

Social Innovation through Design. A Model for Design Education

Abstract: Social innovation involves the convergence of human involvement and contemporary society, positioning design practice as a co-creative trajectory towards implementing significant and meaningful change. The social innovation concept has expanded the scope of design's role in society by means of fostering transparency and community involvement to produce contributions extending beyond the individual designer to impact culture and society. This humanistic perspective leads to questions of how design education should adapt and change to enhance the implications of socially conscious design and the designer's position as social leader. Through a discussion of participatory and co-creative design, this paper attempts to identify how design education can respond to social needs through innovative solutions for social change. This paper reviews the experiential processes of design activities through a series of case-studies to evaluate the impact of introducing the social innovation agenda as part of the design curriculum through collaborative and collective projects.

Theme: Innovation.

Keywords: Design Education, Social Innovation, Co-Creation, Social Change, Community Engagement

1. Introduction

Designers are uniquely positioned to address the challenges and problems affecting society and culture with human-centred, emphatic approaches for the production of models, services and solutions. According to Kong (2000), the making of cultural policy should move beyond the conception of government process and consultancy towards a focus on power, forces of oppression, and the role of everyday places and landscapes in the formation of culture and identity. These implications are reflected in the role that designers assume to intervene and facilitate creativity and connectivity in community life through the production of shared cultural and social activities. Designers are no longer proponents of products and for passive groups of users but catalyses for larger networks and systems to effect change in culture and society (Morelli, 2007).

Singapore has recently allocated and developed creative spaces for environmental, cultural and social sustainability. The concept of social sustainability suggests that the social dimension of cultural activities allow for increased social inclusion and the forming of community (Kong, 2009). It is against this cultural landscape that social activities forge and cultivate communal involvement, interaction and connection. Designing and integrating socially inclusive spaces and programmes provide sites for social life, fostering shared identity and belonging among the human and non-human actors of local communities. This paper discusses how design contextualises and frames the activities of social innovation projects to contribute to urban place-making and cultural production, informing a new model for socially conscious design education.

2. Design and social innovation

Design functions as a social activity with the way in which many of the products and services proposed for the market fulfil and satisfy human needs (Margolin & Margolin, 2002). As contemporary societies evolve and change, so do the range of existing ways of thinking and doing (Manzini, 2014). The sustainability of cultures and societies relies on designing new processes for achieving socially recognised goals through cooperation and creativity. Central to the effective implementation of social innovation, citizen engagement allows for the inclusion of diverse actors in the processes of developing and sustaining solutions for social issues (Simon & Davies, 2013). Socially responsible design, therefore, requires a shift in perspective for new opportunities to emerge through innovative processes that allow social actors, in varying degrees of social participation, become co-producers and co-designers of the intended social intervention (Morelli, 2007).

Designing for social problems requires shared interests between designers and citizens to improve the social quality and development of communities of practice. Social issues are often characterised by a sense of urgency and complexity, requiring new solutions based on social interactions between people rather than machines (Morelli, 2007). The platforms that designers organise generate planned interactions that are structured around the competencies and roles of various actors. Manzini (2014) outlines the bottom-up approach to design-led processes for social innovation, defining designers as social actors operating *with* and *for* communities.

Table 1. Social Innovation and Design within Creative Communities (Adapted from Manzini, 2014)

BOTTOM-UP APPROACHES TO SOCIAL INNOVATION AND DESIGN		
ROLE	MODE	SKILLS
Design WITH Communities	Participating as peers through collaboration and creative community building	<ul style="list-style-type: none"> - Collaboration among diverse social actors - Participation in the construction of shared visions/scenarios - Combining existing products and services to support the creative community members
Design FOR Communities	Intervening the contexts of collaborative services to improve and develop replicable solutions	<ul style="list-style-type: none"> - Conceptualise and develop solutions for specific collaborative services and other enabling artifacts

Designing *with* and *for* communities require designers to clearly take the stance of *participating with* or *intervening for* the immediate social issue or community of interest. The positioning of the design's role allows for clear methodologies to take shape, as presented in the following example. Margolin and Margolin's (2002) model for social design draws from the collaborative, six-step problem-solving process of social workers to meet the needs of client systems through design interventions.

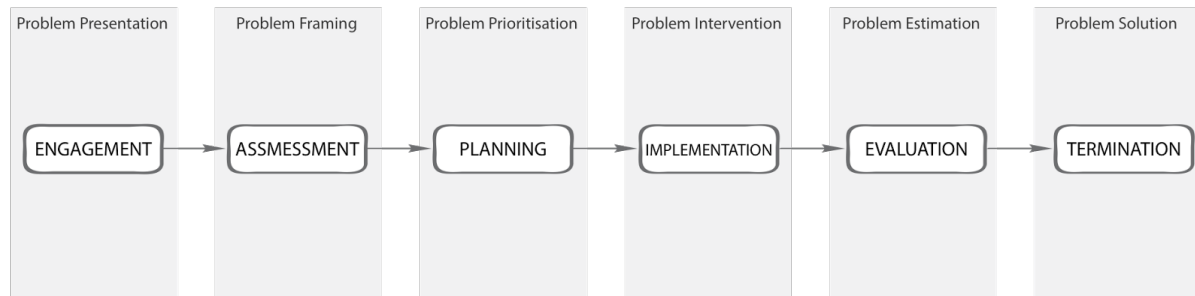


Figure 1. Social Design Process (Adapted from Margolin & Margolin, 2002)

The six-step process of engagement, assessment, planning, implementation, evaluation, and termination can be further explicated as an holistic problem-solving process for socially conscious design. By first identifying the community or group of social actors, the problem can be identified and the constraints of shared activities and potential design solutions can be collectively determined. The procedural steps of this methodology will be further explored and discussed in the next series of case-study examples.

3. Case-studies

Social innovation involves a process of change that aims to achieve socially-recognised goals in new ways (Manzini, 2014), evidenced by the concept of integrated citizenry in Singapore's initial proposals for the development of public housing. The migration of low-income households from *kampung* (villages) to public housing estates was driven by postwar, political motivations emerging from a need for societal change in the imagined nation-state of Singapore (Loh, 2009). Public housing estates were designed to improve living environments with provisions of open spaces, communal gardens and recreational facilities. The following two case-studies present how emerging issues and needs were identified in public housing estates to illustrate the key role of design to influence and impact local communities.

3.2 Case-Study I - "Singapore's Melting Pot of Curry: A Study in Developing Participatory Design-led Social Integration Initiative" (Chua Jia Xiang, LASALLE College of the Arts, 2014)

This project was developed in response to news reports indicating that a significant number of Singaporeans were discontent due to the mass influx of immigrants who were taking over blue-collar jobs and overcrowding the public transport systems, thus resulting in negative tensions between Singaporeans and the growing community of migrant workers. Yahoo Singapore conducted a poll in May of 2012 with migrant workers, indicating that Singaporeans were increasingly becoming xenophobic (Teo, 2012). Further tensions were noted with the discontent of Singaporeans in response to the breakdown of the transportation infrastructure due to the inability to support the sudden increase of usage (Tan, 2012) and the overcrowding issues found in public housing estates (Toh, 2013). Against this backdrop of social issues, organisations such as Humanitarian Organisation

for Migration Economics (HOME) and National Youth Council began experimenting with participatory design approaches to address challenges to build and promote social cohesion.

The growing tension between locals and migrants posed new social challenges that developed into a growing concern for Singapore. Despite the launch of awareness initiatives by the government, the lacking sense of community and empathy between the two groups complicated the integration process. This research proposed to empower designers to seek new processes to enable active participation with the two stakeholder groups through social cohesion initiatives. Aided by the designer as researcher, the project experimented with different participatory design tools and techniques within an inclusive process to build more ownership over the collaborative efforts and outcomes.

The research aim was to consider possible guidelines for the employment of design-led social initiatives, such as participatory design, to better address the issues concerning social cohesion. The following methodology maps how the project was initiated, developed and carried out.

Table 2. Research Methodology for Participatory Design

SINGAPORE'S MELTING POT OF CURRY: A Study in Developing Participatory Design-led Social Integration Initiative	
STAGE	INSIGHTS
STAGE A Understanding the Cause of Social Separation and Lack of Interaction Opportunity	<p><i>Questionnaires were used to gather an overall sentiment from the two stakeholder groups</i></p> <p><i>Interviews were conducted to gain an in-depth understanding from design professionals and social activists on the challenges, opportunities and feasible techniques arising from the use of participatory design in Singapore</i></p>
STAGE B The Need in Developing a More Accepting Society of Foreign Migrants and their Cultures	<p><i>Singapore has always focused on the national, multiracial, societal model of a community consisting of Chinese, Malay and Indian communities (Vasu, 2012).. This model of Chinese, Malay, Indian and Other (CMIO) has been implemented across all national policies from public housing planning to education. In recent years, this model has begun to face problems with the surge of new migrants from relatively different cultures.</i></p> <p><i>With the ever-increasing new migrants, many were forced to fit into the "Other" model. Vasu (2012) described that the model subconsciously created "us" versus a very different "them", heightening the difficulties to bond.</i></p>
STAGE C The Guideline in Developing Participatory Design-led Social Integration in Singapore	<p><i>In an interview with K.K. Ong, he mentioned that designers should "actively involve all stakeholders in the design process in order to help ensure that the solution meets their needs and is usable."</i></p> <p><i>By supporting people-centric processes, the proposed solutions are given a better chance for success as they address challenges from all relevant perspectives for all involved stakeholders.</i></p>

Participatory design was successfully executed by encouraging both locals and migrants to raise awareness of the issues surrounding their communities and cultures. The ‘Vertical Kampong’ app (Figure 2) was created to reflect participatory design approaches from the ground up. Through the app, Singaporean users were able to create or partake in a variety of activities connecting local neighbours to initiate the integration of activities with the migrant community.



Figure 2. The Vertical Kampong Application

Challenges faced by participatory design practitioners concern how to connect participants through localising techniques and tools to maintain participant interest. Building the steps for participatory design approaches allows designers to develop and fine-tune social initiatives that help create empathy and foster relationships. An example of this is found in “Let’s Makan Together”, within the Vertical Kampong App (Figure 3), which integrates social media to encourage community gatherings through the sharing of meals. Another community initiative, “Our Rojak Cookbook” (Figure 3) built

user generated content exchanges to become one of the tools to help foreign residents integrate into the community by connecting users based on food preferences and hometown recipes.



Figure 3. The Vertical Kampong Application (Let's Makan Together & Our Rojak Cookbook)

In interviews with Ms. Mizah Rahman, Ms. Jan Lim and Mr. Adrian Tan, all of whom are key players of participatory design in Singapore, they collectively felt that the issue of local-migrant tensions was too complex to solve immediately with participatory design-led approaches. However, participatory design-led social initiatives could be used as an *"opportunity to creatively engage in an effective dialogue with people."* This is reflected in the Vertical Kampong Application, which initiated conversations between community members.

The Vertical Kampong app was further developed as a design solution that address challenges from relevant perspectives to sustain and increase usage. A 4-step process of participation was integrated within the app:

Table 3. Participatory Design Process

VERTICAL KAMPONG 4-STEP PROCESS OF PARTICIPATION			
WELCOME	INTEGRATION	SHARING	BONDING
Users are introduced to the app and able to explore, read and sign up to join the community.	Allows Singaporean users to take initiative in leading the community and rise up through a ranking system within the app to become a “block chief” (Figure 5), gaining the respect of fellow neighbours. The block chief will create activities and events to encourage participation from old and new residents.	Content from activities are posted for everyone, thus encouraging more residents to partake or join future events within the thriving community.	Occurs when everyone is actively using the app and the ensuing recommendations are made to family and friends.



Figure 4. The Vertical Kampong Application (Kampong Leader)

When evaluating the execution and implementation of this project, a key factor for success was found in the passion-driven, sustainable initiatives that served as incentives for participants. Mr Liam Yeo, a strategic planner, voiced that *“participants know what they need better [than] having a designer or planner to dictate it...participatory design has to be able to create a continuous ecosystem for an initiative to run by participants for participants.”*

3.2 Case-Study II - “Communicating with 21st Century Spaces: Enhancing the Communicating between Void Decks and Users through Technology” (Muhammad Heider Bin Ismail, LASALLE College of the Arts, 2015)

This project involved the examination of publicly shared spaces and community engagement in Singapore’s public housing estates. Urban planners, during the early years of Singapore’s independence, conducted a massive relocation of the population from low-rise estates into high-rise apartments. This has resulted in the creation of high-density, residential areas with over 80% of the population residing in public housing (Lee Kuan Yew School of Public Policy, 2014). Introduced in the 1960s, public housing estates established by Singapore’s Housing Board Development (HDB) have become a symbolic form of Singapore’s unique identity. Public housing estates have inadvertently promoted collectivism and racial harmony for multiracial communities through use of public spaces and marketplaces, encouraging the organisation of shared activities and community engagement.

The concept of a *void deck* is a vacant communal space located on the ground floor of all public housing estates. This communal space is used on a daily basis as part of the commuting route from the private home to the domain of public spaces within the neighbourhood. The main layout of the void deck is typically vacant and replicates the play areas found in the early villages of Singapore, known as ‘kampongs’. Although void deck culture is deemed a national past time, as an integrated space for residents to congregate, it is currently facing the threat of decline due to various social issues.

This research examined how the void decks began losing significance as communal, activity spaces and were increasing in use as transitional spaces. The project was developed to enhance social interaction by repurposing the void decks through technology. Primary research was gathered through intensive interview sessions with various groups and communities within the public housing estates, including the documentation of two families to better understand their experiences within and around the neighbourhood. Interviews were also conducted with architects, urban planners and government bodies to provide further information as well as awareness around the issue of empty void decks. Additionally, interactive designers were interviewed to discuss whether co-creative approaches can effectively provide an appropriate response or solution to the problem.

Field studies were conducted in two locations: (1) Jalan Kukoh Estate, a mature residential area with a high proportion of low income families, and (2) Compassvale Estate, a residential area with a high proportion of middle income families.

FIELD STUDY 001_ UNDERSTANDING THE VOID DECK

First field study was conducted around the vicinity of my area. Site chosen was specifically around 400 metres of my neighbourhood. This site was chosen as it was accessible and also considered to be one of Singapore's matured estates.



The primary area of the void deck. Plenty of sitting areas for people to commune and come together. Serves as a place where activities that does not require much movement.



A defunct provision store located at the void deck. Stores tend to lose money due to high rent and shops found in centralized areas tend to sell similar goods at a lower price.



Bicycle parking lots are also available at void decks. As these objects tend to be bulky, residents are given spaces to park their bicycles at the certain parts of the void deck.



Kindergartens are also erected at void decks. These minor educational institutions serve as places where parents would use to 'babysit' their children while they are away at work. These kindergartens also serve as spaces for children to socialize.



Some void decks had open spaces that had access to natural light. These types of void decks tend to have plants grown by town councils around the edges of the premises.



Access to natural light from these void decks. Though these spaces had access, they had limited amounts of it due to the height and architectural layout of the hdb apartment.



Another view from the same void deck. Tiles were placed instead of pure cement. These places could be hazardous during wet weather.



Large area of empty spaces found at this void deck. Activities rarely take place at this void deck.



Signage disallowing certain activities at void decks. This might hamper the will of residents to partake in activities at these spaces. (possible)



Most old void decks are consistently refitted with new utilities. Maintenance is done by the town council to ensure these spaces are functional.

Figure 5. Architectural layout of void decks

Research highlighted that void decks act as both a transitional space and a location for holding official events. However, void decks are slowly disappearing in new estate designs. In an interview with Mr Johnny Lim, a Grassroots Committee Leader from Sengkang East GRC, he raised the importance of preserving Singapore's kampong spirit and his own awareness of the decline in void deck culture:

"We don't see people doing things at the void deck nowadays. Even official events are moved to the multi-purpose hall. The void decks are too squeeze to do anything and they only serve as walkways to get from one point to another. I guess [that's] why people don't talk that much anymore."

Visual observations were conducted to better understand the users of technology, indicating that Jalan Kukoh Estate had a significantly higher volume of public space activity than Compassvale. To better understand this discrepancy, a Jalan Kukoh resident, Jamal Salleh, was interviewed:

"Most of us have no money so we don't really buy electronic gadgets. I will usually let my children play around the neighbourhood because it is safe. As much as this place is a poor estate, it is still safe for my children because this place is like a kampong. We watch out for one another over here. In Malay, they call it, 'bergotong-royong.'"

In contrast, a resident in Compassvale provided insight on his children and why they rarely spend time in void decks due to his preference to integrate technology as tools for engagement. Various technological devices have allowed him to effectively interact with his children and he highlighted the benefits of how such devices can be used to 'distract' them when busy.

The following stages provide the methodology for setting the key parameters of the design project.

Table 4. Research Methodology for Co-Creation in Design

COMMUNICATION WITH 21st CENTURY SPACES: Enhancing the Communication between Void Decks and users through Technology	
STAGE	INSIGHTS
STAGE A Observing the Differences between Void Decks and other Forms of Communal Spaces	<i>Unlike playgrounds and street soccer courts, 'void decks' are a unique form of communal space laid vacant so that countless forms of official and unofficial activities can take place.</i> <i>The empty space allows neighbours to conduct unofficial activities that could foster social bonding, helping to reduce communal divides and enhance racial cohesion as part of creating a sense of identity for Singaporeans.</i>
STAGE B Find out how Technology can Benefit Families Living in the Selected Estates	<i>Digitag was developed, integrating intuitive technology to engage residents in an interactive kampong experience.</i>
STAGE C Importance of Intuitive Design and Co-Creation as a Form of Better Interaction amongst Communal Spaces and Users	<i>Communal spaces, as a form of place-making, allow socialisation between users.</i> <i>The possibilities of assisted interactions through technology were explored within the context of the void decks, as intuitive environments become possible with the aid of technology.</i>

Spaces can become interactive as users learn to connect and communicate with the surrounding environment. Research uncovered that emerging technologies have raised the ability to enhance environments, making them function through co-creation. Technology can encourage forms of co-creation between neighbours and spaces to establish a more dynamic concept and use for void decks. The implications for design were to use technology to enhance the interaction between the void deck space and users, normalising the presence of technological devices to address the decline of physical activities.



Figure 6. Digitag

Digitag was created as an idea centred around utilising touch sensors, inviting users to spray graffiti on the walls of the void deck. Users were able to shape individual actions within the system, leaving a unique trace to form interactions to transform space into a sense of place. The project revealed how a designer can create possibilities for novel interactions and activities, inspired by being sensitive to co-creation as a collective process.

An interview with interaction artist, Pabo Valbuena, provided the following insight:

The most important issue is how the space is designed, how it is circulated, which architectural elements are present that help to experience the space in a certain way, etc...I am sure there are interesting ways to use technology to improve spaces that already allow good communal communication, I don't think though that technology can balance a space that already clutters that communication.

Although void decks are gradually decreasing in presence and its role as an important social space will continue to decline, the current technology available to endorse co-creation has the ability to reform and repurpose void decks through increased interactions between residents. Technology can be utilised as a mechanism to build social innovations by empowering users within constrained living environments. The research on void decks showed that users positively responded to the implementation of technology-driven activities and interventions.

3.3 Discussion

The two case-studies address the dynamic social issues within the public housing estates of Singapore, emphasising the role of design and designers to intervene and provide solutions for more inclusive communities. Socially responsible design requires the designer, as researcher, to identify with and understand the underlying social problems before embarking on a process for change. Taking from Manzini's (2014) bottom-up approaches for social innovation and design, the shared motivations between the two case-studies are further discussed.

Case-Study I has revealed issues of social cohesion that are, fundamentally, issues of social inaction. Through the grassroots-level interactions and engagement, the study uncovered layers of issues that kept this inaction unaddressed. There is a need for solutions that allow for cultural exchange to develop shared motivations and a common identity that reflects the social realities between locals and migrants. With respect to deploying participatory design approaches for social innovation, the success and effectiveness of the approach requires platforms to be proactively inclusive and accessible to all groups. The effectiveness of the project is seen in the ability to help social initiatives grow intuitively through self-initiated community bonding and content sharing.

Table 5. Stages of Participatory Design

INSIGHTS ON PARTICIPATORY DESIGN	
STAGE	DESCRIPTION
Identify Challenges of Developing Participatory Design-led Social Initiatives	<p>Regardless of how promising participatory design can be, designers need an awareness of the challenges for developing such design-led approaches in Singapore to prevent the failure of social integration initiatives.</p> <p>It is important to identify and discover sustainable approaches for social initiatives to encourage successful participation from stakeholders.</p>
Sustainability of Participatory Design-led Social Innovation	<p>In order to retain stakeholders for active participation in socially-led integration activities, designers must consider the growth of social technologies that encourage participation in real-time to allow the social initiatives to effectively co-create.</p> <p>Designers also need to explore different ways to retain the interests of the stakeholders and ensure the growth of initiatives.</p>
Creating Social Integration Initiatives	<p>Many social issues involve layers of complexity that are difficult to solve with participatory design-led approaches.</p> <p>Design is, however, able to strategically implement creative approaches to initiate awareness and dialogues between stakeholders.</p>

According to Sanders and Stappers (2008), the concept of co-creation developed from the convergence of user-centred and participatory design approaches. Co-creation involves the collective creativity of users and moves beyond participation to develop into a design language encouraging the explorations, expressions and experiences of everyday people (Sanders, 2005). One important factor uncovered by Case-Study II was identifying the role of technology to strengthen co-creation among residents. The research advocated for more emphasis on technology to endorse socialising activities to reintroduce the original purposes of the void decks as a shared, communal space.

Table 6. Stages of Co-Creation in Design

INSIGHTS ON CO-CREATION	
STAGE	DESCRIPTION
Conceptualisation of the Co-Creative Dimensions	<p>Designers need to fully understand the circumstances surrounding the main problem and identify the potential participants.</p> <p>Initial research through interviews, surveys and observational studies allow the designer to contextualise the social issue.</p>

Development and Refinement of the Co-Creative Framework	<p><i>Designers need to fully brief and prepare participants in order for active engagement and interactions to take place.</i></p> <p><i>An examination of best practises and successful case-studies is essential to the successful implementation of a co-creative process.</i></p>
Application of Co-Creative Activity	<p><i>Participants and stakeholders need to understand the underlying motivations and values of the co-creative activity in order for the efforts to be effectively realised.</i></p> <p><i>Design is strategically positioned to facilitate co-creation by ensuring that all involved actors are able to engage and contribute to build a stronger sense of community and membership.</i></p>

The two case-studies reveal a common theme in the re-appropriation of space through creative place-making. The sense of place produces conceptions of history, nostalgia and heritage, all of which are embodied through individual interpretations, social constructions and political uses (Yeoh & Kong, 1996). Places are representative sites for the symbolic expression of individual and collective sentiments, wherein design is emphatically positioned to reintroduce the significance of deepening human interactions through use of technology in participatory design and co-creation.

4. Implications for design education

There has recently been a growing awareness and need for more humanistic and ethical approaches to design practise. Design has developed its own strategies to influence and affect user behaviour in consideration of the intended interactions and social implications (Tromp, *et al.*, 2011). Designers are not mere facilitators of socially conscious design activities but are adept at eliciting the necessary emotions to induce behavioural responses and effectively influence social interventions.

The call for building a socially conscious design curriculum stems from the case-studies of student-led, socially inclusive design research and is further supported by design literature on existing social innovation models. Design students are increasingly aware of the social issues requiring empathetic and ethical perspectives to produce socially responsible and sustainable outcomes. The two case-studies addressed how design can strategically enable citizen engagement by understanding community needs and co-developing solutions to address the issues. According to Simon and Davies (2013), citizen engagement is critical to promoting social inclusion and creative innovations. Designers can prescribe the necessary methods, processes and activities to mediate and facilitate citizen engagement through design interventions (Manzini, 2014).

Referenced against the Social Design Process (Figure 1), the insights and themes arising from the two case-studied were summarised and explicated to produce a model for social innovation (Figure 7). According to Margolin and Margolin (2002), social design requires students to relate directly to vulnerable and marginalised populations to understand the impending social needs. This requires interdisciplinary collaborations between groups of students, policy makers, professionals and stakeholders to effectively advance the socially responsible design agenda. The following process model outlines a general framework for how social design projects can be introduced in the undergraduate design curriculum.

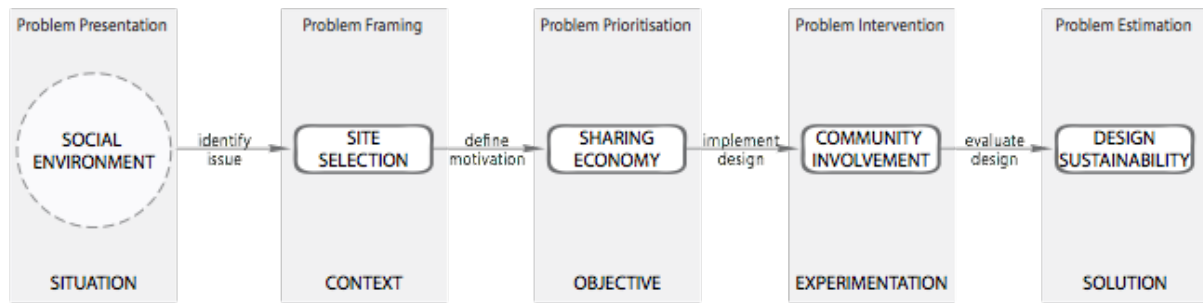


Figure 7. Process Model for Social Innovation in Design Education

Developing a social innovation model for design education requires consideration for outlining a manageable project scope, setting appropriate objectives, introducing feasible design interventions and defining clear measures for solution effectiveness. The social design process outlined by Margolin and Margolin (2002) included a final sixth step, *termination*, during which point the project is finalised and accepted as a successful case. This step is eliminated in the above model, as social design cannot be planned according to its relevance or lifecycle but should be able to produce self-sustaining solutions once adopted and adapted by the community of users.

As seen from the two case-study examples, there is growing sentiment in Singapore to position socially conscious designers and utilise strategically inclusive design processes to address many of the disregarded social inequalities and issues. This requires social design practise and education to recognise the importance of place and creative place-making by integrating histories, nostalgic emotions and cultural heritages. This paper posits that human interactions allowing for individual and collective interpretations and constructions are necessary to the successful implementation of social design.

5. Conclusion

Cultural activities, through increased social inclusion, positively respond to the challenges of achieving and maintaining social sustainability in Singapore. This paper has addressed how social life in residential communities is declining as the urban landscape continues to develop, positioning design as a significant actor and contributor to urban place-making through cultural production. The two case-studies illustrate how design students were able to heighten their awareness of social issues and empathise with the stakeholders to undertake research involving real issues, people, collaborations, interactions and solutions. This has led to the development of a process model for social innovation in design education, which maps a methodology for how future design students can feasibly frame, understand and implement social design initiatives.

This paper has addressed gaps in social design models for education that are culture-specific to the region of Singapore and Southeast Asia. Future studies can broaden the scope of examples and on-going endeavours to better understand how design can further collaborate with non-governmental organisations (NGOs) and various social research groups to build a more comprehensive framework informing socially responsible and sustainable design processes.

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