

180 A waste to value proposition: 'Unspecified Outcome' driven learning

Authors

Shalini Gupta, Varun Goel
Pearl Academy, India

Corresponding author shalini.gupta@pearlacademy.com

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Abstract

Thousands of young people walk into a design school for the first time every summer, eyes bright with hope and the promise of leaving three years later armed with what it takes to be the best in the industry. Learning to stitch, cut, fit and re-fit every day. Patterns half done, gone wrong, mistaken stitches, snips and stains. When the day is over, all these mistakes are swept up and taken away. And tomorrow is a new day to learn some more. But what educators may not realise is that they are subconsciously endorsing wastefulness by demanding perfection.

Author Henry Petroski put it eloquently when he wrote, 'Successful design is not the achievement of perfection but the minimization and accommodation of imperfection.' This sparked the idea of 1) Collecting the waste generated during the process of pattern cutting and garment construction and 2) Finding ways to educate using this continuous effusion of waste that bears infinite possibilities to re-create value.

A group of ten Year One students were guided to use the waste collected to create garments as a part of a 'form generation' module. Traditionally, form generation is the kind of cutting technique that generates waste. Through an action-based research methodology the process of waste generation was analysed, and seen not as a pollutant to be discarded but as an opportunity to create. The end product symbolises a series of actions intended to change perceptions and, eventually, the indigenous industry, rather than merely embedding symbolic notions on the wearer.

The paper documents the process of 'unspecified outcome' driven learning through specific actions of waste collection, creating and delivering a module in Year One, and reflecting on the process and results. Here it is proposed that this will imbue the next generation of Indian designers with change agility, and the means to think outside of the regimented nature of assembly lines and mass-produced retail uniformity, in an attempt at making them better prepared for wholly uncertain future scenarios.

Introduction

'Fashion is the most immediate and intimate form of self-expression' (Corner, 2014). In a hyper connected world, representing one's identity has become paramount to social self-preservation and this is ordinarily achieved via constant material consumption, a prodigious threat to a sustainable future. Hyper consumption leads to waste of both non-renewable natural resources, and materials used in production. This has meant a continuous effusion of unwanted fibre, cloth, colour, and patterns, making the global fashion industry one of the most polluting industries in the world (Wicker, 2017). Designers across the world today are exploring the various avenues of sustainable design and production from a social, political and ethical stand point in an attempt to re-create value from this waste. This may be the cumulative effect of the now evident ills of over consumption, tragedies like the Rana plaza disaster, films like 'The True Cost', or socially driven initiatives like 'who made my clothes' and 'the maker movement'. Lidewij Edelkoort, fashion forecaster and founder of the trend forecasting company, Trendunion, has been a harsh critic of the fashion and clothing industry. In her article 'Fashion is Dead, Long Live Clothing' she proclaims '...there is the making of [fashion], which is done in countries where people are killed for making our garments' (Raphael, 2015).

Interestingly, these tragedies are generally concentrated in developing economies like India and Bangladesh where a high density of population is putting immense pressure on limited resources, and is forcing people to work for and live on less than a minimum wage. Exploitation is rampant and corruption is the expectation. And yet, one looks to the west to provide solutions to these problems. Edelkroot, in 'Anti-Fashion, a manifesto for the next decade', throws light not only on practices in trade but also calls on design schools to change the way they teach their students. Most design schools, she claims, teach to create individual luxury runway stars, instead of engaging students with design practices that are sustainable (Edelkroot, 2014).

India is a great dichotomy of inherent sustainable traditions of upcycling and reusing, that are deeply rooted in our culture, on the one hand, and a global sourcing hub on the other. However, from a nationally renowned Design School, Pearl Academy, with 500 plus fashion graduates each year, only a handful take up or experiment with existing and new sustainable approaches to design and manufacturing. It is therefore paramount to consider the difference they could make to the indigenous fashion industry if even half of the students did. This makes Pearl the ideal space to challenge students' perceptions of what fashion design is and their role as future fashion designers (Sala, 2016).

This thought led to examining the undergraduate fashion design curriculum (Pearl Academy, 2019) as a whole to see what knowledge and skills the graduates were currently leaving with. It was found that after four years of study students accrued the following attributes,

- Extensive knowledge of the discipline
- Confident oral as well as written expression and communication
- Visualisation skills
- Proficient in contemporary technology and software

However, an increasing number of innovators and entrepreneurs today possess a set of attributes that are above and beyond extensive knowledge of the discipline. Some of these key attributes form the basis of Mezirows 'Transformative Learning Theory'¹ and do not necessarily present as assessable pre-planned, current curricular outcomes. From a list cross-referenced across desirable graduate profiles and the changing economic and social climate, the following attributes were chosen, in addition to discipline specific skills, that may be useful if inculcated in current and future graduates:

- Skilled in analysis and problem-solving
- Capable of critical thought, rational enquiry and self-directed learning
- Able to work collaboratively
- Open and intellectually curious

A large number of employers and businesses are also seeking the above graduate attributes. Examining the curriculum *vis a vis* changing graduate profiles and expected outcomes, the attempt was to create and test a module that, through application and experimentation could broaden student approach to the design process and possibly instil the attributes mentioned above. The research hopes to allow for the students, our future designers, to think outside of the regimented nature of assembly lines and mass-produced retail uniformity. The imperfections and non-immediacy provided by this process where the outcome i.e. 'the product', is undefined and unplanned, can lead to change agile design articulation. 'The capacity to cope with change demands inordinate things from us. We need the eyes of a chameleon, the legs of an octopus and the speed and adaptability of a dolphin.' R.Ndala (The University of Adelaide, 2018).

Methodology

Interactive and experiential learning strategies were employed (Beard & Wilson, 2013:26-32), through an action research methodology, that compelled students to look within and question their own beliefs through reflection and action. Action research is a process of systematic inquiry that aims to improve social paradigms affecting the lives of a wider populous (Stringer, 2008). Action research is a befitting option for academicians as researchers, and stakeholders in the teaching and learning environment, to consider (Mills, 2011). It provides practitioners with new knowledge and understanding about how to improve educational practices or resolve significant problems in the classroom specifically and academic institutions generally (Mills, 2011; Stringer, 2008). Action research uses a systematic process (Figure 1: Action Research Helix (Stringer, 2008)) (Dinkelman, 1997:250-274; McNiff, Lomax, & Whitehead, 1996), is collaborative and participatory in nature (Hotler & Frabutt, 2012: 253-269), and offers multiple opportunities for those working within the teaching profession (Johnson, 2012).

This particular action-based research is aimed at encouraging and observing students creating garments from a collection of waste. The technique of waste manipulation is

¹ 'The Transformational Learning Theory originally developed by Jack Mezirow is described as being "constructivist, an orientation which holds that the way learners interpret and reinterpret their sense experience is, central to making meaning and hence learning.'" (Culatta, 2019).'

eventually intended at modifying the curricular strand of 'form generation' in the current fashion design curriculum. Through this intervention the hope is to open a dialogue about transformative process based learning that revisits traditional fashion education, and formulate methods that might enable fashion educators and fashion students to become agents of change within the learning space (Sala, 2016).

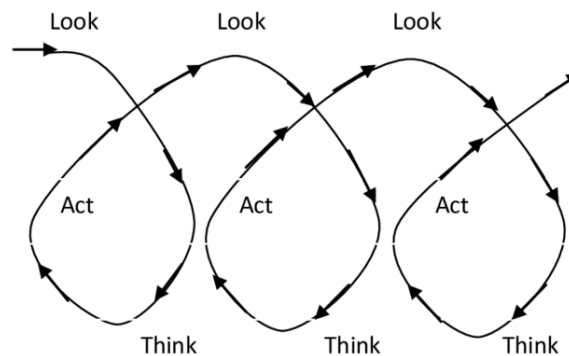


Figure 1: Action Research Helix (Stringer, 2008)

○ Action 1: Creating the module

A gap was identified in the form of un-assessed but desirable outcomes as mentioned above, and this became the key driver to think of how these outcomes could be included and assessed (Stringer, 2008). When trying to redesign the curricular strand of 'form generation', the question asked was, what should the students be able to do after they complete the module? The idea was to redesign the module in a way where the students understood 'form generation' but additionally the learning outcomes were process oriented, in alignment with the teaching and learning activities as well as the assessment.

After some iteration and discussion, the following broad outcomes were finalized.

1. Redefining the design process where waste and not a sketch or idea could be the starting point.
2. Stimulation to subjectively imagine a 'conscious and ethical practice' led future in fashion.
3. Understanding and appreciating dress / garment beyond set standards of garment category, sizes, gender etc.

The challenge now was to formulate specific learning outcomes for an 'unspecified outcome' i.e. 'product'. Using Bloom's Model of cognitive complexity (Anderson & Krathwohl, 2001), the following outcomes were formulated that could possibly justify our intent.

1. **Experiment with** found material using basic taught techniques of construction. *Applying*
2. **Inspect** the relationship between fabric and form. *Analysing*
3. **Assess** the viability of the form vis a vis the body. *Evaluating* (Anderson & Krathwohl, 2001).

The intent with the above higher order outcomes was to focus on the process as opposed to the final product. This is most important towards individual subjectivity in design. Specific product-based outcomes tend to have students focus on the end and tutors more likely to objectively mark them based heavily on the quality of the said product over the depth and quality of the process (Gjerde, Padgett, & Skinner, 2017: 73-82). Here the final outcome was not defined as a product but as a reflection on individual processes. Now using the basics of constructive alignment (Biggs & Tang, 2007:54-62), teaching and learning activities were created with the intent of achieving the above outcomes.

The sessions were planned in three parts; lecture, group discussion and then practice based experiential learning. This allowed for students to be fully engaged until the end of the class and possibly beyond. To elaborate, this methodology, namely the 'Interactive Lecture Method', involves the teacher beginning a discussion with an 'engagement trigger' like referencing previous knowledge or experiences. This aids in capturing and maintaining student attention. Following this the teacher integrates a task that engages students in applying and contextualising what they have learned through theory, action and reflection (McDonald & Teed, 2018). This is also a key driver in Mezirows 'transformative learning theory' which emphasises the importance of allowing students to practice newly acquired beliefs in order to change their perspective (Howie & Bagnall, 2013).

- **Action 2: Collecting the waste**

One of the reasons to consider the module of form generation for this particular research was the amount of fabric waste it generated through subtraction or removal of large pieces of fabric between pattern pieces. This provided the opportunity for students of Year One to think of the waste generated through the action of collecting and putting it in a box, in addition to using the waste itself as inspiration. An empty bin called 'the box of possibilities' (Figure 2: Box of Possibilities) was placed in every garment construction and patternmaking lab in the building. The students were asked to put all extra fabric that they intended to throw away, be it from test fits, trial, toiles, final pieces gone wrong or parts that come out of cutting patterns, into this bin. This initial exercise at one campus of our design school with about 500 students across 3 levels, threw up approximately 8 kilograms of fabric waste every week. This means in 32 weeks which is 16 weeks for a semester and 2 semesters a year, an estimated 250 kilograms could be collected in one year.



Figure 2: Box of Possibilities

- **Action 3: Identifying the Sample Group**

A small group of 10, year one students from the undergraduate fashion design program, Pearl Academy, Delhi, were selected based on their interest and availability for extra sessions as the module is currently being tested outside the regular curriculum.

The students were individually interviewed to establish the level of knowledge and skills they had previously acquired. These students had some basic knowledge of garment types and had some basic construction skills: they had worked on controlling the sewing machine and created a portfolio of seam finishes. They believed sustainability was important, but when quizzed further, they didn't know of any techniques or processes that were sustainable.

Action 4: Delivering the Module

- **Action 4.1: The Lecture & Group Discussion**

The group lecture started with a general discussion on what they thought of the 'box of possibilities'. All the students responded positively with reference to the idea and mentioned that it was a great initiative to have the box. They suggested that it might be helpful to have different boxes/bags for different items as some students found stationary thrown in which they picked up. Most of these students used the waste textiles from the box in their 'design of material'² projects where they needed to create swatch files identifying and labelling different fabrics. A student mentioned that the box helped keep the labs cleaner as they purposefully threw their fabric waste in there as opposed to leaving it around their workspace. They all felt a sense of pride and purpose when contributing to the box. Moving forward, when asked if they knew about terms like sustainable, organic, slow fashion, zero waste and ethical fashion they responded in the affirmative and showed a reasonable degree of general knowledge of the terms. However, they also mentioned that it never occurred to them to practice

² Design of Materials is a module in year one semester one focusing on the understanding of and experimentation with varied materials (Pearl Academy, 2019).

sustainable ideologies in their lives beyond their course prescribed outcomes. When asked why they then picked up the textile waste from the box, they responded that they wanted to save money.

With these thoughts at the forefront of their minds, the student group was asked a few pointed questions, such as, if they knew who made their clothes or how many times they wore each garment they owned? Their answers were not surprising but the questions were meant to provoke thought and that is what their responses showed. They didn't really think about who made their clothes, and they bought them because they were trendy and within their budget. They had given no thought as to how many times they might wear something. Mostly, when first bought, they wore the piece with excitement and then didn't really think about that piece. When asked about where they thought their clothes went after they disposed of them, the group was visibly blank and didn't really think of how these clothes may affect the environment or anyone else around them.

They were now shown a presentation that highlighted the need to upcycle, recycle and reuse. Through a class discussion, it was evident that the presentation had prompted them to think about not wasting resources and how waste in the fashion industry was affecting the environment. Following the discussion, they were shown *The True Cost*, a documentary showcasing the ills of the global garment industry. They looked visibly shaken after the documentary and started discussing their role as designers and what they could do to reduce their contribution to waste, or how they could find design solutions that didn't affect the environment adversely. Real education is about lighting a spark (Biesta, 2016:1), and this was the spark that set the context for the activity to follow. They then looked at a slide outlining the generic value chain of a garment, and discussed how they could possibly make better choices at each stage i.e. design, production, distribution, use, and disposal.

Here it is important to note the responses the students had for disposal or end of use. India as a society has inherently upcycled, reused, deconstructed, reconstructed, repaired, handed down and traded garments that have lived out their usefulness, and the students were aware of these cultural practices through their parents and grandparents. Finally, they were given a short presentation on circular design and the circular economy. In the discussion that ensued they were prompted to think of how they may apply circular design to their design process, and build a community and culture around it through recycling and upcycling materials, zero waste techniques of pattern making, and using waste materials and textile waste to make new products. They were now moving away from their own understanding of why they consume, to a larger understanding of conservation and how they can contribute.

The students were then asked to articulate their design process if they were to use the waste from the box to make garments. They all agreed that the process would begin with the consideration of the material they picked up and not a sketch they had drawn. When asked if they might feel limited by the textile waste as it is a mix of different materials/dimensions/colours etc. the students responded that that is possibly the challenge and the best part of the exercise, and will give them immense scope for exploring, so they may devise outcomes that are individualistic and exciting.

To end the lecture, and before the experimentation began, the students were shown a few videos on how textile waste was being successfully managed in the fashion industry globally by some designers and brands.

- **Action 4.2: Practice Based Experiential Learning**

The idea of making something or creating is possibly most exciting and rewarding to designers and design students alike. They picked up and sewed waste pieces together from the 'box of possibilities' to create yardage which they then manipulated into form. The garment was later dyed to release it of its many meanings and became one entity. The idea was not to expect outcomes but to give them the space to experiment outside the defined boundaries of the rest of the curriculum. Students were more open to explore forms as they didn't know the standard parameters of pattern making and garment making which may have stopped them from exploring some of their ideas. As discussed by Beard & Wilson, interpretation begins where perception ends (Beard & Wilson, 2013:32). This was done with Year One specifically, so they may carry the spirit along as they progress through the course. It was important, at this early stage, to make them aware of the industry and its issues, so they may formulate their problem statements now, and possibly present as future thought leaders.

Reflection

- **Collecting the waste**

The response towards the Box of possibilities was exceptional where an average of 8kgs of textile waste was collected each week. However, the collection was not limited to this research. All the students from across levels and courses including postgraduate years 1 and 2, and undergraduate years 1, 2 and 3 used the textile waste to create samples for their projects or to make smaller components of test fits or components for their creative pattern making workshops.

Students were seen putting other materials such as fusing, interlinings, stationery and pattern paper pieces into the box which signified that students were realising the importance of the box and the concept of recycling and reusing. This in a way gave them a sense of community and collaboration outside of mandated group activities and, it is posited, can be seen as another form of the 'sharing economy' through peer communities (Selloni, 2017:17). This has also provided a new scope for the research, going forward.

- **Delivering the module**

The brief to students was to create anything they liked from the waste textile pieces. Each of the 10 students interviewed described their current design process as some version of Ideate, Research, Conceptualise, Explore, and Make. The aspiration was for the process to be reorganized to Explore, Make, Contextualise. Only for this particular module they would not have a pre-researched and pre-ideated sketch. They would not have a concept to kick off the process. They were to work without guidelines and just experiment for what was possible. Taking away the right and wrong could help students subjectively examine and internalize the process. An attitude of

experimentation could also reverse the fear to try new things (Beard & Wilson, 2013:19).

At first it confused them, but after they were exposed to certain forms and shapes that could be worn as fashion garments (Figure 3) they became more open to explore and accept unspecified outcomes. The students were guided purely by their sense of exploration and motivation to make something that would be unique in form. This, in a sense, reflected a capacity for critical thought, rational enquiry and self-directed learning. The fact that they were not trained in technical garment making did not stop them from exploring (Figure 4). Therefore the outcomes were far less the 'finished' end products of their work and much more examples of thinking-in-action (Figure 5; Figure 6; Figure 7; Figure 8) (Beard & Wilson, 2013).



Figure 3: Example By Tutor

One of the students who was not adept at handling the sewing machine started exploring the elimination of seams with chosen pieces of fabric from the box. This exhibited an attitude of analysis and problem-solving. Students were shedding norms and standards of garments making which induced a series of explorations that were, as expressed by one technical tutor, far more cutting edge, interesting and experimental than previously witnessed from Year One students. After the class students understood the importance of sustainability as an approach to garment making and were highly motivated to explore the concepts of recycle, reuse and circular design further. What was especially interesting is that they realised that each of them had undergone a design process which was very personal to them rather what was taught in classes. It left them more open and intellectually curious. One example was the of a student who started with joining the pieces, and then exploring form, and finally deciding possible themes for the same. This really reaffirmed the desired methodology of Explore, Make and Contextualise.



Figure 4: Form Generation 1



Figure 5: Form Generation 2

Another example was of a student who started the exploration by placing individual pieces of oddly shaped fabric on a dummy, experimenting with possible permutations and combinations and then joined the pieces together to create a garment. Once the form was achieved she went on to contextualise a theme. She also mentioned that her research and ideation was form centric rather than theme centric. And no student drew any designs on paper. These students had engaged with most of the educational resources we used, earlier, but observed that they had only now made the connections

between these ideas and their personal contribution as fashion design students towards sustainable practices. And now, owing to this studio³ based methodology, they had experienced theory and application of these concepts. Using form generation, with textile waste, they could relate to and recall the resources immediately through theories applied and activities practiced.



Figure 6: Form Generation 3

³ 'In studio based learning (SBL) the expectation is for students to iteratively generate and reimagine design solutions, communicate effectively, and collaborate with others. This establishes the studio as a dynamic place where students learn to experiment on their own, to teach and to use all studio members as resources in that search. Instructors support students as they grapple with complexity of design problem-solving through pedagogical practices that include assignments, associated meta-discussions, explicit prompts, reminders, modelling, and coaching (Cennamo et al 2011)'



Figure 7: Form Generation 4



Figure 8: Form Generation 5

Conclusion

The fashion and clothing industry is one of the biggest employers globally today. It provides for, from the most basic to the most advanced needs when seen through Maslow's Hierarchy of needs (Figure 9: Maslow's Hierarchy of Needs (Burton, 2017)).

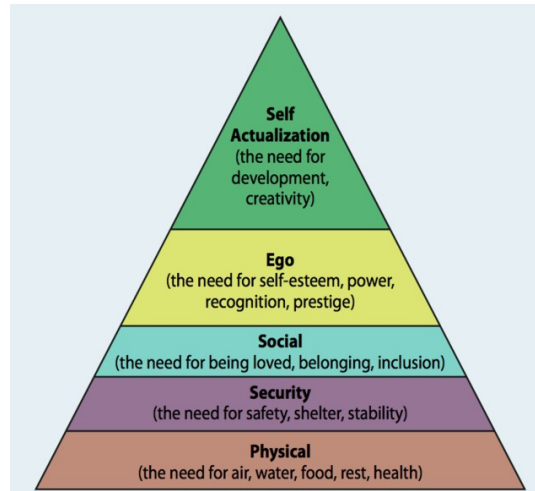


Figure 9: Maslow's Hierarchy of Needs (Burton, 2017)

With an ever growing population, globally, and in developing countries specifically, the industry is continuously expanding. This research is an attempt at an intervention right at the start of a student's journey on how to make an increasingly productive, less contaminating, progressively inclusive industry. These changes can, not only make more income for businesses but they can truly benefit the lives of millions of individuals.

This particular student group was a controlled one and met our expectations exceptionally. The intention was to encourage these students to make circular choices by the way they are taught, thus achieving some desired outcomes which may fill the gaps mentioned in what attributes were missing in the graduates *vis a vis* what employers and business expected. Due to the fact that there were no parameters for the design process to be followed, and the outcomes in terms of final product were unspecified, the students worked more responsibly, with more conviction and engaging a wider spectrum of thought. They made decisions for the garments based on how they wanted the form to function and not how it should function (Figure 10). This made them more accepting of, and open to possibilities in anything they might venture to do in the future. The process of design itself became more personal and self-directed (Figure 11).



Figure 10: Student Exploration 1



Figure 11: Student Exploration 2

Through this research the status quo has been challenged and this is paramount to subjective idealism and innovation in fashion. Using some of the more universally known theories in education, the aim is to make sustainable design, circular choices and considered fashion, integral to design education in this design school. All of the students and teachers have a role to play in the change that is to be achieved. Alternatives have to be sought to manage our waste better and this can start a dialogue about generating less waste to begin with.

Pearl Academy provides spaces in the curriculum called 'open labs', and 'immersions', starting from foundation - which is Year Zero - right through to Year Three. The intention is to use these spaces in order to engage larger groups of students, and refine the module further, and eventually integrate it into all design and production related courses including product design, interior architecture and jewellery design.

Through this module the intent was also to facilitate the student journey from me to we. As Dominique Hes and Andreeanne Doyon (2016) note in their article *Thriving, not just surviving . . .*, ‘the key is to change our attitude to development and growth, to change the story of what success looks like and the model by which we arrange our communities. This requires a shift in thinking from taking away from our world, community, economy and environment to giving to it’ (Hes & Doyon, 2016). There is a sense that this has been achieved to an extent with *the box of possibilities*, but needs more specific research in that area to confirm.

Additionally, a proposed hypothesis is that, as a by-product, but an equally important outcome, the students, our future populous, learn to question socio-cultural stereotypes of the body and its relation to fashion. This research has provided the opportunity to expand the scope of study in this area.

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