ENHANCING CHILDRENS HEALTH LIFESTYLE THROUGH DESIRABLE DURABLE TOYS

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ABSTRACT

Background: *According to WHO, 60% of related factors to individual health and quality of life are correlated to lifestyle. Many people, children included, follow unhealthy lifestyles which lead them to major challenges that threaten their physical, mental, social and emotional health (Farhud, 2015). And these unhealthy lifestyles as studied in this paper are causing the reduction of quality of their lives. Finding a solution to this problem is crucial as it will help children build the foundation for an entire lifetime of healthy practices.* **Problem:** *These lifestyles have currently made children antisocial, opt to entertain themselves using electronic devices, physically inactive exposing them to health risks, lose touch with their culture, be less innovative when it comes to creating their own games and lack common values such as gratitude, empathy and many more.* **Objective:** *The main objective of the study was to explore the indigenous Kenyan games and Agikuyu artifacts and how they can be utilised to produce desirable durable toys for the children which will enhance healthier lifestyles.* **Design:** *using qualitative and quantitative methods, the study used a case study design.* **Setting:** *The study was carried out in Sun-valley estate phase 1 located in Lang'ata constituency found in Nairobi, Kenya.* **Subjects:** *The subjects of this study were adults and children between the ages of 6-12 years.* **Results:** *the research results revealed that 100% of the respondents feel that children residing in the urban areas of Kenya are currently living both a healthy and unhealthy lifestyle. A majority of their daily activities would include spending time on screens that are either on televisions, phones, computers, tablets, play gadgets or music gadgets.* **Conclusion:** *The study concluded that creating desirable toys to attract children to voluntarily engage in games while still preserving a part of Kenya's identity through the use of their indigenous games to inform the toys to be created and the Agikuyu artifacts as an inspiration was a way to better children's lives.*

Keywords: Children, Toys, desirable durable products, healthy lifestyles

Background of the Problem

Physical activity among children is currently decreasing exposing them to health risks such as obesity, diabetes, and depression. They are also losing their ability to learn and have real entertainment with friends. There's a decrease in the level of sound judgment and deep connections to their family, books and thoughts. In addition, they are also losing touch with their culture. All these constitute the lifestyle of the modern-day child.

According to WHO, 60% of related factors to individual health and quality of life are correlated to lifestyle. Many people follow unhealthy lifestyles which leads them to major challenges that threaten their physical, mental, social and emotional health (Farhud, 2015). And this could be a reason as to why we usually hear the common phrase, "in my

days" by the older generation followed by a story that indicates that the old days were better in every way than the present day. But it is important to recognize that the world is evolving and changes are taking place. However, it is also important to recognize some aspects of the past days may still have relevance to the present day. One of which is a child's play life which contributed greatly to a healthy lifestyle.

These lifestyles changes that are detrimental to the well-being of a child are also reducing their connection with their culture. Most children living in the cities and urban towns in Kenya are not aware of the indigenous Kenyan children's games. They are more into technology and western games like hover boarding and cycling. In turn, the country is losing a part of its identity and benefits the games brought to a child's life. In his study, Mawere (2012) focuses on the Zimbabwean traditional children's games and describes their nature and the educational value they had on a Shona child. He also describes the similarities these games had with other ones played by children all around the globe, yet some traditional African games have been marginalized and despised in the face of colonialism and globalization. This not only undermines the integrity of the Shona but African culture as a whole (Mawere, 2012). In addition, these children are growing further and further away from their cultural background with the adoption of western lifestyles.

Therefore, there's a need to look into factors that cause negative lifestyle changes among the children living in Kenya. And ways in which the indigenous Kenyan children's games and the Kenyan culture can be assimilated into products to instill a positive behavioral change and give them a sense of belonging.

From the foregoing and from reviewed literature, it is apparent that as time passes, humans evolve and come up with changes to better their lives. Over time, these changes have brought numerous advantages to both the adults and children. However, they've come with some challenges that have created some lifestyle shifts which are harmful to children. These lifestyles have currently made them antisocial; opt to entertain themselves using electronic devices, physically inactive exposing them to health risks, lost touch with their culture, less innovative when it comes to creating their own games and lack common values such as gratitude, empathy and many more.

The scope of the Study
The study was carried out in Sun-valley estate phase 1 located in Lang'ata constituency found in Nairobi, Kenya. It is an example of an urban community which was required for the study. The study concentrated on children lifestyles between the ages of 6-12 and how product design can be used to impact a change in their lifestyle to better their future. The study took place from the month of April to October, 2018. Figure 1 shows the location of Sun-valley estate phase 1.
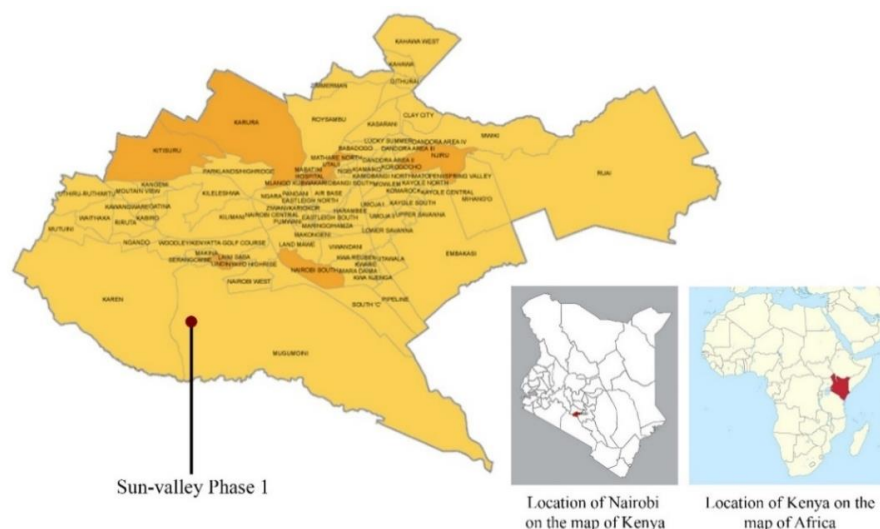
Figure 1: Map of Nairobi showing the location of Sun-valley Estate

Source:www.kenyampya.com - 1/6/2018

Theory

Modern Children's Lifestyle

Modern life pretty much cuts both ways. On one hand, it has brought humans comfort and happiness and on the other hand, it has brought tensions and anxieties that come with advancements. In the journal child development, Gauvain and Munroe highlight the benefits modernization has had on children's cognitive development. They examined the how cultural changes associated with modern development were related to the cognitive development of approximately 200 children between the ages of 3-9 in Belize, Kenya, Nepal and American Samoa. Their findings were that children no matter which society they came from, if they lived in households with more of the modern amenities like cell phones, computers, television, motor vehicles performed better in tests measuring some cognitive function, engaged in complex play activities and performed less work related to household chores, infant care and subsistence (Gauvin & Monroe, 2009).

To add on to Gauvin's and Monroe's finding of present-day children being subsistence, Steven Mintz, a history professor who has long studied the history of American family and childhood, explains that the modern children have a hard time being independent. He describes the life of kids of the past as that of being servants or apprentices. Their lives were strictly controlled. Girls would spend their childhood spinning thread or be doing menial chores and boys would be working in a factory. And when compared to the kids of today, it seems harder for the modern generation to stop relying on someone or something protective and support and act independently than them (Young, 2017).

Other than the cognitive development, modernization has brought about improvement in transportation with the development of cars, trains, ships and airplanes and currently automated cars. It has also led to the invention of machines to ease our lives and enhance communication and information dissemination through

computers, television and the likes. These improvements have made it possible for both adults and children to perform various tasks like travel to a destination in the less possible time with minimum effort needed. The developments have also boosted entertainment through electronic games and television and have made communication fast through social media. Although they have lots of advantages, they have led to an adoption of a sedentary lifestyle (Modern Lifestyle Essay, 2013).

Nowadays not only do children exercise less but have fewer physical activities like walking and running. In 2005, WHO stated that over 85% of the population worldwide is not exercised enough. More and more children, today, opt to engage themselves in activities which requires minimum movement making them 40% less active than they were 30 years ago (Mavrovouniotis, 2012).

This modern lifestyle has also led to solidarity pastimes which damage children social skills. Their ability to interact with their peers, make connections with the immediate environment and build relationships with their family members is decreasing. The rise in solitary activities coincides with an increase in depression, behavioral problems and development conditions such as autism and attention deficit hyperactivity disorder (Modern life 'has turned children into loners', 2007). Children lose common skills like empathy, teamwork, responsibility, respect, and kindness. Although the modern lifestyle has brought numerous advantages to children there are hidden points that impact them negatively.

Children Play

"Play is a child's work" is a very common expression used by many people. But what does it really mean? For some it is a form of exercise for creative dispositions and for some it is how children come to understand the world. All in all, through play children create new learning experiences which enable them to acquire social, emotional and intellectual skills that they couldn't acquire in any other way. Because of how play is often associated with simply having fun and therefore a waste of time, many people tend to overlook the vital role it has in the healthy development of children during the early years of life that results into healthy lifestyles.

In his book, "The Power of Play", David Elkind (2007) speaks about the trilogy drives of play, work, and love which are basic essential to a full, happy and productive life. Play is the transformation of the environment in the service of self. Love is the need to express our desires, needs and emotions and work is the transformation of self in the service of the environment. He derived them from the combination of Freud and Piaget theories of what they thought were necessary for a full and productive life. Even though these drives work separately to fulfill different disposition, they are most effective when they work together (Elkind, 2007).

From the simple self-initiated games such as playing with a building block to role-playing as parents and finally to more sophisticated games like monopoly, children unknowingly apply the three drives which help them to learn a lot. Pellegrini & Gustafson (2005) argued that while work requires a specific objective, engaging in open-ended play

supports the development of higher-order cognitive skills like problem-solving. Together they promote social competence through sharing, engaging in subtle negotiations, perspective taking, empathy and sensitivity towards others. They also broaden children's imagination and creativity; teach them how to follow rules, to adopt the different roles in a society, to develop strategies and take risks, promote literacy, physical health, and cultural understanding (Pearson, Umayahara, &

Tools of Play

Since play has been recognized to be a fundamental need in a child's life, objects used to aid in play are essential. These objects are known as toys. They come in various shapes, sizes and form. The value they bring to a child coincides with the play a child involves themselves in.

Toys lend themselves to a great number of varied activities. They may, therefore, be classified in many different ways. For example, they can be classified according to the ages of the children using them or the type of development. But the best guideline that most toy designers use when creating and categorizing toys is the Play Pyramid. It is the classification of play that is loosely based on Piaget's four stages of cognitive development. They are:

Ndijuye, 2017). These kinds of games offer unique social and development experiences that cannot be found in computer games.

This does not mean parents should ban their children from using computer and television as both mediums can be educational. They should therefore strive to find a balance between the different mediums of play. It is advisable to do this when the children are still young in order to foster healthy habits that would be beneficial to their life.

- Sensory (from Sensory-Motor) – involves aesthetics and entertaining the senses.
- Fantasy (from Preoperational) – it involves role-playing.
- Construction (from Concrete Operation) – it about creating.
- Challenge (from Formal Operation) – this could either be physical or mental.

Figure (2) shows the Play Pyramid. The four categories are the vertices of the tetrahedron. The edges are the play that falls between two categories. The face is the play that falls between three categories. And the space inside is the play that has elements of all categories.
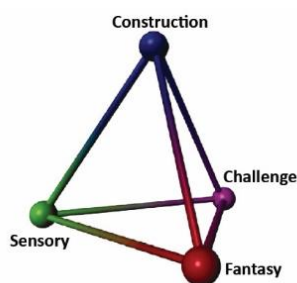

Figure 2: Play Pyramid

Source: http://web.mit.edu - 15/6/2018

The advantages of these category is that it does not depend on age and can be distinguished from each other unlike categories in other forms of classifications. It also helps toy designers to determine if their products have got a play value (Kudrowitz & Wallace).

Toy Preference by age
In order to attract and motivate a child to interact with a toy, one needs to understand their preference and abilities.

6 - 8 years

Children between these ages are interested in physical and challenging play, and risk-taking behaviors which results in rough and tough games. They pay attention to detail which facilitates a desire for collecting stuff. They are also drawn to toys with the theme of friendship and usually prefer a cartoonish representation of toys to real appearance ones. Table 1 shows categories of play and the age group's interest.

Play Category	Sub-category	Interests
Construction	Blocks	- Highly attractive - Wooden blocks - Blocks of a variety of shapes, sizes and lengths - Sets of 80-100 pieces
	Interlocking Building Materials	- Highly interested - Realistic, detailed models - Parts vary in size and shape 100 pieces or more - Materials could be plastic, wood or metal - Sets that have moving, motorized, and computer chip-based components
	Art & Crafts	- Enjoy arts and crafts with various realistic materials - Open-ended materials - Enjoy art and craft activities such as basketry, block printing, bookbinding, carving, leather working, braiding, weaving, photography, and flower pressing.

Fantasy	Pretend & Role Play	• Drama oriented plays • Complex scenes • Use of dolls and stuffed animals with many accessories • Miniature fashion oriented dolls • licensed characters and collectibles that are popularized mostly by mass media
	Play scenes & Puppets	• highly realistic, minutely detailed, and highly functional play scenes • elaborate dollhouses with miniature figures and animals • Complex, jointed puppets with hard heads and painted faces • Realistic puppets with elaborate costumes and accessories
	Dress-up Material	• Interested in themes that promote a chase game like police and robber • Rough and tumble play • Movie, and comic book reenactments • Appealing costumes and accessories • Realistic and functional kits e.g. jewelry kits, make-up
	Small Vehicle Toys	• Small toy cars with numerous accessories • Highly realistic, minutely detailed, highly functional vehicles • Toy cars of all sizes, unique shapes, and colors • Smaller tracks with a variety of straightforward connections
	Tools & Props	• Attracted to highly realistic, detailed tools and props • Rely almost totally on the cause and effect that a given tool or prop produces
Challenge	Puzzles	• Interested in complex frame-type puzzles • Puzzles with 100 pieces • Simple three-dimensional puzzles
	Card, Floor, Board, & Table games	• Enjoy traditional card games, board, and floor and table games • Interested in competitive and social games • Need help to read and interpret the directions to the game

	Computer & Video games	• Sophisticated computer games like those using joysticks • Creative games • Narrative games
	Ride- on Toys	• Interested in popular wheeled vehicles like skateboards
	Recreational Equipment	• Use equipment for both the intended and unintended purpose • Organized movement activities • Interested in projectile toys (soft and lightweight)
	Sports Equipment	• Interested in active sports • Smaller sized equipment is preferred over adult-sized equipment
Sensory	Audiovisual Equipment	• Interested in different genres of music and not nursery rhymes • Love singing in groups and dancing • Real audio, Books and long stories on tape equipment are preferred • Enjoy watching adventure-based stories, situational comedies/dilemmas, & characters close to their own ages
	Musical Instruments	• Prefer to play real instruments • Show interest in formal music lessons • Sing in groups • Prefer adult quality instruments • Enjoy wind-up music boxes, tapes, records, and CDs

Table 1: Toy Preferences by the 6-8 age group
Source: author

9 – 12 years

During this period, children are still drawn to physical and outdoor games. They also love complex games and activities that require a high level of performance. Hence they are drawn to long projects like pottery, crafts on diaries, science projects, generating computer graphics, staging plays and even woodworking. Instead of finished products, they would rather have raw materials that they can use to create their own products. Children in this age group love real appearance toys which are mostly associated with popular characters. Table 2 shows

categories of play and the age group's interest.

Play Category	Sub-category	Interests
Construction	Blocks	• Fairly uncommon • Wooden blocks • Blocks of a variety of shapes, sizes and lengths • Sets of 100+ pieces
	Interlocking Building Materials	• Highly interested • Realistic, detailed models • Parts vary in size and shape • 100 pieces or more • Materials could be plastic, wood, metal or cement • Sets that have moving, motorized, or computer chip-based components
	Art & Crafts	• Engage in detail-oriented art techniques • Use realistic tools • Enjoy arts and crafts such as calligraphy, sketching, crocheting, embroidery, knitting, needlepoint, puppetry, doll making, metalworking, mosaics, and ceramics.
Fantasy	Pretend & Role Play	• Collecting highly detailed, functional, authentic and unique dolls and stuffed toys • Fashion or miniature dolls that are also used as decorative pieces
	Play scenes & Puppets	• Very little interest • Desire their puppet theaters to have authentic staging mechanisms and elaborate scenery
	Dress-up Material	• Themes include scientific advancements, historical subjects and domestic themes • Dramatic activities, sports and competitive games • Accessories like sewing, knitting, leather kits, plastic braiding and embroidery • Costumes, clothing and accessories that represent real-life roles

	Small Vehicle Toys	• Interested in collecting and racing small vehicle toys that are elaborately detailed, functional and complex
	Tools & Props	• Tools are based on themes from various experiences at home, school, and through the media • Are attracted to highly functional, realistic, detailed tools and props • Interested in props with realistic detail and function
Challenge	Puzzles	• Highly complex puzzles • Small, abstract, interlocking puzzles • Three-dimensional puzzles • 100-2000 puzzle pieces
	Card, Floor, Board, & Table games	• Complex games of strategy • Interested in educational and adult topics and games like trivia games • Interested in collecting cards associated with popular characters
	Computer & Video games	• Complex games • Fashion, art and music creation games, and educational games
	Ride-on Toys	• Motorized wheeled vehicle from brand names
	Recreational Equipment	• Often use equipment for the unintended ways • Interested in organized sports, athletics • Enjoy traditional games • Adult activities • Enjoy projectiles
	Sports Equipment	• Very interested in organized sports
Sensory	Audiovisual	• Similar to the 6-7-year-old interests

Equipment	
Musical Instruments	• Similar to the 6-7-year-old interests

Table 2: Toy Preferences by the 9-12 age group
Source: author

Toy safety

The main consideration when designing toys is safety. They must be strong enough to withstand play and breaking which could potentially cause an injury. Materials and surface finish used to make toys should be non-toxic. Edges should be smooth to prevent cuts. Small toys or small detachable parts of a toy that can easily be swallowed should be avoided. If possible designers should consider creating parts that can easily be repaired or replaced (Toy Technology, 2012).

Materials used in creation of toys

The materials used to make toys are determined by a number of factors. That is the type of toy to be created, the age of the children who are to play with the toy, where the children will play with them (indoors, outdoors, in the water, on land or air), the availability and manufacturing costs.

Plastics

Majority of toys are now being made of plastics and have replaced wood, metal and clay that was common in the past. Celluloid (a thermoplastic) was a common material in the late 19th and early 20th centuries used to make dolls. This material was dangerous for kids to play with as it was highly flammable. Since then flame retardants have been added to plastics during the manufacturing process to prevent or slow further development of ignition.

One might ask them why plastics are today a popular material in making toys. First, they are relatively cheap and products can easily be mass produced. They are also waterproof, easy to clean and can be molded into any shape. Some of these common types of plastics used are high-density polyethylene (HDPE) which is very tough and suitable for outdoor toys. Acrylonitrile butadiene styrene (ABS) is hard, strong and scratch resistant while polyurethane is soft, rubbery and flexible suitable for baby toys.

Metal

Before the 1950s, non-ferrous metals like lead and tin were a common raw material used in the production of toys. Lead is a poisonous material and is now unacceptable to use in the manufacture of toys. Tin is still being used to make toys but for older children.

Nowadays, ferrous metals such as steel are being used to make parts of a toy. For example, they can be used to make the frame of a toy or a chain because they are tough, strong enough to resists breakages and can easily be bent. When used this way, they usually need to be dip coated in plastics or galvanized with zinc.

Wood

Wood has been used and still being used to manufacture a number of toys. They are visually appealing and durable but are expensive than plastic toys. The cost of raw materials and the production techniques

(mostly handmade) makes them pricey. They are also not waterproof so one needs to apply a surface finish such as varnish, paint or wax.

The most commonly used woods are the softwoods. They are soft and easy to cut and shape. Hardwoods are tough and more expensive but elm is good for steam bending and cherry is splinter resistant. Manufactured boards such as medium density fiberboard (MDF) and plywood are also being used because they are easy to shape and are cheaper. (Toy Technology, 2012)

Other materials

Some materials that are also used in the production of toys are textiles like cotton fabrics, polyester, soft suede, plush, corduroy, velvet, felt and mesh. Straw, clay, paper, leather, wax and terracotta are also used as raw materials.

According to research findings by Martins and Franquiera (2017), reasons that lead people to get rid of products include ruined properties caused by intensive use, chemical or natural degradation, damage caused by improper use, and technological, cultural and aesthetic obsolescence. But by extending the useful life of a product in its technical and aesthetic qualities, designers can curb these problems Martins & Franqueira, 2017)

When we look at the 620 Chair Programme designed by Dieter Rams for Vitsoe in 1962, we see a product that has lifelong adaptability. It is a kit of parts that adapts to your changing life. At one point it can be a

Durability in Design

"Good design is long-lasting. It avoids being fashionable and therefore never appears antiquated. Unlike fashionable design, it lasts many years-even in today's throwaway society" Dieter Rams (2018).

A long-lasting design is all about designers ignoring the trends that are in our society and instead focusing on creating a product that solves a problem. The product should be of good quality, fulfills its intended function and adapts to one's changing life. Durable designs aim to increase product life and contribute to the conservation of the environment. This means that products will be used for a long period reducing consumer waste and use of resources and minimize the need for a replacement.

sofa and at another point, it can be two separate chairs. The product is also made up of long-lasting comfortable material. The outer shell is made from a hot-pressed sheet moulding compound which is similar to, but stronger than fibreglass. The chair base is a traditional coil-sprung structure overlaid with a rubberized-coir pad (a mixture of torn coconut husks and natural rubber). The use of full-grain uncoated leather forms its own unique style. It is also easy to assemble and repair parts are available and compatible with the same chairs from all years since 1959 (620 Chair Programme). Figure 3 shows the 620 Chair Programme set up three different ways.

Figure 3: 620 Chair Programme
Source: www.vitsoe.com - 15/6/2018

Therefore, to achieve durable designs, designers can incorporate some aspects when creating products. They can ensure products work for long periods of time and be easy to repair or upgrade. They can also make sure products have their own unique

Indigenous Kenyan children's games

The indigenous Kenyan children games have been in existence for a very long time. They have been increasing and developing as the years have gone to suit the ever changing lifestyles of upcoming generations. But now the games are slowly fading away

a) **Kati***: this is the African version of dodge ball. It requires a minimum of three players and a ball made out of socks and nylon paper bags, sand or wet newspaper as shown on figure 4. Two players, each on one end of the field (hoppers), target the ball at the players in the middle. They try to hit

Figure **4:**
Game of Kati

Some versions of the game would require the middle players to build towers from cups

style or have as little ornaments as possible to detach themselves form societal trends. Finally, they can design products with the motive of building an emotional connection between users and their products consequently leading them to hold on to the products for a long time (Lobos, 2014).

This method of sustainability will be advantageous when applied in this project during the creation of toys. The initial cost of the end products might be a bit high but the long term use will balance it out. It also reduces the negative impact of design on the environment and makes them accessible for both the current and future generations.

and so are the benefits that brought to a child living in Kenya. The games that are currently being played are not as numerous as they were many years ago.

Among the common Kenyan children's games that once existed and for the very few still exist are (Nyasio, 2018):

them and those in the middle avoid getting hit. The game goes on until all players in the middle have been hit by the ball. The first two people to be hit by the ball fill the next round.

b) Figure 4 illustrates school girls playing Kati.

Source: www.youtube.com - 11/6/2018

or bottle tops while trying to dodge the ball. Others would require middle players to try

and jump over the ball in a way that it goes through their legs to earn points (referred to as *chobo*) and others would require them to stay like a statue when any other middle player manages to catch the ball. Another version of the game known as rounders, similar to baseball, required players to run round a rectangle marking on the ground with four bases while still avoiding to get hit. The aim of this version of the game is to reach 100 points without getting hit by the ball. The bases act as a safe zone and hoppers cannot hit anyone standing there. The figure 6 shows a layout of a game of rounders.
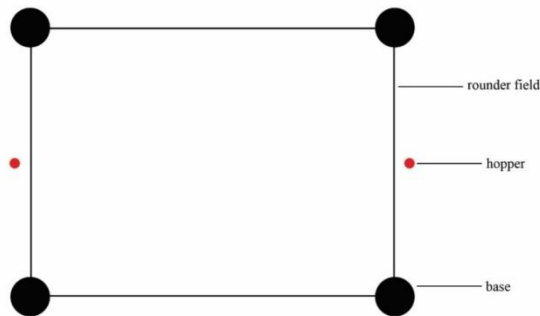
Figure 5: Rounder game layout
Source: author

c) **Kalongo***:* this is a cooking game that uses soil, water, stones and grass as the ingredients for a meal. Waste tins are
d) mostly be imaginary but if one was lucky they could get bits and pieces of hot

used as the cooking pots and sticks as the stirring rod. The source of heat would

charcoal.

Figure 6: Kalongo
Source: www.tuko.co.ke - 4/6/2018

From the figure 7, the children are seen using tins and coconut husks as the utensils and were lucky enough to get pieces of charcoal and use them as their source of heat.

e) **Blada**: this was a favourite game to most girls. A long thin piece of rubber is cut out and linked to make a complete cycle. Sometimes strips of nylon paper bags or rope could be used instead of the rubber. It is then held at both ends by two people and other players jump in and out of the slim space that has been created as shown in figure 8. The game begins when the blada is held at the level of the ankles of the two people on both ends, and after each round, it is raised increasing the difficulty of the players to jump in and out of the enclosed space.

Figure 7: Girls playing blada
Source: www.facebook.com - 11/6/2018

f) **Katolo**: in this game a person uses their leg to push a flat stone onto different slabs ensuring it doesn't land on the line separating them. Only one person can play at a time and everyone else has to wait their turn. Figure 9 illustrates this game.

Figure 8: Game of Katolo
Source: www.youtube.com - 11/6/2018

g) **Three sticks**: three sticks of roughly the same length are the only equipment one needs to play this game. They are arranged parallel to each other with some distance between them. The players make one, two or three horizontal jumps over the sticks without stepping on any of them. The last player jumps as far as they can and the outer most stick is moved to where they land. The players then jump over the sticks again with the new distances in the opposite direction and this continues on

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till one player is left in the game who becomes the winner.

h) **Mubara**: a tire is referred to as mubara in Kikuyu which was used in this game.

It involves propelling a bicycle or car tire or their rims forward using a stick. The game is demonstrated in figure 10.

Figure 9: Mubara
Source: www.facebook.com - 11/6/2018

i) **Cha mama cha baba**: it involves role playing as grown up parent4s with families. The big girls act as mothers, big boys as fathers, small children as the toddlers and babies are made out of sweaters. The children then act out scenes from their daily lives. Very many roles of grandparents, cousins, watchmen and even grocers can be featured in this game. It all depends with the number of players available.

Figure 10: Cha mama cha baba
Source: www.facebook.com - 3/6/2018

From the figure 11, the two girls are acting as the mothers with babies. One baby is a doll and the other is made out of sweaters. The boy is posing as a policeman with his toy gun as the weapon.

j) **Mawe**: the name mawe means stones in English which were the main tool of play in this game. This is a game that was played while sitting down. A circle is drawn on the ground and a bunch of stones placed inside it. Each player has an extra stone that they throw up in the air before they remove and return the required number of stones in the circle. They must remember to catch their extra

k) stone before it hits the ground otherwise shown in figure 12. The aim of this

they turn of playing would be over. This game is to remove as much stones from

the circle as one can.

Figure 11: A game of mawe
Source: photos.google.com- 11/6/2018

l) **Baano**: this game was more popular among the boys than girls. It resembles a game of pool. It is played on a flat surface preferably a field where one can dig tiny holes for scoring. At the beginning of the game, each player gets two marbles. One is placed on the ground, four spread-finger widths away from the hole and the other one is used to shoot. Using the shooter marble, players take turn to hit the marbles into the hole. They start by hitting their marbles then they proceed to other players' marbles. A player scores a point when they hit a marble into the hole. At the end of the game, the player with the most points wins (Games children play in Africa: Bano (Swahili for marbles), 2013). Figure 13 shows a game of baano.

Figure 12: Bano
Source: blog.unbound.org - 11/6/2018

m) **Stick of death:** This is a game that involves a lot of precision, strategy and running. A stick is placed on the ground and supported by sand. Players would then take turns to remove the sand while avoiding either touching or making the stick fall. If they do so, they have to run to an identified post to avoid getting hit by other players.

n) **Gicuha:** this could involve a live tree branch or a rope tied on a tree branch. The boys or girls or mostly both, would

push the swinger from behind and let him/her enjoy the flow until the number of times agreed for each are reached. Then the next kid would get in the saddle and enjoy their turn. This would continue until all have enjoyed their share and the game would start all over agin.

Gicuha

Ndari: mostly played by girls, boys would at times be involved especially where there is no enough girls to go round. It involved two girls swinging a rope while the third jumps it at the centre. Onse turn would end when they fail one jump by stopping the rope swing. Then the next girl would get her turn and show endurance. Ndari would also be played by a single girl swinging her own rope while the rest watched. Any accidental stoppage would end the round and the next girl would get her turn.

Ndari (threes)

Ndari (singles)

Mubira

Mubira: mostly a boy's game, girls would be involved when there are no enough boys to form a team. Rags would be formed and wrapped with twine into a ball. Two goal post of whatever size would be set and two goal keepers positioned. Sometimes, there would be no goal keepers depending on the total number of players.

Importance of children games

In general, children's games provide kids with the opportunity to play various games which is important for their development. Playing allows them to use their creativity, engage and interact with the world around them, conquer fears, develop new competencies and master them, learn how to interact and work with others and practice decision making skills. It is a joyous part of childhood that is cherished by many (Ginsburg, Communications, & Health, 2007).

In addition to the above values stated, the local Kenyan children games enhance a community's values about age and gender roles. They also perpetuate heritage and a sense of origin. Knowing these games helps one understand their symbolic, social and physical culture.
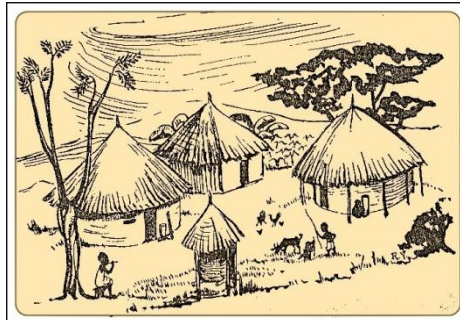
Agikuyu Artifacts

The Agikuyu are the largest ethnic community in Kenya comprising an estimate of 22% of the population (World Atlas, 2018). They are a Bantu race who is believed to have originated from Central Africa to Eastern Africa. They eventually

settled on the fertile lands of Central Kenya at the foot of Mt. Kenya where they practiced farming, iron working as well as the keeping of goats and sheep (Kamenju, 2013).

The Agikuyus had close traditional ties with the Maasai and they often traded goods and intermarried. And as a result of this relationship, both tribes borrowed some aspects of their traditions from each other. According to Jens Finke (2003), the Agikuyu adopted Maasai Nilotic traits such as circumcision, clitoridectomy, the age-set system and the taboo against eating wild animals and fish (Finke, 2003). Some features of the Maasais could also be seen on the patterns of the shield and hairstyles of the *mwanake (a young male)*. As much as

from pottery and gourds to weaponry to other tools like *nguuri* (pincers) and *iturwa* (gikuyu seats) to basketry and jewelry and finally to their architecture.

Plants, animals or minerals were the raw materials used in the creation of these artifacts and they were sourced from either natural or domestic sources. All artifacts had specific functions and significance depending on what they were. For example, the *iturwa* was just a long lasting wooden seat but also acted as heirlooms from great-grandparents. The jewelry was used to make the wearer more attractive to those who see them. Other artifacts were used to distinguish one's social, marital, economic and political status, gender and one's role in a ceremony. And others were just used in


the Agikuyu had some influence of Maasai culture, they had lots of their own rich and different cultural features in terms of their artifacts. They ranged from utensils made and utensils and weapons to increase the efficiency of activities such as self-defense

Figure 14 shows a variety of Agikuyu artifacts.

the day to day activities like the utensils for preparing and eating food, *ikumbi* (granary) to store grains

and warfare (Wambugu, Ngarariga, & Kariuki, 2006).
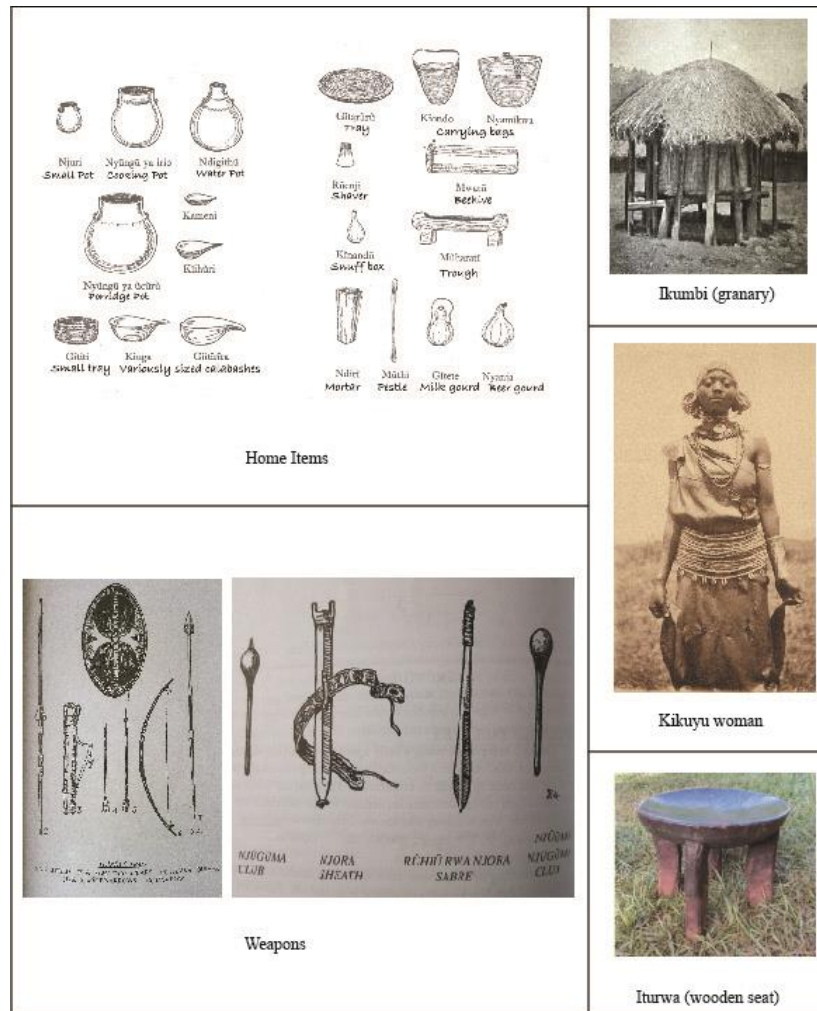
Figure 13: Agikuyu artifacts
Source: mukuyu.wordpress.com, pinterest & The Agikuyu book - 15/6/2018

Social Design

Design is often associated with aesthetics and industrialization but today designers are using it to impact a positive change in the society in areas such as health, transportation, education and many others. Designers are trying to understand the social needs and develop appropriate solutions for them. To do so, they need to understand people's experiences, analyze these in their active participation and figure out more effective ways than what is currently out there.

Why social design? First it is because people's lives are constantly changing. New advancements are always taking place which influence people's behaviours and lifestyles. This means solutions that worked before might not be fitting now and thus designers need to think of ways to address these changes. Social design is also favourable to the economy as it is all about striving to meet meaningful and effective change by reconfiguring resources in different ways (Kimbell & Julier, 2012).

Within the design world, social design is also seen as a design process that contributes

to the well-being of human. There are four modes that guide designers during the process: exploring, making sense, proposing and iteration. *Exploring* is about looking to find out all the components that make up the social issue. One should be open to find out the unexpected things. *Making sense* is about understanding the research done. The designer needs to know what needs to be changed in the user's life and why. In the *proposing stage* ideas, activities and processes which address the issue are identified. Iteration is the process of prototyping, testing ideas and refining an idea.

All designers need to ask themselves why are they designing, what impact will their design have, whom will it affect and what will they achieve. Therefore, no matter what project a designer is undertaking social design is at the core of it.

Design Exemplars

Empathy Toy

Illana Ben-Ari, a Canadian industrial designer, designed a durable toy that

the sighted and the visually impaired. And therefore decided to create a toy that would bridge this gap and enable both the sighted

Mimi Dolls

promotes creative communication and foster empathy. Inspired by thought leaders like Sir Ken` Robinson who claimed that schools killed creativity, Illana believed that she could make a toy that nurtures creativity in the classroom.

The Empathy Toy is a puzzle game. It consists of sets of five wooden puzzle pieces and each participant gets one set. The pieces are of different shape, size and texture and connect to one another in a hundred different ways. One player creates a pattern with the pieces and guides the rest of the players who are blindfolded to reproduce the same pattern. The game challenges people to work together to find a common language that will enable them to solve the puzzle, without it they

Figure 14: Empathy Toy
Source: dantrommater.com - 13/6/2018

wouldn't. Figure 15 shows the game in progress.

This idea came about when she was doing her thesis project. Her aim was to create a navigational aid for the visually impaired. She discovered that there was a huge social and emotionally gap between and visually impaired understand and play with the each other, hence the creation of the Empathy Toy (Boschoff, 2014).

Mimi Dolls are alternatives to the popular Barbie dolls which are characterized by blue eyes, long eyelashes, silky flowy hair, and fair complexion. Mimi dolls have a dark complexion portraying the skin colour of Africans, thick hair and dressed in traditional clothes and jewellery representing different communities in Kenya.

They came about after Nancy Nkirote, a Kenyan mom of three based in Switzerland, noticed that her daughter had grown fond of a white doll she had bought her to the point

Figure 15: Mimi Muthaka
Source: mkenyaujerumani.de - 19/6/2018

of naming it 'Mimi' (Swahili translation of the word me). Yet this Barbie doll looked nothing like her. This made her think about the lack of representation in the toy industry and decided to design a doll that would reflect her daughter. Hence Mimi was born (Makena, 2016).

These authentic cultural dolls aim to give African children pride and knowledge of their cultural background, their own looks and understand their place in the society. She started off by creating dolls that represent different communities in Kenya like the Maasai, Kikuyu, and Kalenjin. Each doll comes with a short story describing their cultural representation, region, traditions, food and roles in the community (Radoli, 2016).

Figure 16 and 17 shows one of the Mimi doll, Mimi Muthaka, and a girl resembling her doll respectively.

Figure 16: Girl resembling her doll
Source: www.facebook.com - 19/6/2018

Methods

Research Design
The research employed qualitative and quantitative methods. Qualitative research design includes techniques that are concerned with phenomena (Kothari, 2004). It aims at discovering how people feel about the subject at hand and what makes them like or dislike a particular thing. The research discerned why children prefer certain lifestyle behaviours to others, why many are not very knowledgeable of their cultural background and what characteristics do both children and adults consider when buying toys.

The quantitative research design was applied where the phenomena could be expressed in terms of figures (Kothari, 2004). It was utilized in the actual survey, where it revealed how many children of what age are drawn to which types of lifestyle activities and behaviours, and in data interpretation.

Target Population & Sample Population

A population is a complete set of individuals with common characteristics that the researcher wishes to obtain knowledge from (Mugenda & Mugenda, 2003). A subset of this population is identified to study and this is known as the sample population. The population of this study was composed of adults and children between the ages of 6-12 all residing at Sun-valley estate phase 1 in Lang'ata, Nairobi. The intended number of respondents who were to make up the sample was thirty-four.

Simple random sampling technique was used to determine who gets included in the sample. The advantages of this are that every item had an equal chance of inclusion and the errors of estimation that could arise when generalizing to a larger population can be measured (Kothari, 2004).

The sample population was grouped into three focus groups and two individual interviews. One focus group consisted of ten adults, another of seven children between the ages of 6-8, and another of eight children between the ages of 9-12. This was less than what was intended which was one group consisting of ten adults, and another consisting of ten children between the ages of 6-8, another consisting of ten children between the ages of 9-12 and three designers.

Below is table 3 showing the distribution of the sample population for the study.

	Description	No. of Respondents	Reason for being selected
1.	Adults	10	Give information on their children's lifestyle and compare them to theirs when they were growing up
2.	6-8 year-old children	7	Participants are similar age and provided a homogeneous segment in which it is possible to find relevant data
3.	9-12 year-old children	8	Participants are similar age and provided a homogeneous segment in which it is possible to find relevant data
4.	Designers	2	Give a view on durability in product design
	TOTAL	27	

Table 3: Distribution of sample population, Source: author, 2018

Data Collection Procedures

To conduct this type of research, both primary and secondary data collection methods were used. The instruments employed were:

1. Observation
2. Interviews
3. Documental Review

Data Analysis Tools

There were five stages of data analysis employed in the study:

i. Transcribing of all data: all data formed was converted into written form so as to be able to make sense out of the field data

ii. Organizing of data: after data had been transcribed, large amounts of information were left which were then organized according to the research questions they answered.

iii. Coding data: the data was then categorized according to codes whereby a code is often a word or a short phrase that summarizes a certain theme of the data. This step helped in giving meaning to the data collected.

iv. Validation: This step was taken to ensure the information gathered is accurate and reliable. To achieve this, the information analyzed was reviewed by the respondents.

v. Concluding data analysis: finally, the research outcomes were linked to the research objectives and recommendations sought for all the problems stated.

Qualitative research approach, however, yielded quantitative data based on data collection procedures.

FINDINGS

Response rate
Out of the intended thirty-three interviews, only twenty-seven people were available to be interviewed. A total of fifteen children (six boys and nine girls) and twelve adults (four males and six females) were interviewed. That makes a response rate of 82% which was termed successful as the majority of the intended respondents were interviewed. This is shown in figure 18.
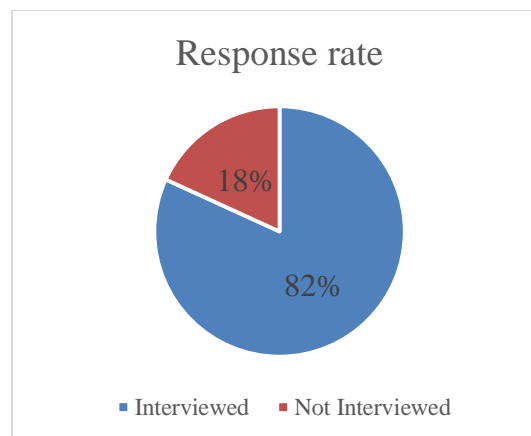
Figure 17: Audience Response Rate
Source: author, 2018

Current children's lifestyle
In response to the first research question, the research results revealed that 100% of the respondents feel that children residing in the urban areas of Kenya are currently living both a healthy and unhealthy lifestyle. A majority of their daily activities would include spending time on screens that are either on televisions, phones, computers, tablets, play gadgets or music gadgets. Other times would be spent studying, doing chores when asked to, engaging in after-school clubs or sports and other forms of play and other activities like travelling, visiting relatives and many more. Figure 19 shows a comparison of activities of a child during a school day versus a day at home.
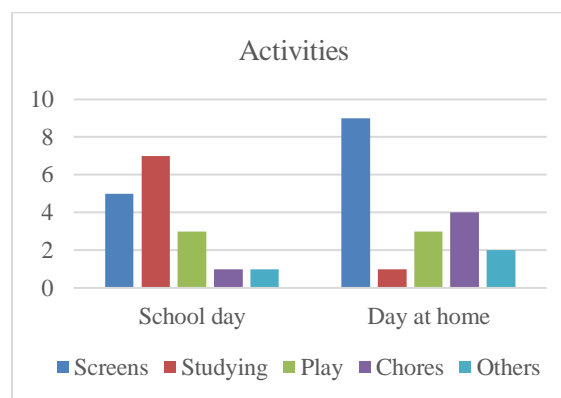
Figure 18: Comparison of a child's activities during a school day vs a day at home
Source: author

From the adult focus group, it was revealed that a majority of children nowadays would be forced to go outside and engage in other forms of play that do not include any screens. This was more so for the nine to twelve-year-olds. And the children's response to this was that they often choose electronics over other forms of play because they are readily available, come in many interesting different forms, and offer numerous games and other activities. Other causes of the adoption of current lifestyles as stated by the respondents are indicated in figure 20.

Figure 19: Causes of adoption of current lifestyle among children
Source: author, 2018

The research further sought to find out problems that have resulted from any unhealthy lifestyles adopted. 3 out of 15 children were found to have adopted a more

sedentary lifestyle. They also executed antisocial characteristics and had adopted some violent character behaviours and language from the games they play and the programs they watch. 60% of children were also found to spend less face-to-face time interacting with their family members, lacked values such as sharing, empathy and teamwork and their common intelligence was slowly declining.

The results also revealed that both some adults and children put in an effort to try and curb these unhealthy practices. For instance, one respondent explained how her parents have demarcated only two hours for screen time, an all family members' dinner time without gadgets, study time in the morning and in the evening, house chores for all family members, plenty of time for playing outside and a family game night every month.

Importance of play in promoting healthy lifestyles among children
Through the observations, documental revision and interviews it was found that play is critical for a child to thrive. And from the responses to one of the interview question, whether play can be used to solve problems that arise from unhealthy lifestyles, it was a unanimous answer that it will.

The adults mostly insisted on the point of finding a balance between the digital activities and other forms of activities. They said to get the children away from gadgets; most households have to either force their children to go outside and play or to go study. The children's admitted that non-digital play is much better and advantageous. But because they are not as

luring as the digital activities they always find themselves back on the screens.

Games were identified as a means to help in solving the problems that arise from an unhealthy lifestyle. One way is that it helps children discover their talents. The non-digital play also keeps children away from screens and helps them be more imaginative and creative. Physical play keeps them active and fit and in the long run protects them from lifestyle diseases such as obesity, depression and diabetes. Mixed age play provides challenges for younger children and teaches older children to take responsibility for one another. They both also acquire some skills such as problem-solving, critical thinking, teamwork, sharing, communication and many more.

Aspects and values of indigenous Kenyan children's games
In an attempt to answer the third research question, *what aspects and values of the indigenous Kenyan children's games can be used to inform the design of toys*, results revealed the main value was its uniqueness from other games in the world. It provides a sense of identity to the Kenyan children.

Two of the adult respondents explained how the indigenous games made their childhood worthwhile. The games offered so many challenging scenarios that built their problem-solving skills and creativity among others. They also made them tough. Role play games taught them about different roles in life, the environment they live in and the different personalities of people. They went on to add that these games brought so many people together as they could be played by anyone regardless of their gender and age. This experience resonated with all the adult respondents who fully agreed to the games being used to impact a change in the lifestyles of current children. On the other hand, 70% of children had very little idea of some of the indigenous Kenyan games let alone the values they add to one's life.

Durability as a sustainability approach

	% of consideration (adults)	% of consideration (children)
Age	100	90
Sex	75	60
Appearance	70	100
Interest	90	100
Durability	50	40
Safety	90	40

Table 4: Percentages of considerations taken when purchasing a toy
Source: author, 2018

From the data above, table 4, it is clear that the durability is rarely taken into consideration when purchasing a toy. Ironically, when respondents were asked

reason as to why they do so, they said that would prefer a long lasting toy such as those made of wood. But because such toys are scarce, they don't have many options to choose from.

The research further sought to find out from the designer how durability can be incorporated into the design of toys. Data gathered revealed that more durable materials should be used as the raw material and the design of toys should incorporate more sustainable methods of production and maintenance.

Culture themed toys in promoting cultural understanding
In an attempt to answer the fifth research question, the results revealed that a gap existed in the urban areas of Kenya having a way for children to learn about their cultural background. 80% of the children did not know much about their culture besides its name and traditional residing location in the country. Those who did learnt about it during their social studies lessons at school.

The design exemplar, Nancy Nkirote, creator of Mimi dolls, advised on a how one can incorporate culture in toys to give the African children pride and knowledge of their cultural background. This is by identifying an aspect of the culture, translating it into design knowledge and then coming up with a relevant concept that can be made into a product. An additional background story explaining the aspect can be added.

Summary of Findings
It is clear from the research findings that modernization has brought about changes in the lifestyle of the children living in Nairobi. This has impacted their way of life, attitude, values and knowledge of the world. It highlighted the negative impacts which were

children getting addicted to new technology which impacts their behaviors, knowledge values and health, and the Kenyan cultures and traditions fading off. Therefore, there's a need to curb this problem with the use of play as it was identified as the more suitable tool to be used.

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