

Relevance of Applying Design by Participation Method in Design Learning in Higher Education

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Abstract

Design is crucial to reconciling the interests of improving human life while maintaining environmental sustainability. A suitable design approach to achieve this is the design by participation (DbyP) method. This method focuses on providing solutions based on various needs, requires active user involvement in the development process, and places designers as facilitators. It has yet been widely taught and practiced by students at design universities. The article intends to write DbyP as a design method to achieve community prosperity while providing a sustainable living environment, as well as conveying proposals for integrating this method into the design university learning process.

Keywords: *Design by participation; human well-being; sustainable development; learning process*

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1.0 Introduction

Environmental problems are becoming increasingly complex and complicated. In a situation like this, it is necessary to mobilize various resources owned by the community to overcome it. Human resources, as well as various types of resources, such as information, natural resources, and socio-cultural ones, both global and local, are equally important. This work must also be done simultaneously and together by all elements of society. The role of students is also essential because, frankly, they are the ones most affected by environmental damage today, and in the future, they will have to work hard to find solutions to overcome it. UNESCO says that environmentally friendly schools and curricula are one of the best ways to overcome climate disruption in the long term (Kompas, July 2024). The aim is to empower the younger generation to play a fundamental role in overcoming the climate crisis and environmental problems in general.

This article aims to examine the feasibility of the design-by-participation (DbyP) method to be practiced by students at design universities. This is based on the idea that the DbyP method can be applied to overcome complex environmental problems, therefore this method needs to be taught to today's students -generation Z- so that they can later use it when working in society to overcome various environmental problems. The increasingly pronounced environmental crisis and frequent natural disasters have forced many

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parties in society to look for appropriate solutions. Generation Z, born between 1997 – 2012, also needs this awareness. This generation is the one who feels the worst effects of the environmental crisis but also wants to participate in overcoming this problem (Husic, DW, 2024). Therefore, the discussion about making the ability to apply the DbyP approach more effective in design universities is getting the right moment.

The objective of this article is to integrate the DbyP method into learning at design universities. The author believes that integrating the DbyP method can provide more benefits, especially to students and society in general. The first reason is that Generation Z who are currently undergoing education or who are starting their careers are the backbone of society in overcoming environmental problems in the future. Both DbyP applications can be used to build original and sustainable community strengths because the DbyP practice explores and utilizes many social and cultural resources originating from the community itself. These two reasons are the basis for being able to practice the DbyP method on a massive scale in society, so that design can be a catalyst for overcoming environmental problems and at the same time achieving the goal of improving community welfare.

2.0 Literature Review

2.1 Design by Participation and Green Education

In the middle of the XX century, design by participation emerged when designers and architects integrated user feedback into their design process. This approach first appeared at the "Design Participation" conference organised by the Design Research Society in Manchester (Sanders et al., 2008). Then, DbyP was developed by many people from the business community; in 2004, the book "*The Future of Competition: Co-Creating Unique Value with Customers*" was written by C.K. Prahadad and Venkat Ramaswamy. Furthermore, it can be seen that this approach is not only playing out in the world of practice but is also being developed as *participatory design* and *user-centred research*. In principle, the DbyP approach emphasises the more active involvement of users, stakeholders, and communities in realising the final design product. With this way of working, a character of inclusivity, empathy, and interactiveness in finding solutions emerges.

A shift in design towards a human-centred methodology has reinforced the role of participatory practice as an essential part of the design process. Designers today routinely socialise and engage intensively with users through several methods characterised by participation, such as surveys, focus groups, workshop co-design, and usability testing. This direct user involvement not only aims to fulfil functional needs but goes beyond user expectations, produces something more intuitive, and provides different experiences. More than just improving usability, participatory design can encourage a sense of belonging, empower members and stakeholders, and encourage them to actively contribute to creating and refining solutions that will directly impact their lives.

In recent years, DbyP has developed in a community-focused area to address local challenges and amplify voices often marginalised in traditional design processes (Lee, 2007; Meroni & Fassi, 2013). Laboratory *co-design* in communities and participatory planning sessions became commonplace, where residents, activists, and experts collaborated to plan and implement solutions tailored to accurate and specific community needs. This approach encourages a deeper understanding of community dynamics and promotes sustainable development and social equality by prioritising local knowledge and real-world experiences in everyday life. With robust *participatory design*, communities can improve the shaping of their future, advocate for transformative change, and ensure that design outcomes genuinely reflect the diverse needs and aspirations of the stakeholders involved.

2.1.1 The Essence of Design by Participation

The essence of the DbyP approach lies in the "what," "how," and "who" designs (Sanders et al., 2008). The "what" of the design created in DbyP relates to the design solution. Rather than being dictated by designers or developers alone, as in industrial design, solutions in DbyP emerge through interactive dialogue and *co-creation with participants*. The process begins by identifying various user needs and aspirations through various methods such as ethnographic research, community surveys, or joint workshops. By understanding the nuances of user experience and the specific factors in the design context, designers can create solutions that directly address existing problems and give voice to audiences' latent intentions.

Meanwhile, the "how" question of design in DbyP focusses on methods and collaboration *tools* used when involving stakeholders in the design process. Techniques like design thinking, participatory design workshops, sessions co-design, and prototyping enable participants to contribute their insights, preferences, and feedback at various stages of product development. This method facilitates the sharing of understanding, fosters a sense of ownership of the final design result, and strengthens a sense of empowerment and commitment among participants. Furthermore, regarding "who" does the design, in DbyP, various stakeholders are involved in the design process. Each participant brings unique perspectives, knowledge, and skills that collectively enrich the design process and contribute to creating a broad, holistic solution. By providing a collaborative ecosystem where all voices are heard and valued, DbyP promotes equality, inclusivity, and social justice, ultimately leading to design that is more responsive to the needs of an increasingly complex society.

2.1.2 Green Education

Recently, UNESCO said that schools need to become greener. With this concept, besides teaching adaptation to environmental changes, schools also have a crucial role in encouraging green transition (Schleicher, A., 2024), namely change or economic growth and welfare of the world community that is environmentally friendly and sustainable. For this reason, they not only equip students with

knowledge but also *mindset* and motivation to overcome environmental degradation. Schools are essential for shaping students' competence in environmental sustainability. They can foster a genuine interest in environmental issues and equip students with the skills to act responsibly either now or in the future regarding the green transition. Now more than ever, it is essential to encourage environmental sustainability competencies in all students, as this is crucial for bringing about changes in the labour market (HR) and the social changes needed to fight the climate crisis.

While UNESCO campaigns for green education for all ages, Husic focusses more on reconceptualising green education for students in tertiary institutions (Husic, 2024). Due to the increasing severity and extent of environmental damage, Husic encouraged students to go directly into society. He also said that universities need to integrate the concepts of sustainable development and climate change into all students' curricula. By working with the community, students will gain authentic learning experiences and the opportunity to provide services to the community to build a sustainable living environment. Multidisciplinary collaborative work will bring students together with the community to increase knowledge about the environment, climate change, local disaster risks, and disaster mitigation strategies. This collaboration can also be used to develop a future vision and narrative about the community and its environment. These things will certainly provide many benefits to students, the community, and other stakeholders involved.

Another exciting article examines design students' involvement in community engagement (CE) activities. Montt-Blanchard et al. said that working with the community is excellent and needed by students, teaching staff, and higher education design. However, implementing community engagement in college faces several challenges (Montt-Blanchard et al., 2023). Namely, there are different settings between universities and conditions in the field, high dynamics of field situations, and difficulty in giving grades to individual students. Montt-Blanchard also outlined several ways to overcome this, such as organising the curriculum to adapt activities for community engagement, building collaborative networks with partners, building flexible communication between the parties involved, and more effective decision-making patterns.

Nowadays, the relevance of implementing DbyP by design students is related to the increasingly intense environmental degradation and the desire to involve all elements of society in extensive work to overcome environmental problems. The DbyP approach is significant in overcoming environmental problems by integrating various strengths of thought, local knowledge, local socio-economic resources, and actual actions, especially from students and stakeholders. The following section presents several reasons why the DbyP approach can have a natural effect and impact on overcoming environmental problems.

1. The DbyP approach involves direct collaboration with the community, increasing understanding of the context, leveraging local knowledge, and ascertaining the real problems.
2. Community involvement in finding solutions or *co-creation* can encourage behaviour change and adopting sustainable living practices.
3. Implementing DbyP stimulates the growth of joint creativity and innovation, such as collaborative ideation, allowing unusual and unique ideas to emerge.
4. If working with stakeholders goes well, it will facilitate the emergence of support and commitment from many parties for the project.
5. The involvement of many stakeholders can ensure that solutions to overcome environmental problems follow policies, regulations, and local socio-economic realities.
6. DbyP can provide collaboration, knowledge sharing, and collective action that encourage building resilient communities.
7. The benefits for students are authentic learning experiences, opportunities to provide services to the community, and the ability to develop a future vision and narrative about their community and environment.

In conclusion, the DbyP method offers a comprehensive and inclusive approach to addressing environmental problems and ensuring sustainable societal welfare. However, Montt-Blanchard said that there are differences in work settings and field dynamics that universities need to pay attention to if they want to apply it as a study and work method for students.

3.0 Methodology

The method used in this research is activity program evaluation. The study is qualitative; The assessment uses measuring tools taken from literature studies, consisting of the degree of initiative, participation, collaboration, creativity, and activity time management. Measurements are carried out during program implementation and after the program is completed. There are 2 types of data, namely primary data obtained through direct observation in the field, and secondary data obtained from activity implementation reports.

4.0 Findings

4.1 Experience and Lessons from Implementing DbyP

The following section presents three cases of community engagement carried out by the Interior Design Study Program from FSRD ISI Yogyakarta. Two cases are about tourism development programs and one case is about dealing with plastic waste. The three cases only involved a few students, 3 up to 5, and the time was not included in the faculty's academic calendar.

4.1.1 Case 1: Utilisation of Public Creative Space in Yogyakarta City



Fig. 1. (a) Public exhibition of Sayidan village; (b) Sayidan tourist village festival
(Source: Research Team, 2023)

Yogyakarta is a cultural tourism city and the center of Javanese culture. The Yogyakarta city government strives to maintain this character. One of the strategies is to provide public creative space facilities that accommodate interaction and expression of local culture in planned creative activity zones. Sayidan village was chosen as the pilot project for Tourism Village because it could be developed into a leading tourist destination in Yogyakarta. The expected impact is that this project can move the wheels of the local economy to increase community welfare.

In the program implementation stage, the ISI Yogyakarta Design Team collaborated with 3 others, including the local community. This village has many creative economic potentials, such as craft, architecture, performing, and culinary arts. The Design Team and LPMK re-identified and created a plan to develop tourist attractions in the village through the Sayidan Tourism Village Festival. Preparing the festival activity plan took a long time; negotiations were tough because public perception was still difficult to change. Moreover, there are other obstacles on the part of the community, such as the absence of *local champions*, which are the drivers of participation, the absence of 'important and urgent' needs, the lack of enthusiasm and willingness to build a tourist village, the inactivity of local youth organisations, and the limited funds available. However, considering that this program involves the interests of the Yogyakarta City Government, 'like it or not,' the activities must be carried out, even without full support from the community.

4.1.2 Case 2: Local Potential Development in Banaran Village, Kulon Progo, Yogyakarta



Fig. 2. (a) Kulon Progo potential festival; (b) Village tourism group
(Source: <https://kulonprogokab.go.id/v31/detail/10018>)

Banaran Kulon Progo Village has potential tourist attractions, such as nature, culture, cuisine, etc. This potential has not been managed optimally. This joint activity aims to create and promote tourist attractions in Banaran Village to increase the village's original income. The ISI Yogyakarta Design Team and local village officials tried to assist in developing activity concepts.

At the implementation stage, the ISI Yogyakarta Design Team, together with the government and village communities, experienced obstacles, especially in preparing the concept of tour packages and the set tourist rates. This problem arises because of the need for more knowledge and skills of village communities in cultural tourism. For example, locally made culinary products' packaging design and prices do not respond to people's tastes and purchasing power. Village communities tend to feel comfortable with their daily activities and lifestyle, so they face difficulties when they have to formulate the concept of "new activities" that must be presented. Village communities are also unused to making detailed, systematic plans with stakeholders. They tend to choose to implement programs that the regional government has planned. The positive thing they have is the enthusiasm and active involvement of the youth.

4.1.3 Case 3: Processing Yogyakarta City Waste into Creative Products

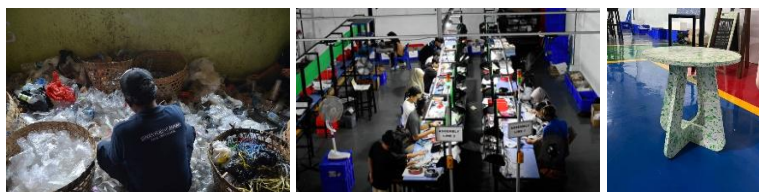


Fig. 3. (a) Plastic waste sorting; (b) Processing plastic waste into creative products; (c) Final prototype
(Source: Research Team, 2024)

The city of Yogyakarta experienced a drastic decline in the quality of its environment due to piles of rubbish; this gave rise to complaints and protests from the wider community. As the 10th regional head, Sri Sultan Hamengku Buwono called for collaborative work, namely

the regional government inviting educational institutions and DUDI to process waste into new products or *upcycling* innovative and competitive. There are three ways to reduce waste generation, namely by *reduce* (reduce), *recycle* (recycling), and *reuse* (reuse). The ISI Yogyakarta Design Team, together with the Yogyakarta City Trade Office through the MBKM Independent Study Program, conducted applied research processing non-organic waste at TPS3R Pasar Giwangan into interior furniture products to meet the needs for facilities and infrastructure in Rusunawa, Yogyakarta City.

The project began with collecting field data through surveys and interviews with some parties. Several obstacles are faced, namely that TPS3R Pasar Giwangan is limited in sorting and has not carried out the recycling process for finished products because they do not yet have the experts or workforce to process non-organic waste. Meanwhile, the Surolaras Waste Bank has tried to recycle plastic waste into finished products. However, due to a lack of knowledge about design and marketing strategies, the products produced cannot meet market tastes and sales targets. Based on these two obstacles, the ISI Yogyakarta Design Team invited PT. Synthetic Inamas Technology for synergy *knowledge sharing* and finding solutions to overcome existing problems in the plastic waste recycling process. Meanwhile, in the studio, the design team conducted a design analysis. It explored using repurposed green materials for furniture in Rusunawa, and alternative designs were then submitted to DUDI to make a prototype.

5.0 Discussion

The lesson learnt from those cases is that complex societal problems, such as waste management in Yogyakarta or developing tourist villages, require time, collaboration, and a holistic approach. Community mobilisation figures play a vital role, and intensive interaction with residents is essential to understand their needs and context. Academics and students should act as facilitators who empathise with residents, accommodate input, and foster a sense of ownership. Effective programs need extensive outreach to raise awareness and participation, encouraging creativity and innovation. Academics, particularly in arts and design, can provide vital support by imparting knowledge and skills. Successful development of tourist villages or waste management solutions requires synergy among government, academia, private sectors, and the community, Penta helix, emphasising the need for collective commitment and cooperation. This is crucial for implementing sustainable practices like emphasis, recycling, and reuse. This united effort can enhance local economic welfare and provide long-term solutions to societal challenges.

These cases show that the activity program involves collaboration with external parties, especially the Regional Government (PEMDA), as the main initiator. Academic involvement is usually limited due to time not aligning with the academic calendar, minimal funding allocation, and focus on supporting social activities. Although collaborative, these programs are small-scale and may not have a wide impact but are beneficial to local communities. Educational institutions typically contribute more intellectual input, reflecting a pattern of leveraging expertise to achieve social goals with limited resources. The DbyP approach used in this activity involves various stakeholders in creating solutions, especially social and environmental problems, by empowering communities to actively participate in the development process. This method ensures that the solutions provided are relevant, sustainable, and tailored to local needs. DbyP is critical in the current context, addressing major challenges such as climate change, social inequality, and sustainable development, thereby enabling society to build a prosperous and environmentally friendly future.

This discussion implies that DbyP is good and can be implemented by design students at universities with several settings. Namely the details of time, number of students participating in each activity program, interactions and reciprocal relationships between stakeholders, as well as a balanced distribution of financing between the parties involved.

6.0 Conclusion and Recommendations

The DbyP approach can be an option for how to overcome environmental problems. The DbyP approach can be utilised by design students when studying and working with the community to gain authentic learning experiences with the living environment and its community of residents. This benefit is in line with UNESCO's goal of green education, namely so that in the future, generation Z can act responsibly in the green transition towards a prosperous, environmentally friendly, and sustainable society. However, implementing programs that apply the DbyP approach or *community engagement* still faces several obstacles, such as implementation governance cooperation between parties. Therefore, the following are several recommendations for implementing DbyP to be carried out more effectively by higher education design institutions.

In general, the study carried out this time has been able to conclude that activity programs using the DbyP method provide many benefits for the community, students, universities, and other stakeholders. However, this study is still limited to qualitative measurements, therefore future research needs to be carried out more measurably and quantitatively.

Future research is to examine in more detail how to integrate DbyP-based activity programs into the design education curriculum, such as determining the number of courses that can accommodate the application of DbyP and the number of project-based classes, compared to the total number of courses. Furthermore, educational institutions must prepare regulatory mechanisms and technical SOPs for implementing the Teaching and Learning Process, requirements for student participation in projects, including grade conversion schemes, and determining the schedule for DbyP project activities. Then it is also necessary to develop networks with work partners such as NGOs, local governments, small industries (MSMEs), and socio-cultural communities.

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Paper Contribution to Related Field of Study

The paper finds the DbyP methodology significant and crucial to incorporation in design education.

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