City Space
Architecture

Digital Public Spaces for Youth Engagement in Informal Settlements.
Case Examples from Mathare in Kenya

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Abstract

Public participation in all its forms is continually limited amongst the marginalised, especially those living in informal settlements. While the right to participate in decision-making on policy and development projects is enshrined in state laws, the urban poor continue to be excluded from such activities, thereby limiting their democratic rights. Inadequate public spaces are one factor that minimises the urban community's participation in citywide proposals. Forms of participation, such as digital engagement, do not reach the urban poor due to the limited digital infrastructure in low-income areas of the city. Attempts to conduct participation in informal settlements see only a few people engaged, worsening existing inequalities in cities. This case recommends the implementation of digital hubs as vital and vibrant public spaces for youth engagement in informal settlements. It looks beyond the hubs as places for merely enhancing digital connection but as spaces that integrate interactive and collaborative activities, thus bringing community members to participate in government decision-making processes and engagement with the community agenda. Taking the case of the Mathare informal settlement, this article draws inspiration from the government of Kenya's plan to establish 1450 digital hubs across all wards in the country. The article proposes a hybridity of activities in the proposed hubs to have both physical and digital engagement methods. Besides participation, the hubs would also be used to promote social health and well-being programs through digital literacy training, enterprise development, activism, empowerment, and engagement in remote/online tasks.

Keywords: public participation, digital hubs, informal settlements, public spaces, inequalities

1. Introduction: Background to public participation

Public participation is a principle of democratic governance that aids inclusive planning and decision-making. The term can sometimes be used interchangeably with 'community participation, ' 'community engagement, ' 'stakeholder engagement, ' or 'civic engagement'. Public participation encompasses the dynamic involvement of individuals, community collectives, and civic entities in the formulation and execution of plans and decision-making procedures that impact the community (Head, 2007). It involves extending invitations to the general public and stakeholders to actively participate in formulating policies, planning programs, or implementing them (Enwereji & Uwizeyimana, 2020). The Constitution of Kenya (CoK) 2010 and other laws mandate local and national governments to conduct public participation to facilitate any legislative or policy process and other businesses (Kenya, 2022). Devolution in Kenya is anchored on democracy, inclusivity, and decentralisation of services (Kenya, 2022). As a result, public participation serves as one of the principles of democratic governance in Kenya.

Citizens have the right to participate in development and policy formulation processes. Participation enhances decision-making by the local governments and authorities (Enwereji & Uwizeyimana, 2020). However, the existing inequalities in cities continually limit the urban poor's right to participate in development and policy formulation processes ,as poverty and informality are constant threats to their access to information (Wamuyu, 2017). This information-access divide exacerbates social inequalities, thereby influencing a range of issues including security, housing, health, and education, amongst others.

In Kenya, for example, 60% of the population lives in informal settlements. This population does not have equal access to infrastructure and basic services compared to those living in formal areas (Wamuyu, 2017). Participation of these populations in development initiatives is equally minimalised by their meagre access to public infrastructure (Kim, 2015). Their right to access all forms of participation (digital or physical) is continually constrained, making them passive decision-makers in development processes. Informal dwellers have limited public places to conduct such co-creation processes. Furthermore, there is limited access to digital participation due to the limited access to the internet and digital platforms (Fransen et al., 2024). When formal participation processes occur, only a few people get involved for the sake of the policy being passed. This is what Arnstein (1969), in her ladder of participation, calls 'manipulation, ' where signatures of the public are collected for proof of discussion in a non-existent or limited involvement. Therefore, this article recommends developing a hybrid form of youth participation by integrating both physical and digital methods in co-creating the processes of planning and policy formulation in informal settlements. Using case examples from the Mathare informal settlement, this article draws inspiration from the proposed digital village hubs by the government of Kenya to serve as vibrant public spaces for youth participation. Amongst other functions, the hubs could be used for building digital literacy skills, youth empowerment, and social well-being. In the following sections, we discuss the methods used in this study, literature on informality, digitalisation and public participation, and provide a recommendations for establishing digital hubs as hybrid public spaces for youth engagement.

2. Methods

The research is approached as a case study. It forms part of a large study conducted in Mathare on the 'co-creation of digital community learning centres, ' which aimed to

discuss how communities could design digital hubs as centres for learning and knowledge empowerment. We first undertook a GIS mapping of the digital facilities and social amenities in Mathare to identify their conditions, number, location, and access by the community. We later conducted two co-creation workshops where the community designed what they would perceive as a digital learning centre. The social design process involved identifying the services and activities, in addition to how the centres would be managed. The findings were related to the literature on informality and public participation and the government's proposal to establish digital village hubs across the country. The article finally recommends how the digital hubs and internet connection in informal settlements could be used as hybrid spaces for public participation for the youth.

3. Benefits of public participation

There are various benefits of participation to the community. Enwereji & Uwiseyimana (2020) note that participation fosters the relationship between the community and the government. Democratic Decision-making Theory shows that society should actively participate in decision-making. In Kenya, the government conducts public participation to allow for democratic decision-making by the public (Moallemi et al., 2020). These processes also ensure the legitimacy of the decisions made by the public and address the actual concerns.

According to Hendry (2022), community participation allows transparency and openness in decision- making. It enables the community to benefit from the resources by discouraging corruption and embezzlement of resources (Rijal, 2023). Transparency and accountability increase trust and acceptance of policies formulated by the government. Civic participation inspires creativity and innovation (Anthony Jr, 2023). Sourcing opinions and views from a diverse background can give rise to novel ideas with capacities to solve existing challenges. In addition, the community could feel more empowered and mobilise local resources to build local capacities for their problems. It also hastens the decision-making process, thereby improving the efficiency of governance systems.

Participation creates job opportunities. The community could mobilise external resources to train the youth in social enterprise development (Mathebula, 2016). Community participation also increases the knowledge of how public institutions work and gives the public greater access to the resources they need (Watt, Higgins, and Kendrick, 2000). For example, in Mathare, Kenya, community-based organisations (CBOs) and local collectives participate in dialogues to discuss the local governance structures and how resources are channelled to the public.

Lastly, community engagement reduces conflicts that could emerge from different groups (Sanggoro, Alisjahbana, and Mohamad, 2022). Various interest groups provide services in urban communities (including the government). Conflicts can arise from these groups when their interests collide. Participation is deemed to harmonise diverse opinions to prevent conflicts and increase public satisfaction (Rijal, 2023). As Newig et al. (2018) argue, participation accelerates consensus between the different groups, thus promoting cooperation.

4. Participation and informality

Although cities currently implement participation as a democratic decision-making tool,

scholarly articles argue that it could reinforce inequalities in areas with existing forms of marginalisation (Wamuyu, 2017). Fredericks (2020) mentions that the current formal public participation methods fail to reach wider groups of the population, including poor people, younger people, immigrants, refugees, and people living with disabilities. This is true with informal settlements in Kenya, which are socially and spatially marginalised. Formal participation fails to reach informal areas due to the inadequate public infrastructure, such as places to conduct the activities. The urban poor living in these informal settlements thus become passive participants as their voices are not actively integrated into the formal city decision-making processes. Moreover, youth in these informal settlements need more incentives to follow up and engage in these participation processes. They describe the processes as boring and lacking modern interactive methods that could attract a wider audience.

Public participation in informal settlements takes different forms. Approaches such as focus group discussions, public hearings, city hall meetings, citizen juries, surveys, and the use of digital tools have been widely used and are being adopted by local communities to facilitate participation (Rowe and Frewer, 2004).

Physical participation requires a venue where participants converge to co-create and provide feedback or inputs to the physical activities (Fredericks, 2020). Tools for conducting physical participation include focus group discussions, physical surveys, open forums, workshops, community dialogues, and public hearings, amongst many more (Fredericks, 2020). These physical spaces provide a medium where communities converge to become part of the city's decision-making. These types of participation use physical tools and methods such as charts, whiteboards, presentations, etc. In cases where digital platforms are fused with these physical activities, they are usually minimal. For instance, a workshop could include graphical computer presentations or feedback sessions on *Google Forms*.

Physical participation is constantly faced with space constraints in informal settlements. Getting a physical space that can host public participation forums is difficult. Public land where such forums take place is often grabbed by those in power, leaving the community with few options (Makworo and Mireri, 2011). In cases where private entities are available in these places, they control the activities, thus interfering with the principle of open access. As Bourdieu (2018) argues, people in power over places are simultaneously in power over those who access the places. In this sense, it becomes difficult for the community to participate actively in such processes. Meagre development initiatives by the government are also fairly to blame for the lack of public places in informal settlements. While formal participation processes continue in other areas of the city, the opinions of the informal dwellers are not fully captured during policy formulation, thereby further reinforcing exclusion. In the Mathare informal settlement, for example, the community attends public participation forums organised by the county governments in other areas such as Huruma, Pangani, or Mlango Kubwa. This means that only a few people attend the public meetings as venues are located outside the settlement.

Unequal demographics in informal settlements also limit participation (Heaton & Parkilad, 2019; Paskaleva et al., 2021). It is argued that physical approaches capture certain population groups, excluding others from such processes. There is a tendency to associate community participation in informal settlements with specific groups—for instance, a biased selection of those who can read and write to attend community workshops. In Mathare, the youth and younger people are often excluded from public participation processes. They are considered rowdy and unruly and associated with creating chaos and violence (Van Stapele, 2016). Besides, youth in Mathare distrust government-motivated

initiatives as they perceive the government as a failed institution. Other groups with social challenges, like people living with disabilities, find it hard to access these meetings because of the lack of aiding infrastructure.

Digital forms of participation comprise online platforms where society can input their opinions and feedback (Karadimitriou et al., 2022). Digitalisation has been considered a powerful tool for collecting citizen feedback. While digitalisation is increasingly used in the participation process, it has been argued that it fosters exclusion amongst the marginalised groups in cities, such as informal settlements where a good proportion do not access the internet. In the Mathare informal settlement, the apathy for using the internet is associated with various factors. These factors include the following;

- Limited access to digital devices such as smartphones or laptops.
- Low digital literacy levels
- The high cost of internet. Digital participation requires the installation of high-speed internet, such as Wi-Fi or an optic fibre connection.
- There is low awareness and capacity for digitalisation.

Therefore, it becomes a challenge to engage in digital participation as only a fraction of the population would be connected.

A mapping survey of (public) places in Mathare identified the following facilities.

4.1 Cybercafes

The study revealed 17 cybercafes across the settlement. All the facilities had internet except one. The facilities are privately owned, and the community accesses them by paying. However, it was realised that some villages, such as Kosovo and Mathare 3B, did not have internet access due to the lack of electricity. This describes how inadequate access to infrastructure and services limits access to digital information (see Fig. 1).

4.2 Social halls

The study identified eight social halls across the settlement. They were observed to be owned by community-based organisations (CBOs). The halls are used by the CBO members and occasionally hired out to the public. The facilities are not connected to the internet. While the facilities are accessed by the community, they do not have access to digital information.

Name of Facility	Village	Facility Type	Service category	Owner/ operator of the facility	Internet Access (Wi-Fi)
Greenpark community social hall	Village 1	Social Hall	Public	CBO	No
Mathare environmental	Village 1	Social Hall	Communal service	Community	No
Homeboy socail hall	Village 1	Social Hall	Communal service	CBO	No

Kinatco Social Hall	Mathare 3A	Social Hall	Public	CBO	No
Slum Children Social Hall	Mashimoni	Social Hall	Communal service	CBO	No
Twaweza Youth Group Social Hall	Mashimoni	Social Hall	Communal service	CBO	No
Bagdad Social Hall	Mathare 4A	Social Hall	Communal service	Community	No
Myda Hall	Mathare 4A	Social Hall	Communal service	CBO	No

Table 1. Social halls

4.3 Libraries

The study identified four libraries that are owned by CBOs. Likewise, the facilities are not connected to the internet.
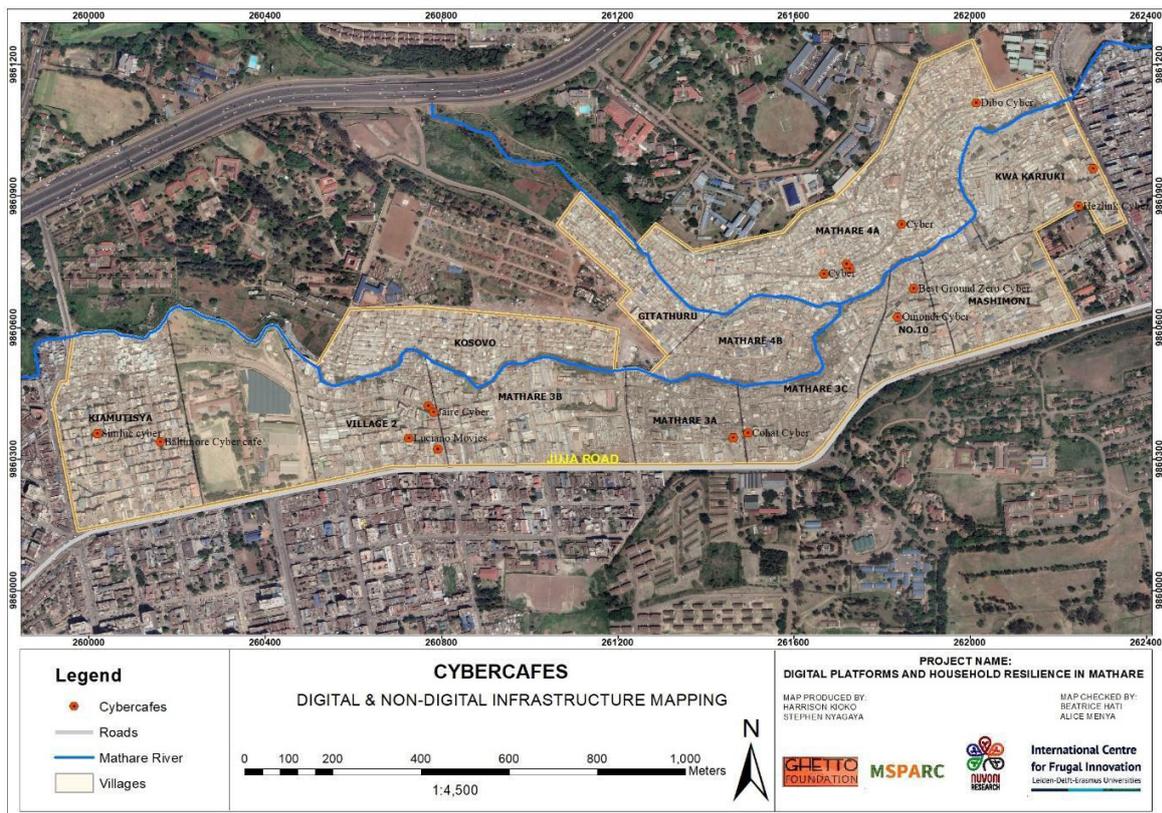

Figure 1. Map showing cybercafes in Mathare Credit: Authors, 2024

Name of Facility	Village	Facility Type	Service category	Owner/ operator of the facility	Internet Access (Wi-Fi)
Mysa Mathare Library	Village 2	Library	Communal service	Community	No
Billian Music Family	Mathare 3B	Library	Communal service	CBO	No
School Hope Muungano	Mashimoni	Library	Communal service	CBO	No
Slin Library	Mathare 4A	Library	Communal service	CBO	No

Table 2. Libraries

4.4 Informal places - bases

The study identified seven informal spaces (bases) across the settlement. Bases are informal places where the youth engage in informal dialogues. These places usually host organic discussions on communal issues. They are sometimes hosted in open spaces, makeshift structures, or at the frontage of buildings. Out of the seven bases, only one of them, which is owned by a private entity, had internet.

Name of Facility	Village	Facility Type	Service category	Owner/ operator of the facility	Internet Access (Wi-Fi)
Spark city	Village 2	Base	Communal service	Community	No
Wanavietnam Area 3B	Mathare 3B	Bas	Communal service	Community	No
Blaqeye Base	Mathare 3A	Bas	Public	CBO	No
Twaweza Youth Group	Mashimoni	Base	Communal service	CBO	No
Smart Base Group	Mathare 4B	Base	Communal service	Community	No
Kun Fire Base	Mathare 4A	Base	Communal service	Community	No
Imperial Base	Mathare 4A	Base	Communal service	Private	No

Table 3. Bases

The findings above show limited public places in Mathare. While the community has libraries, social halls, and cybercafes, the study found that they are privately owned or managed by community-based organisations (CBOs). The community pays to access the places. The facilities have small spaces, limiting public access. Further, these facilities are few and do not meet the needs of the target population. Most of these facilities do not

have internet, making it difficult for the public to access digital information. We, therefore, position that these privately owned facilities limit free participation by the youth.

Despite internet inaccessibility, participation in the bases was free as no access fee was required. The youth create these bases to engage in informal dialogues within their villages. This paper presents how such places can be modelled for hybrid participation. Hybrid participation refers to integrating digital activities in a controlled physical space within a city (Anthony Jr, 2023).

Figure 2 summarises the challenges of public participation and how they inform poverty, inequality, and informality. The blue ring represents informality, poverty, and inequality as the major underlying issues in informal settlements. The green ring represents challenges experienced when implementing public participation in informal settlements. The grey and light blue semi-rings state the forms of participation. In summary, the circle states that community participation (physical or digital) is affected by various challenges that inform informality, poverty, and inequalities in informal settlements.

5. Digital Village Hubs

The Kenya National Digital Master Plan 2022 – 2032 recognises the role of ICT in creating opportunities and boosting economic growth. Amongst other functions, the plan establishes a nationwide digital infrastructure, connecting every citizen to the e-government platform. This

Figure 2. An informal space (base) in Mathare 4B. Credit: Authors, 2024

will be done by establishing 1450 digital village hubs in every ward in Kenya (Government of Kenya, 2022). In addition, the plan sets to establish 25, 000 public Wi-Fi hotspots in public places across the country. The hubs are intended to serve as ICT training and film production centres and enhance access to government services while improving public WiFi(Government of Kenya, 2022). The plan is set to be implemented by the ICT Authority (ICTA) of Kenya.

The role of the ICT Authority in the establishment of the hubs is to facilitate the connection of high-speed internet and provide digital technologies. This allows other entities and communities to design and manage the hubs based on their needs. This provides an opportunity for communities to create hubs as vital and vibrant spaces where youth can participate in planning and decision-making processes for the betterment of their settlements.

Digital hubs as vital and vibrant public spaces

In terms of public participation, the ICTA plan does not provide a strategy for engaging the urban poor in the design and implementation of the proposed digital hubs. The informal settlement communities could leverage their ingenuity to design digital hubs
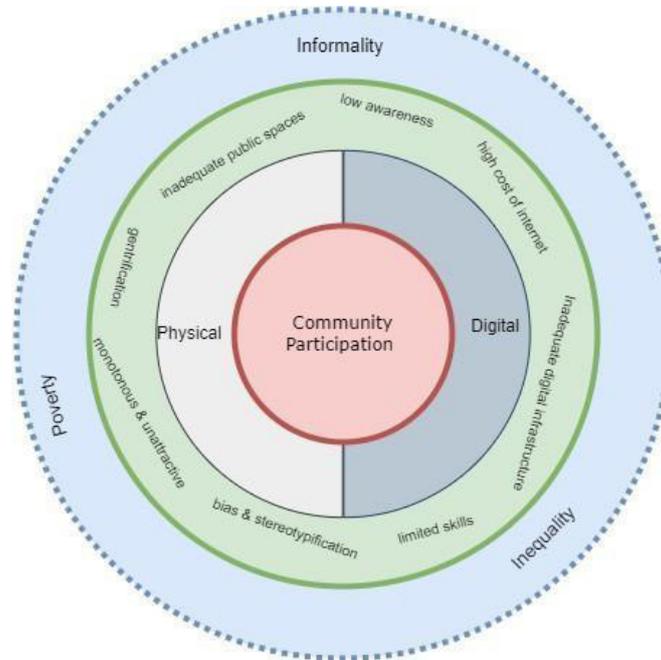

Figure 3. Participation and informality concept, Credit: Author 2024

that are fit for youth participation. This section presents a strategy for how the hubs could serve as hybrid public spaces where youth living in informal settlements carry out physical and digital participation. The communities could capitalise on high-speed internet connectivity provided in the hubs and other public places to conduct online engagement activities.

Mathare is one of Kenya's most populated informal settlements in Kenya, with a population density of 68, 000 people per square kilometre. The settlement has four wards: Mlango Kubwa, Mabatini, Hospital, and Utalii (KNBS, 2019). Based on the ICTA plan to establish digital hubs in every ward, Mathare should host at least four digital hubs. From the findings above, it is evident that Mathare has no facilities owned by the government. Therefore, the government should connect the internet to other facilities or places that are accessed by the community. In Mathare, these places include libraries, social halls, and bases.

Rather than implementing the pervasive city-wide digital proposal, the Mathare digital hubs should be designed to remove the existing inhibitors to participation and information access. They should be designed as public digital and physical spaces, which the authors call hybrid public spaces. They should feature physical and digital participation methods while integrating other forms of community engagement. The table below summarises the activities to be considered in the hybrid public space.

Physical activities	Digital activities
Community workshops & dialogues to discuss issues that need urgent attention	Hybrid workshops and dialogues to discuss urgent issues
Civic education	Digital literacy training
Youth mentorship and counselling programs	Access to government information
Indoor games e.g. snooker, Poker etc	Planning and city development gamification e.g. using Minecraft or Augmented/Virtual realities to plan and design neighbourhoods
Training on health and well-being	Digital studios for young upcoming artists
Exhibitions and concerts	Sharing information/news such as early warning information
Advocacy and activism through artistry (speaking walls, wood carvings etc).	Capacity building on remote/online working

Table 4. Physical and digital methods of participation

Hybrid spaces would include the following elements;
• Physical participation
• Digital engagement
• Hybrid and middle-out engagement

6. Physical engagement

According to Fredericks (2020), physical spaces are places where people can be seen and heard. They provide the opportunity for the community to congregate and speak their opinions. The physical engagement methods should be diverse. They should include formal participation processes and playful and collaborative activities within the space. Workshops and dialogues should be conducted at two levels, i.e., the community level, where only community members participate, and fused levels, where other stakeholders can be invited. Dialogues and workshops should include computer use and simple graphics to make them more interactive. These activities should be participatory and not be one-sided communication by the presenters only.

Other participatory activities should include games. The space should integrate reactive games that involve many participants, such as Snooker (pool game) or poker (card game). These would draw the attention of others to associate with the activities of the space. The space could also be used to consolidate community activism through artistry. This will reinforce the collective activism conducted by other CBOs in the community. Exhibitions and concerts can also be used to speak about eradicating social vices and maintaining health and well-being.

7. Digital engagement

The space should also have digital engagement activities. Workshops and dialogues should be digitalised to include other community members who would not be physically present but wish to join the conversations. City county officials and stakeholders from the relevant authorities are also invited to join the physical or online meetings.

To engage with the ongoing citywide participation in policy and legislation, the digital space should have a *feedback portal* where the community members can send their feedback

to the relevant authorities. Other city and community development initiatives, such as planning and development proposals, can be engaged through digital games. The Minecraft game has been successfully piloted in Mathare through the Block by Block project in partnership with UN-Habitat and Microsoft (N'Nuel, 2020). The youth used the video game to design and visualise their public spaces in Mathare.

Another possible digital tool is augmented or virtual reality, where the participants interact with virtual videos of the city. Other activities that should be included in the space include training on digital literacy, capacity building on remote jobs, sharing early warning information, and studios for recording music or videos for young upcoming artists. The community must have technical knowledge to participate actively in digital engagements. Further, digital media tools can extend engagement beyond the community.

8. Hybridity and middle-out engagement

Hybridity is the integration of both physical and digital forms of engagement (Fredericks, 2020). The hybrid participation form integrates physical and online methods in public spaces. It helps integrate emerging technologies of involvement. This dynamic approach allows for temporarily installing digital techniques in existing public spaces (Hofstad et al., 2022; Karadimitriou et al., 2022). It improves community engagement by promoting playful collaboration and providing interactive and engaging methods to connect with the public. The hybrid public space also allows the youth to upskill themselves in using and operating tools through digital literacy training (Rutten, 2018). Further, it would inspire innovation amongst the participants by exploring the different ideas for solving challenges within the community.

The digital hubs would be modelled to become hybrid public spaces that integrate various activities and allow other community members to access information and participate in the activities remotely. The government should install public Wi-Fi in informal public places such as bases for the youth, informal roadside markets and other open places to allow community members access to the internet for participation. Also, CBO-owned places that are accessed by the public (i.e. social halls and libraries) should be connected to the internet to encourage hybrid participation of the youth.

The conceptual diagram below shows how internet connectivity can enhance hybrid community engagement between the four digital hubs and other informal spaces within the community. The idea would foster the integration of engagement activities between the hubs and the informal spaces. This is what Rivera-Vargas and Miño-Puigcercós (2018) refer to as 'virtual communities'.

Figure 5 shows a youth dialogue in a space that has been reclaimed from Mathare river. Middle-out engagement supports integrating objectives from the top-down decision makers with objectives from the bottom-up decision makers. These objectives strike somewhere in the middle. Knowledge from the higher order authorities, i.e., government, and lower information channels, i.e., the community, come together to meet in the middle. In this case, the government's proposal would be discussed with the community to identify the people's needs, wants, and aspirations before integrating the former to forge relationships and begin a co-design process. In Mathare, discussions would be conducted at ward levels before converging with the government to co-create the process. This would allow the government to appreciate how their proposals fit in the community. It would also increase confidence in government initiatives to encourage participation within the community.
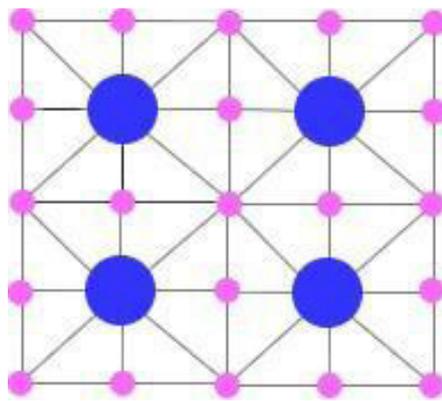
Figure 4. Hybrid Public Space Structure, Credit: Authors, 2024

Figure 5. Youth dialogue in Mathare Park, Credit: Authors, 2024

9. Conclusion

Various factors, including inadequate public spaces, inadequate public infrastructure, limited internet connectivity, and biased selection of specific population groups, limit public participation in informal settlements. Government proposals are not only pervasive but also fail to address the needs of the community. The proposed digital hubs by the government of Kenya can be remodelled to serve as spaces for public participation for youth in informal settlements. Hybrid participation can be promoted by connecting community facilities to the internet to ensure inclusivity. These spaces would be redesigned to include collaborative physical and digital activities, thus breaking the monotony of the normal public participation forums. The spaces would use hybrid activities such as hybrid workshops, dialogues, and virtual reality games to bring the community to par with the government's policy proposals. These spaces would see the youth engaged in various activities within their localities, including upskilling them in business development models, formulating community outreach programs, participating in health awareness programs, and working remotely. As a result, the spaces would strive to eliminate the social vices in the settlement strongly linked to unemployment, idleness, and low awareness.

The proposed middle-out engagement strategy allows the community to autonomously manage their own participation and engagement activities while discussing the policy

and development proposals by the government. This strategy prevents dictation by the government. Thus, the digital space strategies ensure cooperation with the government and the acceptability of the government projects to the community. It will inspire creativity and innovation amongst the youth through the training and empowerment programs. As a result, avenues for job creation and employment will widen. Lastly, the digital space will reduce tension between different groups through enhanced cooperation.
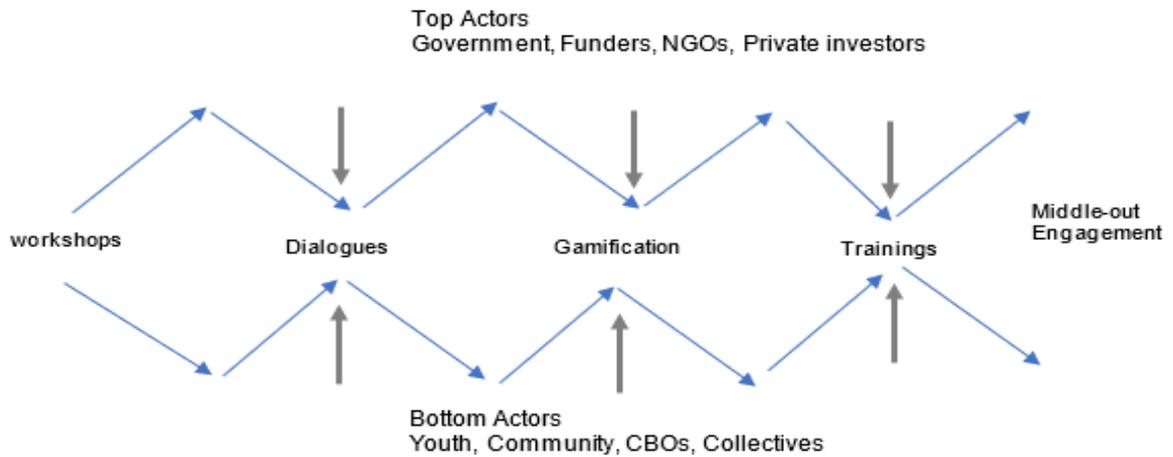

Figure 6. Middle-out engagement, Credit: author

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