

Recycling Textile Waste as material for Woven Art Practice

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Abstract

Whereas the increasing population world over has multiplied production of textiles to satisfy both the clothing needs and fashion trends, waste generation in the textiles production cycle is an increasing environmental challenge. Production of textiles to satisfy the demand has led to generation of used textiles in the waste stream and in the landfill, greatly affecting the environment. Recycling of used textile into usable products is one way of reducing used textile in the waste stream. This study sought to establish the textile waste materials utilized for creative textile production by textile students at Kyambogo University. The study analyzed the process undertaken by students in preparing the materials for use and analyzing products made out of recycled textile waste materials. Using a descriptive design, the study observed projects and interviewed students of Bachelor of Vocational Studies in Education with Art and Design (BVAD) and Bachelor Art and Industrial Design (BAID) at the School of Art and Industrial Design, Kyambogo University. Findings revealed that commonly used textile waste material at Kyambogo University included old clothes especially cotton t-shirts, bedsheets and dresses collected from the immediate environment such as homes, friends, tailors and used yarn off-cuts picked from a nearby yarn spinning factory. The study worked with students to recycle and repurpose textile waste into functional household items hence reinforcing the concept of recycling as a viable alternative to reduce dumping of textile waste that leads to environmental pollution. The results revealed that recycling textile waste has a potential to produce household functional items that could improve livelihoods of families.

Key Words: *Textiles, Recycling, Textile waste, Creative textile production*

INTRODUCTION

The Maslow's Pyramid of Human Needs, placed clothing among the physiological needs that are basic for sustaining human life (Trivedi, 2019). However, with introduction of the fast fashion phenomenon, clothing has since evolved from merely addressing a basic need into fashion items (Piribauer & Bartl, 2019). These fashions are characterized by production of cheaper clothes, which can be worn a few times and disposed of in favor of more trending ones, representing the trend of current society which is sensitive to fashion, rather than quality and physical life of products (Shim et al., 2018).

In fact, Morlet et al., (2017) note that more than half of fast fashions are disposed of in less than a year leading to lots of waste arising from unutilized textiles. For instance, Ellen Macarthur Foundation has calculated that more than \$500 billions of value is lost each year due to clothing underutilization and the lack of recycling, leading to a total amount of greenhouse gas emissions from textiles production of 1.2 billion metric tons annually (Whiting, 2019).

In the Western world, when consumers decide to give up their garments, they have a number of choices: discard, sell, or donate to used textile collectors such as charity organizations, municipalities, retail or professional collectors (Zamani, 2014). Developing countries on the other hand have insufficient capacity to produce textiles for their populations and are the major consumers of secondhand textiles in addition to new ones. Much as secondhand clothing trade is a booming business between the Global North and South, it comes with its own challenges (Naadi, 2021). Literature reveals that secondhand clothing trade is one way of transferring environmental, economic, and social consequences from the countries that produce textiles to those that consume them (Thompson, 2017). In Africa the biggest challenge with this trade has been importation of used textiles of depreciated value, unfit to be worn and handled as waste on arrival. In addition, a good amount of those textiles is none biodegradable, possessing chemical compounds (Zedepa, 2021) and taking hundreds of years to decompose fully when landfilled, negatively impacting on the environment.

Although the UN 2030 SDG goal twelve aims at achieving responsible consumption and production, the current clothing system in regards to manufacturing, distribution, and usage of clothing largely operates in a linear way (Chen et al., 2021) and application of the circular model remains unexplored (Watson et al., 2017). Therefore, encouraging industries, businesses and consumers to recycle and reduce waste is important, as well as supporting developing countries to move towards adopting sustainable patterns by 2030 (UNDP, 2022).

Research conducted by Ramos et al., (2017) suggest that textiles reuse and recycling has a positive contribution to the disposal of solid waste from industries and domestic waste, given their incorrect destination, commonly disposed in rivers, bays and landfills. Similarly, Tahmassian (2010) and Kayode (2006), cite that art is a powerful tool that can inform, people

about issues and bring about change in behaviors and attitudes towards the environment and sustainability (Meade et al. 2008). It is from this context, that the study interrogates the use of textile waste as materials for creative textile production at Kyambogo University, School of Art and Industrial Design. It engages textile design students in recycling textile waste such as fibers, yarn off-cuts, worn out fabrics and fabric off-cuts to produce creatively woven products as part of their course assignments.

LITERATURE REVIEW

Mansour et al., (2018) define waste as any product or substance that has no further use or value for the person or organization that owns it and which is or will be discarded and is as a result of consumption (Kadoye 2006). Lithgrow & Wall (2019) observe that materials become garbage when previous assumptions of value and identity dissolve and the object is dismissed as part of everyday life.

Different types of waste emerge as a consequence of the technology boom, global population growth, coupled with consumerism (Pilchard et al., 2018). This creates challenges at every stage, including waste prevention, treatment/ management, recycling and reuse, as well as the health and ecosystem impacts of poorly managed waste (Evans 2018). While poor waste disposal may be a concern globally, it is more severe in developing countries and in majority of African cities (Aryampa et al., 2019). In Kampala city alone, an estimated 51% of the garbage is left uncollected, causing frequent clogging of sewage systems (Turyatunga, 2021).

In the textile industry, over-production, partly driven by the idea behind the fashion industry that consumers need a new clothing collection for each season has been the major cause on waste generation (Zamani, 2014, Shim et al., 2018). There is a dramatic increase in the production of textiles (Peters et al., 2019) and mismatch in utilization (Ellen Macarthur Foundation, 2017) causing an overstretch on the natural resources and producing heaps of textiles waste. Morlet et al. (2017) observe that large amounts of non-renewable resources are extracted to produce clothes that are often used for a short period, after which the materials are largely lost to landfill or incineration. Textile waste is seen in post-industrial or pre-consumer waste, such as by-products of the fashion and textile industry such as fibers, fabrics, and overproduction (Wagner

& Heinzl, 2020), and post-consumer waste, classified as any type of garment or household article made from manufactured textiles that the owner no longer needs and decides to discard (Hawley, 2019).

Countries such as China, Bangladesh and India, among others, are the major exporters of clothing products, mainly to developed countries of the European Union and the United States. These do not have to deal strongly with the environmental problems arising from industrial textile production, but with the problems related to the disposal of post-consumption (Ramos et al., 2017). Unfortunately, since the capacity for developing countries, to produce enough clothing for their populations is insufficient, they become a dumping ground for the secondhand clothes from developed countries (Naadi, 2021) and the cheap fashions from China. The cycle of increased consumption, shortened lifecycles, and a shift to synthetic fibres, which do not decompose post-disposal, leading textile waste to emerged as a prominent issue (Thompson 2017).

To mitigate this issue, Pichardo (2018) recommends eco-design as an effective tool, that combines creativity, innovation and environmental objectives that replace virgin materials with waste textiles. Further research depicts that repurposing of garments through reconstruction or other secondary uses could save energy, water and carbon emissions as compared to fabric and garment production from 'virgin' materials (Eladwi et al., 2016; Hur, 2015, Ernantez et al. 2017). Similarly, contemporary artists argue that the life of an object does not effectively end when it is deemed no longer useful, but its reincarnation as a recycled material gains more expressive power as it is transformed into art (Schwartzott, 2019). Such artworks according to Pollanen and Routsalainen (2017) may not necessarily highlight an individual's capabilities but rather address important global and local issues. Art works could also drive income generation for the population and the local creative industry (Dissanayake et al. 2017). This study similarly is one of those that seeks to re-use textile waste in art production as an avenue to mitigate environmental degradation that may lead to climate change. In addition, Mansour (2018) posits that projects on wastes, progress the efficiency of training students, and generate collaboration between academia and production and help children to learn to make use of materials around them (Uyanik et al. 2011). Similarly, Yeboah (2015) recommends that waste materials should be

explored and recycled by classroom teachers for effective teaching and learning of art and other subjects at the primary, junior and senior High schools. Owing to little research done on utilization of post-consumer waste for woven art practice, the paper investigated ways in which such waste was recycled by students at Kyambogo University, School of Art and Industrial Design, for art production.

MATERIALS AND METHODS

The study is qualitative in nature, employing a descriptive research design, that seeks to describe the existing phenomena as accurately as possible (Atmowardoyo, 2018). It was conducted at Kyambogo University, School of Art and industrial design in the textile section in the Industrial and Commercial Design department. The target population for the study were textile design students offering Bachelor of Vocational studies in Art and Design with Education (BVAD) and Bachelor of Art and Industrial Design (BAID) in second year of study. The total population comprised of forty (40) students, six participants were purposively selected because their projects explored textile waste. Data was obtained through observation, and structured interviews designed following the objectives of the research. The data obtained was coded, transcribed, analyzed thematically, backed by reviewed literature. Meaningful conclusions were drawn and recommendations generated. To ensure ethical conduct, consent was sought from respondents to participate in the study by explaining to them the voluntary basis of participation, for purposes of the research. A consent form was extended to all those who accepted to participate, encouraging them to conceal their identities. Details of the study such as the purpose and objectives were explained to participants and the liberty to withdraw from the study at any time if they wished was extended. Interviews were done on appointment, according to the participant's convenience and data kept confidential for the benefit of the research.

RESULTS AND DISCUSSION

Findings revealed that the most commonly used textile waste material among the sampled population was old clothes in form of cotton t-shirts, bedsheets and dresses, majorly collected from their homes and from friends. Cloth offcuts were also picked from tailors while some respondents used yarn offcuts from a spinning factory. Although the respondents were aware that there is a pool of recyclable waste materials ranging from yarn rejects from factories, yarn off-

cuts from weavers, shredded fabrics from tailors and garment factories, worn out clothes and other forms of fabrics for home use to those used in public spaces their choice of materials depended entirely on their convenience and accessibility to them moreover such materials were no longer deemed valuable to the owners, similarly did not require expenditure and are of little tangible value (Uyanik 2011).

The respondents prepared the materials locally by twisting them into required sizes of yarns for weaving crafts. That was mainly because they did not have suitable machinery such as a spinning wheel, that could quicken the process. The fabric offcuts were collected, cleaned, shredded to the required size, sorted and hand twisted or used without twisting. The preparation methods observed were suggested by Menéndez-Ramirez et al. (2010) and Pichardo, et al, (2018). Respondents further mentioned that sorting was arranged according to colour, texture, strength, stretchability, fibre content and the construction method.

Findings further revealed that about eighty percent of the respondents produced wall hangings (Figure b, c, e and f) out of the prepared textile waste materials, the others produced a rug (figure d) and a cosmetics organizer (figure a) respectively. Basing on their level of experience in weaving, most of the students used the basic weave structure (plain weave) in the tapestry form, which they could weave competently.



Figure 2: Textile products made out of recycled materials by students. (images taken by researcher) a) Cosmetics organiser produced using cotton t-shirt offcuts, b) Wall hanging

produced using cloth off-cuts and acrylic yarn off-cuts, **c)** Wall hanging produced using cloth off-cuts, cotton yarn offcut and beads, **d)** Rug produced using cotton t-shirt offcuts, **e)** Wall hanging produced using cloth off-cuts from a dress, **f)** Wall hanging produced using cotton t-shirt offcuts.

Discussion

Recycled materials utilized by students for textile production at Kyambogo, University

Findings revealed that commonly used textile waste include old clothes inform of cotton t-shirts, bedsheets and dresses. Therefore, rethinking about recycling waste materials such as the above creates fresh opportunities for an artist by providing a new material for self-expression in line with Ramos et al (2017), Schwartzott (2019) and Lithgrow and Wall (2019). Besides, all the participants engaged were young people who are considered to be fashion sensitive expected to be exploring fashions trends, and contributing to generation of more textile waste (Zamani 2014). As Morlet et al., (2017) notes, over-production in the textile industry is partly driven by the idea behind the fashion industry that consumers need a new clothing collection for each season, yet more than half of fast fashion produced is disposed of in under a period of one year.

Processes undertaken to prepare the textile waste materials used by students at Kyambogo University.

The processes of weaving followed the standard measures practiced by weavers. Weaving was sequenced following the planned design. Students were going beyond the conventional materials such as yarns used in weaving to produce functional products. Using textile offcuts and textile waste was in line with Ramos et al (2017) who suggests that textile reuse can be done by industrial or artisan ways by reutilization of the fabric scraps. Textile waste can be up-cycled or /made into handicrafts in an infinity of objects that depend exclusively on the craftsman's abilities and creativity. Most of the respondents did their weaving on a frame loom as opposed to other looms because by the time of the interview, they had only acquired skills in plain weaving using a frame loom. Therefore, the choice of the tools and the simplicity of the projects was based on the level experiences. One of the respondents however explored a tree branch (fig. f) as the loom depicting the potential that natural materials have to supplement inadequate technology in textile construction.

Textile products made out of recycled materials by students at Kyambogo University.

The products in Figure 2 (a-f) reveal that all forms of textile waste can be utilized to produce creative textiles but also contribute towards saving the environment from pollution, contamination and degradation (Pollanen & Routsalainen, 2017, Dissanayake et al. 2017 and Kayode 2006). Moreover, the products generated out of the waste materials assume new identities, independent of the material that was used to form it (Schwartzott (2019), Lithgrow and Wall, (2019).

From the interviews conducted, all respondents were aware of the environmental issues arising out of poor waste disposal and were convinced that their engagement into production of the woven articles was a measure to mitigate environmental degradation and create awareness about the practices that accelerate it. This study supports Pichardo (2018) that eco-design projects such as these are an effective tool, involving creativity and innovation, bearing environmental objectives.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study found out that students of textile design at Kyambogo University, School of Art and Industrial use textile waste to produce different products. The textile waste used included off-cuts and old textile which students use as yarns to produce woven items. The process of production of products followed the standard weaving procedures and most of the students were producing plain weave using a weaving frame loom. Items produced included wall hangings, item organizers and rugs. The study found out that the experience of using the unconventional materials in textile construction was exciting to many textile students. More so, the study findings revealed that the interest students had in using textile waste, was likely to reduce textile waste in the environment if students were to produce items using textile waste. Furthermore, results revealed that recycling textile waste has a potential to improve livelihoods of artists who use textile waste as a material hence improving wellbeing of households.

Recommendations

The study recommends that; the textile industry should focus on finding sustainable solutions in textiles production and promote circular economy. Environmental conservation bodies in conjunction with the media should create awareness campaigns that continue educating the public about the danger of textile waste on the environment. Artists should continue to explore possibilities of recycling fabrics with a focus on examining textile properties so as to maximize them into artistic productions. Government and NGO programs that promote of women and youth can adopt this method to promote sustainable livelihoods amongst the populations.

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