 27, no. 3, pp. 201-6.
19. Mohd Nawawi, N. (2018) January. Cultural Interpretations in Design, Exhibition Catalogue, Intercultural Dialogue through Design, Anganwadi, Ajjarkad, Udupi, Manipal University Press, India.
20. Nandineni R., 2018, January. Contribution to Social Architecture, Exhibition Catalogue, Intercultural Dialogue through Design, Anganwadi, Ajjarkad, Udupi, Manipal University Press, India.
21. Orpett Long, S., Akande, Y.S., Purdy, R.W. and Nakano, K., 2010. Deepening learning and inspiring rigor: Bridging academic and experiential learning using a host country approach to study tour. *Journal of Studies in International Education*, 14(1), pp.89-111.
22. Poggenpohl, S.H., Practicing Collaborative Action in Design in Sharon Helmer Poggenpohl, Sanoff, H., 'Multiple Views of Participatory Design' in *Archnet-IJAR*, International Journal of Architectural Research - Volume 2 - Issue 1 - March 2008, pp 57-69, retrieved at <http://www.archnet-ijar.net/index.php/IJAR/article/viewFile/177/241>

23. Sanoff, H., 'Origin of Community Design' in Planner's Network, January 2, 2006 retrieved at <https://www.plannersnetwork.org/2006/01/origins-of-community-design/>
24. The Anganwadi Project 2013, Our Approach, The Anganwadi Project Incorporated, retrieved 04 July 2018, <https://www.anganwadiproject.com/projects/approach/>
25. Winschiers-Theophilus, H., Bidwell, N.J. and Blake, E., 2012. Community consensus: Design beyond participation. *Design Issues*, 28(3), pp.89-100