

14th National Design Education Conference 2017

Hosted by Tshwane University of Technology & Inscape Education Group

#Decolonise!

Design educators reflecting on the call for the decolonisation of education

Transforming Fashion Education to Design with Intent

Abstract

Two fundamental shifts are currently evident in design. Firstly, a growing call to integrate research and praxis is evident. Secondly, a call to move fashion design praxis to more relevant and value-adding environmental sustainable and user-centered design approaches is emerging. As such, fashion education should align itself to such shifts.

Conventionally, fashion education at fourth year placed greater emphasis on design and the making of products to culminate in a collection. This teaching and learning approach presented a number of challenges. Firstly, the design of such collections predominately grounded itself in areas such as celebrity culture and fashion trends but with no value to fashion design praxis. Secondly, a disjuncture between research and praxis was evident even though they both focussed on a common theme. This presented a gap for the authors to decolonise fashion education by transforming teaching and learning approaches at fourth year to ensure that students are educated in a manner that contribute to more meaningful and value-adding fashion design praxis.

In this paper, the authors reflectively report in a three-fold manner. Firstly, a report on the rationale for decolonising and transforming fashion education at a fourth year. Secondly, a discussion on a research foci aligning to the notion of design with intent. Thirdly, a reflective discussion on how such a research foci informs and is applied to student praxis in the educational context.

The paper begins with arguments extracted from literature to support the two fundamental calls evident in design and fashion design discourse. The paper then shifts to contextualise the conventional scope of fashion education at fourth year and justify the reasons for transformation. The authors then move to contextualise the research foci, grounded in design with intent, and how research informs student praxis by drawing on student cases. The paper concludes with some delimitations and challenges of such a teaching and learning approach.

In transforming fourth year fashion education, design with intent underpinned research, which in turn informed student praxis opposes the conventional teaching and learning strategy. As such, this paper contributes to the larger discourse to ensure fashion design praxis and education is more relevant and value adding to current situations.

Keywords: transforming fashion education, design with intent, fashion design praxis

Introduction

South African Higher Education universities adopted Westernised colonial Eurocentric epistemological academic models (Mbembe, 2016; Le Grange, 2016; Heleta, 2016) but the 2015 student protests challenged the western doctrine. As a result, South African Minister of Higher Education and Training, Blade Nzimande, called for the Africanisation of universities and the decolonisation of curriculum (Le Grange, 2016:2). But what does this mean as these are multi-modal complex phenomena with no clear meaning. Mbembe (2016:36) argues for Africanisation and decolonisation from a number of perspectives such as, access to higher learning, decolonisation of buildings and learning spaces, authoritative bureaucratic control by universities and the inclusion of "African languages at the center of its teaching and learning". Le Grange (2016:9) recommends, amongst other things, the rethinking of Western disciplines, the inclusion of transdisciplinary indigenous knowledge production and the redesign of curricular for local relevance as ways to decolonise curriculum. It is evident from these arguments that Africanisation and decolonising curricular may take different forms but for this paper, the authors follow Garuba's (2015) approach of rethinking theories and methods that underline the framing and transformation of curricular. By following this approach, the authors attempt to address the call for decolonisation by transforming curricular through rethinking theories and teaching and learning methods, in order for it to align with fundamental shifts occurring in design landscapes.

This paper therefore starts by presenting a shift in design praxis and education and moves on to present the application thereof through two student projects. The paper then concludes with reflections, delimitations and challenges of the projects and the new teaching and learning approach which commenced in 2016.

Shifts in fashion design praxis and education

Two fundamental shifts are currently evident in design. Firstly, a growing call to integrate research and design praxis, in general, is apparent. Secondly, a call to move fashion design, in particular, to more relevant praxis that should add value to environmental sustainable and user-centered design (UCD) approaches. To underpin our thinking, we draw on arguments extracted from literature to support these two fundamental calls.

Giacomin (2014:607-608) reasons that design today is characterised and practiced under three distinct paradigms and values, namely that of technology driven design (TDD), human centered design (HCD), also known as known as UCD, and environmentally sustainable design.

Historically, as a result of the industrial revolution, design in general practiced under the TDD paradigm focussed on the designer and their expert knowledge in shaping material products (Krippendorff, 2006; Sanders & Stappers, 2012). As such, this paradigm saw designers practicing as the expert, guru and lone-genius (Krippendorff, 2006; Sanders & Stappers, 2012). The TDD movement, or commonly known as the market driven paradigm, dominated the 1980s during which time autonomous designers were primarily responsible for the design of material products from their expert lens. Thus, designers did not "explore what to design" but rather concentrated on "how to design what the client asked for" (Sanders & Stappers, 2014:27). For this reason, in the 1980s, the TDD movement was rife with market research, design was practiced as 'for people' and the marketplace acted as the context of use (Sanders & Stappers, 2014:26-27). As a result, the TDD paradigm bore witness to trained market researchers studying people as subjects by observing and surveying them (Stappers & Visser, 2007; Sanders & Stappers, 2008) but researchers and designers assumed two very different roles (Sanders & Stappers, 2012:23). This meant that a TDD praxis saw research and design as two separate entities because trained researchers gathered information about people and transferred this to expert designers who then designed for people (Stappers & Visser, 2007:1). This expert designer lens meant that design was approached from what Muratovski (2016:xxx) refers to as an "inward-looking practice" and manifested in a "form of personal self-expression". Although the TDD movement may have dominated design, two fundamental shifts are evident in general design praxis.

The first shift is the call to integrate research and design to inform praxis (Crouch & Pearce, 2014; Sanders & Stappers, 2014; Muratovski, 2016). When design is driven by research, Muratovski (2016:xxx) calls this an "externally-driven process" because the designer first identifies and defines a problem which in turn informs the design of creative solutions. In this situation, design is driven by systematic and scientific research and not by an in-ward looking practice were style, intuition, artistic practice and personal self-expression is core (Muratovski, 2016:xxx; 10). In other words, designers should assume the role of a researcher and research should then inform praxis.

The second shift is that design landscapes are changing with a growing call to move design practice away from TDD to HCD and sustainable design paradigms (Krippendorff, 2006; Fry, 2009; Sanders & Stappers, 2012; 2014). Despite these calls, several scholars (Joy, Sherry, Venkatesh, Wang, & Chan, 2012; Pookulangara & Shephard, 2013; Welters, 2015; Fletcher, 2015) confirm the fashion design praxis remains grounded in a TDD paradigm and supports the culture of overabundance, conspicuous consumption, fast fashion and unsustainable environmental practices. As a counter argument, several scholars are rejecting fast fashion and traditional forms of TDD practice and argue for change and a move towards UCD approaches such as co-design and environment sustainable approaches in fashion design praxis (Clark, 2008; Fletcher, 2008; Fletcher & Grose, 2012; Walker & Giard, 2013; Fletcher & Tham, 2015; Hethorn, 2015; Peterson, 2015). Environment sustainable approaches to fashion praxis can be viewed from different angles, for example: the move from fast to slow fashion, the use of organic materials, zero waste and re-use to redesign. Co-design, also known as participatory design, is an approach to HCD (Sanders & Stappers, 2008; Steen, 2011).

Sanders & Stappers (2012:30-31) argue that co-design is a mind-set or a worldview that changes the way that design and development processes are seen and approached. To implement such a form of design praxis, designers will have to place people (users) and their needs, desires, experiences, capabilities and behaviours as the nucleus for design (Marti & Bannon, 2009; Keinonen, 2010; Norman, 2013; Giacomin, 2014). The result is that people and their voices are the sources of inspiration (Sanders & Stappers, 2014:29) as opposed to, for example: secondary visual images, muses and travel experiences. In co-design, users, as non-designers, are joint, co-operative and active partners to provide expertise and participate early in the design process, as opposed to them being merely passive subjects to be studied (Sanders & Stappers, 2008; Sanders & Stappers, 2012). HCD proponents (Sanders, Brandt & Binder, 2010; Steen, 2011; Wilkinson & De Angeli, 2014) claim that real users of products are the experts of tacit knowledge as opposed to the expert designer. For this reason, participation of users early in the design process eradicates the need for designers to draw on their personal knowledge, skills and attitudes as drivers in the design outcome (Wilkinson & De Angeli, 2014:615). Therefore, designers should not adopt an in-ward looking approach to praxis.

It is evident from the aforementioned discussion that a growing call to integrate research and design in order to inform design praxis is evident. Beyond that, the design landscape in general, including fashion design, is shifting with many voices beckoning a move away from the TDD paradigm to alternative thinking and approaches to praxis that adds value to social and environmental needs. If this is the situation, then surely fashion design education should align itself to such shifts. The problem is that by enlarge fashion education, follows a model of design education where students are encouraged to self-express, develop personal style and rely on intuition and are taught to apply design principles such as line, texture, proportions and harmony with aesthetics and taste (Muratovski, 2016:xxix-xxx). In other words, an inward-looking practice to education is fostered. If fashion education has to align itself with the two fundamental shifts occurring in design landscapes then educational design philosophies and teaching and learning strategies should change. As such, the authors aimed to transform the design philosophy and teaching and learning strategies to align with such movements in design praxis.

A change in thinking about application to fashion education

Conventionally, fashion education at fourth year (in particular the BTech Fashion programme), placed greater emphasis on design and the making of products to culminate in a collection. This teaching and learning approach presented a number of challenges. Firstly, the design of such collections predominately grounded itself in areas such as celebrity culture and fashion trends but with no value to fashion design praxis. Secondly, a disjuncture between research and praxis was evident even though they both focussed on a common theme. It is in this gap that we started to consider a decolonised approach in fashion education at fourth year level, by transforming teaching and learning approaches to ensure that students are educated in a manner that contribute to more meaningful and value-adding fashion design praxis.

The BTech Fashion programme consists of three interrelated modules. The investigation in the Theory of Clothing module (the research aspect) in particular, has to inform the design praxis in the Specialized Clothing Technology module. In the past, students were encouraged to select their own topic of enquiry, but this resulted in students occasionally selecting topics that seemed to be meaningless and not really adding value to the discourse of the discipline. Thus a change of approach and a research foci aligning to the notion of design with intent was suggested for the 2016 cohort based on two doctoral studies in the Department, one of which focussed on environmental sustainability in the South African fashion industry and one study, in progress, where HCD is considered as an approach to fashion design education.

With the change in approach and research foci the projects were to focus on one aspect of environmental sustainability in the industry, and to consider a more human-centered approach in design as opposed to the lone-genius approach. A framework, as presented in Figure 1, was created to assist students with developing a research focus for their BTech project.

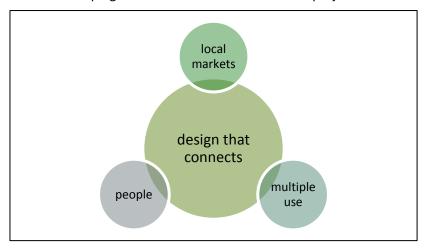


Figure 1: Project focus framework for 2016 (developed by authors)

In addition to the above framework, students were urged to look deeper into issues that concerned the above. In the people category aspects such as *doing things differently, lifestyle, human needs* and *social needs* were suggested. Aspects that informed the multiple-use category included *Cradle-to-cradle-apparel-design (C2CAD)*, *continuous loop* and *lifecycles*. For the category local markets, aspects suggested were *by, for* or *with* local markets. Within this framework, students were able to craft their own projects. The 2016 cohort consisted of five candidates who developed the projects presented in Table 1.

Table 1: 2016 BTech Fashion cohort

STUDENT	CATEGORY SELECTED	FOCUS OF PROJECT
Α	People and multiple use	Trans-seasonal collection Functionality
В	People and multiple use	Multi-functional modular collection, predominantly made from organic fabrics
С	Local markets	Organic fabrics and using local crafters
D	Local markets and multiple use	Collecting waste fabric from various regional manufacturers for her collection. The fabric cost of this collection amounted to R500.
E	Local markets	Using a local crafter to inform product development

From the above, the cases selected for this paper are based on the work of student A and student B because these two projects specifically focussed on including users in the design development process. The two projects will be discussed in relation to the approach taken in the project, the research design for the project, and significant findings from the data collected.

#1: Under Construction by student A

The aim of Student A's project was to demonstrate that through applying HCD principles, a functional multi-purpose garment collection could be developed. Due to her own background as a former architecture student, Student A opted to focus on architects, who need to work both in office and on site, as the context in which the collection was to function. Literature on, HCD and aspects of functional clothing as suggested by Gupta (2011:231-327), informed the research. These comprised of a consideration of psychological, physiological, biomechanical and ergonomic aspects, and how it could best be applied in multi-functional and trans-seasonal clothing. Fletcher and Grose (2012:78) suggest that multi-functionality in clothing provide, in a positive way, a strong relationship between wearer and product and, in a negative way, a misunderstanding of the use of the product and could thus not be a sustainable solution due to over-consumption. Multi-functionality does provide a change in mind-set to the wearer (Fletcher & Grose, 2012:79). However, trans-seasonal, provides clothing that can be worn through various seasons, can reduce clothing consumption and, by implication, be considered a sustainable solution (Fletcher & Grose, 2012:79-80; Moshoeshoe, 2016:7).

A's project followed a case study research design and a co-design approach The participants of the project were three final year architecture students from a higher education institution in Gauteng who had both studio time and compulsory site visits, and thus mimicked the actual architectural work environment. The research design consisted of three phases. In phase one, initial semi-structured interviews were held with the group to determine users' needs. As a former architectural student, Student A began phase one with a lone-genius mind-set assuming that the participants required multipurpose clothing to carry their equipment to site visits but the analysis of findings showed that this was not the case. This informed phase two where participants were re-interviewed in order to establish their needs and provide solutions to current clothing concerns. The data reflected three areas that were of concern by the participants. The first was safety at site visits and thus participants preferred garments or colours that would necessarily attract attention. The second was that garments should preferably have hidden pockets to store valuable items, and thirdly, garments should have components that could be detachable. Findings of phase two also indicated that there was a need to adjust current styles to accommodate protection from heat, rain and cold (Moshoeshoe, 2016:14).

These research findings informed phase three (integration of praxis and research) with Student A designing a collection of products that could be, in her interpretation, trans-seasonal. The design collection included the following (Moshoeshoe, 2016:15):

- Comfort: specifically considering the type of fabric to be used
- Colours: Use of predominantly neutral colours

- Textures: Versatility of fabric textures
- Fabric choice: Should have protective characteristics with regard to weather
- Functionality: Clothing needed to be functional
- Practicality: Clothing needed to be practical
- Specific design features: Clothing needed pockets, hoodies and zips



Figure 2: Work of Student A (designer), E Hön (photographer), FADA Facebook page, 2017.

To integrate research and design, in phase three prototypes were evaluated by participants, in terms of protection against the elements, multi-functionality in terms of clothing reversibility, selected design features, and colour and fabric choices made by the designer (Moshoeshoe, 2012:11;15). In general the participants were happy with the design decisions Student A had made. This integration of primary research to inform design and users involvement shows that a co-design approach was applied in the early and latter stages of the design process.

However, upon reflection, Student A felt that she should have evaluated prototypes in the field in order to establish if the clothing was appropriate for the context of use, but due to time constraints this was not possible. She also considered not having included the participants throughout all stages of the design process a negative to her study and mentions, "in that way both parties learn from each other and exchange design processes from their respective academic fields of study" (Moshoeshoe, 2016:22). She mentions that the BTech experience and approach was enriching to design for a need and mentions how "rewarding it is to design with a purpose" (Moshoeshoe, 2016:22).

#2: Morphosis by student B

The aim of Student B's research was to investigate whether there is interest in a modular perspective of multi-functional garments. Due to proximity of participants, she opted to collect data from students at a higher education institution in Gauteng. The objective of her project was to consider students' suggestions in order to inform the design of products (McAlpine, 2016:3). As with Student A, she largely focussed on the writings of Fletcher and Grose (2012) with regard to multi-functionality in garments and whether this approach could be considered sustainable or not.

Fletcher and Grose (2012:79) specifically refer to the rigours of restraint as a strategy to reduce environmental impact which requires a different approach to design and use of the garment (McAlpine, 2016:11-12). Student B argued that a modular approach in design provides the wearer with opportunity to change and adapt for different occasions and provides a possible new strategy to consume products. Modularity also provides an opportunity to change garments for different seasons, thus being trans-seasonal (McAlpine, 2016:13). Modular clothing allows for the wearer to change and interchange the different styles in their wardrobe and, by doing so transform themselves (Fletcher & Grose, 2012:82; McAlpine, 2016:12-13). As suggested by Fletcher and Grose (2012:82), Student B reasoned that the most challenging of such an approach is to change the shapes and silhouette of a garment (McAlpine, 2016:14-15).

Student B's research design also followed a case study approach with snowball sampling comprising of three participants. This study took a two phase approach, where the first phase consisted of gathering data through semi-structured interviews with the participants. Through a method of colour coding five themes were identified, namely, sustainable lifestyles, challenges of sustainable lifestyles, dressing time constraints, preferred sustainable fashion stores, and multifunctional garments (McAlpine, 2016:25). The findings from the data informed the design and development of prototypes that specifically focussed on changing shapes and silhouettes through careful consideration and usage of zip details (McAlpine, 2016:36-43).

Phase two then set out to evaluate whether or not the prototypes addressed the participants needs and suggestions regarding multi-functional modular clothing. The zip detail in particular was highlighted as a successful strategy to achieve multiple silhouettes and shapes.



Figure 3: Work of Student B (designer, photographer) 2016

On reflection, even though having developed a very successful collection, McAlpine (2016:49) mentions that although multi-functional modular garments could be an approach to address environmental unsustainability, the cost thereof was above that of participants' and therefore provided a somewhat disjuncture between the objectives and the results of the study. She also reiterates that that environmental sustainability provides an intensely multi-faceted design challenge (McAlpine 2016:49-51).

From conventional to alternative

We conclude this paper with some delimitations and challenges of such a teaching and learning approach through a reflection on the design framework (Figure 1) provided to students and by reflection on how research is starting to inform and enrich the design process. The decision to (almost) force the students to consider current issues in design instead of allowing only a creative approach has actually enhanced creative ability of the 2016 BTech Fashion cohort. Not only did the projects reflect serious engagement with current challenges with regard to environmental sustainability and shifting design praxis, it also delivered highly creative projects that showed a deeper level of thinking and reasoning about fashion design. This aligns to one of the focus areas of the BA Fashion Design programme that started in 2017, namely – design with intent.

In a market saturated with mass produced clothing it has become necessary for fashion designers to be able to contribute innovative design to society that hold the possibility of social, socio-economic and environmental development. Design with intent in this context therefore relates to socio, economic, environmental development and change. This is possible only if fashion designers can identify and understand end-users needs of products, services or systems, and are then able to put into context the required research. Included in design with intent are the design and technological practice required to be able to transform a concept into a workable (functional and desirable) design solution. As Fletcher and Grose (2012:156) suggest:

As more designers begin to populate other sectors of the economy, totally new patterns of designing, of consumption and of behaviour are likely to evolve, for the range of issues and information that designers become exposed to is much broader than can be afforded through the simple lens of business and the market, and this inevitably informs practice.

The framework presented in Figure 4 was adapted for the 2017 cohort, to assist students to get to their focus a lot faster.



Figure 4: Project focus framework for 2017 – work in progress (developed by authors)

The above figure is a 'play' wheel that consists of three movable layers. Layer one is the mind-set of the study/student which requires that the project is approached from a particular point of view, either as entrepreneur, as story tell, as activist or as educator. Two examples are provided for clarification on the use of the tool. Students then need to consider a particular focus and then develop a research topic within the two suggested frameworks.

Table 2: Suggested projects that align to the new framework

	APPROACH	FOCUS	FRAMEWORK
EXAMPLE 1 Multi-functional modular low cost wardrobe.	Designer as entrepreneur	Focus of the project is on substitution and alternate processes	Tipple Bottom Line
EXAMPLE 2 What do I design for disabled people	Designer as activist	Focus of the project is design with disabled users	HCD

In example 1, a student could take an entrepreneurial approach to the project that aims to focus on environmental consciousness and a transformative approach as a result of a multi-functionality modular wardrobe within a specific cost framework. In the case of example two, the student could take on a designer as activist approach with a project that aims to focus on designing with disabled people as per their clothing needs, goals and preferences. In this project, the student will follow a HCD approach.

Reflecting on the 2016 BTech cohort, changing student mind-sets to systematic and empirical research that informs praxis was a challenge of such a teaching and learning approach. Traditionally, for students, research was about literature surveys and the collection of secondary visual images. It was difficult to move students away from what they perceived as research to a point where research was systematic, scientific and empirical. Students were also inclined to follow an in-ward looking approach where the designer as lone-genius, intuition, artistic practice, aesthetic and personal self-expression, were core drivers for fashion design praxis. As such, the challenge was in changing student mind-set from an in-ward looking approach to an externally-driven approach, where research informed praxis to add value to more people-centered and environmental sustainable design contexts. Nevertheless discussions presented in this paper, show that it is possible to address such an approach through transformation by rethinking underpinning theories about fashion design, alternative approaches to praxis and teaching and learning methods as way to decolonise the approach to fashion design education.

References

Clark, H. (2008). Slow + fashion – an oxymoron – or a promise for the future ...? Fashion Theory: The Journal of Dress, Body & Culture, 12(4):427-446.

Crouch, C. & Pearce, J. (2012). Doing research in design. London: Berg.

Fletcher, K. (2008). Sustainable fashion & textiles: Design journeys. United Kingdom: Earthscan.

Fletcher, K. (2015). Other fashion systems. In *Routledge handbook of sustainable fashion*. Edited by Fletcher K. & Tham, M. New York: Routledge.

Fletcher, K. & Grose, L. (2012). *Fashion & sustainability: Design for change*. London: Laurence King Publishing.

Fletcher, K. & Tham, M. (Editors). (2015). *Routledge handbook of sustainable fashion.* New York: Routledge.

Fry, T. (2009). Design futuring: Sustainability, ethics and new practice. Oxford: Berg.

Giacomin, J. (2014). What is human centered design? The Design Journal, 17(4):606-623.

Garuba, H. (2015). *What is an African curriculum?* Accessed 28 June 2017. Available from: http://mg.co.za/article/2015-04-17-what-is-an-african-curriculum/

Gupta, D. (2011). Functional clothing – definition and classification. *Indian Journal of Fibre and Textile Research*, 36(4), 321-327.

Heleta, S. (2016). Decolonisation of higher education: Dismantling epistemic violence and Eurocentrism in South Africa. *Transformation in Higher Education,* 1(1), a9. http://dx.doi.org/10.4102/the.v1i1.9

Hethorn, J. (2015). User-Centered innovation: Design thinking and sustainability. In *Sustainable fashion what's next?: A conversation about issues, practices and possibilities.* 2nd edition. Edited by Hethorn J. & Ulasewicz, C. New York: Fairchild Books, Bloomsbury Publishing Inc.

Joy, A.; Sherry Jr, J. F.; Venkatesh, A.; Wang, J. & Chan, R. (2012). Fast fashion, sustainability, and the ethical appeal of luxury brands. *Fashion Theory: The Journal of Dress, Body and Culture,* 16(3):273-295.

Keinonen, T. (2010). Protect and appreciate - Notes on the justification of user-centered. *International Journal of Design*, 4(1):17-27.

Krippendorff, K. (2006). *The semantic turn: A new foundation for design.* New York: Taylor & Francis Group.

Le Grange, L. (2016). Decolonising the university curricular. *South African Journal of Higher Education*, 30(2):1-2.

Marti, P. & Bannon, L. J. (2009). Exploring user-centred design in practice: Some caveats. *Knowledge, Technology & Policy*, 22:7-15. doi: 10.1007/s12130-009-9062-3.

Mbembe, A. J. (2016). Decolonizing the university: New directions. *Arts & Humanities in Higher Education*, 15(1):29-45.

McAlpine, M. (2016). The viability of multifunctional garments student leading environmentally sustainable lifestyles. Unpublished BTech report. University of Johannesburg, Johannesburg.

Mosheosheo, K. (2016). How that user-centred approach be used to design multifunctional clothing to protect architecture students from weather elements. Unpublished BTech report. University of Johannesburg, Johannesburg.

Muratovski, G. (2016). *Research for designers: A guide to methods and practice.* Los Angeles: SAGE Publications Ltd.

Norman, D. (2013). *The design of everyday things.* Revised and expanded edition. New York: Basic Books.

Peterson, D. (2015). Social media as a tool for social change. In *Sustainable fashion: Whats's next? A conversation about issues, practices & possibilities*. 2nd edition. Edited by Hethorn J. & Ulasewicz, C. New York: Fairchild Books.

Pookulangara, S. & Shephard, A. (2013). Slow fashion: Understanding consumer perceptions: An exploratory study. *Journal of Retailing and Consumer Services*, 20(2013):200-206.

Sanders, E. B. N., Brandt, E. & Binder T. (2010). A framework for organizing the tools and techniques of participatory design. Conference proceedings of the 11th Biennial Participatory Design Conference held in Sydney, Australia.

Sanders, E. B. N. & Stappers, P. J. (2008). Co-creation in the new landscapes of design. *CoDesign*, 4(1):5-18.

Sanders, E. B. N. & Stappers, P. J. (2012). *Convivial toolbox: Generative research for the front end of design*. Amsterdam: BIS Publishers.

Sanders, L. & Stappers, P. J. (2014). From designing to co-designing to collective dreaming: Three slices in time. *Interactions*, November – December:24-33.

Stappers, P. J. & Visser, F. S. (2007). Bringing participatory techniques to industrial design engineers. Conference proceedings of the 9th International Conference on Engineering and Product Design Education held in Newcastle. Conducted by the University of Northumbria. United Kingdom: University of Northumbria.

Steen, M. (2011). Tensions in human-centred design. *CoDesign*, 7(1):45-60.

Walker, S. & Giard, J. (2013). *The handbook of design for sustainability*. London: Bloomsbury Publishing Plc.

Welters, L. (2015). The fashion of sustainability. In *Sustainable fashion: Whats's next? A conversation about issues, practices & possibilities.* 2nd edition. New York: Fairchild Books.

Wilkinson, C. R. & De Angeli, A. (2014). Applying user centred and participatory design approaches to commercial product development. *Design Studies*, 35(6):614-631.

Work of Student A (designer). 2017. FADA Facebook page. [O]. Available:

https://www.facebook.com/FADAgallery/photos/ms.c.eJxFz9sNBDEIA8COTryCcf~ NnZYk5HdkDKgvd S2Wpsjy9dMDCLpXcoBlCRM5wLAPdGEge8ReokujbilX9UjohbRO4IF0h~ QF7ETqgy8BxkBssAuF3qIPu GEO4~ 7A6TCRXovMgX5OiD~;L7joO.bps.a.1351318874933879.1073741905.483437868388655/135 1318981600535/?type=3&theater. Accessed 21 May 2017.

Work of Student B (designer). 2017. The viability of sustainable multifunctional garments for students leading environmentally sustainable lifestyles. BTech report, University of Johannesburg, Johannesburg.