



Co-designing educational spaces: unveiling opportunities for empowered learnings in post-apartheid secondary school in South Africa

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Co-designing educational spaces: unveiling opportunities for empowered learnings in post-apartheid secondary school in South Africa

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Abstract. In the context of a secondary school in a township in South Africa, this study employs a participatory action research approach to engage primarily the students into co-designing a self-managed space. This approach aims at utilising the local resources to reduce the gap between students from townships to other privileged secondary schools in the city. The applied concept is based on self-management, a novel approach in the South African context, draws inspiration from global educational reforms. The methodology is developed in collaboration with the Tsako Thabo Secondary School in Mamelodi, Pretoria, South Africa, with students aged 14 to 18 years acting as co-designers and space managers. In three on-site workshops, spanning from contextual understanding, over design exercises, to the base foundation of the self-management's concept, the workshops yield significant outcomes. Two different designs: an architectural design of the co-created space, and a design of the system regulating the space between all its members, with a funding strategy, have been developed. The design proposal includes a self-managed space with four distinct areas, and three booklets to guide future initiatives. Challenges in the field, including cultural differences and logistical issues, were navigated with adaptability and effective communication. Despite these challenges, the students' resilience underscores the transformative potential of participatory research in fostering an empowering educational environment. This research contributes a unique perspective to the self-management discourse, emphasising a macro-level impact on students and their autonomy. The co-designed space provides a platform for experimentation and addresses resource deficiencies in the community. Overall, the study unveils novel opportunities for collaborative educational initiatives, emphasising the importance of adaptability and meticulous planning in diverse contexts.

1. Introduction

South Africa's colonisation by the Netherlands (1652-1795 and 1803-1806) and Great Britain (1795-1803 and 1806-1961) [1], led to a multicultural country with a racial hierarchy. Ultimately, the White South Africans took over the political system and implemented the apartheid (1948-1994), a system that would legalise racial segregation, which left the country with major disparities. These disparities affected the domain of territory, sports, politics, and especially education where there are still profound inequalities in opportunities between students from townships and other privileged areas. For example,



historically, the apartheid regime compelled non-white South Africans into designated urban areas known as townships which reinforced a segregationally system between the different races. These housing settlements were characterised by underdeveloped social services and limited economic infrastructures. While these laws are legally dismantled, the population living in those settlements are still confronted with many enduring challenges from Apartheid. Being geographically remote from economic hubs and having a restricted range of business activities, it contributes to a precarious internal economy of these townships [2]. Consequently, educational outcomes within these settlements remain tremendously unequal perpetuating a bimodal system leaving the majority of the township youth as unskilled labour. Tracing its roots to the Bantu Education Act of 1953, implemented during the apartheid era [3], this legislation deliberately ensured less resources for students living in townships, perpetuating their relegation to unskilled labour positions. Even post-colonialism time, the pass rate of a secondary school for township students lags significantly at only 50% compared to other privileged areas that can achieve up to 98%. Similarly, the completion of a university degree is only achieved by a modest 11% of the township's students, whereas 80 % of the privileged students possess a degree [4].

To reduce the educational gap, establishing new spaces of learning through a self-management approach could be a step forward to enable student's agency in the decision-making process to foster accountability in their educational future. The idea of self-management refers to the delegation of power to the collective. It is an approach that has been the focal point in the past in many educational reforms across diverse global contexts, including Australia, Canada, New Zealand, and the United Kingdom [5]. While the concept of self-management remains relatively new in South Africa, this research delves into the possibility of applying this approach in a modern context on a micro level, a single space self-managed by the students. Collaboration with the teachers, school director, and external community becomes a key element for developing the full potential of the space following the values and vision of the students. This paper seeks to elucidate how the application of a self-management approach of collaborative spaces can engender new opportunities and instil a sense of ownership within the Black student community residing in the township of Mamelodi, South Africa. By developing spaces tailored to their specific needs, novel opportunities of educational development are possible reducing the educational gap between Black and White students.

In the specific case of Tsako Thabo Secondary school in Mamelodi, a dialogue is cultivated between the school community and if going forward, with external stakeholders within the township. A co-designed space activity is primarily carried out by the students aged 14 to 18 (grade 10 to 12) at the school, thus constituting a self-managed initiative. The presented research has been initiated in the context of a 4-months Master's Thesis within the field of architecture and planning beyond sustainability at Chalmers University of Technology in Gothenburg, Sweden.

1.1 Self-management

The self-management approach in education refers to a decentralisation of the school's authority which is delegated to the students [5]. This approach can vary from one school to another depending on how much this system is integrated into the educational system. For example, in the Lycée Autogéré de Paris, students form a general assembly where they can regulate the registration of other students, bring changes to the curriculum, promote new projects, call for parents-teachers meetings, and more [6]. In Jonathan School, Canada, the pupils in primary school have the choice to go to school or not, and they decide what they want to learn. Teachers act more as a support for the learning desires of the child, and the school is responsible for providing the necessary material. This technique showed great success in terms of individual potential. Taking the example of the reading skill, most children would learn by themselves at around six years old; by the age of 8, the whole class could read properly [7].

Self-management, in the context of this study, is the ability to self-regulate one's activity and to put in place new initiatives. To achieve this state of self-management, students must implement a new form of organisation where all members have well-defined roles to ensure a good functioning of the space [8]. The organisational structure used in this research mirrors that of a General Assembly, featuring an executive committee poised to serve as the project's driving force. In summary, self-management is

characterised by decentralised decision-making, empowering students as the primary users of the space and enabling them increased control to foster new activities aimed at answering lacking resources of the school. This facilitation of agency concurrently fosters a sense of belonging, a pivotal element contributing to the cohesion of the space.

2. Case study - Tsako Thabo Secondary School, Mamelodi

Tsako Thabo Secondary School is situated in the township of Mamelodi, a constituent of the Tshwane Metropolitan Municipality located in the northeast of Pretoria in the Gauteng province of South Africa (figure 1). Established in June 1953 as a racially designated area during the apartheid era, Mamelodi

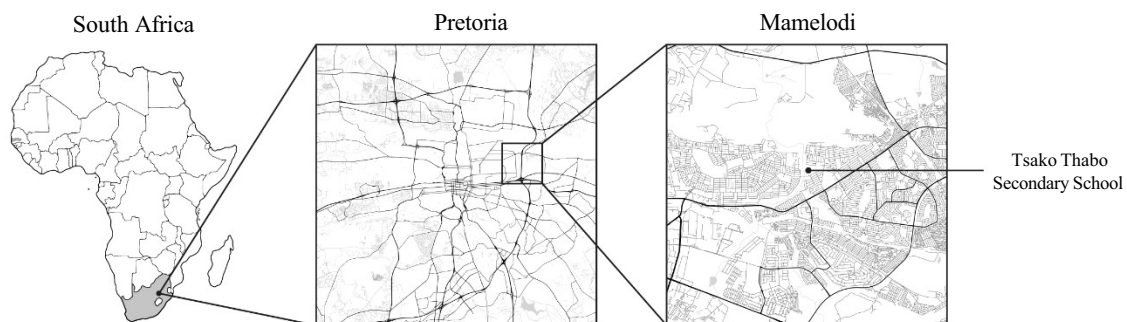


Figure 1. Situational plan of the township of Mamelodi, in the city of Pretoria, South Africa

currently accommodates approximately 335,000 residents [9]. Evolving from its historical context, Mamelodi has transformed into one of Pretoria's most developed townships, characterised by a proliferation of primary and secondary educational institutions, alongside the concerted efforts of numerous organisations and groups striving to enhance the overall quality of life within the township. During the last decade, the University of Pretoria has undertaken diverse research endeavours within the precincts of Tsako Thabo Secondary School, fostering a close-knit relationship and a robust network between the academic institution and the school community. Notably, Tsako Thabo emerges as a distinctive educational establishment, where the school principal has implemented a suite of incentives dedicated to the enhancement of the scholastic environment. Consequently, the school exhibits a receptivity to further initiatives geared towards its amelioration, rendering this study an opportune moment to unveil novel dimensions of potential for the students and the institution at large. Figure 2 shows examples indoor and outdoor spaces of the Tsako Thabo school.

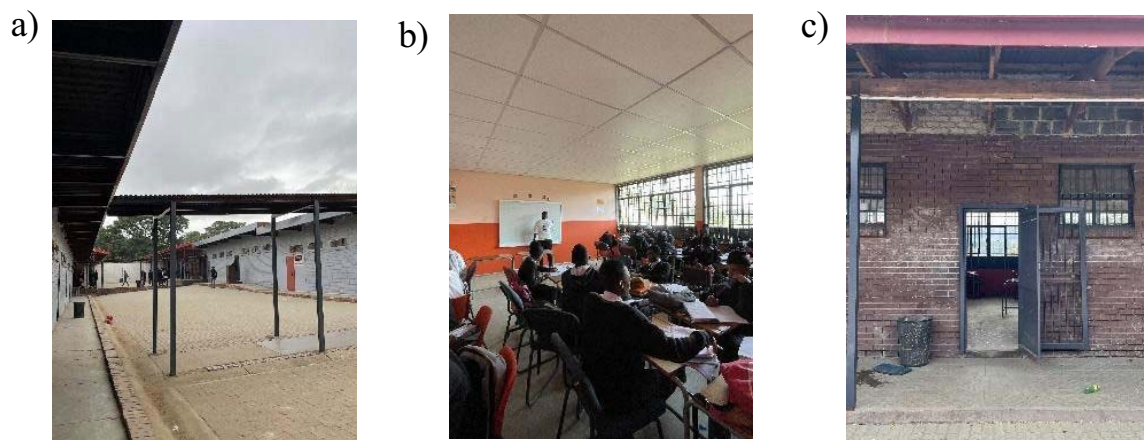


Figure 2. Spaces of Tsako Thabo Secondary School. a) Courtyard regrouping grade 10, 11 and 12. b) Typical classroom in grade 12. c) Entrance of a classroom. Photos: Naïna Dion-Barbin, 2023.

3. Methodology

This study is based on a participatory action research (PAR) approach [10], facilitating an intimate engagement in the co-production of knowledge and co-design process, predominantly involving students over a 3-month period. Data collection encompassed photographs, notes, workshops, informal interviews, and a questionnaire that were systematically analysed. Collaboration with the director of Tsako Thabo and an assigned teacher facilitated the logistical aspects enabling the organisation of three distinct workshops (table 1). These workshops focused on assessing students' needs and articulating their vision (contextual workshop), co-designing a self-managed space (design workshop), and creating an organisational structure to manage the space (foundation workshop). The workshops were primarily conducted individually, with the exception of the initial session, which involved a larger group of students. To ensure the smooth operation of this particular workshop, assistance from student from Chalmers was enlisted. Students participating in the workshops were from age 14 to 18 years old and were chosen based on their previous interest in collaborative activities at the school by the designated teacher. The process remained in close connection with the director and teacher to ensure a cohesive project to the school's structure. While the primary focus of this research centres on the students of Tsako Thabo as the principal agents shaping the space, it is crucial to align with the school's existing capacity. Furthermore, the integration of the larger community, including local organisations engaged in fundraising activities, is essential for building a sustainable space. This inclusive approach fosters the development of new connections between the students and the community, thereby enhancing a collective sense of belonging. The participatory approach was particularly concentrated on design sessions, during which students actively collaborated to configure a space that resonated with their needs and shared vision.

Table 1. Resume of the three workshops on-site at Tsako Thabo Secondary School.

Workshop topic	Date	Participants	Aim	Data collection	Challenges
Contextual	March 24 th , 2023 (3 hours)	19 students Aged from 14 to 18. Eight girls, and eleven boys.	Understand the contextual environment of the township and the school.	<ul style="list-style-type: none"> · Questionnaire · Mapping of the “good” and “bad” places around the school · Needs and vision group discussions. 	<ul style="list-style-type: none"> · Slow internet connection. · Language barriers with grade 8 students struggling with English. · Logistical challenge due to students arriving at different times.
Design	April 21 st , 2023 (2 hours)	9 students Aged from 17 to 18. Seven girls and two boys.	Individual design of the self-managed space and creation of an organisational structure.	<ul style="list-style-type: none"> · 9 individual designs. · Introduction and discussion about the structure of a self-managed system. · Discussion on a funding system. 	<ul style="list-style-type: none"> · Finding a time slot accommodating all students. · Heavy noise in the school during workshops at lunchtime. · Lack of glue or tape at the school which necessitated the researcher to complete furniture setup at home post-workshop.

Foundation	April 25 th , 2023 (2 hours)	8 students Aged from 17 to 18. Six girls and two boys.	Co-designing of the space and election process to establish the organisational structure with a funding strategy.	<ul style="list-style-type: none"> · Two different designs of the self-managed space. · Establishment of the organisational structure by electing the executive committee. · Set up of monetary goal. 	<ul style="list-style-type: none"> · Limited workshop venue options, using the cramped computer room. · One participant dropped out since the last workshop.
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3.1 Contextual Workshop

The aim of this first workshop was to gain a deeper understanding of the context of the students of Tsako Thabo school. This initial investigation was imperative to comprehensively grasp and evaluate the specific needs of the students. The half-day workshop was divided into three distinct parts, a questionnaire with the aim to understand the contextual environment of the students in the township of Mamelodi with their family and peers, a mapping exercise to identify the “good” and “bad” places on the school’s premises, and discussions with the students about what is lacking in the school’s environment. The questionnaire comprised 34 questions covering the topics of the student’s relationship with their family, their teachers, and peers, their engagement toward the school, their difficulties, and their expectations. The choice of using an online questionnaire, using the platform “QuestionPro”, was to easily summarise the participants’ data in a systematic and visual way to present to the director of the school. Since secondary school students are getting familiarised with computers, it seemed a great occasion to offer an activity engaging them with this new material using the keyboard, mouse, and following an internet URL. However, due to the slow internet connection, the access to the questionnaire proved to be time-consuming and took a full hour and a half to complete for every participant. Hence, for this particular context, employing a paper-based questionnaire may offer a more effective method allowing more time to activities involving the whole group. Subsequently, on a more nuanced level, it was deemed crucial to ascertain the students’ sentiments regarding their educational institution and which room could be used as the student’s self-managed space. To extract this information, each participant was furnished with a schematic layout of their school, where they were asked to pinpoint one place they enjoyed on the school premises, one location they perceived as dangerous or to be improved, and a location that had potential to be the new student space. The results from the questionnaire were then grouped together in a schematic plan of the school and colour graded from the most common answers (darker) to the least common ones (lighter) (figure 3). Cumulatively, these activities yielded a comprehensive depiction of the prevailing circumstances, addressing the students’ familial, peer-related, scholastic, and intrapersonal dynamics.



Figure 3. Plan of the “good” and “bad” places identified by the students of Tsako Thabo.

3.2 Design Workshop

The second workshop was concentrated on two thematic activities: the design of the future space, and the structural aspects of the self-managed system governing the space with a funding strategy. The aim was to first, encourage the students to design their future self-managed space and second, implement the concept of self-management by establishing a student management structure. The results from the previous workshop highlighted several activities that were perceived as lacking in the school's environment by the students, including areas for bible study, a computer room, dance space, study room, library, cooking classes, arts and crafts materials, among others. Four areas were mentioned repeatedly (arts and crafts, technology/study area, therapy corner, and dance area), which have been chosen as key areas by the researcher to facilitate the design activity (figure 4) for the students. Along with pre-cut paper furniture, the students could easily arrange various items within the designated plan. This activity proved successful, fostering engaging discussions among students and subsequently prompting further discourse on optimal space utilisation.

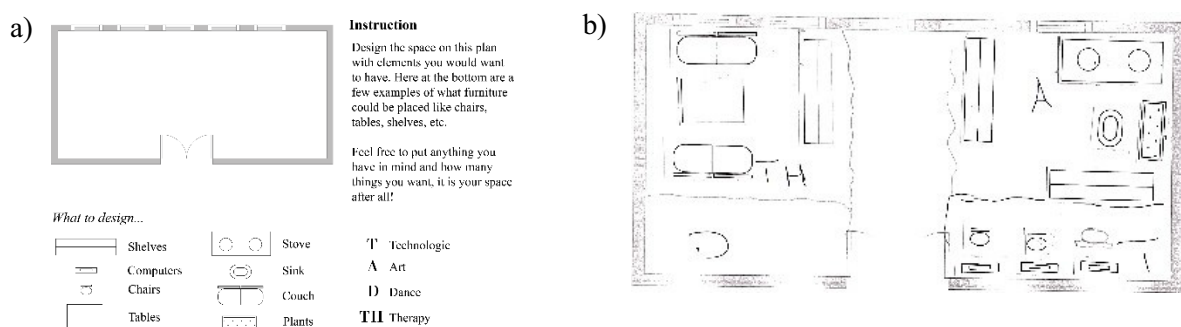


Figure 4. Designing workshop of the self-management space by the students. a) Base plan of the space with the pre-cut furniture. b) Example of an individual design by one student.

The second thematic activity was based on establishing an organisational structure and proposing funding methods for realising the furnishing of the space. Drawing inspiration from existing organisational frameworks, notably one of a General Assembly which is a model known to the researcher through previous personal experience, the organisational structure (figure 5) was conceptualised. This model comprises active members, those contributing to the monthly meetings, and the four members constituting the executive committee. Meetings are scheduled once a month, or more

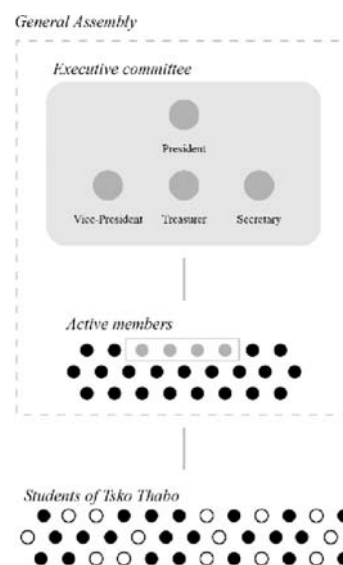


Figure 5. Organisational structure of the self-managed space.

frequently as required, the organisation serves as a platform to present ongoing project statuses, vote on proposed initiatives for the space, allocate financial resources, coordinate fundraising events, and undertake other pertinent discussions. In essence, it fosters a collaborative environment where members are kept informed of space-related developments and actively engage in decision-making processes. This element is crucial within the self-management system, emphasising the need for autonomy and collaborative responsibility in constructing a space reflective of the students' values. Significantly, students exhibited a keen interest in exploring funding strategies, suggesting avenues such as a GoFundMe campaign and direct outreach to potential donors, coupled with personalised acknowledgments. This workshop emerged as a notable success, substantially aiding the overall process. It became evident at this juncture that students harboured a genuine interest in actively participating in the creation of a space uniquely their own. Their abundance of new ideas and proactive engagement underscored their enthusiasm for advancing to the subsequent stages of the project.

3.3 Foundation Workshop

This third and final workshop aimed to synthesise the data accumulated over the preceding weeks, establishing a robust foundation for a project that could be autonomously executed without the researcher's direct intervention. An important part of the process involved collaborative efforts to amalgamate ideas, concepts, and designs. Thus, the students were organised into two distinct groups, tasked with presenting their designs from the prior workshop to each other. In a collaborative way, they co-designed a new space considering each other's propositions (figure 6). This led to two very distinctive plans one with closed spaces utilising furniture and walls to delineate various activities within the room, while the other one concentrated on leisure activities and open space for a cooking area. This exercise served as a constructive platform for the students to engage in active listening and collaborate towards a shared vision. The collaborative act of creation and design spurred extensive debates and fostered a sense of communal unity by taking into consideration each and everyone's point of view.

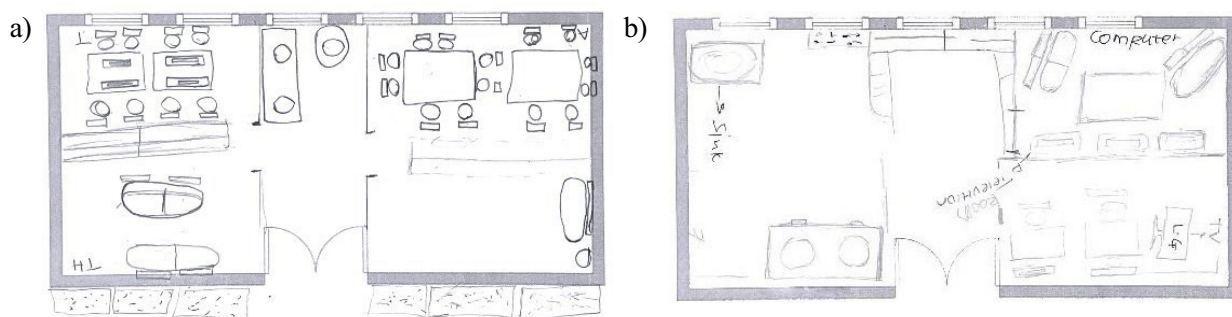


Figure 6. The co-design activity resulted in two types of plans. a) Plan with close spaces. b) Plan with open spaces.

Moreover, to establish a sustainable organisational structure, an executive committee was instituted, serving as the central governing body for the designated space. Preceding the workshop, comprehensive descriptions of each role, along with their corresponding responsibilities (table 2), were provided to the students. This preparatory phase aimed to facilitate the election of the most suitable candidate for each role. Any student aspiring to assume a specific role was required to prepare a speech, presenting it before their peers. Subsequently, a voting process ensued. For instance, in cases where only one candidate stood for a role, participants were presented with two choices: either vote in favour of the student or vote for the "abstain" option, signifying that the candidate was deemed unfit for the position, and the preference was to have no one in that role at the moment. This methodology was consistently applied to all roles within the executive committee.

Table 1. Role and responsibilities description of the members forming the executive committee.

Role	Responsibilities
President	<ul style="list-style-type: none"> · Represent members to teachers and the principal. · Compile the agenda for the meetings. · Facilitate the meetings.
Vice-President	<ul style="list-style-type: none"> · Assist the president in organising meetings. · Act as a delegate if the president is unavailable for a meeting. · Work closely in collaboration with the president.
Treasurer	<ul style="list-style-type: none"> · Manage the organisation's account. · Keep track of transactions. · Present how the money is distributed for various projects.
Secretary of external communication	<ul style="list-style-type: none"> · Represent all organisation's members outside of the school. · Responsible for planning fundraising activities for the space. · Highlight the project within the broader community, including parents, university, and students.

In addressing the fundraising strategy, a two-fold approach was adopted. The initial initiative involved a month-long online fundraising campaign with the goal of securing R10,000 (545USD), leveraging the researcher's international contacts to solicit assistance on a global scale. The second initiative focused on in-person fundraising involving parents, families, friends, and local organisations. The elected student responsible for external communications would play a pivotal role in organising this facet of the process. External stakeholders were also engaged, with a coordinated effort to link the school account with the online fundraising platform, and local organisations were approached to secure participation, whether through monetary contributions or provision of furniture.

4. Results

The workshops resulted in two different designs: an architectural design of the co-created space, and a design of the system regulating the space between all its members with a funding strategy. To facilitate the project's ongoing trajectory, three additional meticulously crafted booklets have been created, offering guidance to students' post-research. The first booklet outlines the newly proposed organisational structure with the executive committee, furnishing details on assembly proceedings and meeting functionalities. The second booklet is dedicated to financing strategies, encompassing avenues for securing funds, community engagement initiatives for donations, and mechanisms for furnishing the space. The third, and final, booklet explains the proposed design, providing tools for future workshops to generate additional ideas.

4.1 Design proposal of the self-managed space

The final design that is being proposed has been created by the researcher based on the previous co-designed workshops with the students. Synthesising diverse student ideas, the final design encompasses our distinct areas: the therapy corner, arts & crafts section, the technology enclave, and the dance space (figure 7). It was brought up by the students that the arts & craft corner should have an open space with the dance area so they could listen to music together and move freely from one activity to the other. Having the right side of the space being open allows for more flexibility depending on the activity they want to prioritise. On the other hand, the left side of the space is dedicated for silent and intimate activities like studying and conversing. These two activities are separated by furniture and movable panels offering a more private space.

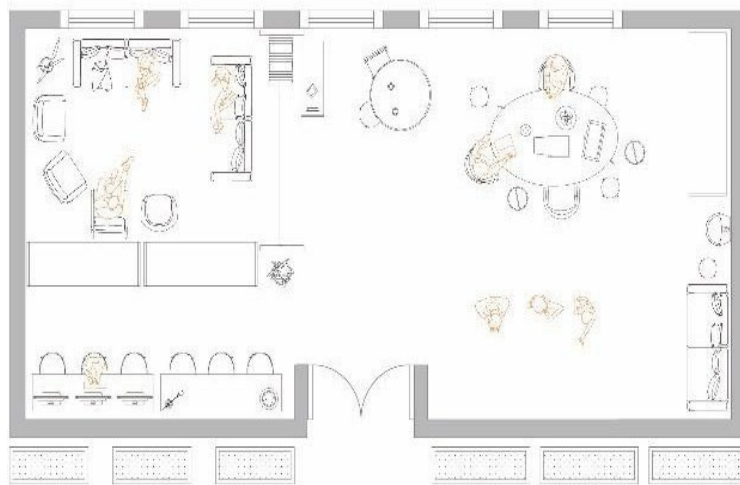


Figure 7. Final design proposal for the self-managed space including a therapy corner, a technology area, arts and craft and a dance space.

Unfortunately, due to time constriction, the final design was not presented to the students. However, the director of Tsako Thabo and the teacher assigned to the project were able to comment on it. It was unanimous that the idea of the four different activities was strong and needed. It respects the student's work and integrates the researcher's architectural knowledge in a seamless manner. The only concern that was brought up was by which strategy the space could be furnished with the specific materials and furniture. This question is directly answered through the new system that has been designed to organise funding strategies and implement the new activities.

4.2 Design of a system and funding strategy

This second part is as much of importance as the architectural design since it is through this new system that the space becomes viable. The new organisational structure manages the space by establishing a fair system allowing the students to occupy the space alternately, organises activities, furnishes the space through funding activities, and communicates the information decided among the active members with the teachers and director of the school to ensure a proper cohesion with the school's vision.

4.2.1 Organisational structure

During the executive committee election process, which encompassed the selection of a president, vice-president, secretary of external communications, and treasurer, an additional role was introduced. A new student participated in the workshop and expressed a desire to contribute to the process. Therefore, the students decided to give her the role of the assistant treasurer. Consequently, the students collectively decided to establish the position of assistant treasurer for her. The task of preparing and delivering speeches posed a formidable challenge for some students; however, the researcher's guidance emerged as a pivotal factor, facilitating all enthusiastic participants in navigating this process successfully. Each role was successfully assigned to a student, and the overall voting procedure proceeded without major disruptions, except for one student who did not secure the desired position.

4.2.2 Funding the space

RallyUp and GoGetFunding emerged as the two preferred online platforms, selected for their user-friendly interfaces and global accessibility, facilitating a campaign that transcends international boundaries. Given the researcher's familial ties to Canada and academic background in Sweden, the ability to engage international donors was significant. Discussions with the school principal affirmed the integration of the fundraising campaign with the school's financial infrastructure, subject to oversight

by the assembly for project prioritisation. This strategic approach not only aligns with international donor engagement but also ensures a seamless integration with the school's financial processes, underpinning the sustainability of the fundraising efforts.

5. Discussion

5.1 *Research and community*

This research aimed at understanding the importance and the benefits in the application of a co-design methodology for the creation of self-management spaces. Through this collaboration between the students themselves, the school staff, and the broader community, they enabled a new space tailored to their needs, thereby presenting newfound opportunities. The efficacy of self-management, as a systemic approach, has been validated in its ability to empower participants, enabling them to make decisions and exert agency over their educational trajectories. Within this co-designed space, students assume the prerogative to determine and organise elements vital to their development in alignment with their distinct vision and values.

This study holds notable significance within the realm of self-management, offering a distinctive perspective by affording students a dedicated space for experimentation. While self-management has traditionally been scrutinised at a micro-organizational level, such as within the school body, this research uniquely focuses on its impact on students at a macro level with the broader community. This affords students greater autonomy and flexibility in their educational pursuits, representing a departure from conventional analyses. Consequently, this approach, actively involving students in shaping their educational future engenders novel opportunities of fulfilment through the different activities possible in the self-managed space, and by offering a communal space of belonging. This unique perspective offers valuable insights into the complexities and opportunities inherent in fostering collaborative, empowering educational environments through architectural interventions.

5.2 *Challenges in the field*

Venturing into the township of Mamelodi proved to be emotionally and logistically challenging. The pervasive effects of poverty were palpable, manifesting in discarded waste, dilapidated road conditions, shattered glass, and ageing vehicles. Despite these challenging surroundings, once situated within the school premises, the reception from students, educators, and administrators was remarkably warm and accommodating. This environment within the school engendered a sense of security, providing a contrast to the harsh realities observed in the broader community.

Conversely, communications between the stakeholders and the researcher exhibited a protracted pace, intermittently impeding the progress of the study. The main challenge lay in orchestrating a schedule that accommodated the availability of the students from different grades, and the designated teacher assisting the researcher. Following three postponements of the second workshop, a pragmatic solution involved on-site engagement, and gathering of the students one by one with the teacher's permission. Additionally, the absence of a dedicated space for the study within the school necessitated perpetual flexibility and adaptability to varying environments. The school's spatial limitations in relation to the number of students created recurrent disruptions owing to elevated noise levels during workshop sessions. Nonetheless, despite all the challenges encountered, the students exhibited commendable resilience and commitment to the ongoing project. These workshops conducted in South Africa offered valuable insights into the complexities inherent in co-designing a self-managed space, underscoring the importance of adaptability, effective communication, and meticulous planning in navigating diverse logistical, technical, and cultural contexts. The students' active engagement, despite these challenges, highlights the transformative potential of participatory research in fostering a collaborative and empowering educational environment.

As a researcher originating from Canada, conducting fieldwork in South Africa presented numerous challenges rooted in cultural and social intricacies. For a newcomer to the country, the need to grasp unfamiliar cultural nuances, distinct from Western norms, required a learning curve. Despite this, the reception of the project from the school's body and the students was positive and the students' resilience

underscores the transformative potential of participatory research, illuminating the nuanced dynamics of co-designing a self-managed space.

6. Conclusion and Future work

This study contributes with a unique perspective to the self-management discourse, emphasising macro-level impacts on student's autonomy and flexibility. Grounded in a participatory action research method over a 3-month period, this initiative engaged students, teachers, parents, and the broader community into a collaborative approach aiming to create a self-managed space. This initiative seeks primarily to utilise local resources to unveil new opportunities specifically tailored to address the needs of underprivileged students from townships. Addressing the historical bimodal system established by apartheid, characterised by disparate learning outcomes, this research introduces the potential of self-management as a key factor to provide the lacking resources to the township's student's educational success. By fostering collaboration among the youth, the study aims to instil a sense of belonging and empower students to take agency within their community. The case study of Tsako Thabo Secondary School exemplifies this approach, where students actively took part in the workshops by co-designing the future self-managed space, and by implementing a system allowing the good management of the place.

Ultimately, this methodology can be implemented to any other school environments seeking to empower their youth where resources are often lacking. Whether in Europe, North America, or Africa, this collaborative way of designing spaces enhance the sense of belonging for all and maximize the use of available resources. The success of this initiative is contingent upon community involvement, ranging from school leadership support to external community contributions for space funding, it is a collective endeavour that necessitates concerted efforts. The three comprehensive booklets, designed to guide students post-research, serve as valuable resources for external stakeholders seeking to implement similar initiatives in their respective educational institutions.

Despite the ongoing nature of the physical realisation of the new space, the foundation of this research is robust. A final design proposal has been formulated, students have been elected to constitute the organisational structure, and funding ideas are strategically in place. The imminent steps involve preparing the designated room for the future space, promoting awareness of the new organisational structure within the school, and organising a community-focused campaign. Unfortunately, the passing of the project from the main researcher to the community happened too quickly, due to time constraint in the country, which led to the project being unfinished still to this day. This step was overlooked during the planning of this research, even though documentation was provided to the school for its continuation, securing a responsible for the project after the researcher's leave should have been made. Contact with the principal confirms that the project still remains important for the community, but the lack of a supervisor project makes it difficult to being pursued.

The students' remarkable resilience throughout this process underscores the transformative potential of participatory research in cultivating an empowering educational environment. The co-designed space emerges as a dynamic platform for experimentation, effectively addressing resource deficiencies and presenting innovative opportunities for collaborative educational initiatives. In conclusion, this research illuminates the feasibility and merits of a co-design approach in creating inclusive, empowering, and sustainable educational spaces, underscoring the paramount importance of adaptability and meticulous planning within diverse contexts.

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