

# Experiential Learning through Community Co-design in Interior Design Pedagogy

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## Abstract

The profit-driven tendency of interior design trends and styles today has developed in line with the decrease of social awareness in design. The majority of interior design students also decide to pursue interior design education for its marketable and profitable purposes rather than seeing interior design as a field of opportunity to contribute to the social welfare of their communities. Hence, the objective of this research is to implement community service through co-design in interior design pedagogy. The article describes the learning and design methods used based on human-centred design approaches of co-design and analyses the resulting benefits from this approach. Findings reveal that the process of collective creativity and collaborative development with the community enables a direct experience of learning and fosters a deeper connection and understanding of users. They also promote novel multidisciplinary design innovations, accommodate the community's potentials in the society and stimulate a reflexive impact, allowing students to reflect on their future role as interior designers in bringing positive changes to their community against the profit-driven tendency of contemporary designers today.

## Keywords

co-design, community design, human-centred design, interior design pedagogy, participatory design

## Introduction

Interior design is a discipline that is very close to the complexities and basic needs of human life. It is a discipline that requires deep empathetic studies and human-centred approaches in the design process in order to be able to devise beneficial solutions that can improve human life and the built environment. The learning and

practice of interior design intersect with the scope of other disciplines apart from architecture and engineering, such as humanities and social sciences (Cys 2009). The multidisciplinary nature of interior design, that requires subsequent connections to other fields of knowledge, means that interior design practitioners are aware of many disciplines of knowledge and therefore would ideally have the multi-perceptive ability to solve the complexities of human life in connection to their living environment. Unfortunately, the interpretation and practice of interior design observed today have often been limited to decoration or styling of interior properties (Smith 2004). This tendency usually accommodates the tastes of the upper class rather than the deep social issues and cultural values of daily humble communities or the general society as a whole. Furthermore, only the upper class can afford to hire interior designers to satisfy their personal tastes for high-end living, working and recreational spaces. The majority of interior design students also decide to pursue interior design education for its marketable and profitable purposes rather than seeing interior design as a field of opportunity to practice social work; to contribute to the socio-economical welfare of their communities. Design is, hence, often regarded as a luxury, addressing the desires of specified elite economic groups, and is frequently generated by marketing forces towards these elite users (Kroeker & Singh 2007). Based on this background, the purpose of this research is to implement community service through community co-design in interior design pedagogy, in the studio course Interior Design and Styling 4 (IDS 4), taken by third year students at a university in Indonesia. The article describes the learning and design methods used based on human-centred design approaches of co-design, and analyses the resulting benefits. This research-design project aims to facilitate self-knowledge in designers and raise awareness of the social issues in the context of interior design, rather than compete against external measurements of design trends or styles in profit-driven society.

## Community-based learning versus project brief-driven model

Community design is based on participation that is essentially founded by the assumption that 'good things come from empowered people' (Salama & Wilkinson 2007, 249). Community service-learning provides students with direct personal experiences as well as real interactions with the society they live in, and insights into design and planning of real places (Hou 2007). Most of the interior design studio courses, though taking up real objects and problems as design projects, have followed the project brief-driven model, in which information on user and environment are gathered only at the beginning of the design process, acting merely as pioneer data or background to the problem, while the ensuing design decisions are determined liberally by the student or lecturer's own interpretation of the problem. Much of the design outputs are evaluated solely by student peers and lecturers without any usability tests performed from the perspective of the users. This form of learning maintains a detached relationship with the client and design concepts would tend to go by the tide of popular trends and styles in the market. The design products eventually end as conceptual ideas that could be useful only for the student's portfolio, exhibition objects or entries for design competitions. Rarely is there a reflexive impact, through which students can evaluate the social context of their own designs or whether

their works can truly bring positive changes to society and their living environment.

By cultivating a collaborative relationship with local communities, community-based learning puts forth the cumulative nature of design and planning, and highlights relationship building rather than merely goal accomplishment (Hou 2007). The essence of a good education becomes the experiences fostered, not the objects nor subjects to which the students are exposed. As Salama & Wilkinson (2007, 250) put it, 'The most important purpose of community design and participation is not only good buildings and environments, but good citizens in a society.'

## Co-design: definition and methodology

The term 'co-design' or 'cooperative design' was developed from the concept of participatory design and is frequently used interchangeably. Its methodology has been largely adopted in many fields of practice such as architecture, urban planning, industrial design and service systems. On the other hand, interior design is a relatively young discipline, developed from the profession of interior decorating during the Eclectic period, marked by the mass birth of the nineteenth-century design styles, as well as a result of the increasing complexities of architectural studies (Pile 2005). Consequently, the idea of community and social participatory design is still a developing concept in interior design compared to urban planning and architecture.

Despite its vast interpretations and definitions since its birth in Scandinavia, the term 'co-design' is an attempt to describe a design approach that actively involves other individuals besides designers in the whole design process to create a design that is truly useful. Sanders & Stappers (2008) used the word 'co-design' to indicate an activity of collective creativity. Hence, in the co-design process, diverse experts and intended users along with designers come together in order to cooperate creatively and are all participants of the design process (Steen *et al.* 2011). Instead of designing merely for a particular user, designers allow their potential clients and experts to become a part of the creative process. Spinuzzi (2005) outlined three stages of cooperative or participatory design research, as shown in Table 1.

**TABLE 1** Methodology of cooperative or participatory design

Stage	Methodology
1 Initial exploration of work	<ul style="list-style-type: none"> <li>• Designers familiarise themselves with users and the work environment.</li> <li>• Ethnographic studies on user site involving designers to empathise with users' daily settings, habits and problems.</li> </ul>
2 Discovery process	<ul style="list-style-type: none"> <li>• Active interaction between designer–user–expert.</li> <li>• Collaborative setting-up of goals, ideas and design concepts.</li> </ul>
3 Prototyping	<ul style="list-style-type: none"> <li>• Collaborative and iterative shaping of artefacts using various prototypes.</li> <li>• Results are discussed in forms that users can understand and share.</li> </ul>

Steen *et al.* (2011) identified three benefits of co-design for service design projects, which could also be expected in this research. The first benefit is for the service design task itself, such as developing the creative design processes, establishing service definitions and project organisation. The second benefit is for the users, such as developing a compatible system between the service offered and the user needs, improved service experience and user contentment. Finally, the third benefit is for the community or organisation involved, that it could improve cooperation between experts from different disciplines and stimulate design innovations.

## The design process and methodology proposed

In the Interior Design and Styling 4 (IDS 4) course, students were guided to study a particular cultural community that is still under development in Surabaya city. There were two major final products that had to be completed at the end of this course. The first project was to develop an interior design conceptual proposal for a 300m<sup>2</sup> area for a community centre based at a real site in Surabaya. The students' design interventions should be able to accommodate the community's aspirations and activities, while at the same time promote them to potential visitors and general society. This conceptual proposal would serve as a useful template or pilot for future set-ups and developments in the community, especially in terms of acquiring administrative and financial support from local government. The second project was to redesign or stylise the existing interior settings of the community's present base camp, in order to support their routine as well as incidental activities, and enhance the image of the community to the local surrounding society. The second project was implemented directly on the community site with real product outputs. Students were guided by mentors that consisted of academic and professional experts in arts, interior design and architecture. They were also required to involve the community members throughout the design process through exchanging and co-implementing feedback, skills and ideas.

The students underwent a four-month iterative design process consisting of six stages developed from Stanford School of Design (Carroll *et al.* 2010): understand, observe, point of view, ideate, prototype and test. The design process can be fused with the three-step methodology of cooperative or participatory design outlined earlier by Spinuzzi (2005) as elaborated in Table 2. Specific design strategies based on human-centred design studies were incorporated in all the six stages of the design process. The initial stage of *understand – observe* starts with ethnographic studies as the specific design strategy in order to assist designers in obtaining a comprehensive knowledge of the potentials and the aspirations of the community (Draper 2015). This process is then followed by the method of empathy mapping (Ferreira 2015) to help designers discover specific spatial problems when performing the community's activities. Entering the *point of view – ideation* stage, designers would set up goals together with the community based on Pena & Parshall's (2001) problem-seeking and goal-setting variables: function (people, relationship and activity), form (place, environment and quality), economy (operating costs and life-cycle costs) and time (past, present and future). They would then formulate design concepts together with the community to gain innovative ideas from multiple perspectives. Finally in the *prototype* and *test* stage, designers co-produce and co-implement the projects together. Evaluation of designs used the participatory method, in which students invite not only the lecturers but also the

**TABLE 2** Design methodology and the expected benefits of co-design with community

Stage	Methodology and strategy	Benefits expected
1 <b>Understand – Observe</b> (Initial exploration of work)	<ul style="list-style-type: none"> <li>● Ethnographic studies               <ol style="list-style-type: none"> <li>a) Designers gather information about the community and visit the community.</li> <li>b) Designers engage in discussions with the community, involve themselves and participate in the community's activities.</li> <li>c) Designers take note of the community's actions, behaviours and needs.</li> </ol> </li> <li>● Empathy mapping and problem seeking               <ol style="list-style-type: none"> <li>a) Designers observe the community's needs in terms of interior design and identify their potentials and aspirations through empathy maps.</li> <li>b) Designers perform literature studies regarding interior design standards for the programmatic needs of the community.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Designers gain a thorough understanding of community experience, aspirations and needs.</li> <li>• Designers gain social skills such as communication and social awareness.</li> <li>• Discovery of qualitative data in terms of the community's potentials that could be enhanced through design interventions.</li> </ul>
2 <b>Point of View – Ideate</b> (Discovery process)	<ul style="list-style-type: none"> <li>● Co-setting of design goals and concept               <ol style="list-style-type: none"> <li>a) Designers explore possible sites for design implementation and consult with the community.</li> <li>b) Designers collaborate with community members, local people and experts to establish their design goals together.</li> <li>c) Designers brainstorm ideas and formulate a concept based on the community's ideas and potentials through affinity diagrams based on Pena and Parshall's (2001) problem-seeking framework and concept mappings.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of concrete design goals that meet all the users' needs.</li> <li>• Creation of innovative design concepts as a result of various perspectives.</li> <li>• Increase in values of respect and social communication.</li> </ul>

(continued)

community in evaluating the effectiveness of their designs. Usability tests are then performed on the product yielded to ensure that it has successfully achieved the co-designed goal. With the community involved in the production and testing of prototypes, designers are given the opportunity to indulge in intensive social interaction with the community and learn values of teamwork. The community could

TABLE 2 (continued)

Stage	Methodology and strategy	Benefits expected
3 <b>Prototype – Test</b> (Prototyping)	<ul style="list-style-type: none"> <li>● Co-production and implementation               <ol style="list-style-type: none"> <li>a) Designers implement the co-determined design goals and incorporate the community's potentials such as skills and work products in the design through conceptual sketches, mock-ups and three-dimensional interior renderings.</li> <li>b) Designers invite the community and other relevant experts to evaluate their designs.</li> <li>c) Designers, experts and community members co-implement the interior settings of the community's current basecamp together.</li> </ol> </li> <li>● Usability test               <ol style="list-style-type: none"> <li>a) Designers perform a usability test by asking the community to use the product for a certain time.</li> <li>b) Designers obtain testimonies from the community to evaluate the effectiveness of their design.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Production of novel and innovative designs based on multiple perspectives.</li> <li>• Designers gain life skills in terms of social communication, team work and respect towards others.</li> <li>• The community gains a sense of contribution to the success of the design.</li> <li>• The design output can truly be useful for the community.</li> </ul>

also gain a sense of belonging or contribution to the design. Table 2 explores the benefits that can be expected through implementing the proposed methodology.

## Research object

The community chosen as the research object for this article was the *Serikat Mural Surabaya* (SMS), a community consisting of mural and street artists in Surabaya. It is a highly active community with a small studio on the east of the city that also serves as the community's basecamp. Their routine activities include giving workshops and training to local people, applying mural art on the walls of both urban and rural streets, collaborating with the regional government on several occasions. They also produce graffiti works of various forms and showcase them in public places.

## Results and discussion

### Understand – observe

At the initial stage, the authors as studio instructors contacted the community and proposed this collaborative design project. Students then collected brief

information on the community via the Internet and both social as well as mass media. We visited the community and gathered both physical and non-physical data of the community. The physical data included site conditions and existing interior facilities, whereas non-physical data included the community's routine and incidental activities, existing and potential users, the community's history and establishment as well as their future goals and visions. The initial stage of understanding was followed by observation through ethnographic studies in which we involved ourselves as participants in the community's activities (Figure 1).

Students attended and participated in the community's *ngegambar barengan* (which means 'drawing together') occasions, consisting of informal drawing workshops, talk-shows and discussions. We observed mural painting activities that were applied on street walls around campuses. Through these ethnographic processes, we learned to empathise with the community's aspirations, creative perspectives, habits and future visions of their existence in society. We used empathy maps to sort out abstract qualitative data in order to find the community's pains (needs) and gains (goals). It has been observed that this community are people who disregard bounded formality in art, who have a deep committed passion for creating novel forms of art. This could be seen through the unorthodox application of their paintings that are not only applied on walls, as often seen in conventional mural art, but even on furniture, unexpected daily and household equipment, such as refrigerators or paper holders, as well as clothing and footwear. They attempted to integrate mural art into daily objects such that art becomes an everyday habit to perform and admire. However, their desire for this creative practice is not only aimed at their own satisfaction but also at how they can bring impact on others. This is evident through the workshops they open for the public and the applications of their work in public streets and corners. This passion for art and creativity, hence, became the priority issue to address as designers and researchers, in what Ballentyne (2002) termed as the 'living art' and 'habitual dimensions' of a building, that should be accommodated in contemporary buildings. These findings can never be wholly discovered in the conventional project brief-model of interior design pedagogy, without the ethnographic research and participatory processes of human-centred design that were performed at the beginning of this design project.



**Figure 1**

Designers participated in the mural community's activities, workshops and constructed empathy maps as an attempt to empathise with the mural community's aspirations, creative perspectives and habits.



By understanding and observing the community in the initial stage of *understand – observe*, we were able to sort out literature data that were relevant to the problems and determined the criteria for selecting the appropriate site for the community's imaginary future basecamp for interior design implementation: a library on the east of the city that is close to many small- to medium-class residential neighbourhoods. This site was chosen because of the simple structures that could provide the open spaces and flexible interior design elements that were in line with the informal, easy-going and sociable nature of the artist users.

### Point of view – ideate

This is the stage where collaborative creation began. Students and lecturers further analysed the goals, needs and problems of the community based on Pena & Parshall's (2001) problem-seeking framework (Figure 2). After mapping out the problems that needed to be solved in terms of interior design, the students, lecturers, community members and mural artists had several informal meetings to exchange design ideas and concepts through open discussions, documentation and affinity diagrams (Figure 3).

These meetings were found to be truly significant in building the cooperative design process. They provided insights on the part of the students and lecturers of the possibilities of co-creation, in which they considered various ideas on how to incorporate the creative works of the community members and mural artists in their design concept. Meanwhile, the community members and mural artists had a better perception of the problems they were facing in terms of the interior settings of their basecamp because they have been defined more specifically using the academic research tools and perspectives employed by the students and lecturers. Based on the desire to accommodate the creativity of the community members and to promote their mural works, the students and lecturers along with the mural artists developed the design concept of linking their mural artworks with interior design elements in their design projects (Figure 4).

This meant that they would try to produce conceptual ideas of novel custom-made interior design elements such as structures, enclosures, furniture, accessories

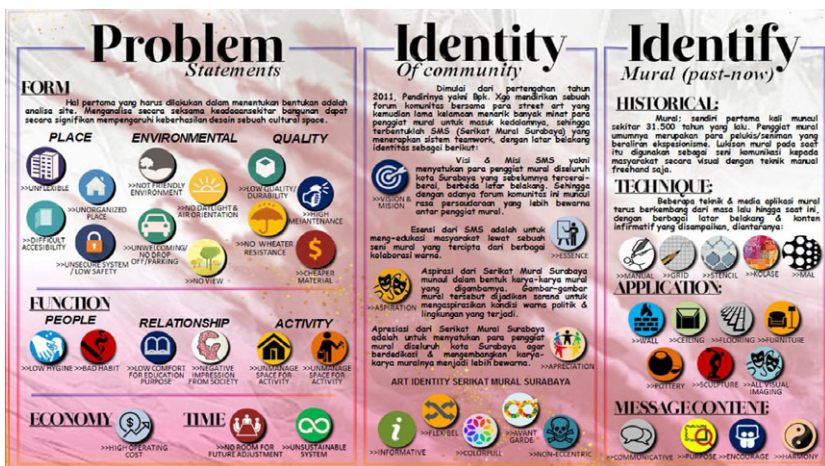


Figure 2

Analysis of problems and needs of the community (Image by David Ardi Laksono).



and system fixtures that visually and spatially connect to the community's existing mural artworks. The unorthodox applications of mural art on random items such as household appliances and furniture by the mural artist, analysed through ethnographic research during the observation stage, inspired this design concept, providing a pathway to design innovations in both mural art as well as interior design.

### Prototype – Test

During this stage, the participants of this research produced two kinds of prototypes. The first prototype was a conceptual design proposal for 300m<sup>2</sup> area of a community centre on the chosen site for implementation. The designers first produced various models for design implementation in the form of two-dimensional sketches, and mockups (Figure 4) to study the spatial quality before implementing mural art into the design. This process was then followed by further development of design through three-dimensional renderings. At this stage, a varying degree of design innovation was observed. Existing mural works of the community were fused with interior design elements, making the mural art more attractive, and rendering a spatial sense of function rather than becoming merely a two-dimensional art object as often found in conventional galleries or cafes. The mural art was applied on drop-ceiling elements, meeting chairs, partitions, beams, columns, floor patterns, counters and other furniture (Figure 5). In this case, mural art was used as a tool to define space, provide visual emphasis, and to control interior flow or navigation for users in the interior space. The designers' creativity and knowledge



**Figure 3**

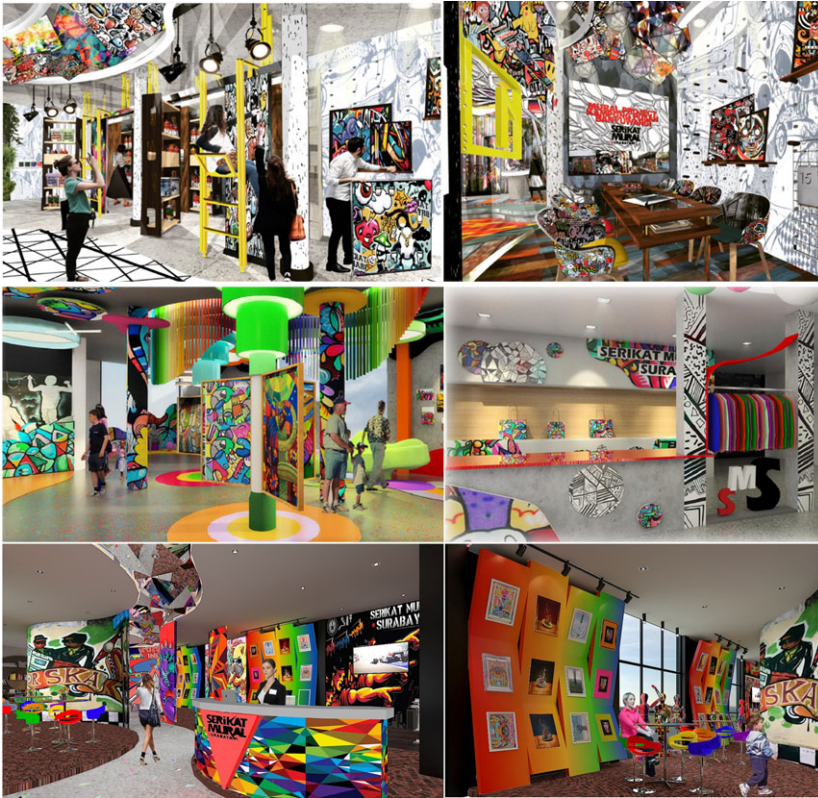
Students identified problems, brainstorming programmatic and design concepts with community members, art experts, academics and peers through open discussions and affinity diagrams.



**Figure 4** Concept, schematic sketches and mockups for the interior design of a mural community centre (Image by Gloria Puspitadewi, Dea Minerva and Goey Fenny).

in interior design together with the community’s expertise and passion in mural art produced significant design innovations in both the fields of interior design and mural art, hence establishing mutual benefits.

The second prototype was a design for a space to store as well as to display mural equipment. The design was realised on the site of the existing basecamp of the community. Based on the findings of the *understand – observe* stage, lack of storage space and poor organisation of space were the main interior design problems for the community. These were due to two factors. First, the equipment for mural painting included a wide range of materials with varying dimensions and colour specifications. Designers needed to accommodate the storage of paint brushes (from the smallest to the largest); paint rollers; spray paints, poster paints and wall paints of all colours; documents of colour codes and paper rolls. The second



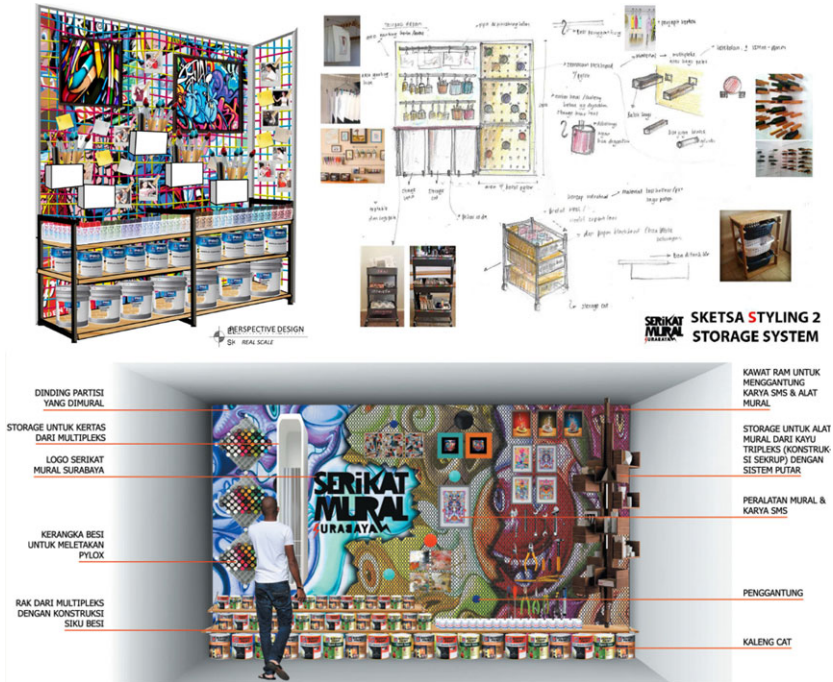
**Figure 5**

The mural artworks of the community were fused with interior design elements such as ceilings, floor pattern, furniture, beams, and columns in order to define space rather than functioning as separate art objects (Designed by David Ardi Laksono, Dea Minerva and Goey Fenny).

problem was that all these materials had to be easy to store, access and organise both before and after use. The random and impulsive nature of the creative artists at work required a flexible system of access to materials, regardless of whether they were at their mural artwork or at rest. Through active informal meetings between the students, lecturers, community members and mural experts, the collaborative team devised several storage systems that still maintained the concept of linking mural art with interior elements, while also addressing the problems of space and storage organisation (Figure 6).

The storage included both a fixed system for large equipment such as wall paint cans and a flexible system for smaller items such as brushes, catalogues, spray paint cans and pallets, using a net of wires as the storage background for random hanging of items. The most vivid feature of the storage, however, lies in the co-creation and collaborative process of a new mural artwork that was visually connected to the fixtures of the storage area (Figure 7). Together with the mural artists and community members, students and lecturers set up the storage corner that functioned not only as a place to store the materials but also to display them in line with the mural background. The mural painting included the community logo and the storage fixtures were arranged surrounding it in such a





**Figure 6**

Conceptual design of mural equipment storage area, linked by the community's mural artworks (Designed by David Ardi Laksono, Dea Minerva and Goey Fenny).

way that they helped in creating an identity element in the otherwise cramped interior space.

Due to the collaborative process performed, novel designs of interior elements and storage systems have been produced that can benefit the community in accommodating their mural activities while also providing a spatial identity in their community basecamp. When tested for use by the mural artists, the various types of mural materials with differing shapes, dimensions and colours could be flexibly stored and accessed, supporting the spontaneous and dynamic activities of mural artists, yet in a controlled manner in the otherwise messy environment. The mural materials, whether a single can of spray paint or a stack of brushes, also served as art objects in the co-designed storage corner, hence producing a new form of artwork (Figure 8). This co-created storage area becomes an attractive identity corner that can assist in promoting the community's image to the daily visitors to the community.

Apart from the benefits in terms of understanding the user and creating design innovations in the prototypes produced, the long four-month process of collaboration and stranger-to-partner transformation in communication between the community, students and lecturers also rendered some reflexive impact. From the reflection reports submitted at the end of the course, both students and lecturers conveyed how their first-hand experience of becoming design users made them realise the complexity of human factors and problems that could be accommodated through interior design. They reported the challenges they had to face in nearly every stage of the design process. During the stage of understanding and



**Figure 7**

Collaborative design process between community members, mural artists, students and lecturers for storage installation.



**Figure 8**

Final implementation and testing of mural material storage as the product of collective creativity and cooperative design.

observing the community, they conveyed their difficulties in matching the idiosyncratic communication styles of the community members; like their artworks, each of the members had creative and unique personalities. Both students and lecturers revealed the challenges they had to face in putting aside their initial prejudices

and after doing so, were able to discover the positive qualities and potential within the community that could be incorporated into their design interventions. During the *point of view* and *ideation* stage, they also faced challenges in having to merge the community's ideas with their own. Presenting their ideas based on their knowledge on interior design, especially those that contradicted the community's views at face value demanded diplomacy, communication skills and emotional strategies in ways that did not offend the community. During the stage of producing conceptual prototypes, students revealed how they needed to learn to be open-minded in receiving minor criticisms regarding their designs from the community and explaining the reasons behind their design interventions. Because of the students' openness in communicating and receiving feedback, the final designs successfully met the goals of the community. Reflection reports from the community also revealed their gratitude in receiving assistance and acknowledged the usability value of the designs. They revealed how students and lecturers respected their views and aspirations in the design implementation. Hence, the consecutive collaboration process not only expanded the students' interior design knowledge, but also taught them valuable life skills in communication, respect and consideration for the users' values, skills and expertise. Furthermore, both students and lecturers also realised the role they can play in promoting and contributing to the values of the local community where they live or work. Hence, through co-design with the community in interior design pedagogy, students can look beyond profit-driven trends and styles and strive for greater ethno-social awareness in their practice of interior design. In our study, we found that the students who had gone through the learning process in this research were inspired to choose topics on human-centred design, community and social spaces for their ongoing thesis projects: for example, 'Interior design of a village community centre to revive a traditional toy-making community in Surabaya' and 'Design of a village art centre to facilitate the touristic and cultural impact of street artists in Samarinda'. These topics differed in themes from those proposed by students of the previous years who had not experienced the co-design learning process; past thesis topics tended to relate to themes such as design of commercial or retail spaces. Further investigations into the catalytic validity of the ensuing social impact of this work is warranted, with potentially important implications for the scope and nature of interior design research in general.

## Conclusion and recommendations

Through this research, a methodology based on a socially-responsible interior design studio project has been successfully tested and could be used for devising future interior design curricula in contemporary design education. Many benefits have arisen out of the implementation of this methodology, as revealed in this research-design project. First, through the *understand* and *observe* stages, students can obtain a deep understanding of the users' aspirations, character and values by being participants of the community. The experience of becoming part of the community themselves allowed them to share the values of the community and incorporate them in their design. For instance, the creativity and passion for producing and applying art in the daily life of the users in this project became a priority to accommodate which could never have been wholly grasped in the conventional project-brief model of learning that maintains a detached relationship with the client. Secondly, the collaborative development of design concepts in the



*point of view* and *ideation* stages could make way for novel ideas or concepts of design innovations, as discovered by Steen *et al.* (2011) in co-designed service design projects. In the case of this research, the innovation of linking mural art with interior elements became a new source of inspiration. This has positively affected the success of the *prototype – test* stage, in which the community's potential, in this case their mural artworks, became tools to define space rather than merely functioning as separate art objects applied on walls as generally seen in conventional interior design projects. These innovations would have otherwise been inhibited and designers might likely have designed display installations for the mural art rather than integrating them into the interior space. Finally, designers gained a reflexive knowledge that touched on the meaningful social aspects of interior design. The experiential learning through community co-design has fostered a direct encounter with real-life problems in their surrounding community, allowing students and lecturers to reflect on their future role as interior designers in bringing positive social changes in society rather than compete against profit-driven trends or style.

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## References

- Ballantyne, A.** (2002) *What is Architecture?* New York: Routledge.
- Carroll, M., Goldman, S., Britos, L., Koh, J., Royalty, A. & Hornstein, M.** (2010) Destination, imagination and the fires within: design thinking in a middle school classroom, *International Journal of Art & Design Education*, Vol. 29, No. 1, pp. 37–53.
- Cys, J.** (2009) Finding a space for the practice of interior design, *IDEA Journal: Interior Territories*, Vol. 9, pp. 20–31.
- Draper, J.** (2015) Ethnography: principles, practice and potential, *Nursing Standard*, Vol. 29, No. 36, pp. 36–41.
- Ferreira, B., Silva, W., Oliveira, E. & Conte, T.** (2015) Designing personas with empathy map, *SEKE*, Vol. 152.
- Hou, J.** (2007) Community processes: the catalytic agency of service learning studio, in A. Salama & N. Wilkinson [Eds] *Design Studio Pedagogy: Horizons for the Future*.
- Gateshead: The Urban International Press**, pp. 285–93.
- Kroeker, R. & Singh, V.** (2007) Material culture and design education, in A. Salama & N. Wilkinson [Eds] *Design Studio Pedagogy: Horizons for the Future*. Gateshead: The Urban International Press, pp. 255–68.
- Pena, W. & Parshall, S. A.** (2001) *Problem Seeking: An Architectural Program Primer*, fourth edn. New York: Wiley.
- Pile, J. F.** (2005) *A History of Interior Design*. London: Laurence King.
- Salama, A. M. & Wilkinson, N.** (2007) Introduction: community, place and the studio, in A. Salama & N. Wilkinson [Eds] *Design Studio Pedagogy: Horizons for the Future*. Gateshead: The Urban International Press, pp. 249–54.
- Sanders, E. B. N. & Stappers, P. J.** (2008) Co-creation and the new landscapes of design, *CoDesign*, Vol. 4, No. 1, pp. 5–18.

**Sanoff, H.** (2007) Community based design learning: democracy and collective decision making, in A. Salama & N. Wilkinson [Eds] *Design Studio Pedagogy: Horizons for the Future*. Gateshead: The Urban International Press, pp. 21–38.

**Smith, C.** (2004) Inside-out: speculating on the interior, *IDEA Journal*, Vol. 5, pp. 93–102.

**Spinuzzi, C.** (2005) The methodology of participatory design, *Technical Communication*, Vol. 52, No. 2, pp. 163–74.

**Steen, M., Manschot, M. & Koning, N. D.** (2011) Benefits of co-design in service design projects, *International Journal of Design*, Vol. 5, No. 2, pp. 53–60.