UNIVERSITY OF NAIROBI

College of Architecture and Engineering

School of Arts and Design

A STRATEGY TOWARDS ENHANCING VISUAL AIDS IN TRAINING OF CHILD CAREGIVERS IN DAYCARES WITHIN NAIROBI'S URBAN INFORMAL SETTLEMENTS

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Project Paper submitted in partial fulfillment of the requirement for the Masters of Art in Design Degree to the school of the Arts and Design, University of Nairobi.

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DECLARATION

I declare that this project entitled "Enhancing visual aids in training of child caregivers in day cares within Nairobi's urban informal settlements"—is my own work and to the best of my knowledge has not been presented to any other university for a degree or any other certificate.

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ACKNOWLEDGEMENT

DEDICATION

This work is dedicated to the trainers of caregivers in Nairobi's informal settlements for the amazing work. To visual designers who seek to use their skills to make behaviour change communication simple, joyful and memorable.

ABBREVIATIONS

BRAC - Building Resources Across Communities

ECD - Early Childhood and Development

ECDE - Early Childhood and Development and Education

KICD - Kenya Institute of Curriculum Development

OECD - Organisation for Economic Co-operation and Development

DEFINITION OF TERMS

Visual tools - In this research the term visual tools is used interchangeably with graphics and visual aids to mean iconic expressions of content, mainly focusing on but not limited to still illustrations, designed to optimize learning. Definition based on theory by (Clark et al 2010).

ABSTRACT

As of 2017 there were 300,000 children living in Nairobi's informal settlements and at least 2700 informal daycares run by owners with little or no formal training on Early Childhood Education. and majority with low education levels. There have been some efforts to train caregivers in order to improve the quality of their services. Visual aids are inadequately used in the training of these child caregivers. Studies show that visual aids are highly successful in any behavioural change program because they aid the comprehension, attention and adherence of information especially in a low literacy setting as this. The main objective of this study was to a strategy towards enhancing visual aids in training of child caregivers in Nairobi's urban informal settlements.

This study was a participatory action research which is mainly qualitative in nature and involves a lot of collaboration with the population studied. Best practices from literature review in regards to using visual aids were analyzed. A case study of an organization that trains caregivers in Nairobi's urban informal settlements was conducted. A codesign session was held with trainers and designers and the inputs contributed to creating a strategy that would enhance the use of visual aids in the training. This study established that, if appropriately used, visual aids have a great potential to aid training of child caregivers in urban informal settlements. Results indicated that trainers use visual aids inadequately mainly because they are not empowered on how to use them. A visual analysis of their training materials revealed that visual aids are also not contextualized. This study proposed a strategy that will empower trainers to use visual aids by providing a simplified template that guides them on how to incorporate visuals in their training.

  As informal child care centres are on the rise as informal settlements expand. Most caregivers in these centres are not formally trained, yet they offer a crucial service to the education system in the country. There is a need for a strategic training approach that will equip informal ECD caregivers with skills to enhance learning and child care in informal settlements. This study recommends a strategic way of incorporating visuals in training to ensure that they are more effective and have a greater impact to empowering caregivers and ultimately improving the quality of childcare.

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE PROBLEM

According to UNICEF 2018, scientific research shows that most part of human development is from birth to eight years old and this is the time where the foundation for success is built into the adult years. During this age bracket the quality of childcare is very crucial as it also determines the quality of life even in adulthood.

From review of literature there are numerous studies that have been done highlighting the poor state of informal daycares and most of them list the lack of knowledge among the caregivers as one of the root causes of the problems. A situational analysis by Unicef (2017) gives the perspectives of daycares being insanitary and cold. According to a manual of caregivers by The National Council for Children's Services in Kenya 2011 one of the challenges faced by caregivers is the lack of awareness in what their role is and recommends the need to empower caregivers with appropriate training so that they understand their role in caregiving. Speaking generally of pre primary school systems, Unicef 2018 says that one of the reasons teachers lack to implement play based learning is because teachers lack information on how to find and create low cost play materials using locally available materials.

Most of these studies recommend that the caregivers of these informal childcare centres be trained. In fact, according to World Bank 2004 one of the features that should be in a program to improve the quality of Early Childhood Development is to train caregivers and educate parents.

Trainings for caregivers in informal settlements

As of 2017 there were 300,000 children living in Nairobi's informal settlements and at least 2700 informal daycares which are run by owners with little or no formal training, (Caddy 2017). Not only are the daycares informal but most of the caregivers are not trained on Early Childhood Development (ECD), Wairimu 2014. The caregivers' skills and personalities are big determinants of the quality in a child set up. Studies show that caregivers who have formal education or have been through training provide better quality childcare, (Burchinal et al 2002); (Kidogo 2019).

Burchinal et al (2002) says that previous studies consistently show that caregivers who have formal education provide better quality childcare. This resonates with an assessment of 24 childcare centres in Nairobi's low income areas whose caregivers underwent a 9 month quality improvement program that involved training and mentorship visits. The assessment was done by Kidogo, one of the few organizations that conduct caregiver trainings in Nairobi's low income areas. A global tool called Family Child Care Environment Rating Scale (FCCERS) was used to rate the quality of caregiving before and after the trainings. FCCERS is an internationally recognized tool that measures the quality of child care settings. The FCCERS tools look holistically at the physical environment of the centre, program of activities, personal care routines and the quality of care given by the caregiver among many others. The results showed that there was a significant increase in child care quality. The increase was from a score of 1.4 to 2.9 out of a possible 7, Kidogo (2019).

According to Hickman (2014), in normal ECD settings professional development of teachers is related to the quality of the ECD program and also determines the developmental outcomes for children. For a centre to have quality it needs to be nurturing and stimulating and this is closely linked to the personal attributes of the caregiver. Ongoing support and mentoring for ECD practitioners is key for quality of care and to ensure new skills that are learnt are applied consistently and effectively. The support and mentorship is important especially if the training was short or if the ECD practitioners have low prior education and skills, Hickman 2014.

A situation analysis of training Interventions for the caregivers in Kenya.

There are quality improvement programs that are mainly in the form of training and mentorship to the caregivers who operate these daycares. A situation analysis by the researcher revealed that most of the interventions in Nairobi's low income areas are done by non governmental organizations like Tiny Totos, Tayari, Kidogo and the Aga Khan Foundation all based in Nairobi. The interventions are mainly workshop trainings where the caregivers are trained on mainly four areas which include health and nutrition, caregiving skills, business and soft skills training for the caregivers. In some cases the workshop training is followed by mentorship visits.

According to desktop research, Tiny Totos teaches caregivers business skills, child stimulation and nutrition, and thereafter the caregivers are given a small loan for their business. Kidogo's training topics include but not limited to business, safe and stimulating areas for children, health and nutrition, parent and community engagement

Critical analysis of the use of visuals in the training of caregivers at Kidogo: A Pilot Study

This preliminary analysis was done at Kidogo. Kidogo is a social enterprise that improves the quality of daycare centers through the training of the caregivers. During the pilot study, the researcher made non-participant observations when he attended one of the training sessions that targeted caregivers from Githurai and Kangemi. The researcher also interviewed one of the trainers.

Kidogo has presence in 7 informal communities in Nairobi; Kibera, Kangemi, Githurai 44, Githurai 45, Kawangware, Imara Daima and Pipeline in Nairobi. Kidogo has a network of around 70 caregivers, the researcher interviewed a trainer and attended one of the trainings. The training was led by two facilitators and it was very interactive, the facilitators engaged the trainees by having them act out role plays and asking questions frequently. The facilitators mostly used Swahili language for the facilitation, since some of the trainees are not fluent in English. After the training caregivers were given handouts which were mainly notes on the day's training. According to the trainer most of the trainees have low education levels and most of them do not have training in ECD.

The analysis of the use of visuals in the training is grounded on literature review from the previous sections. Firstly the analysis will look at how visuals are incorporated in the materials handed out after the trainings considering the visual style, layout of design and content, amount of visuals, relevance to culture and appropriateness to the target audience, (Plimpton & Root 1994). *Figure 1.1* shows some materials given to caregivers after training

Use of visual tools in training materials
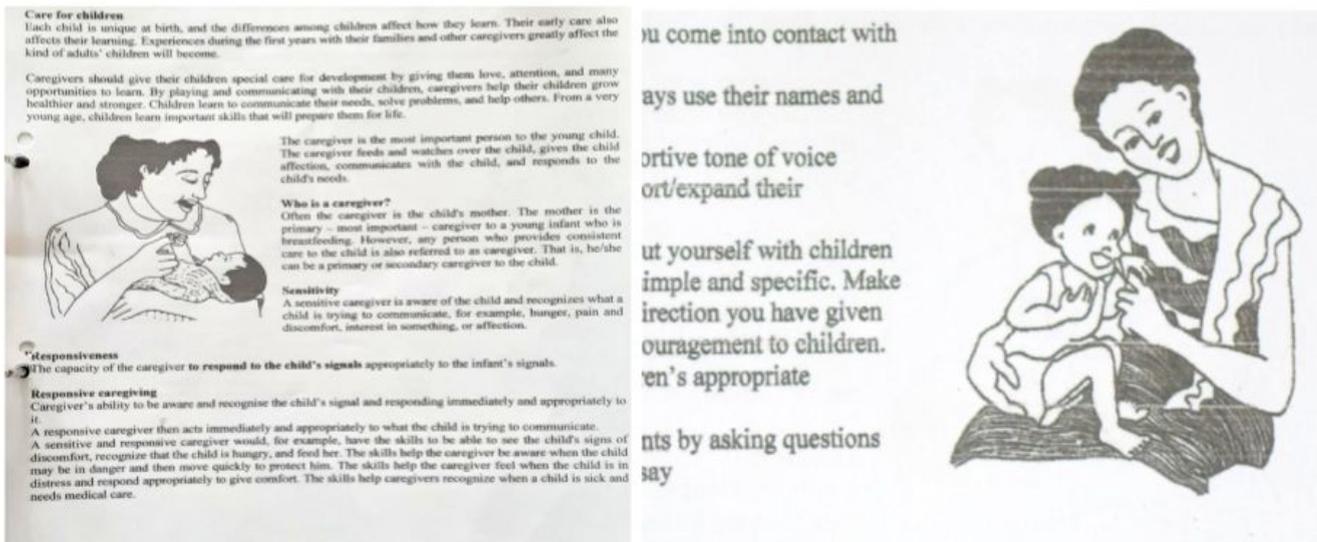
Figure 1.1 Some materials given to caregivers after training (Source: Author, 2020)

Use of visual tools in training

Figure 1.2 A caregiver training session (Source: Author, 2020)

Secondly, the analysis will look at how visuals are used to aid the facilitation in the actual

instruction, if the instructors used any visuals to explain concepts and how the visual artists aid the facilitation, (Osborne 2006). Thirdly, the process that was used to come up with the materials. How the visuals were chosen, how and if the visual artists were involved in the testing of the materials, (Plimpton & Root 1994); (Dowse & Ehlers 2001). *Figure 1.2* Shows a caregiver training session.

From the pilot study it was established that the materials had inadequate visual content, a visual designer is not involved in the layout and design of the materials, visual aids are barely used in the training and after the training the materials given are not assessed to determine their effectiveness.

1.2 STATEMENT OF THE PROBLEM

Visual aids are inappropriately used in the training of child caregivers in day cares within Nairobi's urban informal settlements.

Informal settlements in Kenya are expanding as urban populations increase. As such, informal child care centres are also on the rise. Most caregivers in these centres are not formally trained, yet they offer a crucial service to the education system in the country. Given the planning and governance constraints in the formal education system, there is a need for a strategic training approach that will equip informal ECD caregivers with skills to enhance learning and child care in informal settlements.

Research shows that the use of illustrations in educational materials is very effective in aiding comprehension, attention and adherence to the material especially among low literacy in adults, Houts et al (2006). However this visual approach has barely been utilized in the context of training caregivers in urban informal settlements in Nairobi. From the situation analysis, it was established that the visuals are not appropriately used in line with existing literature.

From the literature review, there are guidelines that suggest a strategic way of using visuals for the low literacy adults. These guidelines look at how visuals are incorporated in the materials, used to aid the facilitation in the actual instruction and the process that was used to come up with the materials, (Plimpton & Root 1994), (Dowse & Ehlers 2001)**.**

1.3 OBJECTIVES OF THE STUDY

Main objective

To develop a strategy that can be used in designing visual aids for enhanced training of caregivers in children's daycares in informal settlements in Nairobi.

Specific Objectives

1. To determine best practices on how visual aids can enhance training of caregivers in urban informal settlements.

2. To establish the gaps in the use of visual aids in the training of caregivers in Nairobi's urban informal settlements.

3. To develop a strategic approach to enhancing visual aids in the training of caregivers in Nairobi's low income settlements.

1.4 RESEARCH QUESTIONS

What strategic approach can be used for enhancing training of caregivers in child daycares in informal settlements?

1. What are the best practices on how visual aids can enhance training of caregivers in urban informal settlements?

2. What gaps are there in the use of visual aids in training of child caregivers in Nairobi's urban informal settlements?

3. What strategic approach can be used to enhance visual aids in the training of child caregivers Nairobi's urban informal settlements?

1.5 SIGNIFICANCE OF THE STUDY

This study will propose an intervention that can be used in designing visual aids to be used in the training of caregivers at day cares within urban informal settlements within Nairobi. The proposed intervention will be suited for caregivers with low literacy levels and additionally assist them understand the training issued to them by the trainers within these settlements. This eventually will contribute positively to the success of caregiver training, their behaviour change and ultimately impact the future of young children raised in those centres.

This study will inform interventions that incorporate educating adults of low education levels by suggesting an approach to incorporate strategic visual aids in the training of caregivers from low income communities. This approach could also be used in other trainings that target the low literacy adults.

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter is a review of literature that focuses on; childcare and caregivers in urban informal settlements, Caregiver trainings, Strategies used in training adults with low literacy adults and how pictures aid comprehension, recall learning from health communication. It also looks at various theories on the process of using visuals and its effective use of visuals in materials and training.

2.1 THE STATE OF CHILDCARE AND CAREGIVERS IN URBAN INFORMAL SETTLEMENTS

Scientific research shows that most of human development is from birth to eight years old hence this is the time where the foundation for success is built into the adult years, (UNICEF 2018). The first six years of life are very important since brain development is fastest in the early years, by the second year the brain is 70% of an adult brain and by the sixth year the brain is 90% the weight and size of the adult brain. The early years is the period where the child has the ability to learn and acquire certain knowledge and skills and attitudes very quickly with minimal effort since the brain is in its most malleable form (Busolo & Agembo 2017). However, Ratcliffe (2018) argues that parents lack awareness on the importance of proper childhood development or what it entails. Their perception of child development leans only to the academic side and they do not highly regard play which is crucial for child development. They are often too busy and barely have time for their children who end up missing out on development.

According to Muendo (2014) the provision of childcare services in the informal settlements is highly informal because of financial obstacles. In the slums there are three main strategies for childcare; combining childcare and work, relying on kin and neighbours and using centre based care, (Clark et al 2018). Factors like more women joining the workforce and women led households have led to the existence of daycare business,

(Wairimu 2014). Also the urban areas lack a network for family support like in the rural area where the child could be taken care of by other kin, (Muthuri 2016).

As of a mapping done in 2017 by Tiny Totos, one of the few childcare organisations in Nairobi, there were 2700 informal daycares in Nairobi's informal settlement, (Caddy 2017). The quality of the daycare centres is generally poor; overcrowding, poor sanitation and the environments are not conducive, (Nganga 2009). There are numerous studies that have been done highlighting the poor state of these informal daycares and most of them boil down to lack of knowledge among the caregivers. Premji (2014) gives a perspective of informal daycares in Kenya. She highlights the problem faced by many informal daycares especially in informal settlements. Among the many problems she states is unsafe environments and lack of stimulation and play. She says that the problem is a bit complex and needs to be addressed holistically by public and private entities.

The physical space of a child's environment is linked to their development. Berris & Miller (2011) says that physical space is linked to the child's learning and development. The physical space includes both indoor features like lighting, furniture, layout and noise, the external environment includes outdoor space including nature and play equipment. In a research done in Australia educators and parents said that the physical appearance or the ambiance is the second most important factor to consider after staff in the selection of an early learning center. Though the features of an ideal physical environment were difficult to break down, some of the leading definitions were bright, tidy, clean, inviting and colourful. Space, lighting, colour and materials were key characteristics which could be put under the title ambiance. According to Emily (2002) the first characteristics of a good day care is that the caregivers should be trained on Early Child Development and Education.

However, the case is very different in most informal daycares in Kenya's informal settlements. Case studies and news articles reveal that the spaces are dimly lit, over crowded, unhygienic and most caregivers are not trained on Early Child Development and Education. According to Ratcliffe (2018) parents in informal settlements have to make a difficult choice of leaving their children in substandard child care centres where teachers are too busy to provide quality care for the children. In a typical case you will find children crammed in a space so that the caregiver can maximize their income as parents are unable to pay the daily

fees. Children in these substandard daycares usually miss out on proper stimulation which is crucial for their development.

There are plenty of malpractices in daycares; they are overcrowded, children are abused, suffer physical injury and even die. Most of these incidents feature the same characteristics; an unhygienic daycare in an informal settlement and untrained caregivers who flee when things go wrong, (Orengo & Obegi 2014)

Orengo & Obegi (2014) also highlight rogue daycares in Naivasha where children are given syrup and alcohol so that they can fall asleep when the caregivers are overwhelmed by the crying children. Caregivers are too overwhelmed and strained for the many children they have to take care of, (Ratcliffe 2018). This goes on without their mothers suspecting anything.

There are also cases where babies die in daycare centres. In 2019 there was a case in Naivasha where a baby died in the care of an elderly caregiver who later fled, (Murage 2019). In 2015 in Nairobi's Pipeline Estate, a child in a daycare was found to be sexually abused, (Mukei 2015). In 2020, there was another gruesome incident in Mtwapa Kilifi county where three children died in a fire incident and one drowned in a bucket, in all these cases their caregivers fled, (Kipkemoi, 2020)

Kitsao-Wekulo & Nampijja (2019) argues that working mothers in Nairobi's informal settlements have very limited child care options. They are usually forced to leave their children in poor unregulated daycare. The same situation is in Naivasha, mothers working in flower farms and are forced to make hard decisions of leaving their children in these daycares since hiring a nanny is too expensive and there is hardly a child care centre at their place of work, (Orengo & Obegi 2014). The mostly overcrowded daycares are operated by untrained women. The poor quality not only dents the social and mental development of children but also puts them at risk of malnutrition, illnesses, child abuse and delayed development, (Kitsao-Wekulo & Nampijja 2019). Orengo & Obegi (2014) adds that daycares might easily dent a child's social life as many children pick up bad habits from their peers and could be the perfect environment to raise abusive children.

Some of the informal daycares are operated by elderly women, overcrowded, poorly lit and operated illegally since there are no regulations set by the national or county governments to

manage them. The lack of a system that regulates daycare centres makes it possible for anyone to operate one. Sometimes daycares have nothing to offer a child save for the physical space, (Orengo & Obegi 2014).

Studies show that this informal substandard daycares are the root of childhood illnesses since most children who are at the pediatric unit are a result from these daycares, (Orengo & Obegi 2014). This is also suggested by Wahome & Mbatia (2017) who says that the main cause of malnutrition in the Mukuru and Viwandani slums is the lack of knowledge on feeding practises. The authors recommend that training be extended to caregivers on child feeding practises.

Figure 2.1: An example of a daycare in a low income area   (Source: worldpolicy.org)
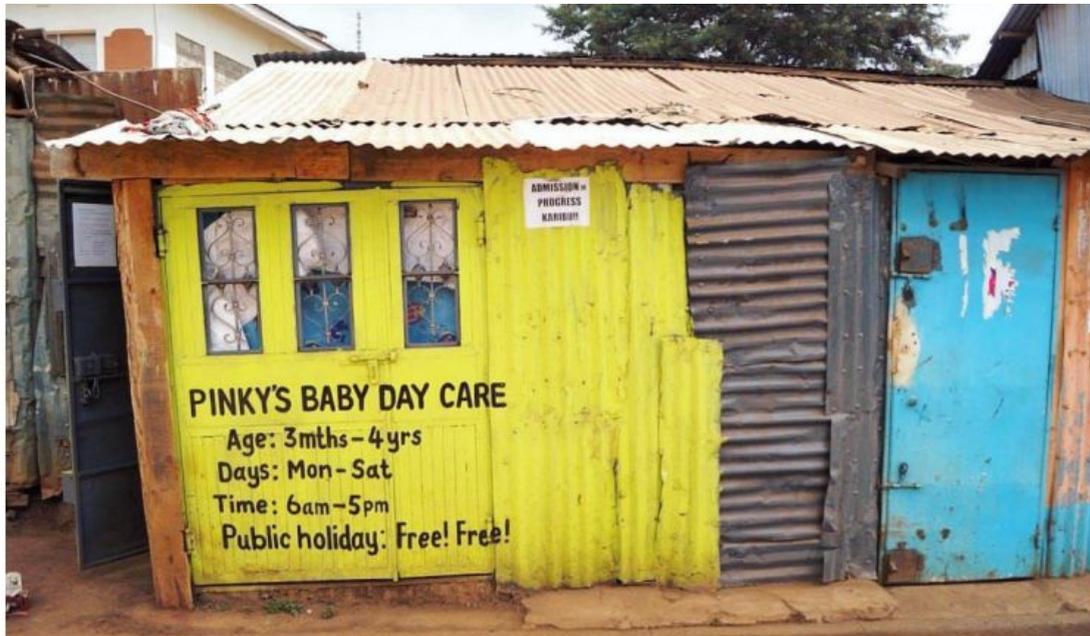
Figure 2.2: A typical daycare in an informal settlement (Source:https://deskgram.net)

2.2 CAREGIVER TRAININGS: INTERVENTIONS TO IMPROVE QUALITY

Caregivers of children upto three years of age are not required to have any formal training and these childcare centres are not regulated, (Ratcliffe 2018). A study conducted by Wairimu (2014) in Kibera to address the challenges faced by teachers in non formal preschools established that, 76 % of the teachers in the sample population of around 30 participants, did not have training on ECDE and only 20 % had an ECDE certificate and 3 % only had a diploma in ECDE, (Wairimu 2014). The ECDE program is the formal training program that preschool teachers undertake to make them certified to handle a preschool class. In the case of learning materials a report by UNICEF (2018) states that teachers lack knowledge about learning materials, even those who know they should be there lack training on how to find or make them using locally available resources. Locally available resources are any materials that are easily found in one's environment, often low cost, and can be easily manipulated to create play or learning items.

A study by Githuthwa et al (2011) established that lack of adequate physical facilities and instructional materials was one of the main challenges to ECD. (Monda 2012) looks at the

influence of learning materials in a preschool set up. The preschool age group is around four to six years. His study revealed that there are minimal resources being used in the classroom set up. He recommends in-service teachers be taught on the use of this materials, sensitize the parents and the community on the provision of adequate teaching and learning materials by creating awareness in workshops and seminars, (Monda 2012). This concept is also agreed by Ratcliffe (2018) who says that training the women who run these daycares might help improve the situation. Though some preschool teachers are trained, critics argue that the trainings are too theoretical to offer any practical help in the real world in a child care centre. Studies show that if the caregivers are offered practical guidance, it is enough to positively impact their practice, (Ratcliffe 2018).

According to a manual for caregivers by The National Council for Children's Services in Kenya 2011, some of the roles of the caregiver are to provide a stimulating environment that allows children to carry out their activities, provide a variety of materials for play and give them time, space and play opportunities. The manual also says that infants 0-2 years experience cognitive development when they manipulate objects using their senses, and toddlers experience cognitive or mental development by using physical objects to understand the world. However, one of the challenges faced by caregivers is the lack of education in that many caregivers do not know what their role in caregiving is and therefore it is necessary to empower the caregivers with appropriate information so that they fully understand their caregiving role.

Sun et al (2015) argues that in many countries ,especially less developed countries,ECD educators of children under three years receive less training, lower wages and they also have fewer opportunities for continuing professional development. The ECD educators also have lower educational and professional qualifications. Githuthwa et al (2011) also argues that the level of development of ECD in Kenya is yet to match its importance highlighting lack of proper teacher training and poor facilities.

According to World Bank (2004) one of the features that should be in a program to improve the quality of ECD is to train caregivers and educate parents. There are numerous

studies that have been done highlighting the poor state of these informal daycares and most of them boil down to lack of knowledge among the caregivers and many recommend training of these caregivers.

A situational analysis by the researcher revealed that most interventions that are done to these caregivers in the informal settlements is training on various aspects of childcare like health and nutrition hygiene classroom management business issues on how to make them profitable. After the training the caregivers are given handouts which are mainly notes that have little or no visual aids to accompany the text. They have to rely on written information and to help them remember, comprehend and adhere to the instruction during the workshop. Also the training does not appropriately use visual aids during facilitation.

2.3 STRATEGIES USED IN TRAINING ADULTS WITH LOW LITERACY

According to OECD (2019) which looks at ways to engage low skilled adults in learning, defines low skilled adults as those with low education levels. Low skilled adults learn better when the learning is problem oriented and practical. Most adults learn easily in the workplace as compared to other types of learning like seminars, workshops, open and distance learning. Also adults have busy lives and are likely to lack time for their training. Infact shortage of time is one of the leading barriers to adult learning.

According to Lowenstein & Bradshaw (2004) those with low literacy skills learn best from demonstrative teaching, supplemented with written materials tailored to their level. He says that any educational materials targeted to them should have text printed in lower case, include a few key points and should have pictures which will assist them in comprehending the concept being taught.

Figure 2.3: Using illustrations to explain nutrition   (Source:www.childfund.org)

Use of Pictures to aid comprehension, recall learning from health care communication

Studies show that when illustrations are used with text for example in the case of health education help to draw attention to the message, assist in comprehension, help in recalling and it also increases the likelihood that people will act in accordance with the message.

According to Houts et al (2006) research shows that low literacy adults benefited more than high literacy adults from the use of pictures in health education materials. The author says that the use of pictures closely linked to written or spoken text can increase attention to and recall of health information as compared to the use of text alone. Pictures also have the ability to improve comprehension when they show relationships among ideas. In the case of health patients, especially those with low literacy levels can benefit when pictures with very simply worded captions are used with spoken directions.

In the case of health education people with low literacy levels mostly rely on what they hear and therefore they need assistance in recalling spoken instructions and comprehending written information.

Again as aforementioned, the relationship between training health caregivers and daycare caregivers may be different because of their clients i.e. patients vs children and as such the

approaches may be slightly different –as you have also argued below. We are totally losing the debate on day care givers and how their training is affected by lack of or poor visual aids.

Houts et al (2006) looks at various studies that show effects of use of pictures in health education materials. One study is done by Delp and Jones as cited by Houts et al (2006) that finds out if pictures draw attention to health education materials, assist in recall of information and adherence to instructions given to patients. In the study 234 parents after receiving treatments prior to discharge were given instructions on how to care for their wounds at home. The results showed that patients who received handouts with pictures were significantly more likely to read the handouts with 98% reading with illustrated handouts as compared to 79% reading with unillustrated handouts. Also those with illustrated handouts were more likely to recall information with 46% with illustrated handouts recalling compared to 6% with unillustrated handouts recalling. On adhering to wound care instructions, 77% with illustrated content adhering as compared to 45% with unillustrated content adhering.

Studies show that pictures affect the comprehension of health education materials. Houts et al (2006) looks at a study by Michielutte et al. In the study was to determine the effect pictures had on comprehension of information on cervical cancer prevention among 217 women. Half of the women were given health education brochures with pictures and the other half was given the same brochure without pictures. Comprehension was measured on the responses of 8 questions about the content in the brochure and the outcome measure was the percentage who answered at least seven out of the eight questions correctly. The results showed that 65% of the women with illustrated brochures answered at least seven questions correctly as compared to 53% of those with brochures without pictures answering at least seven questions correctly.

The study also provided separate results comparing the effect of pictures on high literacy and low literacy subjects. Literacy was measured by a wide range achievement test word recognition test. The findings showed that there was a large difference in comprehension among women with low literacy tests. 61% with illustrated content comprehended and 35% with unillustrated content comprehended. There was a small difference among women with high literacy scores 70% with illustrated content comprehending and 72% without illustrated

content comprehending. This shows that low literacy adults benefited more than high literacy adults from the use of pictures in health education materials.

Mansour and Dowse (2001) as cited by Houts et al (2006) assesses the effects of pictures in comprehending medication instructions among 60 low literate South Africans. The subjects were randomly assigned to two groups that were given a medicine label and an accompanying patient information label leaflet. Both groups had the same content but one had the content with accompanying pictures and another without accompanying pictures. To test comprehension the two groups were thereafter asked two questions about the content they had read and comprehension was measured on how correctly they answered them. The results showed that 47% with text only content answered the questions correctly and 73% with illustrated content answered the questions correctly. The subjects were also asked whether they preferred the illustrated content or the unillustrated content. There was a clear preference of illustrated content.

Again as aforementioned, the relationship between training health caregivers and daycare caregivers may be different because of their clients i.e. patients vs children and as such the approaches may be slightly different –as you have also argued below. We are totally losing the debate on day care givers and how their training is affected by lack of or poor visual aids.

2.4 THEORETICAL FRAMEWORK

This section looks at literature review of studies that support various theories of using visuals effectively for instruction and effective communication. Some of the theories mentioned include the process of using visuals, strategies of using them effectively and the style of visuals that are appropriate for a low literacy audience.

2.4.1 USING VISUALS EFFECTIVELY: TECHNIQUES, STRATEGIES AND APPROACH

2.4.1.1 Visuals for effective communication

According to Osborne (2006)Visuals, like illustrations, have the ability to portray complex information in simple ways by using graphic symbols . A designer has a creative approach of communication that is unique and creates a deeper connection with people than any other

way because they have the ability to use non-verbal codes like products and use them to convey messages and solve solutions.

Visual artists have the ability to simplify complex information and present it in a way that is more comprehensive, appealing and inviting to read. This technique is often used and is very effective when the target audience is of low education levels or has low literacy levels, (Houts et al, 2006; Carstens et al, 2006). According to Houts et (2006), the use of illustrations in materials significantly and positively affects the recall, comprehension and adherence of the contents among readers,

However, there are guidelines and recommendations to ensure the appropriate use of visuals, since inappropriate use of visuals can lead to misinterpretation of content materials. The visuals used should have the appropriate style, adequate, culturally relevant to the target audience, simple with no unnecessary details and they should be tested with the target audience, (Buono 2006; Carstens et al 2006; Plimpton & Root 1994; Dowse & Ehlers 2001)**.**

In addition to this key characteristics of appropriate visuals, the success behind having appropriate visuals lays behind an appropriate process. The process requires content creators and the visual artists to collaborate to simplify the content. The content also needs to be tested with the intended audience before the final design is done. Even after distribution of the materials, feedback should be collected and the whole process of creating materials for the low literacy audience is iterative, (Plimpton & Root 1994; Dowse & Ehlers 2001).

2.4.1.2 Behavioural change strategy at the community level

McKenzie;Mohr & Smith (1999) as cited by Kleeman & Wilson (2007) says that behaviour change is most effective when it is initiated at the community level. Many studies show that providing information alone is not efficient in causing behavioural change. He says that community based initiatives are successful in behavioural change compared to information based campaigns. Community based social marketing CBSM has four steps. The first step in designing an effective CBSM campaign is to know the barriers and benefits to an activity. The second step is selecting behaviour change tools that resonate with the barriers you have identified. After identifying a design tool it is important to get feedback from focus group discussions. The tools chosen need to be proven to be effective. After identifying a design tool it is important to get feedback from focus group discussions and then create themes that

will help to find areas that need to be redesigned. The third stage is piloting, conducting a pilot study will evaluate the effectiveness of the design tool. If the pilot is not effective the strategy needs to be reviewed and piloted again. If the product is successful then the campaign is ready to be implemented across the community, (McKenzie-Mohr 1999).

McKenzie-Mohr (1999) says that there are four variables that need to be considered in CBSM; who is delivering the message, what is the message, how is the message being delivered and who is the audience. Thompson et al (2012) also cites Stephan and Stephan who says that education is effective whether it is aimed to overcome ignorance or create mindfulness and develop empathy Langer et al (1985) as cited by Thompson et al (2012). Thompson et al (2012) also says that when creating educational strategies it is important to go personal and to the community level as they are most effective rather than having a strategy that fits all.

2.4.1.3 Strategic process of using of visuals

Peregrin (2010) concurs that pictures have a positive effect on retention, comprehension, recall and adherence to health materials. He quotes Linda Hodgon who says that communication is 55% visual, 37% vocal and 7% verbal or the actual message. Peregrin (2010) looks at the process of creating effective communication using visual cues. One needs to first have a clear objective of the main message that needs to be passed across. Thereafter one can go ahead and see what part of the message can be presented visually and reduce the overall text. In most cases not everything can be presented visually and therefore it is important to choose the areas that can be presented visually. The author also says that the visual style used does not matter as long as the style is simple and without clutter or unnecessary detail. However, Clark et al (2010) says that the visual style to be used must depend on factors like the objective of the learning materials, the audience prior knowledge to the content. For example using simple line drawings would be better than having three dimensional animations to illustrate complex information because of content overload. Unnecessary details and clutter can divert attention from the message especially in low literacy settings. The visuals also need to be culturally relevant to the target audience. The target audience should also be included in testing if the visual cues to see what messages are gotten from the intended audience.

Clark et al (2010) mentions three guidelines that should be considered in order to have effective graphics. Firstly, the properties or style of the graphics. This is because some styles are more suitable in some cases, for example it would be easier to illustrate a complex process using diagrams and charts than using real photographs because of presenting the content in a simpler way that reduces content overload. Secondly, is considering the intended learning outcome. Sometimes there are different objectives that call for different styles. For example one objective could be to decorate materials and motivate the reader and another objective could be to present factual information in a realistic way. Thirdly, prior knowledge of the subject among the learners. Research shows that when the learners have prior knowledge on the subject, using visuals does not have a lot of impact on them because when reading the words they can easily build mental pictures of the content. For example it would not have as much impact using illustrations to explain how the brake system works to engineers than to use images in novice learners. Visuals are highly effective for novice learners or when presenting introductory lessons.

Clark et al (2010) says that there needs to be a systematic approach for using graphics in materials. If there is no systematic approach graphics could easily hinder learning, since they might be taking away from the content by diverting attention. There are three areas that are considered while designing graphics. Firstly, is the look and feel which is mainly the theme of the overall style used. Secondly, is the suitability of individual illustrations for each case and thirdly is the layout design of the material which basically is the placement of art in relation to other components like white space, text and the page.

Clark et al (2010) suggests a five stage process that should be followed while using graphics. Firstly, one needs to define the goals of the instructional materials. This resonates with Peregrin (2010) who says that the first step is having a clear objective of the main message. Different materials have different objectives like motivating, describing a process or even solving a problem and they call for different styles. The second step is to determine the context in which the materials will be used. The context includes things like, the learner profile, the setting of the learning environment, perhaps style guides to be considered in the case of organizations. The third step is to design a general visual approach which is the look and feel of the visual style to be used. The fourth step is to determine the communication

function of different content areas and determine individual styles to match up the different content types. For example if a certain content area is to explain multiple content it might need a visual with an organizational style like a diagram or chart to present the content. In some cases photographs will be needed. The last step is to plan and layout the graphics to respond to different psychological instruction events. For example, if the content is introductory and the learners are novices one might consider to use visual content that is simple and focuses on aiding attention and reducing cognitive overload. If the learners are low in personal motivation then it would be prudent to focus on visuals that promote motivation for example using realistic pictures that they can identify with and are inspiring. *Figure 2.4* gives a summary of the ideal process of using visual aids.

2.4.1.4 Using visuals for the low literacy audiences

Buono (2006) gives some guidelines for creating materials for a low literacy outreach. The guidelines give information about various aspects of the materials; the text, visual, format and the layout. The visuals should be used wherever possible to explain the headings and important information and the visuals should relate to the information. It is also necessary to have captions accompany the pictures as pictures could be interpreted differently and the captions guide the reader on what to look for in the picture. The visual style should be simple and should not include extra details for example they should be simple line drawings. Generally the materials should have only the basic information the reader needs to know and there should be consistency in organization and formatting.

Osborne (2006) suggests ways in which visual artists could help healthcare professionals communicate. Visual artists could help the health care professionals draw simple sketches and the idea here is not to make them great artists but to let them appreciate the power of simple sketches. Secondly the visual artists could assist in the creation of creative health care handouts that have illustrations printed on them and also leave room for the professionals to draw   on
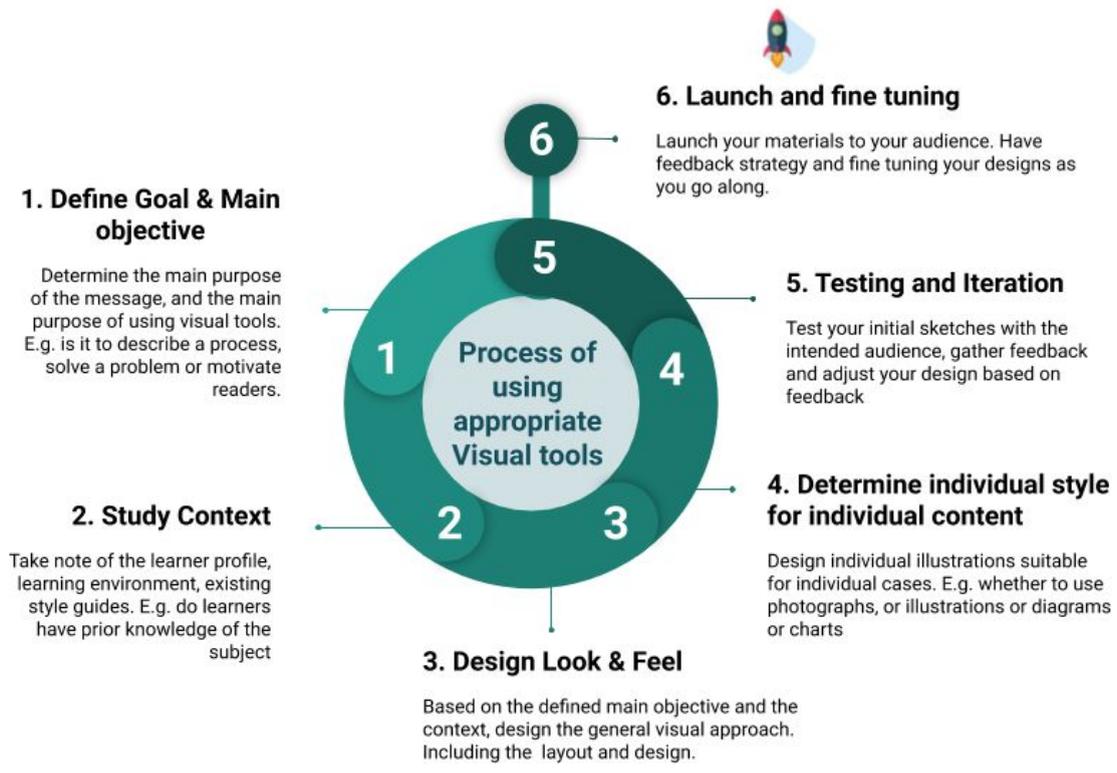
Figure 2.4: A summary of the ideal process of using visuals tools to enhance communication based on literature review (Source: Author, 2020)

them and edit them as they like. Thirdly, visual artists could collaborate with health care professionals to help them get low cost but quality visual materials, (Osborne 2006). *Figure 2.5* gives a summary of the ideal characteristics of appropriate visuals. ***Figure 2.6*** shows the three main roles of visual artists in creating visual tools used in training based on literature review.

According to Osborne (2006) visuals can help tell the health care story by making the materials have proper layout and design. Since most content is developed by health care experts, it is highly likely for the materials to have a lot of text that is hard to read text. This eventually makes the materials unappealing and uninviting to read.

Osborne (2006) and Houts et al (2006) agree that visuals actually help the reader recall the information. Visuals also have the ability to portray complex information in a simple way by using visual symbols.
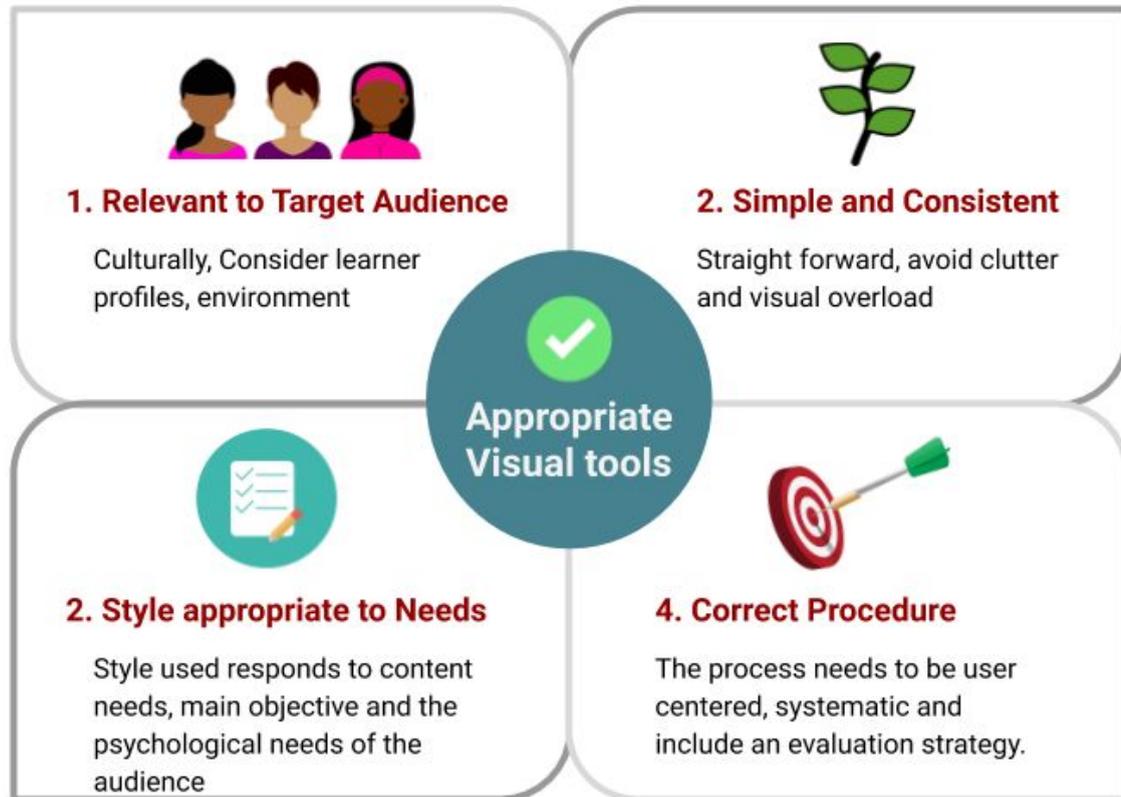
Figure 2.5: A summary of the ideal characteristics of appropriate visuals tools to enhance communication based on literature review (Source: Author, 2020)

According to Carstens et al (2006) visual materials particularly in developing countries are often used to supplement, complement or even replace the written word for effective communication. However the difficult part in this is actually choosing a visual style that is appropriate for the low literacy audience. Sometimes the use of graphical conventions like speech bubbles or even mathematical symbols in illustrations can be a barrier to comprehension, (Carstens et al 2006).

Carstens et al (2006) looks at the relationship between the complexity and abstractness in visuals and the comprehension among literate and low literacy adults in South Africa. In the study respondents were shown materials with varying visual styles. The results showed that as the visual abstraction increased there was also an increased difference in the level of comprehension between the literate and low literate audiences. For example when one wants to portray a conversation between two people, it would be comprehended better with facial Expressions and body postures than having speech bubbles, (Carstens et al 2006).
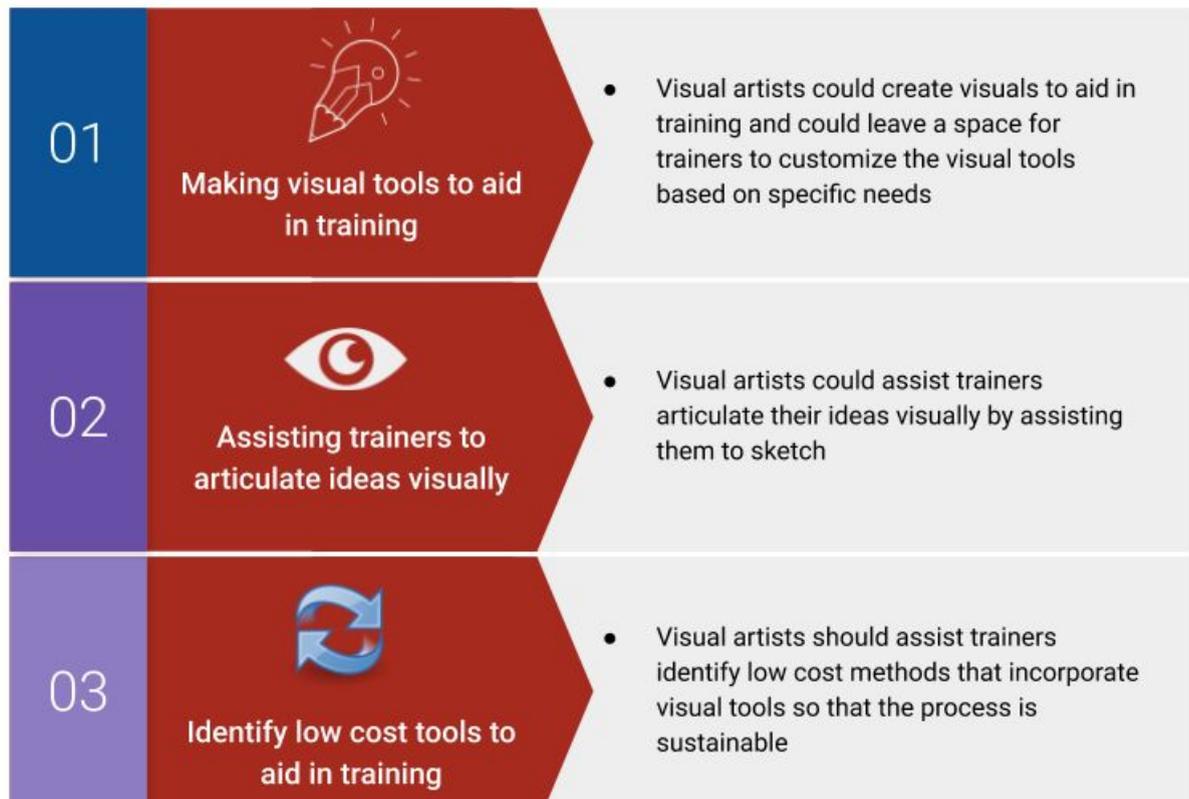
Figure 2.6: A summary of the three main roles of visual artists in creating visual tools used in training based on literature review (Source: Author, 2020)

In the case of Plimpton & Root (1994), Jane Roots is a reading and literacy specialist, looks at materials and strategies that work for low literacy health communication. Plimpton & Root (1994) highlights a few problems relating to the content found in typical health materials; information overload, too many words, technical jargon and inappropriate culture and language. Problems relating to graphics in typical health material include; lack of illustrations, too many graphics, inappropriate illustrations and styles. An example of an inappropriate style would be to use a cartoon style to illustrate body parts. Also cost is an issue, the use of heavy coated stock and multiple colours in materials is very expensive, (Plimpton & Root 1994).

Plimpton & Root 1994 recommends using simplified materials that are culturally fit for the audience and there should be a method for needs assessments before the materials are created. A graphic designer is needed in the planning process to help the content creators learn and practice principles of good graphic design. Though the materials need to be simple, they also

need to be attractive so that they can create an interest in adults to pick up the materials. Lastly the materials need to be low cost, (Plimpton & Root 1994).

Plimpton & Root (1994) also has a process for creating materials for a low literacy audience. The first step is to create the content. Here the content creators, who in this case are health experts, write down content that is simplified. Then the artists are incorporated to create the layout design in a way that it will bring people's attention to the material. Thereafter the material that is made is tested with the intended audience and this step is often overlooked. Most of the testing is done by professionals instead of the intended audience. Only after the materials are tested and the intended audience satisfied that then the artists could go ahead and make the final product. Sometimes what makes it hard for people to stick with this step is that feedback and peer review takes time. After the final material is designed and distributed, it is important to track down the distribution of the materials and contact users for feedback, (Plimpton & Root 1994).

According to Plimpton & Root (1994) it is easier to simplify the communication so that everyone can understand rather than developing universal communication skills in everyone so that they can understand materials developed.

According to Dowse & Ehlers (2001) the use of visual aids like pictograms in communication is one way of reaching the low literate audience because it offers an alternative way of reading the information and stimulating imagination. However the success behind the use of visual aids is determined by culturally relevant and appropriate pictograms, a comprehensive design and testing process. Oftentimes the process is usually iterative as also outlined by (Plimpton & Root 1994)**.** Dowse & Ehlers (2001) agrees with Plimpton & Root (1994) on having culturally relevant visuals. He says that though the visual language is considered universal, cross cultural testing shows that due to differences in culture, the same visual aids might be interpreted differently in different settings. Therefore there is a need to design and evaluate pictograms with the target population.

2.4.1.5 Visual prompts

Sussman Gifford (2012) argues that one effective way of using visual tools to communicate and promote behavioural change is to have visual prompts. Visual prompts have been highly effective in advocating for behavioural change in road safety, climate change and even

increasing donations. In their study using a visual prompt near the light switch encouraged individuals to switch off lights in unoccupied washrooms. The odds were 8 times higher that lights would be turned off in washrooms that had signages in them than those without signages. The study was undertaken in a mid sized Canadian campus that had a population of 18,000, the research was done for 43 days.

While using visual prompts one thing to consider is the fact the design needs to be simple and straightforward without clutter for it to be effective. Too many words and using pictures that do not resonate with the text can cause confusion.

Visuals prompts could be one way of presenting information visually since its use goes beyond the training and it is very effective to ensure adherence and recall of the content one is trained on.

Clark et al (2010) gives three reasons as to why the potential of using graphics in learning is often under realized . Firstly, most instructional content is usually a 'wall of words' where we have a lot of text and barely any words in materials. Secondly, sometimes graphics are often overused and are not used for the rightful purpose which is to instruct but are mainly used to decorate, though this does not hinder learning it does not support it either. Thirdly, oftentimes the use of graphics is used late in the process of designing content and there is not much planning that goes into it. Sometimes content creators just pull images and photographs from the internet, especially those who do not have access to a graphic designer.

2.5 EXEMPLARS: LEARNING FROM BEST PRACTICES

This research also sought to establish how visual aids are used by other organizations to train caregivers in similar settings. The organizations chosen were recommended by Kidogo and were considered to have better practices when it comes to using visual aids in training caregivers. Only a handful of child care organizations train caregivers as most child care organizations create content for the children therefore it was prudent to select organizations through snowballing. Smartstart was purposively sampled since it is based in South Africa's low income areas, has the almost similar social franchising model of training women from the communities and helping them to start their daycares. Also part of Kidogo's team have been there for benchmarking and is considered as a best practice in terms of using visual tools in training.

Smartstart

Smartstat is a South African organization that improves the quality of childcare by aiding women and men from the community to start and run their own daycare business. Most of those trained do not have a background in ECD but are interested in the business or a passion for children. They conduct a week training to the caregivers and mentorship thereafter. The trainings are done.

During training they use pre printed flip charts that have topics and they also have a space where the trainers can add more content during the training. Each trainer has their own set of pre printed flip charts based on the topics they train on. The preprinted flipcharts ensure consistency and flow in all their trainings in different trainings or trainers.

They also use props in their trainings. For example to show children how to share by taking turns they a sand timer. They also incorporate a lot of role plays in the training.

As they start their trainings, the caregivers are given a handbook that has all the topics inside. The handbook lets them know what to expect in the oncoming trainings and also it has a space for them to jot down notes. The handbook is illustrated and it utilizes a mix of simple

line illustrations and photographs. Simple infographics are also used and there are activities for the caregivers to write on.

There is also a monthly magazine that is also published online. The magazine has some success stories, some activities and is used like a social tool to bring the caregivers together.
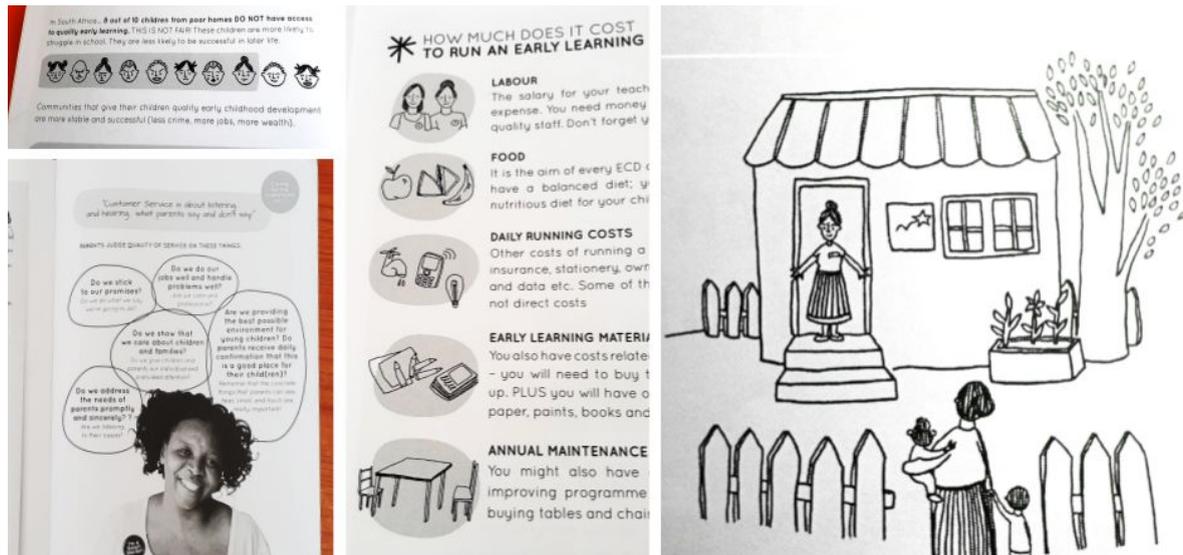
Figure 2.7: The illustrated caregivers handbook (Source: Author, 2020)

Figure 2.8: Monthly magazine that has among other things stories, activities and creates a platform where caregivers can interact (Source: www.smartstart.org.za)

BRAC

BRAC is an organization based in Bangladesh but it has presence in other countries around the world including Uganda and Tanzania. They operate play labs that are in various communities where children visit to come and play. BRAC has a curriculum that they use to empower paraprofessional women from the community to help them operate their play labs. The curriculum has a set of activities that are clearly illustrated in black and white to help caregivers understand each activity. Aside from having an illustrated curriculum, BRAC conducts training in the communities where they have their play labs set. Paraprofessional women from the community are trained by ECD professionals. It was established that during the training they use a variety of visual aids; flip charts, flashcards and presentation slides. These materials are created by the trainers without involvement of visual designers apart from images in the presentation slides and the illustrations in the play lab curriculum. The visual aids used in the training are created manually. For instance, trainers use manilla papers and markers to create flash cards. There are no graphical contents used in training aside from the curriculum that contains pictures to support the demonstration and instruction of play based activities.

BRAC trainings focus more on practical lessons and visual aids are not used a great deal. However, in the case of the illustrated curriculum, appropriate visuals were considered to be those that relate to the local culture and are successful in actually demonstrating the activities intended. It was established using visual aids in training makes the training more practical, the class is lively and there is better comprehension. Here is an excerpt:

> *"In our PPT (powerpoint presentation), there is a colorful image on brain structure. It helps/ boost the play leaders' interest in learning of the specific contents. The use of flash cards also provides them the knowledge of how to use those pieces practically in class." - BRAC 2020*

This shows that use of visual aids has a direct noticeable impact on learning among caregivers.

Dignitas

Dignitas is a Kenyan based organization whose trainings are focused more on building soft and leadership skills among teachers in Kenya. In the recent past Dignitas has trained Kidogo teachers. Dignitas also have a wide variety of visual aids; they use photos, pictures, videos, charts, writings on flipcharts, work sheets, drawings and take home templates. Their reasons for using visual aids was to cater for different learning abilities. It was also established that visual aids made information practical & easier conceptualization. It was also noted that their visual aids were used during group work and they increased participation, collaboration and sharing of new ideas since caregivers are able to come up with more ideas. It also breaks the monotony of written text. To ensure that the visual aids they use are appropriate they collect photos and videos from communities where the training will be. These materials are usually tested with internal staff and a team of alumni teachers and adjusted based on the feedback given.

The challenges faced while using visual aids is actually getting local content. For example getting local videos on best practices on pedagogy. The cost of printing materials for all the caregivers is also a challenge. While using videos in training and power shortages is usually a challenge. To measure the effectiveness of the visual aids they used during training they rely on written or spoken reflections after an activity which might highlight any visual aids. Classroom observations are also used as a way to measure effectiveness. The adoption of certain charts or templates to foster learning show the visual aids were effective. Dignitas claimed that using visual aids has not only greatly improved engagement levels of the trainees but it has also made their trainings more interesting. When asked about the impact of visual aids here is what was said:

> *"Use of visual aids has improved engagement levels of our trainees generally and made our trainings more interesting. After sharing a video or jumbled pictures; which we like to call picture splash, we have seen an increase in participation. New ideas start to come up and this is proof that something has been ignited by the visual aid used. Something that mere lectures and text on board could not derive!" - Dignitas 2020*

This statement shows that visual aids have a unique advantage of increasing engagement and creativity, and hence could have more profound effects when used to complement written text or verbal communication.

Seenaryo

Seenaryo is an organisation based in Jordan and Lebanon but with footprints in other parts of the world trains teachers in schools especially in refugee communities and teachers who host them. Seenaryo does not set up or own child care centres but they improve teachers who are already existing in centres. Teachers are trained on activities that they could do with their children and later they are given a playkit to act as a guide and support material after the training. The playkit is a library of songs, games and stories linked to the curriculum

In their training, they use a variety of visual aids; flashcards, props & toys, powerpoint, posters, charts on the wall and videos. The visual aids are mainly used in two ways. Props and toys are used to practically demonstrate how activities are supposed to be done in the classroom. Posters, videos and charts are used to communicate effectively to teachers in training. This is what was said about the importance of visual aids in their training

> *"They(visual aids) are critical both to how we expect teachers to teach, and to how teachers understand the information. It wouldn't be possible without visual aids (but that's because teaching 3 - 8 year olds always requires visual aids!)" - Seenaryo 2020*

This statement not only outlines the importance of visual aids to aid comprehension but the important role they play in practically demonstrating how ECD teachers and caregivers are supposed to teach children. In reality a huge amount of learning in child care centres relies on visual aids and it is therefore any training that does not involve use of visual aids is practically impossible.

The visual materials used in training like posters and flashcards are designed in house by the trainers using Adobe Indesign, Powerpoint and Microsoft Word softwares. The most important fact that is considered is the suitability of the materials to young children since the teachers are expected to replicate what they learn in their child care centres. The visual aids also need to be simple and clear, they should equally represent gender, race, disability and they should be environmentally sustainable.

When asked about why they use visual aids in training, the main reason is that children of 3 to 8 years old learn using visual aids therefore any training of caregivers should also use visual aids.

2.6 CONCEPTUAL FRAMEWORK
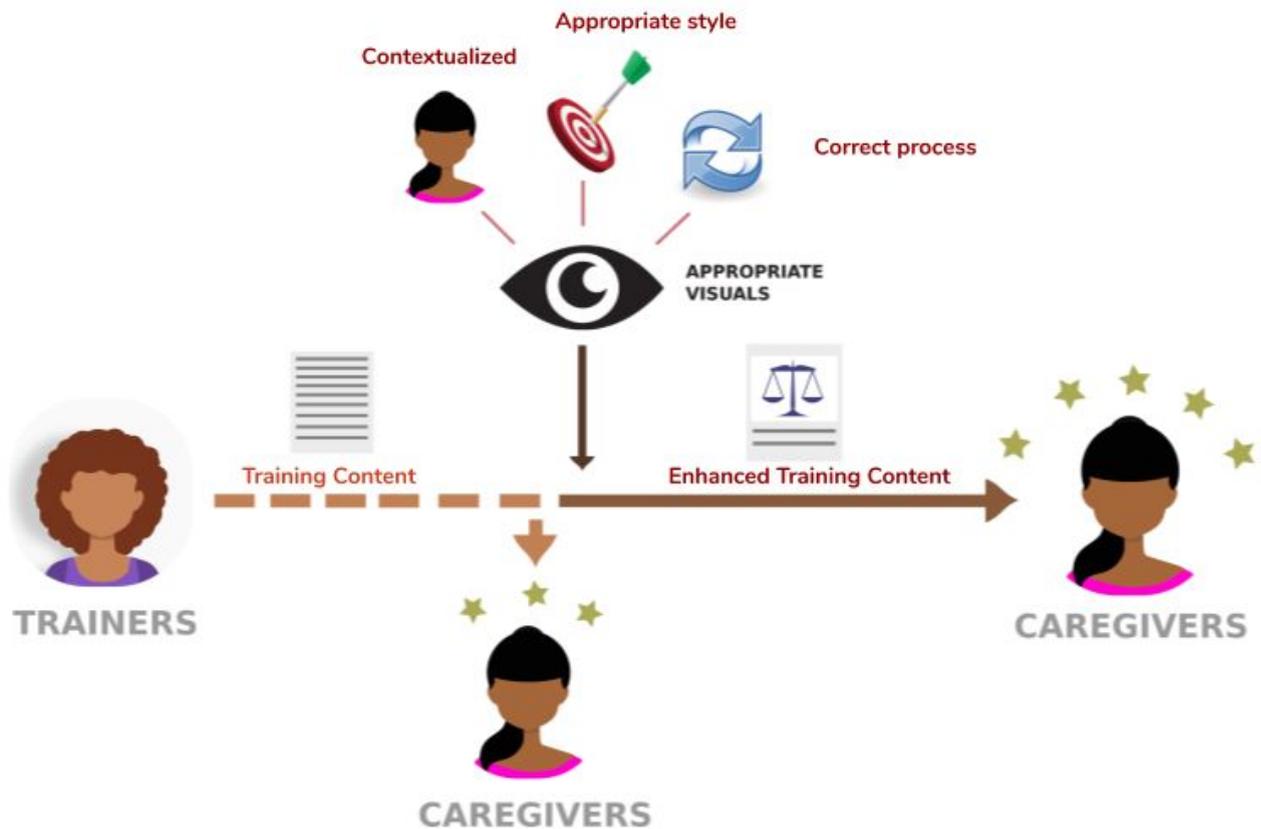
Figure 2.7: Conceptual framework based on literature review (Source: Author, 2020)

The conceptual framework suggests that if trainers delivered their content to caregivers without using visual aids, their training would not be as much successful compared to using visual aids. Without incorporating visual aids the caregivers will have less comprehension, attention and thus the tra caregivers will be less competent. However if visual aids are incorporated the training content is enhanced. For the visual aids to be appropriate they need to be contextualized, having an appropriate style and created using a correct process. Enhanced training content means that it will be more comprehensive, more successful in drawing the attention of the caregivers and ultimately the caregivers will have a more

likelihood of adhering to the content. The end result will be more competent caregivers and this will obviously have a positive impact on child care.

Table 2.1: A summary of using visual aids from other organizations that train in similar settings (Source: Author, 2020)

	Visual aids used in training	Support Materials given	Impact of Visual aids on training	Factors considered	Challenges
BRAC Bangladesh Tanzania Uganda	Flip charts, flash cards, presentation slides,	Illustrated curriculum	Practical, lively learning & comprehension	Local culture, actual demonstration of activities through images etc.	Power interruptions
Dignitas Kenya	photos, pictures, videos, charts, writings on flipcharts, work sheets, drawings, templates	Readings, Take away templates	Cater for different learning abilities, practical & easier conceptualization Increases participation, collaboration & new ideas Breaks monotony	Collect photos, videos from communities & test them & iterate	Getting local content, Printing costs, power shortage
Seenaryo Jordan & Lebanon	Flashcards, props & toys, powerpoint, posters/charts on the wall, video	Playkit book	Comprehension & practical learning	Suitable for children, simplicity, sustainability	
Smartstart South Africa	Flip charts, props,	Magazines, Caregivers handbook	Practical learning	Suitable to local context, simple	

2.7 SUMMARY

There is a real need for quality child care in Nairobi's informal settlements and training caregivers on best practices of child care cannot be over emphasized. Many studies have shown that the caregivers lack the necessary knowledge and skills to manage their businesses professionally or at least provide good quality care for the children. Though some caregivers and pre school teachers are trained, critics say that the training given is too theoretical and is not as effective as it should be for their child care centres. Studies show that the more practical studies are the more impactful to behaviour change.

Caregivers in informal settlements present a unique challenge to how training should be tailored. Most have low education levels thus low literacy levels and this needs to be taken into consideration. Studies have proved that integrating visual aids to written or verbal communication is highly effective in aiding comprehension, attention, retention and adherence to information and it is more effective in a low literacy audience. However, not all visual aids are effective since inappropriate visual aids can have a negative effect on learning. The successful use of visuals to enhance communication is dependent on factors like; having the correct procedure and involving the intended audience, using the appropriate style that resonates culturally and socially with the audience and testing the visual tools before roll out.

There are various approaches and guidelines that are reviewed in this literature from different scholars and they focus on three main areas; Firstly, how visuals are incorporated in instructional materials. Secondly, how visuals are used to enhance training and Thirdly the correct procedure of using visuals in the materials and in training.

Visual aids have an important role in aiding behavioural change. Providing information alone is not enough to drive behavioural change and therefore community based initiatives should be used. Custom made strategies based on the needs of each community are likely to be more successful than one strategy that fits all. Visual aids are versatile; they are malleable and have the ability to take on many forms and in various mediums and have diverse positive effects.

From literature review it is evident that visual tools are successful in enhancing communication when they are used appropriately in instruction or in instructional materials and when the correct process of using them is followed. If the visual tools are used

inappropriately then there is no guarantee in enhanced communication, instead it hinders communication.

From literature review there are four main themes that contribute to what appropriate visual aids are and the factors discussed below.

2.7.1 Simple and consistent

Firstly, visual aids need to be simple and consistent. The overall visual style used in materials should have less details and less clutter. For example drawings should be very basic and they should not have unnecessary details because they might divert attention away from the main focal point. In the case of text there should be less words. The best practice is to have more around 60% of the information visual and the rest written or spoken. Another case would be colour, in instances where colour does not add much value to the visual aid it is better to use black and white. The layout design should be consistent across the materials. This case could be applied in having at least one visual style that runs throughout the material or even having certain components in certain areas which could even help in faster way finding.

2.7.2 Contextualized, user centered visual aids

Secondly, the visual aids need to be contextualised. Contextualization means that it is user centered. User centered visual aids start with having a process that considers the needs and pains of the user. For example understanding their environment, considering their prior knowledge of the topic at hand and the environment they are in, involving them in the process of creating the visual aids and testing. As mentioned in literature review in some cases where the topic at hand is not new to the trainees there is no need of having a lot of emphasis on the visual aids. In cases where the topic at hand is new there need to be simple and clear visual aids to accompany the text.

Contextualization also means that the visual language has elements or cues that they can easily resonate with. It is also important to consider how they interact with the materials and when they do it. For example in one case, having a visual prompt on how to change a child's diapers might be the correct option instead of having flyers or handouts on the same. This is

because the visual prompt will be placed at the diapering station and therefore will be easier to glance at than a flyer which would be stored at some other place.

2.7.3 Appropriate style to the needs and overall outcome objective

Apart from addressing the content at hand, visual aids also need to address psychological needs of the audience. There is more to presenting the information in a visual way to aid comprehension. There are also psychological needs which could be to inspire the audience, to motivate them to conform to a certain behaviour. This psychological needs also to be addressed and they may dictate what style or even medium is appropriate to them. The visual designer should have a clear understanding not only of the content but the main purpose of the message and the main purpose of including visual aids.

2.7.4 Having a correct procedure

As outlined in the literature having a correct design process is key to appropriate visual tools. The procedure should include different stakeholders and it should begin by first defining the main objective. Here the main purpose of the message and the main objective of using visual tools is addressed, then one studies the context by taking note of factors like the learner profile the environment. Then the designer designs the general look and feel of the visual aids based on the context and the message objectives and thereafter determine individual styles for each component of the content. The visual aids need to be tested with the final user before the design is finished and rolled out. Even after the visual aids are rolled, there needs to be a clear strategy laid out for collecting feedback in order to keep on improving the visual aids.

Visual designers should work closely with content creators and assist trainers to articulate their content visually during facilitation. They should also assist in providing low cost ways to incorporate visuals.

2.7.5 Learning from best practices

All the organisations studied use a variety of visual aids, the most popular are visuals on flipcharts, flash cards, pictures and presentation slides. Though visual designers were involved in different instances to create support materials, trainers had a part to play in

making simple practical handmade visual aids to aid learning in training. Most of the tools made by the trainers were made from locally available materials.

In all instances, trainers had various reasons for using visual aids in training. The reasons mentioned the most were that using visual aids makes learning more practical, increases comprehension and it encourages participation and engagement in learning. Having simple visual aids that resonate with the local culture and clearly demonstrate the intended activities were the main criteria for selecting visual aids.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 OVERVIEW

The aim of this research was to identify the gaps in the use of visual aids in training of child caregivers in Nairobi's urban informal settlements, to determine the best practises in using visual aids to train caregivers and to develop a strategy to be used in guiding the design of visual aids used in the training.

This research used Kidogo as a case study. Data was collected through photos, field notes, interviews, visual analysis of documents and a workshop. Data was analyzed thematically after which conclusions were drawn and recommendations given.

3.2 RESEARCH DESIGN

This research was participatory action research which is qualitative in nature since the orientation of this research was based on gaining understanding and getting insights is highly exploratory. According to (Creswell et al 2007) participatory action research is critical as it helps alleviate individuals and liberate them from constraints covered in media, language, work and relationships of power by studying the issues they face. He also cites Maguire (1987) and Stringer (1999) who say that one of the major features of this approach is to improve the quality of life in oppressed and exploited communities. This was in line with the main objective of this research is to develop a strategic approach for enhancing the learning of ECD among caregivers in informal settlements.

There was a need to have a theory that will guide the research. The theory of appropriate visuals, as mentioned in literature review, guided what set of questions were to be asked, what was to be observed and how data was to be analysed into themes. However the researcher remained objective in the research process and did not predetermine the results based on the theory, (Harling 2012). There was room to allow any new themes that arose from the findings. The researcher needed to use literature and existing data to create four thematic areas that contribute to appropriate visuals. Creswell et al (2007). They include simplicity and consistency, contextualized and usercenterdness, correct process of creating

visuals and a style that responds to the main objective and the psychological needs of the audience.

Participatory design also looks at both theory and practice and how these two relate mutually and also establishes how the relationship may help to shape the life and work of a particular setting, (Creswell et al 2007). In this case, theory from literature was reviewed and the main argument was that appropriate illustrations need to be simple and consistent, user centered and contextualized, created using a correct systematic procedure and the style needs to respond to the main objective and psychological needs of the audience.

3.3 POPULATION

From the pilot study, it was established that most of the trainings are done by just a handful of non governmental organizations and these are Tiny Totos, Tayari, Kidogo and the Aga Khan Foundation. At this moment only Kidogo and Tiny Totos are currently doing the training during the time period of this research. Kidogo was purposively sampled as discussed in the next section.

3.4 SAMPLING DESIGN

Purposive sampling and snowballing were used to target the population. At this moment only Kidogo and Tiny Totos are currently doing the training during the time period of this research. The researcher purposely sampled Kidogo. Kidogo has a very holistic approach to the training topics unlike the others which mainly focus on specific areas. Kidogo has a presence in over 7 low income communities in Nairobi, and was during the period of the study conducting training. It also has a large network of caregivers operating daycares in Nairobi's urban informal settlements. It also had funding to conduct training during the period of the research.

The researcher purposively chose caregivers who run daycares from the areas of Kangemi, Githurai, Pipeline and Imara Daima since those are the ones who were in the current cohort being trained by Kidogo in the year 2019 and 2020.

Table 3.1: Sample Distribution Summary (Source: Author 2020)

Description	Person to interview	Population	Sample
Trainees	Caregivers in current cohort	38	8
Trainers	mid level trainers	3	2
	High level trainers	4	2
Total			12

3.5 DATA COLLECTION METHODS AND TOOLS

To establish the gaps in the current trainings, the researcher was a participant observer in 4 trainings, interviewed 8 caregivers and 4 trainers and had a focus group discussion with caregivers. To determine the best practices the researcher formulated a questionnaire that was filled by staff and trainers in respective organisations and also interviewed Kidogo staff who had visited these organisations. To develop a strategy to be used in guiding the design of visual aids used in the training the researcher held a co design session with designers, high level and mid level trainers.

Participant observations

The researcher attended 4 caregiver trainings and was a participant observer. In each of the four trainings there were around 17, 8, 26 and 24 participants respectively. The researcher had the opportunity to observe how training was conducted and what tools were used and how they were used.This was important in having empathy and understanding the first hand experience of the caregivers. As outlined in the IDEO Human Centered Design Toolkit, participant observations could yield more reliable data than interviews.

Interviews

The researcher conducted interviews with the caregivers and the trainers. The interviews with the trainers helped establish the process used to create training materials and the caregiver

interviews helped establish their experience during the trainings and how effective the materials given during the trainings were. In this case one on one interviews were relevant as opposed to doing a survey so as to have more in depth understanding. The interviews were recorded and later transcribed. Interviews were conducted with 8 caregivers, 2 mid level trainers and 2 high level trainers.

Focus Group discussions

The researcher had a focus group discussion with seven caregivers. This was necessary to learn the general experience of how the trainings were conducted. The discussion took place for around twenty five minutes.

Co Design Session

Participatory research needs collaboration and trust from different team players, Creswell et al (2007). To achieve this the researcher had a co design workshop session with designers, high level and mid level trainers. The high level trainers are specialists in various fields like ECD and business and they create the content. They have a university degree. They are responsible for training the mid level trainers. mid level trainers are former caregivers or teachers who have been promoted to become trainers. They are the ones who deliver most of the content directly to the caregivers and mentor them. In the codesign session there were 3 designers, 3 mid level trainers and 6 high level trainers.

 The main objective of having the codesign session was to generate ideas that would later be useful in creating a strategy on the design and use of visual aids in the training caregivers. The codesign session was guided by the Co Create handbook and IDEO Human Centered Design Toolkit, Kit, I. D. (2019).

According to Fisher (2003) designers and the ultimate users of the product work together and collaborate to have a greater insight on the usability of a product. This approach is more focused on a design process that involves different stakeholders at different stages of the design process. This approach is democratic whereby the users and other stakeholders have a right on the design process and product. Schuler & Namioka (Eds.)(1993) also agrees with this idea of democracy. He says that the people affected by the product should have a right to influence and this right is exercised by participating in the design process. When people participate they also build relationships and it is easier for the ultimate users to buy in the

product, Schuler & Namioka (Eds.)(1993). The Codesign session was important for mutual learning for the trainers and designers. As outlined in literature review visual aids need to consider the user profiles and the learner environments. The Co design session also helped to create a way for understanding the caregivers in the informal settlements and their environments.

Visual analysis of physical artefacts.

The researcher conducted a visual analysis of the materials used in training. The criteria for analysis was based on literature review highlighted in the previous chapter that clearly indicates how communication materials to the low literacy audience should be, (Peregrin 2010;Houts et al 2006;Buono 2006; Carstens et al 2006; Plimpton & Root 1994; Dowse & Ehlers 2001).

Some principles and elements of good publication design were used as a reference point. The principles and elements of publication design considered were hierarchy, unity, use of images and typography. Hierarchy is a systematic way of arranging elements depending on the most dominant ones. Unity is determining which elements will be the same and which ones will be different in all the materials. The researcher took photos of the training materials used.

3.6 RESEARCH PROCESS, VALIDITY AND RELIABILITY

Having multiple sources of data will ensure accuracy and validity Yin (1984) as cited by Tellis (1997) recommends the use of six multiple sources of data to be used as evidence in a case study. This research involved participant observation, visual analysis of training materials, interviews, focus group discussion and instrument administration and co design session.

3.7 DATA ANALYSIS

Data from interviews was transcribed and analysed thematically. Four themes from literature and existing data to create four thematic areas that contribute to appropriate visuals.

(Creswell et al 2007). They include simplicity and consistency, contextualized and usercenterdness, correct process of creating visuals and a style that responds to the main objective and the psychological needs of the audience. However the researcher was open for new emerging themes that came from the transcribed data.

Data from training materials and documentation used was analyzed visually. Also some principles and elements of good publication design accompanied by literature review were used as a basis for the analysis.

Data from the co design session was also documented and analyzed thematically. Themes were gotten from the data collected.

Table 3.2: Logical Framework (Source: Author 2020)

Objective	*Data Needs*	*Data Source*	*Methods*	*Analysis*	*Output*
To determine the best practises in using visual aids to train caregivers in urban informal settlements	*Good practice in the use of visuals*	Literature Review, Journal Articles, Exemplars Trainers, Training materials,	**Interviews** with trainers **Physical artefacts** analyze the content that the trainees are given after the trainings **Secondary data** from journal articles, organization reports, a review of successful trainings that incorporate visual aids in various parts of the world, BRAC, Smartstat.	**Thematic Analysis** **Visual Analysis**	Guide on Good practice
To identify the gaps in the use of visual aids in training of child caregivers in Nairobi's urban informal settlements	*Training Process Training materials*	Trainers, Training material	**Interviews** with trainers, caregivers **Participant observation** during the trainings to see how the trainings are conducted **Physical artefacts** analyze the content that the trainees are given after the trainings **Focus Group Discussion**	**Visual Analysis** **Thematic Analysis**	Analysis of the gaps
To develop a strategy to be used in enhancing visual aids in the training of child caregivers in day cares within Nairobi's urban informal settlements.	*Strategic approaches*	Caregivers Trainers Designers	**Co design** high level trainers, mid level trainers and designers to collaborate to develop a strategy	**Thematic Analysis**	Proposed strategy

CHAPTER 4: FINDINGS

4.1 INTRODUCTION

This chapter will look into the findings from the case study at Kidogo, best practices and a co design session. The researcher conducted interviews with trainers and trainees. The interviews were set to understand any challenges faced during the training, strategies that work well in aiding comprehension during the training, the use of visual aids in trainings and gather any ideas they have on how trainings could be improved.

4.2 A CASE STUDY OF KIDOGO

4.2.1 Background Information

As mentioned earlier to identify the gaps in the use of visual aids in training caregivers in Nairobi's informal settlements, a case study of Kidogo was done. This section gives an overview of the trainers, the trainees and the environment they are in, the training program and how the trainings are conducted.

Figure 4.1: A caregiver training by Kidogo (Source: Author, 2020)

4.2.1.1 *The trainers*

Trainings are conducted by two types of trainers; the high level trainers and mid level trainers. The main trainers have a higher level of education and are experts in different fields relating to the topics being trained like ECD, nutrition and business mostly. These experts are involved in creating the content and also training the mid level trainers. The low trainers have a lower education level and are actively involved in directly training and mentoring the caregivers. The mid level trainers are usually former caregivers or teachers and they come from the communities they work in.

They understand and easily interact with the caregivers as they live in the same community and they have a lower level of education than the high level trainers.

High Level trainers train mid level trainers who then train the caregivers. However, the high level trainers are usually present to occasionally support the mid level trainers. In some cases the high level trainers directly train the caregivers especially in situations where the mid level trainers are not confident or conversant enough with the topic they ought to deliver. *Figure 4.2 shows a summary of the high level trainers, mid level trainers and caregivers and how content flows to the caregivers.*

4.2.1.2 *The trainees/Caregivers and their Environment*

The trainees are caregivers who run daycares in the informal settlements. They are from different backgrounds and they have different levels of education. It was established that 90% of caregivers have upto primary level of education, 2 % have a university degree and 8 % have never gone to school. They also have a wide range of ages, from 23 year old to 60 year olds. The caregivers live in the communities where they operate in; Kangemi, Kibera, Pipeline, Imara and Kawangware.

The daycare business varies and it was established that there are three types of daycares; home based, centre based and school based. A home based daycare is usually inside the home of the caregiver, in a centre based daycare, the daycare business is at a separate structure from the caregivers home and a school based daycare is a daycare that is attached or part of a primary school. In most cases in the school based daycares is where you are likely to find caregivers with the highest education levels and the home based the lowest education levels.

In a typical daycare which is mostly a 10 by 10 square feet space you would expect to find around 10 - 50 children. The daycares operate from 5.30 am to 9 pm and during this time the caregivers are usually engaged with the kids for most of the time except when they fall asleep.

Figure 4.3 shows a centre based daycare where a caregiver rents a small room separate from her home for a daycare business. Some caregivers use their own homes as daycares and others are attached to a school. Caregivers attached to a school usually have a higher education level.

 From the discussion with the trainers and interaction with the caregivers, it was established that Caregivers in the urban informal settlements are from diverse backgrounds and have varied education levels. The range of the ages of the caregivers is 23 to 60 years. In the education levels around 90% of the caregivers have primary education, 20 % have a university degree and 8% have never gone to school. *Figure 4.4* is an infographic that shows some bio data and business information.

Content flow

Mid level Trainer
Former caregivers/teachers.
Based in the community.
Middle-low education level.

High level Trainer
ECD/Health/Business Experts.
Create content to be trained on.
Higher education level.

Caregivers
Run daycare centres.
Low education level.
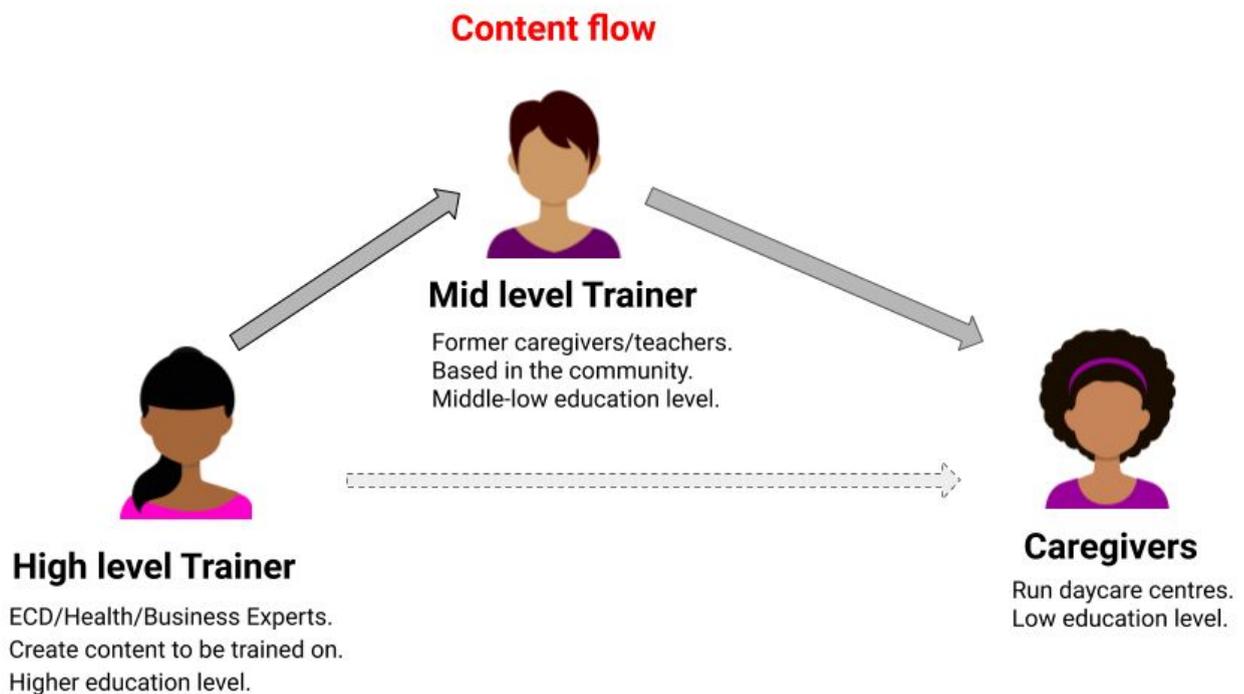
Figure 4.2: The flow of content from trainers to caregivers. (Source: Author, 2020)

Figure 4.3: A Centre based daycare (Source: Author, 2020)
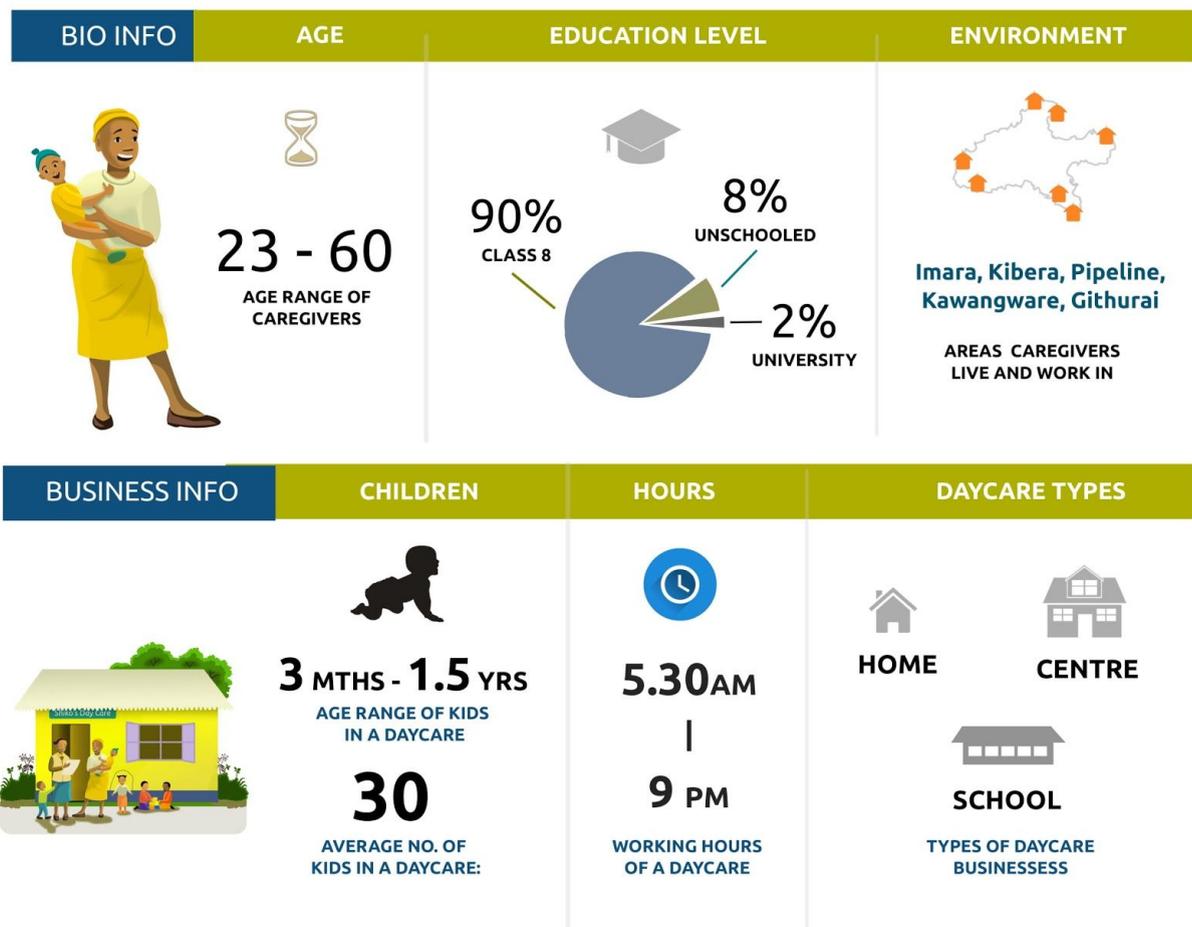
Figure 4.4 : Infographic showing some bio data and business information
(Source: Author, 2020)

4.2.2 TRAINING PROGRAM

The researcher was a participant observer in four training sessions. The trainings were conducted in Kangemi, Githurai, Imara Daima and Pipeline. Since this study was based on visual aids used in training, it was prudent to get first hand experience and observe how the trainings were done. Participant observations also were key in developing empathy and getting to understand the users. Empathy is an important principle in the co design session which was to come later in the study.

From the participant observations, it was established that an ideal training lasted for 3 hours. Training is done on a monthly basis for a period of around 6 months. The training program usually has seven major components.

Before the training

On the training day, trainers arrive much earlier to prepare some of the materials that will be used in the trainings. Some of the materials prepared before the trainings or a few days before include a welcome sign, case scenarios which are activities to be done in the training, a morning exercise. These materials were created afresh in almost every training. This was done on flipchart or manilla paper using marker pens.
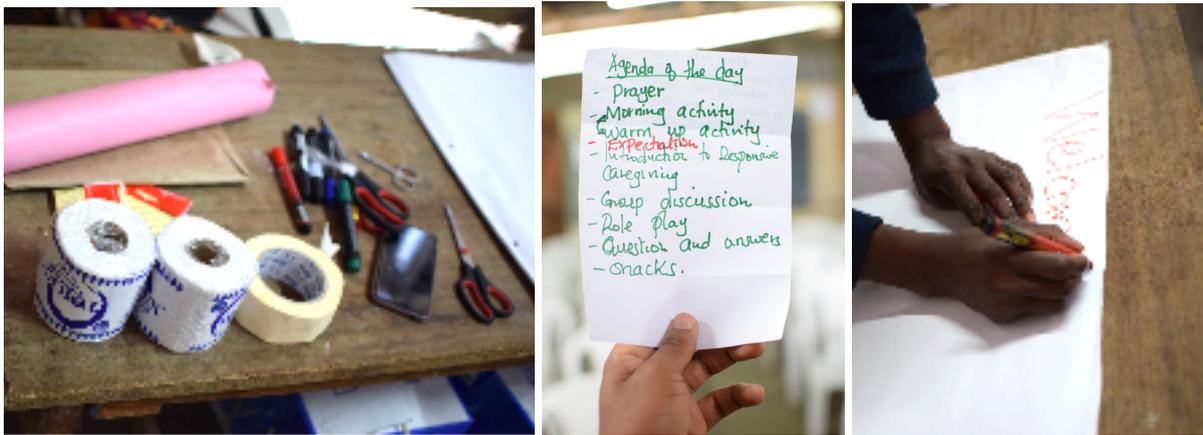
Figure 4.5: A photo collage showing some of the materials used in the trainings (Source: Author, 2020*)*

Figure 4.6: Trainers creating materials to be used in that day's training (Source: Author, 2020)

4.2.2.1 Training Activities

The training runs from 9 am to 12 pm in most cases apart from the April and August trainings that are full day. The trainings are held once every month and the caregivers are taught various topics relating to ECD, health, nutrition and businesses.

As outlined by OECD (2019), most adults learn easily in the workplace as compared to other types of learning like seminars, workshops, open and distance learning. Also adults have busy lives and are likely to lack time for their training. Infact shortage of time is one of the leading barriers to adult learning, (OECD 2019). The training participants are usually identified and contacted through mapping in the community done by Kidogo, then interested caregivers voluntarily enroll in the training.

The training program usually has six major parts; a morning activity, warm up, introduction, group work, role play and discussions.

Figure 4.7: An outline of the training program (Source: Author, 2020)

Morning activity

The first thing that happens is a morning activity which is done individually as the participants arrive. This activity is usually a question asked that is linked to the training on that day. The caregivers fill their answers on sticky notes and later paste them on a flipchart. Sometimes caregivers are asked to draw their answers on paper or sticky notes and they stick them on the wall. Also, as the participants arrive they create their own unique name tag using a manilla paper and felt pen. The name tag is supposed to be put on your chest throughout the training.

Warm up

After the morning activity we have a warm up activity which is usually a small team building activity. The activity that is short and active, often times it is a game that involves active body movements and singing. Sometimes the game is usually related to the topic of the day. In one of the trainings, the trainees were taken to a room filled with toys and told to choose a toy of their choice and play with it like a little child. The trainer acted like a teacher and who went round attending to the children. After the warm up activity which lasts for around fifteen minutes, thereafter everyone goes back indoors.

Figure 4.8: Trainees looking at their morning activity drawings and on the left is a close up of an activity (Source: Author, 2020)

Introduction to the topic

The trainer then introduces the topic of the day by asking for trainees expectations and also by reviewing the morning activity. The trainer spends around half an hour minutes facilitating. After some time as the trainer talked the participants seemed to be less engaged and somehow losing attention. The trainer was assisted by another whose work was mainly to write short notes on a flipchart. The main trainer used hardcopy notes as a reference. Swahili was the main language used during facilitation, English was scarcely used only for a few words or phrases. The trainer used a lot of practical examples, stories and real life case scenarios to introduce the topic at hand and this seemed to keep the learners more attentive and engaged in the topic at hand.

Group Work

After the trainer introduces the topic at hand the trainees are divided into groups of around 4-6 and are given an exercise. The exercise is usually a case scenario of a problem related to the topic at hand written on a flipchart. Each group is given a unique case and they are required to brainstorm on how they would tackle the issue. Each group discusses possible ways to address the problem and they write their points on flipchart using markers.

Figure 4.9: A group discussion on the left and the same group doing a role play of their discussions. (Source: Author, 2020)

Role Play

After the case scenario discussion, each group is required to plan how they will role play their solution before the rest. The problem given is read out aloud to the rest of the participants and then they role play their solution and later explain the points that they had. In one training the activity was to brainstorm on games that they would play with their children in class. For the role play the participants acted out a hide and seek game. This brought a lot of joy and excitement to learning. The role play lasts for around ten minutes.

As outlined in literature review by OECD (2019), low skilled adults such as those with low education levels learn better when the learning is problem oriented and practical. The role plays are an important ingredient in making learning more practical and problem oriented as they role play scenarios in their day to day activities.

Discussions and Questions and Answers

After the role play the trainer summarizes the topic at hand and starts a discussion about the role play. After this the trainers then are free to ask questions mostly of the things that they go through in their daycare centres. After the training the caregivers are given short notes for reference. The next section is a visual analysis of the materials they are given.

4.3 USE OF VISUAL AIDS IN TRAINING

In all the trainings there was minimal use of visual aids used in training to train the

1. Define Goal & Main objective

Determine the main purpose of the message, and the main purpose of using visual tools. E.g. is it to describe a process, solve a problem or motivate readers.

2. Study Context

Take note of the learner profile, learning environment, existing style guides. E.g. do learners have prior knowledge of the subject

6. Launch and fine tuning

Launch your materials to your audience. Have feedback strategy and fine tuning your designs as you go along.

5. Testing and Iteration

Test your initial sketches with the intended audience, gather feedback and adjust your design based on feedback

4. Determine individual style for individual content

Design individual illustrations suitable for individual cases. E.g. whether to use photographs, or illustrations or diagrams or charts

3. Design Look & Feel

Based on the defined main objective and the context, design the general visual approach. Including the layout and design.

Process of using appropriate Visual tools

caregivers, apart from the illustrations in the handouts given. In most cases the notes were written on the flip charts using a marker pen. Only in one instance did the trainer draw on the flipchart. In that instance, the trainer drew a pyramid to explain a point during a positive discipline class.

Though there was little use of visual aids to train caregivers, the trainings incorporated visual aids in other unique ways during the training. For example trainers often asked caregivers questions during the morning activity and the caregivers were asked to draw their answers. In one training the caregivers were asked to draw games they played in their childhood. In another case the drawing caregivers were asked to draw was metaphorical. They were asked to draw a tree that has branches and roots. The branches were to symbolize activities that they do with children in the classroom and the roots were to symbolize activities that they are not able to do with children in the classroom. The trainer wrote the activity on a flipchart, drew

an example of the activity and pasted it on the wall as a sample for the others to see. As the caregivers got in the training venue they got to see the morning activity and each was given a plain sheet of paper. The activity was done silently and individually. After finishing their activity they pinned their drawings on the wall.

During the focus group discussion after the training the caregivers were asked about their experiences of the morning activity. The comments given highlighted the positive impact drawing had on the learning. Some of the comments were as follows:

> *"The way I drew the tree and differentiated the tree and the roots I understood it better, like the things that I do in class and the things that I do not do in class.*
>
> *When you are given a paper to draw it is unlike when you are asked a question to answer. When you answer a question (verbally) it just goes. However, when you are given a paper to draw, you will think and something that you have taken your time to think usually sticks in your mind. Drawing can make us more creative." - Caregiver*

These statements besides clearly outline how impactful a simple drawing activity can be, they also show that caregivers deeply understand and embrace the importance of communicating visually. This statement portrays how visuals provide an alternative way of communication that not only has a deeper connection to the caregivers but also creates a deeper understanding of concepts.

Figure 4.10: A drawing activity for the caregivers (Source: Author, 2020)

Figure 4.11: Creating unique name tags brought joy to learning (Source: Author, 2020)

In another instance, caregivers were trained on how children learn through play. In this case the morning activity was to draw their favourite childhood game on sticky notes and paste them on the wall. They made the drawings on sticky notes and pasted them all on the wall. Then one by one the drawings made were reviewed. A caregiver stood in front of the rest and one by one analyzed the drawings and tried to make out which game was drawn. Some drawings were simple, having simple objects in them like balls. Other drawings were a bit complex and had stick figures that seemed to be in action perhaps playing a game. There was so much laughter and fun as they tried to make out which game was drawn on the sticky notes and a feeling of nostalgia as they reflected on their childhood.

Figure 4.12: Trainees looking at their morning activity drawings and on the left is a close up of an activity. (Source: Author, 2020)

It was also observed that in two trainings props were used. In both trainings the topic being facilitated was learning through play. The topic focused on how caregivers could control their classroom and how they could use play to let children learn. The props were play items are toys and books made from locally available materials that the caregivers are taught how to make and use in their classroom.

In one training the morning activity was a role play. The trainer had arranged play items in several boxes in a different room. As the training began, the caregivers were asked to go to a room that had the play items stacked in boxes. They were to act like little children entering a classroom, take any play material of their choice and play with them in the classroom. The trainer acted out as a teacher who observed how the 'children' played with the materials and tried to resolve some conflicts of children fighting over the materials. This activity role play lasted for about twelve minutes. It was interesting to observe how natural and easy it was for the caregivers to act like little children, some 'fought' over materials and others reported their classmates to the teacher. For a moment it felt like one was in a daycare. After the activity they all went back to the training room and were asked how they felt and what they had learnt. It was observed that the play items were very successful in making learning real and practical. As the caregivers shared what they had learnt from the role play, it revealed how successful the props were in delivering the content as they had learnt so much in such a little time and in a way that was fun and engaging.

Figure 4.13: Trainers and caregivers role playing a classroom environment use some props used in a training learning through play Source: Author

4.3.1 Forms of visual aids used in training

It was established that the use of visual aids as a strategy to enhance learning was under utilized and its potential unrealized. Only in a few instances was it mentioned as a strategy that had been used in training. The types of visual aids that have ever been used in trainings were hand drawn illustrations, videos and printed pictures.

4.3.1.1 *Videos and pictures*

It was established that videos and pictures are occasionally used in trainings. In one instance a trainer said that a video and pictures were used to explain nutrition. When the nutrition video was shown, it was not only easier for the caregivers to understand but they were also able to implement good feeding habits in their daycares. The videos were obtained from websites of health organisations and Youtube. In another instance a caregiver related when a video was once used to explain diapering steps which she enjoyed and even recommended it for other trainings.

Sometimes pictures were shown to the caregivers to help them understand. One trainer said that they use pictures when they feel that the caregivers are losing attention or when language alone is not enough to describe a concept. For example in a health training, a disease might have an English name and not have a Swahili term. This calls for a picture to clearly illustrate the disease. The pictures used are mainly outsourced online from ECD and health platforms.

A challenge of using videos is that trainings is done in the local communities and sometimes it is challenging to have a projector in the field which might make the notion of a high level training to the caregivers.

4.3.1.2 *Hand drawn illustrations*

Hand drawn illustrations were the most common type of visual material used. Hand drawn illustrations were used by trainers to explain different concepts and were used by the caregivers to express their ideas to the trainers.

Occasionally trainers draw illustrations on flip charts or manilla to explain certain concepts. This was only mentioned in three interviews. In the one instance, a caregiver mentioned that they were taught how to spend their money using a funnel drawing. In the funnel the money that got in was the income and what got out was their expenses, the money they were left

with depended on how wide the funnel hole was. After the training they were later asked to draw it later using their real income and expenses and it made her understand the concept.

In another instance a trainer mentioned how a seesaw drawing was used to explain profit and loss in a business training. This was very easy for the caregivers to relate to since after the training some caregivers use their arms to illustrate the equilibrium of losses and profits when asked how their business is fairing. The illustrations are made by the trainers themselves. In all the cases mentioned, the drawings were used in a metaphorical way.

However, it was mentioned in three interviews that a drawback in using more hand drawn illustrations in training was that caregivers did not know how to draw. One said that it is better not to draw than to make a bad drawing and prove that you can not draw well. To counter this they sometimes cut out pictures from newspapers and adapt it to their training material.

Caregivers drew hand drawn illustrations to express their ideas in the morning activity. Caregivers are usually asked a question and they are required to draw the answer instead of writing it. During the focus group discussion, one caregiver commented that drawing requires a lot more thinking and something requires your time to think usually sticks in the mind. Another caregiver said that when they draw and see what their friends have drawn they understand a concept in a new way.
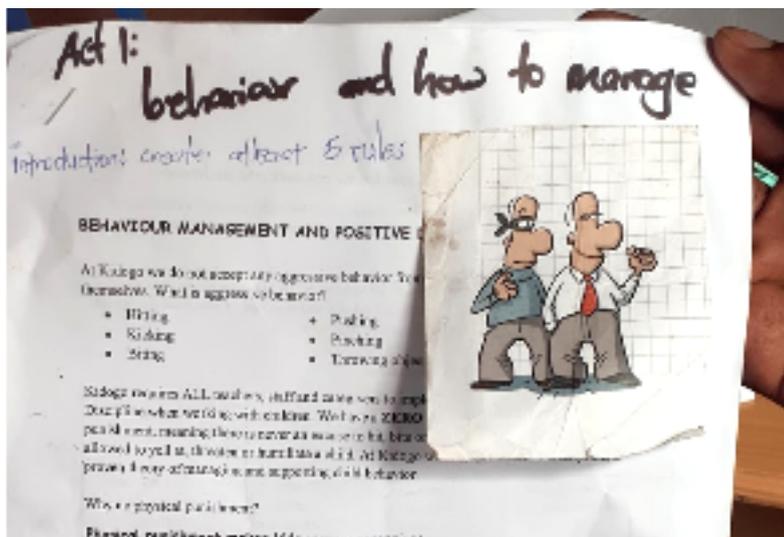
Figure 4.16: An adapted illustration which was cut out from a magazine and stuck onto trainers notes. (Source: Author, 2020)

4.3.1.3 *Props*

It was established that in some trainings props were used. This was common in the training of learning through play where real play items are used in class. The play items are toys and books made from locally avaible materials that the caregivers are taught how to make and use in their classroom.

Figure 4.17: Some props used in to training learning through play Source: Author, 2020)

4.4 USE OF VISUALS IN TRAINING MATERIALS GIVEN TO TRAINEES

After each training the trainees are handed out printed notes that are supposed to act as a point of reference. The visual analysis of the materials given was based on literature review highlighted in the previous chapter that clearly indicates how communication materials to the low literacy audience should be. Some principles and elements of good publication design were also used as a reference point. The principles and elements of publication design considered were hierarchy, unity, use of images and typography. Hierarchy is a systematic way of arranging elements depending on the most dominant ones. Unity is determining which elements will be the same and which ones will be different in all the materials.

4.4.1 Use of visuals in the materials

The handouts are mainly written out text with little or no pictures and illustrations. Not all handouts had illustrations, only two thirds of the handouts had accompanying illustrations. In the handouts that had illustrations, the illustrations covered less than 40% of the total content. Linda Hodgon as quoted by Peregrin (2010) says that communication should be 55% visual, 37% vocal and 7% verbal or the actual message.

As outlined earlier illustrations have positive impact to attention, comprehension and adherence. Having illustrations in handout notes might be the very reason that caregivers would look at the handouts or even be motivated to read them.

The accompanying illustrations were lineart and are in black and white. They were simple and straightforward. However, most of the characters portrayed in the illustrations were not in the context. Some of the illustrated women and children seemed to have caucassian hair and pointy noses which is unlikely to be found in Nairobi's urban informal settlements . Clark et al (2010) argues that visuals also need to be culturally relevant to the target audience. The target audience should also be included in testing the visual cues to see what messages are gotten from the intended audience.

4.4.2 Use of principles and elements of good publication design in the materials

Hierarchy as a principle was used though not clearly executed. Hierarchy as a principle is important because it helps organize information in an organized way by making important

information like titles more dominant than the rest of the content. This helps the reader consume information in the correct sequence. Hierarchy should be very cleverly and clearly executed especially for an audience with low education levels whose literacy levels are low. In the case of the handout notes, there were some instances where the headings and paragraphs had the same font style and size, in some cases the headings were differentiated by an underline. Thus the eye would not be easily drawn to the titles first then the paragraphs as should be in an ideal case.

In terms of unity, all the handouts analyzed seemed to be a bit different from each other. There was no unifying factor in terms of the typography, images used and the layout design in general. For example one handout had the font Times New Roman and another Comic Sans. One had a letterhead for the organisation and another did not have. In some cases the handouts had the logo and the header and in some cases they were missing.

It was also observed the placing of images and text was not in a systematic way. There was no proper subdivision of margins therefore text and images were arranged in an organized way.
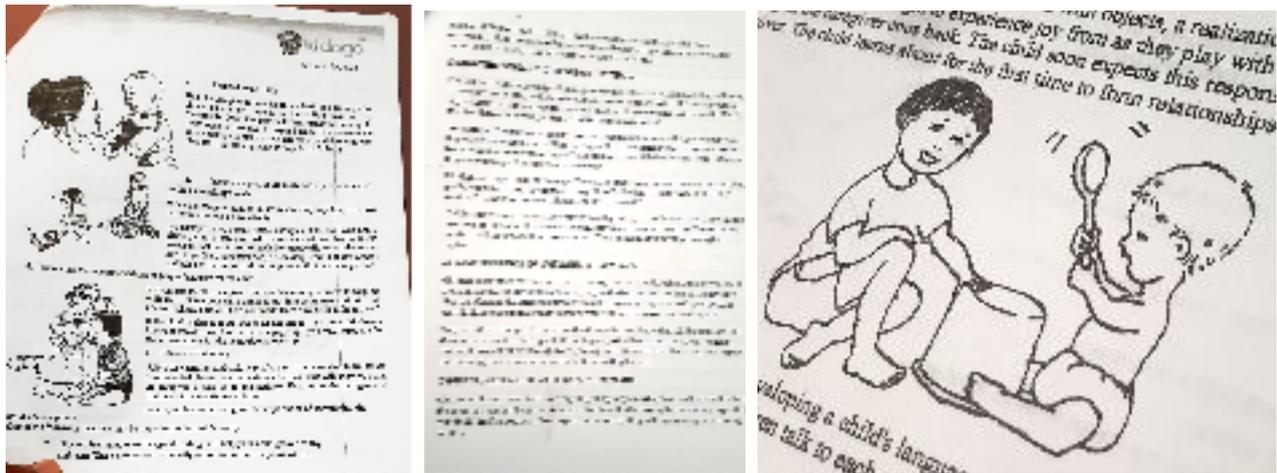

Figure 4.14: Handout notes given to caregivers after training (Source: Author, 2020)

4.4.3 Feedback from caregivers and trainers on the training materials given to caregivers

The researcher also sought to establish how effective the handouts given after the trainings were. It was established that the handout notes were not effectively used often as a point of reference after the training. Although caregivers claimed to read the handouts only in their free time, trainers on the other hand had mixed reactions as to whether the handout notes they gave were useful.

Trainers did not have any laid out system to establish if the handout notes are being used or not. They claimed to know the notes were being read if the handout papers became rugged and old, if they saw their behaviour change after the training or if caregivers asked questions from what they had read. One claimed not to know if the notes were used or not.

When asked how often they referred to their notes, it was established that only one went through her notes on a daily basis because she stores her notes with attendance trackers. The rest claimed to read their notes in their free time. This was in the morning, late evenings or during weekends when their businesses had closed. One that claimed that it was hard to read the notes during the day because they are usually very busy and sometimes children in the daycare can tear them. One claimed it was difficult for her to read because even after her busy business is closed, she has her own children at home and a husband to take care of. One said that he lost all his notes.

Suggestions were sought from the caregivers and trainers to improve the handouts that they were given. The ideas that were given were clustered into three areas. Firstly, there was the need to change the format, from black and white handout notes to attractive posters that had pictures in them and they would be stuck on the wall. The caregivers claimed that this would make it easier for them to refer to the notes compared to hardcopy notes that you might easily put in your bag and forget about them. The trainers also suggested having posters and pictures because pictures will make the notes attractive and entice them to read. One caregivers reasoned that if the posters are colourful it would also make her daycare attractive even for the children.

Secondly, there was a suggestion to simplify the content. This came mainly from the caregivers. They claimed that the notes had very long sentences and so many words thus there was a need to further summarize the notes. There was a recommendation to translate the

language to Swahili since the notes are usually in English. The trainings are also done in Swahili.

Thirdly, there was a suggestion to present the notes in other media. Other ways mentioned were; having the notes on soft copy so that they are accessible on phone, have notes in form of videos that caregivers can watch on their phones and also have props during training.

4.5 STRATEGIES USED TO AID LEARNING DURING TRAININGS

It was established that use of role plays, stories and case scenarios, visual aids and a simple language were the strategies used to aid learning.

It was established that the use of case scenarios, role plays and stories were the most common strategies used to ensure the information was comprehensive and contextualized. This came across in more than 90% of the caregivers and trainers. It was mentioned 11 times in the interviews.

Caregivers said that they enjoy having roleplays and that the stories and case scenarios make the learning practical. During the focus group with the caregivers, one caregiver said that the case scenarios that they are given to discuss in their groups are experiences that they come across daily and they make them understand better. Another said that when they role play, everyone understands how they will implement the lessons learnt in their daycare centres.

According to trainers, role plays and stories not only makes learning more practical and comprehensive but also makes the caregivers more engaged during training.

The use of visual aids was mentioned in only two interviews as a strategy used by trainers to aid comprehension during training. Though pictures and videos are not used often, an instance was given where a video was used during one of the trainings. One of the trainers said that the videos helped caregivers relate to the information they were being given and after visiting their centres she established that they had adhered to the information. A similar instance was also mentioned by the caregivers.

4.6 PERCEPTION OF USING VISUAL AIDS IN TRAININGS

The researcher also sought to establish the respondents view on the use of visual aids in training. All the respondents affirmed that visual aids were necessary to have in trainings and gave reasons for it. The reasons given were classified to three main themes.

 Firstly, was the idea that visuals brought attention to the subject being learned. Caregivers said that they are very busy people with many responsibilities therefore it is very easy for them to lose concentration but videos would help capture and retain their attention in a training session. This was also affirmed by the trainers who commented that caregivers have a short concentration span and showing them pictures or videos would help them be attentive and engaged to the training at hand.

Secondly, visual aids have the ability to increase comprehension and adherence to the content being taught. This was the main point that was put across. Caregivers affirmed that pictures have the ability to present the information in a way that is easy to understand. Trainers said that visual aids, unlike language, have the ability to communicate the same message across all languages. This is very useful especially when language is highly technical or has no Swahili translation. It was also established that when visual aids are used, information is easier to remember and therefore to apply in practice. Trainers and caregivers agreed that what you see or draw sticks in your mind. It was established that if pictures were used in the handouts, they would entice and motivate the caregivers to look at the material.

Thirdly, visual aids have the ability to bring joy to learning and make it more fun. This feedback came mostly from caregivers. In one case, a caregiver preferred having beautiful illustrated posters instead of the handout notes given to the training saying that it would even make her daycare more attractive. One trainer said that when caregivers draw during the morning activity they enjoy, laugh and learn from each other's drawing.

Figure 4.20 Direct quotes from the interview with caregivers (Source Author, 2020)

4.7 CODESIGN WORKSHOP

The main objective of having the codesign sessions was to generate ideas that would later be useful in creating a strategy on the design and use of visual aids in the training caregivers. The workshop was held on 21st February 2019 at Kidogo Head Office in Adams Arcade from 9.40am to 12.40am.

There were 13 participants from diverse backgrounds; six high level trainers, three mid level trainers who represented the caregivers, three designers and the researcher who was the facilitator playing a neutral role. The three designers had experience in design thinking.

4.7.1 The Challenge

The challenge for the brainstorm was created beforehand and it was drawn from key insights from the interviews, focus group discussion and the participant observations conducted. The key insights were converted into two '*How Might we*' questions. This was important in creating an opportunity for people to see the challenge in a new way that provokes ideation. This technique is recommended in the IDEO Toolkit for Human Centered Design.

The two questions were;

1. *How might we improve training materials given to caregivers?*
2. *How might we improve training materials used by Trainers during training?*

Each question was broken further by adding *'so that'* at the end of the question to have three different variations so as to make the problem more specific and yield more diverse ideas. A scenario was added after each question. The scenarios were direct quotes and key insights gotten from the field.

Table 4.1: Questions brainstormed in the Co Design session (Source: Author, 2020)

Main questions	**Variations**
How might we improve training materials given to caregivers...	… so that we give caregivers so that it is easy for them to understand?
	… so that it is easy for them to use in their environment?
	… so that they motivate them to read or use them after the trainings?
How might we improve training materials used by Trainers during training...	… so that they help simplify information and make it easier to explain?
	… so that there are different channels and consistency in our trainings?
	… so that they are easy to prepare and set up during training?

4.7.2 The Process

Before generating ideas it was important to create an environment where everyone was free to express their ideas without judgement and increase collaboration. To encourage collaboration and free thinking, every participant introduced themselves through a game it was made clear that everyone's opinion was important.

It was also important to understand who we were designing for in order to create empathy and understand the challenge better. To achieve this there was a brief introduction about the training program by the Franchising Manager and a short documentary that highlights the women and the trainings done in the community. Thereafter there was a discussion about the

daycare business and the women who operate it, a persona was created and filled out on a flipchart. This was necessary especially for the designers who were new to Kidogo's program and the communities they work in.

Ground rules were set to encourage free divergent thinking, collaboration and to avoid judging others. The ground rules were; "think crazy", "no idea" is a bad idea and "we are all equal in this room." These ground rules were written on the walls.

Generated ideas were written on sticky notes and posted on flipcharts. Participants were divided into three groups each group had a designer, a high level trainer and a mid level trainer. After being presented with the challenge, everyone had their individual 3-5 minutes to write down their ideas and then they shared their ideas within the group and selected the top five ideas that they would present to the team. After each group presented their top five ideas for each question they tackled, voting was done by everyone putting tick marks on the ideas they loved most.
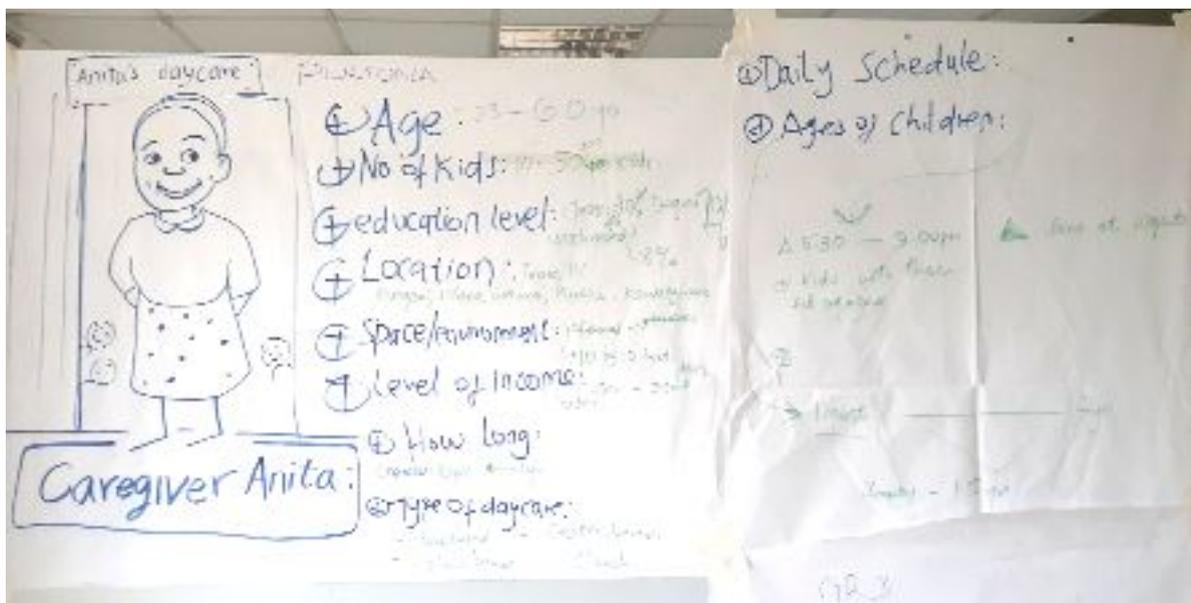

Figure 4.21 A profile of caregivers in the informal communities developed during the codesign session (Source: Author, 2020)

**Figure 4.22: A photo collage of the codesign session (Source: Author, 2020)**
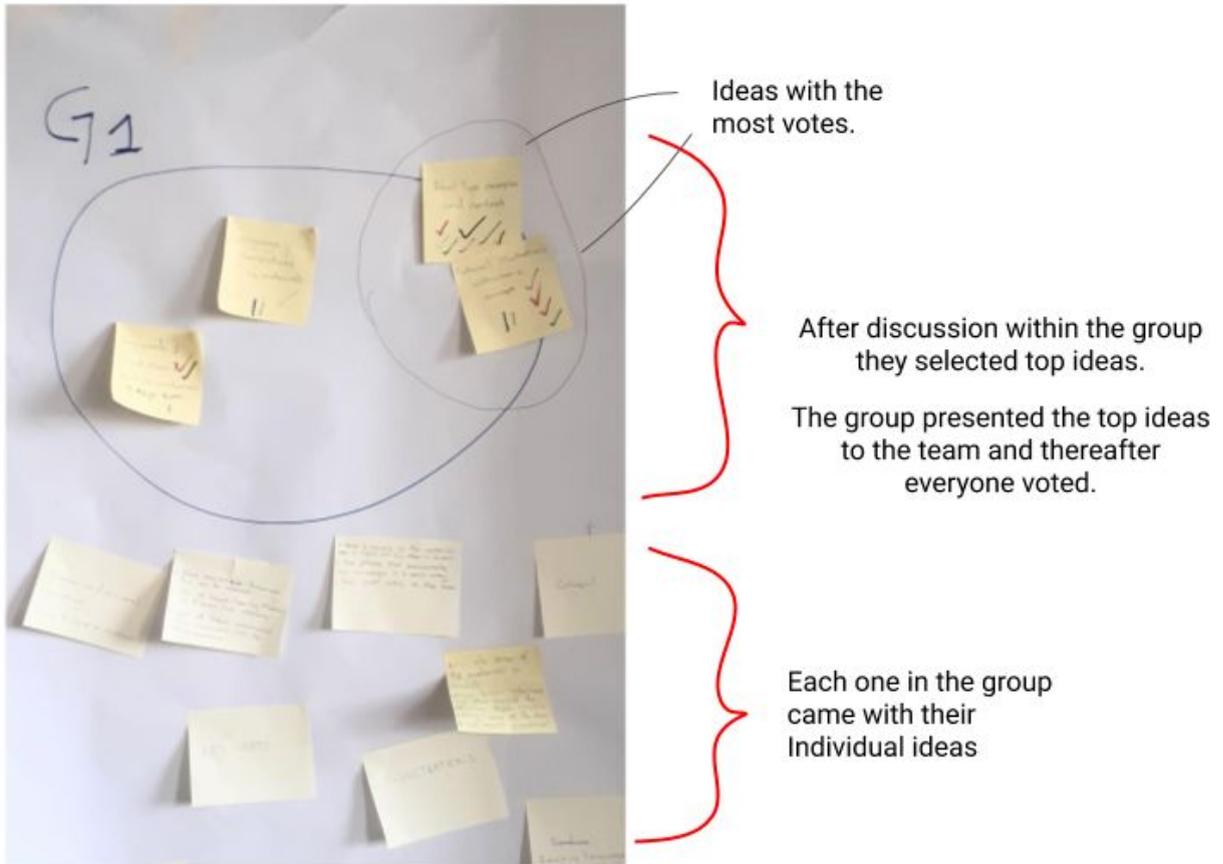
Figure 4.23: Idea generation and selection process (Source: Author, 2020)

Results

Table 4.2: Top 5 ideas generated for the question, "How might we improve our training materials so that we give caregivers?" (Source: Author:2020)

Question variation	Top ideas generated
How might we improve our training materials so that we give caregivers so that it is easy for them to understand?	- Use real life examples and context - Use pictorial illustrations with a comical concept so they don't forget. - Language translations of materials, training is in swahili materials in English - Use keywords and short and clear precise sentences - Visual materials like charts that they can post at their daycares
How might we improve our training materials so that it is easy for them to use in their environment?	- Use activity cards/posters on the walls that will be easier to access than notes and also reduce bulky papers/ comprehensive one with visuals showing step by step process - Facilitator uses pictures during the role play and then caregivers carry them home and they can use them at their centres. - Simplify the materials to 2 pages - Using visual materials like charts; Facilitate posters - Giving materials on time.. Like the files they give them
How might we improve our training materials so that they motivate them to read or use them after the trainings?	- Incorporate directive/interesting questions on the topic like. Did you know that if you did this … this happens ... ? Also in the training materials you could have questions that they will be discussed in the next trainings like take homes. - Use key messages on the topic like counselling cards…/posters - like counselling cards used in health… speech bubbles that will attract people to the information. - Use of Case scenarios and they internalize - Make use of the COPs to discuss the training topics - it will make them interested - Reach out to the trainees Mentorship - they might be interested to go back and read.

Table 4.3: Top 5 ideas generated for the question, "How might we improve our training materials used by trainers?" (Source: Author:2020)

Question variation	Top ideas generated in order of most votes
How might we improve our training materials so that they help simplify information and make it easier to explain?	● Using Videos ● Real life and relevant scenarios in our context. ● Step by step illustrations. ● Have short notes that have key words to be taught ● Have a training/activity checklist that trainers check as they cover content during training
How might we improve our training materials so that there are different channels and consistency in our trainings?	● Using different colors for different themes/training topics ● Use visual aids and real life examples/props e.g using real rice in nutrition training ● Use predone videos; ● Thematic games that explain the topic e.g. act out role play scenarios e.g. a crying babies ● Introduce pops such as dolls.
How might we create training materials that are easy to prepare and set up in trainings?	● Preparing videos in training from online sources ● Preparing several group questions and scenarios in advance and laminating them ● Using white boards rather than flipcharts. ● Using more questions within the sessions trainings

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter gives a summary of the findings from the previous chapter and gives a discussion and conclusions drawn from the findings and suggested recommendations.

The research aimed to answer the main objective of developing a strategy to be used in guiding the design of visual aids in the training of child caregivers in day cares within Nairobi's urban informal settlements. This was done by first looking at the best practises in using visual aids to train caregivers in urban informal settlements and identifying the gaps in the use of visual aids in training of child caregivers in Nairobi's urban informal settlements

5.2 SUMMARY OF FINDINGS

The summary of findings was arranged in regards to the objectives of the study.

5.2.1 Best practises in using visual aids to train caregivers in urban informal settlements.

To answer the first objective, which was determining best practises in using visual aids to train caregivers in urban informal settlements, the researcher analyzed different theories from literature and also studied how caregiver trainings were done by different organisations in similar settings.

From literature review, different scholars tend to agree concerning factors that need to be considered in regards to how visuals should be used to aid learning, especially for a low literacy audience. There are four main factors mentioned, firstly having simple and consistent visuals that are lacking unnecessary details that would divert attention from the subject. Secondly, having user centered and contextualized visuals that relate to the audience culturally. Thirdly, is using an appropriate visual style that resonates with the subject at hand and the psychological needs of the audience. Lastly, having a correct procedure. The procedure ensures that the intended audience tests the materials before roll out. These factors give a basis as to how visuals should be used to enhance training, incorporated in instructional materials.

To answer this objective, organisations considered to have best practices were also studied. This objective was partly met since. One limitation to the study is that it proved challenging to acquire samples of training materials from different organisations or to attend their training

and observe how training is done. Generally, the organisations seem to partly follow the guidelines mentioned from literature. For example, in one case, the visuals that were used in the training were actually obtained from the community where the caregivers live however, the materials were tested by another group.

It was established that in all organisations that there is no clearly laid out structure to actually determine the impact or effectiveness of the visuals used. However, they all claimed that visuals have a great impact on learning in various ways. Using visual aids aided comprehension by making learning more practical, it made learning more joyful by breaking the monotony of spoken or written information and increasing participation for example when flash cards were used. Using visual aids also brought increased creativity in learning and learners easily understood concepts.

Most of the visuals used in training were either designed or compiled by the trainers themselves and only in a few cases designers were involved in creating visual aids. In all organisations studied visuals were presented in more than one channels; videos, pictures, publications, drawings, flashcards and on flipcharts. Most of the visual aids used in training were actually made by the trainers themselves or sourced by trainers from free online sources. In most cases support materials like publications had graphic designers engaged.

5.2.2 Identifying the gaps in the use of visual aids in training of child caregivers in Nairobi's urban informal settlements

To answer this objective, a case study of Kidogo was conducted.Training materials were analyzed, participant observations in training were made and interviews were conducted with trainers and caregivers. From the visual analysis of the materials given to the caregivers established that visuals were not effectively used. The visuals used were inadequate since they covered less than 50% of the content and in some cases materials lacked any visuals on them. In addition, some of the visuals were out of context since they had characters not found in the settings of the intended audience.

Interviews with caregivers established that the materials given were not as effective as intended since they were not read regularly. Having a busy schedule during the day and

lacking time to go through the materials were the main reasons given for this. Caregivers suggested improving the materials they were given by making the contents simpler and shorter, having pin up posters with pictures instead of posters. This implied that accessing the materials as pin up posters would be easier than handouts which they said easily get lost or destroyed by children in their daycare.

Interviews established that use of visual aids has a greater potential to aid training. Caregivers and trainers mentioned certain occasional instances where videos were in training and suggested more of that. Caregivers said that using videos would not only capture their attention but bring joy to learning. Trainers mentioned that in the few instances videos were used in the training of certain topics, there has been more attention, engagement in learning and positive behavioural change. A challenge to using presentation in the field is the perception that powerpoint presentations and having projectors in the field would seem to insinuate a high level of training. This was considered to be potentially intimidating to the caregivers especially with low education levels and thus the reason for the more preference to use flip charts and pens.

In the few instances where caregivers were asked to draw their answers, it was observed it brought joy and engagement to learning. Some caregivers laughed at each other's drawing and they got a chance to express their thoughts individually as they pinned up their work. Caregivers claimed that drawing activities sparked their creativity since it made them think hard and it was easier to remember things you draw. In addition, others claimed that when ideas are drawn they are viewed by a new fresh eye and this brings another level of understanding concepts.

When asked if it was necessary to have visual aids in training, both caregivers and trainers responded in the affirmative. Visual aids were considered to aid comprehension, bring joy to learning, retain attention and a form of self expression. Trainers suggested that visuals could actually help trainers deliver content much easily and especially when new trainers from different communities are onboarded. Visual would also assist to create standardized training resources that would help different trainers deliver the content uniformly across different communities.

Even though the visuals have a great potential and seem that their importance is understood, they have been used inadequately and ineffectively. One of the main reasons for this is that

trainers felt they did not have necessary skills to create visual aids and this work required assistance of a visual designer. However other trainers got their content online from websites, others used locally available materials like newspapers to cut out pictures or make props. Others leaned towards drawing basic geometric drawings that involved regular shapes.

5.2.3 Developing a strategy to be used in guiding the design of visual aids in the training of child caregivers in day cares within Nairobi's urban informal settlements.

From the co design workshop, the ideas generated leaned towards simplifying content, bringing joy to learning, aiding comprehension and ensuring materials given were contextualized and effective. To help simplify content and aid comprehension, ideas of using fewer words, simple language or translated materials were put across.

There were ideas to ensure that there was some joy and motivation to learning and information was retained for longer. Most of these ideas incorporated visual aids, for example, having posters instead of handout notes, presenting content with a comical storyline and using pictures and props in training. Also visual aids ensured that information was accessed in an easier and intuitive way. For example having colourful pictorial posters on their walls would be easier to refer to regularly and last longer than having notes in a binder stored in a shelf.

Ideas of having flip charts that were reusable would also assist to create standardized training resources that would help different trainers deliver the content uniformly across different communities.

Also a lot of ideas were put across to ensure that content delivered in training was contextualized. The ideas included using real life examples in training, case scenarios and also giving a chance for the caregivers to share content amongst themselves.

5.3 CONCLUSIONS

5.3.1 The Gap between Theory and Practice

The first objective sought to establish best practices of using visual aids from theory reviewed in literature and from a few organisations considered as best practices. This study established that there is a gap between theory and practice in the context of using visual aids to aid

training of child caregivers. Literature review gives certain guidelines and best practices of using visual aids that in some cases do not match the practice from the organisations conducting the training. In some cases the standards set in theory could be too high and in other cases the practice of using visual aids is below standards.

Some of the disconnections between theory and practice were as follows. Firstly, from the organisations studied 75% of the visual aids used in training were created by trainers themselves without involving visual designers yet theory recommends and defines the role of the visual designer. Visual designers were included mostly in creating publications for support materials and not in creating visual aids to be used in training. Existing visual aids like videos and pictures were also gotten from other sources like the internet. This made it less likely to involve visual designers since most materials were ready made and it was just a matter of adapting them or using them as they are. By virtue of not involving visual designers means that the visual aids used might not be as effective and appropriate.

From theory, scholars argue that visual designers have three main roles in the creation of appropriate visuals; they could assist in creating visual aids templates that trainers could customize during the training, they could assist trainers articulate their ideas visually by aiding them to sketch and they could assist trainers identify visual aids that are of low cost for sustainability purposes. Visual designers also have the ability to use contextualized visual cues that are successful in communicating more fluently and in a way that arouses emotions, (Cross 2006; Osborne 2006)

Secondly, the process of using visual aids laid out in literature review is different from practice. Theory has a very elaborate process laid on using visual aids. It involves defining objectives and goals, studying the context, designing the look and feel, testing, iteration and fine tuning. In practice the last parts of the process that involves testing, iteration and fine tuning after launching were missing. In most cases there were no clearly laid ways of ensuring their effectiveness. This was because of three reasons. Visuals were either integrated too much to the training content to seperate them as a component and measure their effectiveness. Trainers and caregivers seemed to assume that visual aids were important and as long as they were used, there was no need to measure their effectiveness. Leaving out

visual designers in most cases could result in the lack of measuring effectiveness since designers are taught to test anything they make and continue iterating even after roll out.

5.3.2 Impact of visual aids

From the study visual aids have a great potential that is yet to be realized. There is already an awareness of the importance of visual aids. Trainers and caregivers are theoretically aware of the importance of having visuals in training but lack knowledge, or skills to effectively use visuals in practice. A hindrance of using visual aids could be lack of confidence and skills to make them since many trainers felt incapable of creating visual aids because they are not artists. Though this could be a valid reason, the trainers are capable of using the materials they have in the most effective way. A good example of using simple materials in an effective way is the morning activity which brings so much fun to learning and makes learning more personalized. In the morning activity, caregivers are required to draw their answers on sheets of paper. This implies that trainers have the potential to use simple visual aids in simple customized ways that could go a long way in aiding comprehension and retention of information especially in a low literacy audience. However, there lacks a simplified and practical way to guide trainers on how to create, use and test effectiveness of visual aids in training caregivers.

The study revealed that visual aids are versatile and highly malleable; they can appear in many forms and have varied impacts. They can be used in different ways for different reasons and bring diverse effects like aiding comprehension, attention, memory or joy to learning. Not only can they be used to aid communication during training but also to let trainees express themselves thus learning from each other and making learning more personal and memorable. Some caregivers mentioned that they like the training because they are given a chance to share their experiences. Caregivers during training express themselves by drawing and also verbally sharing their experiences.

Using visual aids helped make learning more practical. It was established that children in child care centres learn best when learning materials are more visual. Also the caregivers are involved in creating learning materials for their children. It was therefore much easier for the

caregivers to appreciate using visual aids in training because it was something they were already accustomed to. In most training, props were used, specifically the training of how children learn through play. From the interviews with the caregivers, it was established that materials helped them to practically understand the concept. In this training, there were play materials and a lot of role play where caregivers and trainers acted out a daycare setting with children fighting over materials. This not only made the training fun but also it gave caregivers practical knowledge drawn from real life experiences. The more simple, straightforward and practical their training are the more likely they are to enjoy learning, comprehend and adhere to what they learnt.

Learning from best practices established that different organisations had different forms and ways of using visual aids. For example Smartstart had monthly magazines that connected caregivers together and also had an illustrated booklet as a training handout. The booklet had personalized activities and a space for them to write short notes. Dignitas on the other hand used lots of flash cards to increase trainers' participation. These organisations also used visual aids to increase participation and collaboration among caregivers.

Visual aids also have a great part to play in the creation of simplified training materials that not only help trainers easily deliver their content but also bring consistency in content delivery across different communities by different trainers. Having pre designed visual aids like pre designed flip charts and flashcards can help bring consistency, however, there needs to be room for the trainers to manipulate training materials during training so that every training is fresh and both trainers and trainees have a room to contribute to existing content. In one of the organisations studied, pre printed flip charts were used, they had illustrations and also the trainers have some space to add any information during the training. This saves the time for preparing materials for each training and the cost of buying new flipcharts for every training. It also means that there will be some guaranteed consistency if the training is done in different communities or by different trainers.

5.3.3 Role of visual designers

The study revealed that in most cases, it was the trainers who created simple visual aids for their training. Although visual aids could be best created by designers, trainers and caregivers

who are non designers also have the ability to create them without the presence of visual designers. However, visual designers are likely to maximize the contextualization of visual aids since as argued by Cross (2006) they have the ability to use cues from the environment to communicate more fluently visually, eventually making visual aids more effective and appropriate.

Aesthetics in materials matter and might determine whether caregivers will be motivated or give their attention to the materials. Visual aesthetics like having colours and proper layout design were mentioned by caregivers as things that ought to be improved as they could motivate them to refer to the materials. However, sometimes this comes at a cost for example having a visual designer to create the layout and printing in full colour.

Visual aids could have more impact if integrated to existing systems or tools. The study revealed that caregivers comprehended more during the role play sessions or when case scenarios and stories were told to them. From the co design session an idea was put across to have the visual aids in a comical way that has a storyline. This implies that visual aids could be more effective if they are attached to the existing successful training strategies.

5.4 RECOMMENDATIONS

5.4.1 A strategy to guide trainers on using visual aids in training

The disparity between theory and practice should be addressed. The theory from literature is up to standards, however, on the ground there are some factors that make it hard to reach the set standards. The model set in theory has an assumption that in all cases visual designers will be present to create high quality visuals but in reality more than half of the visual aids used in training are created by trainers who are not visual designers. The researcher recommends a guide to using visual aids. The guide should be simple enough to be understood by designers and trainers so that, in the absence of visual designers, trainers are able to maximize the effectiveness and use of the materials within their reach in the cases where the visual designers are not available. The guide should have specific information on, firstly, the importance of having visual aids in training. Secondly, The guide should suggest how specific low cost or commonly used materials could be used to create visual aids. It should also suggest various forms of visual aids that could be used to deliver the content.

Thirdly, the guide should suggest the most important factors that need to be considered while creating or adapting visual aids from other sources like the internet. For example, ensuring the visuals are in context of the trainees and are simple. Fourthly, there should be a simple effective way to measure effectiveness of visual aids so that iteration goes on even after roll out. Fifthly, The guide should also assist in boosting trainers confidence in using the materials around them as visual aids. It could provide simple and practical strategies of adapting materials so that they can be used as visual aids. For example how to use newspaper images to increase trainees participation. The simple and practical strategies may be adapted from existing best practices.

In the case where there are visual designers in the organisation, the guide should also indicate at what stage they should be engaged and their roles.

The recommended guide is a six step process. In the first step trainers need to write the main goal of their training. The second step is identifying the main reasons for using visual aids, this is important as it will help them tie this reason to their main goal for the training. In the third step, trainers choose possible forms of visuals that they could use. They also have the opportunity to invent their own new form. It also requires them to mention how and when the visual aids are going to be used. Sometimes visual aids can be used before, during or after the training. The fourth step requires trainers to think of how they will create the visuals and ,in case a visual designer is needed, clearly think of the assistance they need. The fifth step requires trainers to think of ways they will test their visual aids and set success parameters. In the sixth step, trainers need to list the kind of feedback they got and also think of ways of acting on that feedback before they actually use their visual aid. This step is also done even after using their visual aids because it will ensure iteration and fine tuning goes on. *Figure 5.1* shows a simplified guide of using visual aids which is a template that trainers can fill.

A GUIDE TO USING VISUAL AIDS IN YOUR TRAINING

1. TRAINING GOAL

The main goal of my training is to …

2. PURPOSE OF VISUALS

The purpose of the visual aid is to…

3. FORM OF VISUALS

The most appropriate visual aid is in form of …

- ☐ Template
- ☐ Props
- ☐ Handout
- ☐ Poster
- ☐ Drawing Exercise
- ☐ Video
- ☐ Printed Flipchart
- ☐ I have a new idea
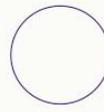
How will it be used?

When will it be used?

4. CREATING YOUR VISUAL

(A) I can create it

(B) I need a Visual Designer

A. How I will create my visual

B. I need a visual designer to

5. TESTING

How will you test your visual aid?

How will you know if it will work?

6. ADJUSTING & USING IT

Feedback

How I will improve

Figure 5.1: A simplified guide that trainers fill to help them create appropriate visual aids themselves or with a visual designer (Source: Author 2020)

5.4.1.1 Integrating visual aids to existing 'infrastructure'

As part of the guide of using visual aids. The researcher recommends that visual aids should be integrated to existing tools or practices that already have a positive impact on learning. In the case of Kidogo, visual aids could be easily integrated to existing practices like role plays and case scenarios since they already have been proven to have an impact on learning. Also in the case of tools, the researcher proposes to improve the flip charts that are constant in every training which have the welcoming message, program of the day and the morning activity. In the case of improving the case scenarios and role play, the researcher therefore proposes to have a comic strip that has a short storyline that will be used to create a case scenario during training. The existing case scenarios are handwritten without any illustrations on. Sometimes the case scenarios are written in the training and they are not on durable materials. The comic strips need to be simple and straightforward with clear captions or word bubbles to aid comprehension. The researcher recommends having four to six picture boxes that will be in the form of flashcards attached together. The making of the flash cards will require close collaboration with the trainer and should be tested with caregivers to ensure maximum effectiveness and appropriateness. They will be more successful in capturing attention and sparking imagination therefore increasing participation and ultimately comprehension. The comic strip idea was mentioned by the trainers during the co design session and will therefore be easily accepted by the trainers.

In the case of improving existing tools, the researcher suggests to improve welcoming posters, programs and some housekeeping rules that are written on flip charts just before the training. It was noted that these materials are usually prepared just before training and thus consumes the trainers preparation time. The researcher proposes to have a template that will be printed on more durable material like satin so that the trainers do not need to spend so much time preparing this material just before the training. The template will have some areas that are left blank so that trainers can customize it by writing variables like the title, date or any other aesthetics that trainers wish to add. Whiteboard markers could be used to write the temporary variables for that vary in every training.
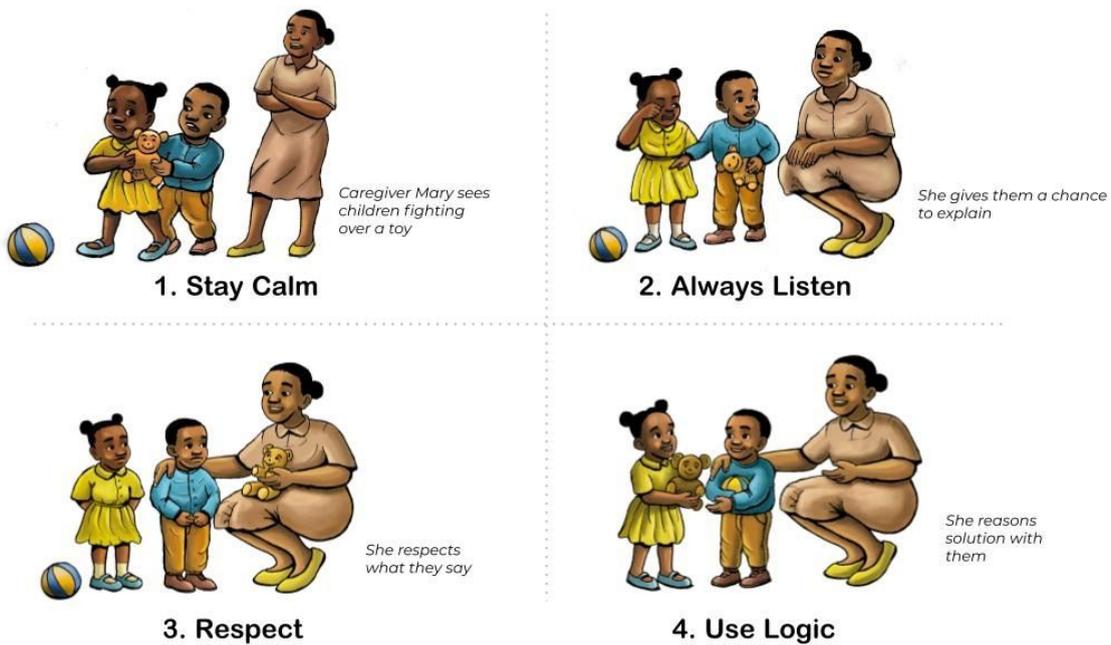
Figure 5.2: A picture of proposed comic strips would look like. (Source: Author, 2020)

The researcher proposes to have pre printed training content on more durable material. The idea is to replace the training guide that trainers hold on their hand as they facilitate. Having the training layout on a larger surface that can be viewed by the trainees will also help the trainer engage more easily by having more eye contact with them. In collaboration with the trainers each topic could be simplified to several slides or pages.The content could be simplified into charts, illustrations or diagrams that will easily summarize information and make it easier to explain. The content should also be similar or relate to the content that will be on handouts or support materials given after the training. Some part of the content could be printed permanently and there should be room for the trainers to add more content using white board markers so that they also incorporate any new knowledge from the training. This will assist the trainers in terms of the flow of content and help maintain consistency of the same training in different communities even with different trainers.

5.4.1.2 Improving the design of printed support materials

The researcher also suggests redesigning handouts to a posters layout so that caregivers have the option of sticking them on their walls. Caregivers suggested having notes in more visual

ways and having them like posters on their walls. Though the posters will carry less information than the multi paged handouts, they will be effective in terms of ease of access to information. They will easily create an interest for the caregivers to refer to the handouts given and motivate them to learn more. The poster content will be more than 55% visual therefore they will be much easier to comprehend.

Another proposition is to lay out information in a hierarchical and strategic way so that it is visually emphasized in the order of importance. For example, making the important information more visually dominant could help suggest in what order information should be read. A practical example could be having large titles or illustrated headers. An example of strategic laying out of information is having 'Did you know', 'Try This' or 'Think about this' sections within the handout to present interesting facts to the caregivers. This will help break the monotony of reading the text and will assist the learner consume in different interesting ways. Most importantly it will create an interest in learning and a quest for knowledge.

The handouts could also be printed in full colour or in a higher quality paper so that they are also aesthetically appealing.

Simplifying the content and language

The study established that Swahili language was mostly used by trainers in facilitation but all the handouts analyzed were in English. However, This could be the fact that spoken Swahili could be easier than written Swahili, however, the study revealed that some caregivers would prefer to have Swahili to English. The researcher therefore proposes the translation of the materials given to the caregivers so that they have the option of choosing the language they prefer. Another alternative is to use very simple and basic English in cases where written Swahili proves difficult.

Figure 5.3: A Redesign of Handout notes   **(Source: Author, 2020)**

5.4.1.3 Using multiple channels

The proposed trainers guide on using visuals in training supports the use of multiple channels of visual aids where possible. The researcher proposes the use of different forms of visual aids in training. More than a quarter of the caregivers suggested having shorter sentences and more summarized content. The trainers claimed to have summarized the content and it seems that there is a limit as to where content can be summarized and important information is left out. Other caregivers revealed that to supplement what they are taught in training they watch YouTube videos related to the content. This indicates that using various channels could help distribute the information and help reduce content overload on a single channel. Using various forms of visual aids will also cater for the various types of learners and caregivers will have an option to choose the form that is convenient for them.

The researcher therefore proposes to use different forms of visual aids to ensure all the important content is put across in various ways. Content could be distributed into various channels instead of having all the content in a multi page text heavy document. The information could be presented in form of posters, short videos, simple handouts, take home

exercises, comic strips and facts. For example, important information that is closely related to behavioural change should be made into visual posters that caregivers can see daily in their work. A good example of this could be daily routines. Information that requires vivid demonstration could be made into short videos that could be played on their phones.

Videos could be outsourced from different databases as long as there are in context and permission is granted for use in training. The videos could be shown during training and later sent to caregivers as support materials. More than 75% of the caregivers have phones that can play video.

5.5 Suggestions for further research

The main objective of this study was developing a strategy that would guide the design of visual aids in the training of child caregivers in daycares within Nairobi's urban informal settlements. This study did not specifically to what extent visual aids have an impact in caregiver trainings.

Researchers could therefore study the impact of visual aids in training and the results they bring in the overall positive behaviour change of caregivers. The use of visual aids in other organisations considered as best practices in the field was not studied exhaustively. Researchers therefore could do a more exhaustive study on other best practices and give more recommendations that could be adapted in the context of Nairobi's informal settlements.

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APPENDICES

Appendix I: CoDesign Program

Co Design Session - PROGRAM

- **9.00 am - 'Starting off'**
  - **Warming up -** Welcoming people, *A fun activity of knowing each other 5 min*
  - **Knowing each other -** Getting to know each other, a creative activity to help know each other. 5 min
  - **Sharing expectations** by the end of the session for franchising this could be done a bit earlier beforehand 5 min
- 9.15 am - 'Introduction'

Tips to the facilitator: Make the presentation visual to engage them… show pictures, illustrations on flipcharts, make it short & precise.

  - **Present the challenge 13 min**
    - Thank them for their time, willingness to come and share ideas
    - Intro to my research in the field - interviews and observations
    - Thank them for the wonderful work they are doing - share some success...
    - The challenges/findings that I saw - **Talk of challenges as opportunities to make things better** so they don't feel
    - Provide an opportunity for them to add on to the challenges they think are important on sticky notes to save on time/or just share it… **2 min**
- 9.35 am Discussing the challenge/'Sharing Stories'
  - **Defining the challenge -**
    - Discuss how converting challenges to HMW questions is a way of seeing challenges as opportunities and how I did that.
    - Discuss the 4 main HMW will brainstorm on today and the challenges that gave birth to the questions.
    - Go through the questions and ask for any clarifications

- 9.45 am Brainstorm Session

  - Activity to encourage collaboration and participation - Make a plane out of paper and see which one flies the farthest.

    - **Discuss the brainstorm rules -** no judging questions, crazy ideas, capture everything **5 min**
    - **In three groups address the four HMW questions.** *Each group has an FO, a designer and a FC The FO is standing in for the caregiver*
    - The members in each group think of ideas individually and write them on sticky notes. **5 min**
    - Then they place their sticky notes on the flip chart as they share their ideas amongst the group **6 min**
    - Write down/sketch 5 ideas after choosing the top ideas or merging some
    - Then we present each group for **6 min**
    - Voting ideas

Repeat this process for the two key questions..

  - **10.40 am**
    - **Develop further a few selected ideas**
      - We push further a few good ideas and see..
    - **The End**

Appendix II Co Design Session Summary and ideas generated

Participants

There were **12 participants** from diverse backgrounds
- 3 mid level trainers who represented caregivers,
- 6 High Level Trainer
- 3 Designers who all have experience in design thinking.
- The Researcher who acted as a facilitator

Collaboration: *Participants were grouped into 3 groups, each group needed to have a High level trainer, a mid level trainer and a designer.*

HMW Questions

The main aim of the brainstorm was to present the challenges in the form of 2 *'How Might We'* questions so that we can brainstorm ideas on how to address them by having trainers and trainees and designers collaborate.

Q1: How might we improve training materials given to caregivers?
Q2: How might we improve training materials used by Trainers during training?

Each question was broken further by adding *'so that'* at the end of the questions to have three different variations so as to make the problem more specific and yield more diverse ideas. A scenario was added after each question. The scenarios are quotes and **key insights** got from the field

The Brainstorm session

After presenting the question to each group The members in each group thought of ideas individually and wrote them on sticky notes for about 6 minutes. Then they placed all their sticky notes on the flip chart as they shared their ideas amongst the group for 5 min.
After everyone has presented their ideas in the groups they choose 5 ideas that they think are most suitable. Each group had a chance to present their top 5 ideas to the rest of the team. After all three groups have presented everyone has to vote. Voting was done by putting a tick mark on the ideas that one loved. Participants were allowed to make 0-3 ticks on a single idea depending on how much they found the ideas suitable.

The next session has the key findings arranged according to the questions asked.

Key Findings

Q1 : How might we improve training materials given to caregivers?

Group 1: How might we improve our training materials so that we give caregivers so that it is easy for them to understand?

> **Scenario: Caregiver Nancy** - *"Sometimes because of long sentences we do not understand, some of us do not understand English. It has too many words and long sentences. I do not have time to read all that."*

TOP 5 IDEAS:
1. Use real life examples and context
2. Use pictorial illustrations with a comical concept so they don't forget..
3. Language translations of materials, training is in swahili materials in English
4. Use keywords and short and clear precise sentences
5. Visual materials like charts that they can post at their daycares

Other ideas: simple and minimal writing, clear and concise sentences; pics and drawings; local examples; two languages; short sentences; more basic and practical info..

Group 2: How might we improve our training materials so that it is easy for them to use in their environment

Scenario Caregiver Ian *"The handouts are mainly papers sometimes they get lost, we put them in the bag and we forget to read… I keep my handouts at home because children in the centre tear them up. I am always very busy. I have kids at my daycare and kids at home when will I read?"*

TOP 5 IDEAS:
1. Use activity cards/posters on the walls that will be easier to access than notes and also reduce bulky papers/ comprehensive one with visuals showing step by step process
2. Facilitator uses pictures during the role play and then caregivers carry them home and they can use them at their centres.
3. Simplify the materials to 2 pages
4. Using visual materials like charts; Facilitate posters
5. Giving materials on time.. Like the files they give them

Other ideas: give them charts; let them carry their drawings home; drawings on the wall; cards with pictures stuck on the wall; Role play with the handout b4 giving them

Group 3: How might we improve our training materials so that they motivate them to read or use them after the trainings?

Scenario Caregiver Joy " *Apart from the handouts I get I wish there were other materials that I get after the training that create an interest for me to read.*

TOP 5 IDEAS:

1. Incorporate directive/interesting questions on the topic like. Did you know that if you did this … this happens ... ? Also in the training materials you could have questions that they will be discussed in the next trainings like take homes.
2. Use key messages on the topic like counselling card…/posters - like counselling cards used in health… speech bubbles that will attract people to the information.
3. Use of Case scenarios and they internalize
4. Make use of the COPs to discuss the training topics - it will make them interested
5. Reach out to the trainees Mentorship - they might be interested to go back and read.

Other ideas: make handouts in a poster format, colourful n with pictures, with speech bubbles about the main ideas; case scenarios within their communities; reach out to caregivers after the trainings; more interactive; directive questions that can be weekly or monthly regarding the topic;

Question 2 : How might we improve training materials used by Trainers during training?

Group 1: How might we improve our training materials so that they help simplify information and make it easier to explain?

Trainer John: *"Some information is a bit hard for us even us trainers to understand… I wish I could explain this topic in a simpler way"*

TOP 5 IDEAS:

1. Using Videos
2. Real life and relevant scenarios in our context.
3. Step by step illustrations.
4. Have short notes that have key words to be taught

5. Have a training/activity checklist that trainers check as they cover content during training

Other ideas: use simple language and words to explain, allow trainers to use their own examples, use real life situations and pictures simple materials & use relevant examples to help understand the concept.

Group 2: How might we use different channels to create our training materials in different channels to be consistent in our trainings?

Trainer Lily: *"I mostly use flipcharts, roleplays, scenarios in my trainings… I wish there were easier ways for me to train"*

TOP 5 IDEAS:
1. Using different colors for different themes/training topics
2. Use visual aids and real life examples/props e.g using real rice in nutrition training
3. Use predone videos;
4. Thematic games that explain the topic e.g. act out role play scenarios e.g. a crying babies
5. Introduce pops such as dolls.

Other ideas: predone videos - record videos b4 training create our own content; predone flipcharts

Group 3: How might we create training materials that are easy to prepare and set up in trainings?

Trainer William: *"I usually spend a lot of time and energy preparing for materials I will use to train others.. sometimes I do it just before the training… I wish there was an easier way to do this" We will be entering new communities and we might have new trainers… I wish we had materials that are easy for the new trainers to set up and use..*

TOP 5 IDEAS:
1. Preparing videos in training from online sources
2. Preparing several group questions and scenarios in advance and laminating them
3. Using white boards rather than flipcharts.
4. Using more questions within the sessions trainings

Other ideas: more questions during the sessions to make it more interactive; Prepare several group questions in advance, laminating case scenarios for durability and use

in more training to be used during group discussions; preparing videos in training, using white boards.

Appendix II - Questionnaire Learning from best practices

Quick questions on training

Thank you for willing to participate in this short survey. I am looking into how organizations that train caregivers conduct training to caregivers/teachers especially in low income settings. Focusing on how you use visual aids, the training aids you use in training and any support materials after training.

Visual aids are items or tools of illustrative nature used to aid learning. (most common examples are but not limited to pictures, illustrations, videos, drawings and could be in any form... electronic, printed, hand drawn e.t.c) This is just an example intended to clarify what visual aids are and not limit your answers. Support materials are any items given to the trainees during or after the training to act as a reference point. They could be in any form or media. Also feel free to add stories or examples in your answers at any point.

Questions

What form of visual aids do you use in the training of caregivers/teachers?

How do you use the visual aids mentioned above?

What form of support materials do you give to caregivers/teachers to support learning during and after the training?

How does the use of visual aids impact the delivery of the content in the training?

How do you ensure that the visual aids you use are practical and suitable for the people who train?

What successes have you had while using visual aids in the trainings you have conducted?

What are some of the challenges you face while using visual aids in the trainings you have conducted?

How do you create or design the visual aids that you use in training?

What factors do you consider while creating/designing visual aids to use in your training?

How do you measure the effectiveness of the visual aids you use in training?

Why do you use visual aids in training?

Please share any highlights or stories or in regards to your experience of using visual aids in training?

Thank you for taking your time to participate in this survey!

Appendix III Interview Guides

*The questions will be used to interview three different groups; High level trainers, mid level trainers and caregivers.High level trainers are in charge of creating the content and training it to mid level trainers who then train the content to the **caregivers.***

The questions asked are aligned and guided by the themes gotten from mainly from literature review and some information gotten from best practices so far.

*The main themes are that visual aids should be **contextualized**, **simple and consistent, user centered** and created using a **systematic process**. All this is discussed in detail in the document.*

Estimated Interview time: 20 - 40min

<u>Interview guide for high level trainers</u>

How do you conduct your trainings?

What challenges do you have while training?

How do you handle them?

How do you ensure what you train is understood?

Which tools do you use to conduct trainings?

Do you use any visual tools during training?

Which ones do you use?

What determines which visual tools to use?

Do you think they are effective?

Do you measure how effective they are?

Do you know if the trainees refer to the materials given?

How are the visual tools created?

Why do you use visual tools?

Is there anything you want to see improved in the way trainings are done?

What would you want to see improved?

If you were to improve the materials you give trainees what would it be?

How do you ensure your materials are used by trainees?

<u>Interview guide for mid level trainers</u>

Questions on how mid level trainers are trained by high level trainer

How are you trained on what to train caregivers?

Do you refer to materials after when you are training?

Is there anything you like about trainings?

Is there anything you dislike about trainings?

Is there anything you want to see improved in the way trainings are done?

Is there anything you want to see improved in the materials you are given?

Are there any visual aids used in your training?

What are the visual aids?

Do you think they are necessary? Why?

If you were to improve the materials you give trainees what would it be?

How do you ensure your trainings are in the level of child caregivers?

Questions on how mid level trainers train caregivers

How do you conduct your trainings?

What challenges do you face while training?

How do you handle them?

Which tools do you use to conduct trainings?

Do you use any visual tools during training?

Which ones do you use?

What determines which visual tools to use?

Do you think they are effective?

Do you measure how effective they are?

How are the visual tools created?

Why do you use visual tools?

Is there anything you want to see improved in the way trainings are done?

If you were to improve the materials you give trainees what would it be?

Do you think caregivers refer back to the materials given during trainings? Why?

How do you ensure your materials are used by caregivers?

Do you have any ideas on what could be improved to make trainings more comprehensive?

Do you have ideas on what could be improved to make the materials easier for caregivers to read and refer in their daycares?

Interview guide for caregivers

How has your experience been so far in the training?

Do you think the trainings are conducted in a way that you can easily understand?

How is training done in a way you can understand?

Do you refer to materials after the training?

When was the last time you refered back to materials given?

What do you like/dislike about trainings?

What would you suggest to improve in the materials you are given?

When would you consider the best time to refer back to materials given?

Why do you think so?

Do you think having visual aids in training is necessary?

Why do you believe so?

What ideas do you have on how trainings could be improved to make you understand more?