

From Productive Space to Pedagogical Space: Performative Video in Urban Farming Education

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Abstract. Urban farming has been widely recognized as a strategy to enhance food security, social interaction, and environmental sustainability in urban settlements. However, its potential as a medium for inclusive and sustainable education remains underexplored, as existing approaches are largely limited to conventional knowledge transfer such as technical training and extension programs. This condition reduces community engagement and fails to address diverse learning needs across age, gender, and social groups. This study proposes a conceptual shift from productive space to pedagogical space, positioning urban farming environments as active learning infrastructures. It introduces performative video as a participatory and embodied learning medium that integrates spatial experience, social interaction, and visual storytelling. Using a design thinking approach combined with visual and participatory analysis, the research examines how video-based performative practices can transform urban farming activities into inclusive educational experiences. The study was conducted within community-based urban farming groups in Yogyakarta, Indonesia, through observation of spatial configurations, social dynamics, and the production of performative video as both method and output. The analysis focuses on the relationships between spatial characteristics, participatory processes, media representation, and educational outcomes. The findings reveal that performative video enhances engagement, supports cross-generational learning, and expands inclusive knowledge dissemination beyond physical space. Furthermore, it redefines urban farming as a distributed pedagogical environment integrating architecture, community practice, and digital media. This study contributes a hybrid spatial-media pedagogy model for advancing sustainable and inclusive education in urban contexts.

Keywords: *inclusive education, urban farming, performative video, spatial pedagogy, participatory learning.*

INTRODUCTION

Urban farming has emerged as a key strategy for addressing complex urban challenges, particularly those related to food security, environmental degradation, and the decline in the quality of social interactions. In the context of spatial planning and efficiency, integrated urban farming systems have also been identified as capable of improving the efficient use of space while supporting environmental sustainability in densely populated areas [1]. In addition, a community-based approach to urban farming land management demonstrates that the integration of productive, social, and environmental functions can be achieved through adaptive and participatory land-use models [2]. In various global contexts, this practice is viewed not only as an alternative food production system, but also as part of an urban ecological system that contributes to urban sustainability [3], [4]. In addition, urban farming is also increasingly recognized as a social space capable of strengthening community cohesion through collective, space-based activities, which implicitly open up opportunities for the development of the pedagogical functions of space. In the context of Yogyakarta, studies on the socioeconomic model of urban farming show that urban farming groups function not only as production units but also as community-based mechanisms for economic and social empowerment [5].

In recent developments, attention to the educational dimension of urban farming has been growing, particularly in relation to sustainable and experience-based education. Empirically, this practice has become institutionalized at the community level, as evidenced by the existence of 22 active urban farming groups spread across five neighborhoods in the Gondokusuman subdistrict of Yogyakarta, indicating that urban farming has evolved into a stable and sustainable community-based social system. Studies show that learning directly connected to environmental contexts and real-world practices can enhance students' understanding and engagement [6], as well as foster critical awareness rooted in community experience within the framework of equitable education [7]. This perspective aligns with the concept of spatial pedagogy, which views space as an active medium in the learning process, rather than merely a passive

backdrop for educational activities, and emphasizes the importance of spatial narratives as part of the construction of knowledge [8].

The main problem lies in the educational approach, which is still dominated by conventional methods such as technical training and one-way outreach programs. This approach tends to fail to address diverse learning needs, particularly for groups with different social backgrounds, ages, and abilities. This is consistent with findings regarding epistemic inequalities in the education system that hinder equitable and inclusive access to learning [9], as well as the limitations of inclusive pedagogy in facilitating real-world, context-based learning experiences [10]. In the context of urban farming communities, these limitations are also related to the fact that organizational processes and collective communication within farming groups are not yet optimal [11].

In response to these issues, an alternative approach is needed that can integrate space, experience, and participation as part of the learning process. Two emerging approaches are performative learning and embodied learning, which position the body, action, and experience as the primary mediums for the production of knowledge [12]. This approach enables immersive learning through direct interaction with the environment, reinforced by the integration of spatial and participatory technologies, which are increasingly prevalent in contemporary urban studies [13].

In this context, several studies have proposed the use of participatory and creative approaches as strategies to increase engagement in learning. A model for strengthening the capacity of farmers' groups through participatory mapping and visual dissemination also shows that visual media can serve as both a learning tool and a means of community empowerment [14]. Duggan and Gutiérrez-Ujaque [15] show that participatory practices such as counter-mapping can be effective pedagogical tools for linking spatial experiences to the production of knowledge. This approach reinforces the idea that learning occurs not only through the transfer of information, but also through the process of co-producing knowledge based on spatial experiences.

In addition, advances in visual-based methods and digital media are also opening up new opportunities in inclusive education. Visual representations and experimental cartography—as demonstrated in studies of experiential cartography—are capable of integrating bodily experience, space, and visual narratives into a single pedagogical whole [16].

In this context, video serves not only as documentation but also as a performative medium that activates the learning experience. In this study, the use of video is also aimed at expanding the reach of information on urban farming beyond the community directly involved in these activities. By visualizing community activities, spaces, and experiences, information that was previously conveyed through direct interaction can be packaged in a media format accessible to audiences with diverse backgrounds and levels of engagement.

Nevertheless, most studies still treat physical space, community activities, and learning media as separate entities. There has been little research that integratively examines how the concepts of spatial pedagogy, performative learning, and visual media can work simultaneously to shape an inclusive learning system. This indicates a research gap in understanding urban farming as a pedagogical infrastructure that integrates spatial, social, and media dimensions. Based on this gap, this study aims to reposition urban farming from a “productive space” to a “pedagogical space” through a performative video approach as a medium for participatory learning. The novelty of this study lies in the integration of the concepts of spatial pedagogy, performative learning, and visual media to form a community-based hybrid pedagogical model. This study focuses on an urban farming group in Yogyakarta as an empirical context to examine how this transformation can support inclusive and sustainable education.

METHODS

This study employs the design thinking approach as the primary methodological framework for developing user-centered solutions in the context of space-based learning. This approach is relevant because it emphasizes an iterative, empathetic, and participatory process that aligns with the principles of inclusive pedagogy and experiential learning [6], [10], and is consistent with a participatory and visualization-based empowerment model for strengthening the capacity of urban farmer groups [14]. In the context of this study, the empathize–define–ideate–prototype–test framework was used to identify the community's learning needs, formulate a concept for performative media, and test its effectiveness in activating space as a pedagogical medium. This approach is combined with a descriptive qualitative method that allows for an in-depth exploration of the relationship between space, activities, and learning experiences, particularly in the context of community-based urban farming practices that have interrelated socioeconomic and ecological dimensions [5], [14]. A combination of visual methods and participatory observation was used to capture the embodied dimension of learning practices, as developed in studies on

embodied geographic methods that position the body and the experience of space as integral to the production of knowledge [12]. Thus, the methodology used is not only analytical but also performative.

The research was conducted among community-based urban farming groups in Yogyakarta, Indonesia, which were selected for their active urban farming dynamics and their potential as spaces for social interaction and public education. Specifically, out of a total of 22 active farming groups, this study focused its in-depth analysis on two groups as case studies, thereby enabling a combination of systemic understanding and in-depth contextual exploration. The selection of these two groups was based on survey results and interviews that indicated a relatively high level of community participation and potential for activity development compared to other groups. This selection was not intended to position these two groups as the “best” representatives, but rather as case studies whose management processes and community engagement are relevant to the exploration of video media use in this research. [vs1.1]This context is relevant to the narrative regarding the interconnection between urban food systems and community space practices in shaping urban social ecology [3], [4]. The research subjects included members of the farmers’ group, the local community, and those involved in the video production as part of the learning process.

Data collection was conducted through a combination of field observations, interviews, visual documentation, and the production of performative videos. This approach aligns with participatory research practices in the context of urban agriculture, which emphasize the importance of involving local actors in the processes of knowledge production and dissemination [14], [11]. Empirical data also includes quantitative information on the frequency of group activities, member participation rates, and the frequency of regular meetings—which generally take place once a month to once every two weeks, with attendance rates ranging from over 50% to 75% of members—as indicators of the sustainability of community activities. Observations were used to identify the spatial configurations and activity patterns of urban farming, while interviews were conducted to explore community members’ perceptions, experiences, and levels of participation.

The video production took the form of informal conversations featuring community members active in urban farming spaces as interviewees. The conversations explored how the activities came to be, the progress made so far, management experiences, and the various challenges and solutions that have emerged based on the specific conditions of each location. Thus, community members are not merely the subjects of documentation but serve as the primary sources of the narrative based on their firsthand experiences. Visual documentation and video production serve not only as recording tools but also as pedagogical mediums that facilitate the collective representation and reflection of spatial experiences, in line with the experiential cartography approach that integrates space, the body, and visual narratives [16].

The research variables were constructed to capture the relationships among the spatial, social, media, and educational dimensions. The spatial dimension encompasses the physical characteristics of space, such as land use and spatial configuration, which influence interactions and activities. The social dimension focuses on the level of community participation and inclusivity, which are key indicators in community-based pedagogy [15]. The media dimension examines the narrative structure and video production process as forms of performative practice, while the educational dimension assesses engagement, understanding, and knowledge transfer in the context of inclusive learning.

Data analysis was conducted qualitatively using a thematic approach and visual analysis, which allowed for an in-depth interpretation of the relationships between space, social practices, and visual representations within the urban farming system as an urban ecology [16], [3]. Thematic analysis is used to identify patterns of relationships among research variables, while visual analysis is used to interpret representations of space and activity in performative videos. This approach allows for the exploration of the relationships between space, the body, and media as an integrated pedagogical system, and reinforces the understanding that learning occurs through dynamic interactions between experience, representation, and participation [17]. To clarify the empirical characteristics underlying the analysis, Table 1 presents a summary of the main quantitative variables, including the number of farmer groups, their geographic distribution, the frequency of activities, participation rates, and the variety of activities carried out. This presentation of data serves not only to describe the context but also as a foundation for understanding how the intensity of activities and the structure of community participation contribute to the formation of space as a practice-based learning system.

Table 1. Empirical and Analytical Framework of Urban Farming Pedagogical System Integrated

Dimension	Indicator	Empirical Data	Roles in Learning
Spatial	Room type	Yards, riverbanks, public facilities	A platform for interaction
Social	Participation	>50%–75% attendance;	Co-production of knowledge

Dimension	Indicator	Empirical Data	Roles in Learning
		22 farmers' groups	
Media	Video	Participatory-based performative video production	Representation and distribution
Education	Engagement	Intergenerational learning; increasing engagement	Learning Outcomes

Note: This table integrates empirical data and an analytical framework to explain the relationship between the spatial, social, media, and educational dimensions in shaping an urban farming-based learning system.

RESULTS AND DISCUSSION

Spatial Characteristics of Urban Farming

The spatial characteristics of urban farming in the study area reveal a pattern of land use that is highly adaptive to the constraints of urban space. This finding is supported by the scale of distribution of these activities, which involve 22 active farming groups spread across five urban villages, indicating that this practice is not sporadic but is spatially distributed within a network of urban communities. Based on field observations, the land used is spread across various types of spaces, such as home gardens, riverbanks, and underutilized public facilities. These conditions indicate that urban farming has developed as a spatial strategy that responds to the pressures of land scarcity, while also reflecting the dynamics of a fragmented urban food system as described by Matooane [3] and O'Donnell [4]. The resulting spatial configurations tend to be informal, flexible, and non-standardized, allowing for adaptation to local needs.

However, physical limitations of space, such as limited land area, drainage issues, and exposure to urban environmental factors like pollution, pose major challenges to optimizing the function of these spaces. In this context, strategies such as vertical farming and the use of alternative growing media have emerged organically as solutions from community practices. Furthermore, urban farming spaces serve not only as production spaces but also as spaces for social interaction that facilitate collective activities, such as group meetings, training sessions, and other community events. This aligns with the concept of spatial pedagogy, which positions space as an active medium in the learning process [6], where the configuration of a space influences how individuals interact and learn.

Social Dynamics and Community Participation

Social dynamics within urban farming groups indicate that urban farming serves as a platform for the formation of practice-based learning communities. The relatively high participation rate, with member attendance ranging from over 50% to 75% at regular meetings, demonstrates the existence of a stable and recurring social rhythm that constitutes an essential prerequisite for the formation of a community-based learning environment. These activities are also supported by a network of 22 farmers' groups, which facilitates a broader exchange of knowledge across communities. The level of group member participation varies considerably, influenced by factors such as age, occupation, and level of interest in agricultural activities. Farmers' groups function not only as production units but also as social spaces that facilitate the informal exchange of knowledge and experiences. This phenomenon demonstrates the practice of "co-production of knowledge," which is a key characteristic of community-based learning [15], and is in line with the community-empowerment-based urban farming socioeconomic model in Yogyakarta [5].

However, participation is not always equitable. Some groups are dominated by certain actors, while others experience limited participation due to low motivation or members' time constraints. Furthermore, the involvement of vulnerable groups, such as young people and women, still faces challenges in some cases. These conditions reflect inequalities in access to the learning process, as described in the concept of epistemic injustice [9], and are influenced by internal and external factors such as age, education, and access to information in the context of farmer group participation. Therefore, an approach is needed that can enhance inclusivity through more engaging and participatory methods.

The Production and Role of Performative Video

The production of performative videos in this study was carried out through a participatory process that involved members of the farmers' group as both subjects and actors in the narratives being constructed. In practice, this involvement took the form of informal conversations that allowed the participants to share their experiences directly, so that the video narratives evolved from the experiences and knowledge of the community members involved. This involvement took place within the context of structured routine activities, such as cultivation, maintenance, and harvesting that occur periodically, as well as socio-

educational activities like training sessions and community festivals, thereby strengthening the empirical foundation of these performative practices. The intensity of these regularly occurring activities serves as a crucial foundation for building continuity in the experience-based learning process. This process not only produces visual media but also creates a space for collective reflection on the activities undertaken, which, from a participatory pedagogy perspective, constitutes a form of experience-based co-production of knowledge [15]. The narrative structure of the video is based on the group members' daily experiences (including planting, tending, and harvesting) presented in a performative format. In practice, the conversations in the video also reveal that each location has its own distinct experiences and challenges. The problems faced and the solutions developed arise based on the spatial conditions, resources, and community experiences at each location. These elements form part of the narrative presented, ensuring that the video not only conveys information about urban farming activities but also showcases the contextual experiences that unfold within them.

This approach is consistent with the concepts of performative learning and embodied learning, in which the learning process occurs through action, experience, and representation [12]. Video serves not only as a tool for documentation but also as a medium that activates spatial experiences and enables the transformation of knowledge into a more communicative and inclusive form. Furthermore, the visual representations in video reinforce the spatial dimension of urban farming activities, as demonstrated in the experiential cartography approach, which integrates space, the body, and visual narratives [16], and supports the dissemination of visual knowledge in the context of community empowerment [14]. Thus, performative video functions not only as a medium but also as an epistemic mechanism that connects experience, space, and the production of knowledge. To provide an empirical illustration of the collaborative practice of performative video production, Figure 1 shows the involvement of farmers' group members in the recording process at an urban farming site as part of an experiential learning activity. This documentation demonstrates how space, the body, and social activities are integrated into a performative practice that not only produces visual media but also shapes a participatory and contextual learning process.



Figure 1. Performative video production process in urban farming space involving community members as active participants in embodied and collaborative learning practices.

The Transformation of Space into a Pedagogical Space

The transformation of urban farming spaces from production spaces into pedagogical spaces occurs through the integration of activities, experiences, and media. Performative activities that are recorded and presented in video form create a new layer in the function of space, where the space is no longer merely a place of production but also becomes a medium for learning. This process demonstrates how space can be activated through performative practices that involve the body and social interaction, while simultaneously shaping the narrative of space as part of the construction of knowledge [8], [12].

This transformation also demonstrates that learning is not limited to physical spaces but can be expanded through digital media, which enables a broader distribution of knowledge. In this context, video serves as an extension of space, allowing local experiences to be accessed by a wider audience. This reinforces the concept that pedagogical spaces are distributed and not physically limited, as articulated in the experience-based pedagogical approach [6], [10], and in line with the growing integration of spatial technology into participatory urban practices [13]. The transformation from productive space to pedagogical space occurs through a mediating process in which spatial experience and community practices are translated into visual narratives and educational messages. Figure 2 illustrates this transformation mechanism and shows how performative video extends learning beyond the physical boundaries of the urban farming site. Urban visual media can also reveal temporal and atmospheric dimensions of place, reinforcing the value of visual representation for interpreting urban experience [18].

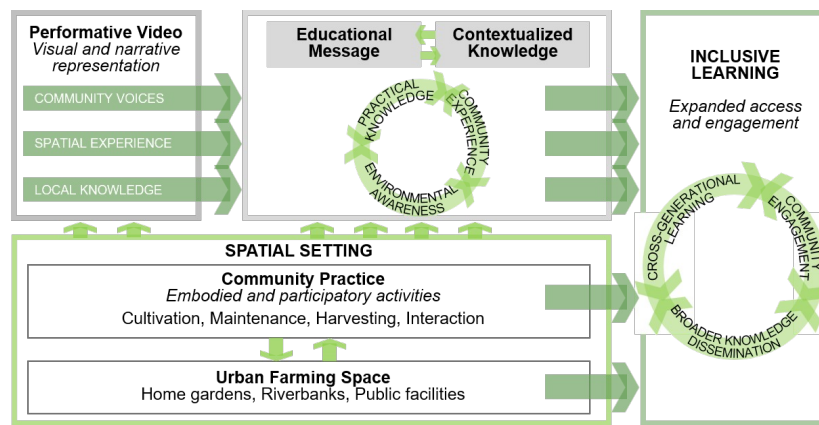


Figure 2. Transformation mechanism from urban farming space to inclusive pedagogical learning through performative video.

The model indicates that the pedagogical function of urban farming does not emerge from physical space alone, but from the interaction between spatial experience, embodied community practice, performative representation, and the subsequent circulation of knowledge through media. This process enables locally situated knowledge to become accessible to broader and more diverse audiences, thereby supporting the development of inclusive learning.

Impact on Inclusive Education

The use of performative video has a significant impact on increasing community engagement in the learning process. This impact becomes even more significant when placed within the context of an already active community system, where frequent regular meetings and high levels of participation serve as the foundation for increased engagement through performative media interventions. Participation in video production encourages active involvement among group members, including those who were previously less engaged in urban farming activities. Furthermore, the visual and narrative formats of the videos allow for the delivery of information that is more easily understood by people of various ages and backgrounds, thereby supporting the principles of inclusive and accessible education [6], [7]. In addition to being used within the community context, videos provide an opportunity to share urban farming experiences and knowledge with people who are not directly involved in these activities. Through a visual format that can be revisited, information about the community's processes and experiences can be shared with audiences from a wider range of backgrounds and levels of involvement.

Intergenerational learning has also increased, with older and younger members interacting and sharing experiences through the same medium. This demonstrates that performative videos can bridge differences in learning and communication styles, as well as reduce potential epistemic inequities in access to knowledge [9], [10]. In addition, the distribution of videos through digital media ensures that the knowledge generated is not limited to local communities but is also accessible to a wider audience, thereby expanding the reach of inclusive learning.

Conceptual Model and Implications

Based on the research findings, a conceptual model was developed to illustrate the relationship between space, activity, performativity, media, and learning within a sustainability framework. This model is grounded in empirical conditions, specifically a network of 22 active farmer groups with routine activities and relatively high levels of participation, which enable the integration of spatial, social, and media dimensions within a community-based learning system. This model demonstrates that urban farming spaces serve as a starting point that triggers activities, which are then processed through performative practices and represented in visual media, resulting in sustainable learning experiences and shaping an integrated urban learning ecology [3], [4]. To synthesize these empirical and analytical findings, Figure 3 presents a conceptual model of urban farming as a pedagogical space, integrating spatial experience, community activity, performativity, media representation, and learning within a circular and adaptive system. This model demonstrates that learning does not occur linearly but through a recursive process in which spatial experiences, social practices, and media representations mutually reinforce one another in shaping a sustainable and inclusive learning ecology.

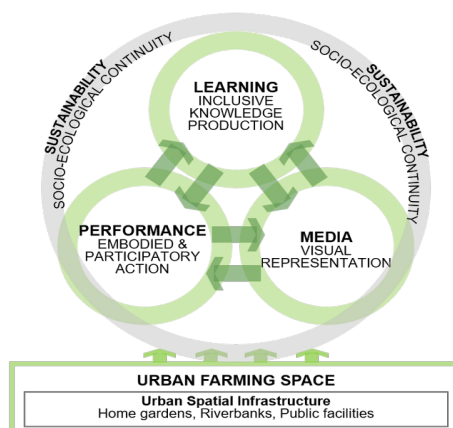


Figure 3. Conceptual model of urban farming as a pedagogical space integrating spatial, social, performative, and media dimensions into a distributed learning system that supports inclusive and sustainable education.

The implications of this model suggest that the design of urban farming spaces should take pedagogical aspects into account, not just production functions. Spaces should be designed to support interaction, participation, and performative activities, as well as to accommodate adaptive, community-based learning practices [14]. In addition, the integration of media into classroom practice is important for expanding the scope of learning [16]. In a broader context, this model contributes to the development of inclusive and sustainable education and has the potential to be replicated in various other urban settlement contexts.

CONCLUSION

This study confirms that urban farming can no longer be understood narrowly as a space for food production, but rather as pedagogical infrastructure that operates through dynamic interactions between space, activities, and media. By highlighting the existence of a network of 22 active farming groups with regular social rhythms and relatively high levels of participation in the Gondokusumna subdistrict of Yogyakarta City, this study argues that the social foundation for community-based learning has in fact been established, though it has not yet been explicitly articulated within a pedagogical framework. The main novelty of this study lies in the conceptual shift from “productive space” to “pedagogical space” through the integration of spatial pedagogy, performative learning, and visual media. In this context, performative video is not positioned as a communication tool, but as an epistemic mechanism that enables the co-production of knowledge based on spatial experience. These findings expand the existing discourse by demonstrating that inclusive learning depends not only on teaching methods, but also on how space and social practices are constructed as active and participatory learning systems.

Furthermore, this study proposes a space- and media-based hybrid pedagogical model that integrates a network of relationships linking space, activities, performativity, media, learning, and sustainability. This model makes a theoretical contribution to the development of the concept of a distributed learning environment in an urban context, while also demonstrating that architecture and spatial design play a strategic role in shaping an inclusive and sustainable learning ecology. Critically, these findings also suggest that the failure of many urban farming programs to sustain participation is not solely due to technical or economic factors, but rather to the absence of a pedagogical framework capable of activating space as a medium for learning. Thus, the integration of performative approaches and visual media is not merely a methodological innovation, but a conceptual necessity in designing community-based learning systems that are responsive to social diversity.

The implications of this research open up new directions in architectural and urban planning practices, where spatial design is not only aimed at physical and ecological functions but also serves as a pedagogical platform that enables the inclusive production and distribution of knowledge. In the context of sustainable education, this approach offers an alternative strategy that can be replicated in various urban settlement contexts, particularly in the Global South, which is characterized by complex social and spatial dynamics.

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