Photography Education in Resource-Constrained Contexts:
Exploring the Potential of Mushfaking

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ABSTRACT

The history, development, products, and impact of image-making are well-represented in literature. The literature looks extensively at the technological developments and advancements in the field and how photography has contributed to our understanding of historical, political and social tensions. However, the training and preparation of photographers has received less attention in the literature, particularly in photography education in resource-constrained contexts. This paper seeks to present mushfaking as a conceptual framework that addresses the multi-literacies required in photography education. This approach uses inexpensive solutions to aid digital photography's teaching and learning process. Mushfaking is offered as a learning design tool for practice-based teaching and learning. The paper aims to offer a new dimension on how mushfaking can be used as a learning design principle to show how this concept could bring theory and praxis together, facilitating the design of context-based solutions to educational problems.

KEYWORDS

Digital Literacy, Digital Pinhole Photography, Multi-Literacies, Mushfaking, Pedagogical Principles, Photography Education

INTRODUCTION

"Teaching photography… lies in the value of growing a community of thinking, literate, and visually literate people, who aim to understand the world we live in and the imagery around us in relation to histories and contexts both local and global" (Svea Josephy, in Bogre, 2015:18).

The history and technological evolution of image making is well documented by, amongst others, Guggenheim Museum (1996), Bell, Enwezor, Zaya and Oguibe (1999), Clarke (1997), and Edwards

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(2006). Unfortunately, the same cannot be said for the teaching of image making, where a scan of the literature that engages with the scholarship of teaching and learning in art and design within the South African context provides scant evidence of previous research with a focus on pedagogical strategies for digital photography education within a resource constrained Higher Education (HE) context. Instead, academic literature on photography in the South African context tends towards documentation of political and social tensions (Krantz, 2008; Newbury, 2009; Thomas, 2018) and ethical concerns emanating from how this documentation occurs (Hendricks & Kajiita, 2021). In the HE context, much academic writing around photography education is mostly imported from the 'Global North', and gravitates around photographic theory, and the advancement of photographic technology as a tool for educational enquiry. The same is true for South African HE, where there is a growing focus on photography as a teaching tool in various disciplines (Childs, 2016), or using diverse photographic techniques for research purposes (Schulze, 2007; Mitchell, Weber & Pithouse, 2009). As such, photography is mostly used as a supplement to various course objectives or research activities in diverse fields of study reinforcing knowledge and gathering evidence. However, there are very few studies that investigate the education of the photographic medium as an artistic practice (Abrahmov & Ronen, 2008). Additionally, most of the digital photographic lexis we use to talk about digital photography arises from the analogue era[1] and is not always appropriate for contemporary photographic techniques.

In this paper, we seek to fill this gap by presenting a conceptual approach to facilitating the teaching and learning of the written and visual language of digital photography within a resource-constrained environment at a selected South African university. We do this by asking how the construct of mushfaking in digital photography education can support the mastery of multi-literacies which are required for digital photography. The concept of mushfaking – which refers to the creation and use of language and available tools in resource-constrained spaces – is used to frame our approach by allowing for the integration of theory and practices towards the development of student multi-literacies. For this paper, multi-literacies are understood in a broad sense. Drawing on the work of the New London Group, multiliteracies are thus viewed as a methodological tool for literacy in modern teaching and learning situations with limited resources. The continuous balancing of photographic theory, practice, and digital literacy abilities is necessary for digital photography education. We first outline challenges within the context of the study related to teaching photography, followed by a literature overview of photography education. We then present our lens – mushfaking – and its potential for addressing some contextual constraints, followed by the learning design intervention: digital pinhole photography.

CONTEXT OF THE STUDY

South African HE, where this conceptual study is located, is still reeling from its apartheid and colonial past. These historical systems were enabled by deep segregation along racial lines, resulting in educational and economic disadvantages accruing to the majority black population. Prior to independence, universities, schools, businesses and communities received government funding or support depending on the racial populations they served. Transformation efforts over the last almost three decades since the country's independence in 1994 have resulted in the opening up of physical access to universities for students from historically disadvantaged communities and schools. However, despite these positive strides, the tentacles of the country's damaging historical legacies continue to entangle these students as they struggle to access the culture, epistemologies and resources required for academic success. The students may encounter barriers to digital access ranging from a lack of devices and Internet connectivity to a lack of digital skills (Blaj-Ward & Winter, 2019). These issues may compromise students' ability to navigate, evaluate and create information using a range of digital technologies effectively and critically.

The specific university where this conceptual study takes place has strongly positioned itself in the technology space as a leader in transforming teaching and learning practices in line with the 4th Industrial Revolution. As such, there is a strong drive within the institution to not only equip learning spaces with appropriate learning technologies, but to also capacitate academic staff to effectively teach in these spaces. As such, there is a strong assumption by stakeholders that the university's campuses are digitally equipped and well-connected (Blaj-Ward & Winter, 2019; Gourlay, 2015). However, the available digital equipment (focusing on learning technologies) does not always fulfil the needs of a resource-intensive photography module and the students enrolled in that course. There is a lack of adequate photographic technical teaching resources required to engage with digital photography education, including an inadequate number of computers to accommodate the class and computer labs that have outdated and inadequate photo editing software, as well as computing devices that do not support or have the suitable input/ output (I/O) devices to communicate with the existing and new hardware to enable reading, transfer and writing of data.

This paper focuses on a digital photography study unit at the university that is part of a visualisation module for first-year multimedia and graphic (communication) design students (see Figure 1). The photography study unit is one of three that comprise the visualisation module. The visualisation module is one of six that make up the first year of study for a degree in digital media design or graphic (communication) design (Faculty of Art, Design, and Architecture rules and Regulations handbook). Currently, students in the multimedia and graphic design departments share the same visualisation module but do not have the same access to teaching staff and digital photography teaching equipment. Students enrolled for the Multimedia and Graphic design programmes of study are required to make use of Digital Single Lens Reflex Cameras (DSLRs) as a tool of the trade in conjunction with Web 2.0 technologies in the making of digital photographic images. The use of digital technologies requires digital literacy (McIntyre, 2014) and multilingual literacies (Janks, 2010).

The goal of this paper is to present a pragmatic approach to introducing the complex multi-literacies required in photography education, while working with varied contemporary photographic tools which include Web 2.0 and Industry 4.0 (4IR) technologies to support student learning (Zakia

Figure 1. Photography study unit within the larger module and programme
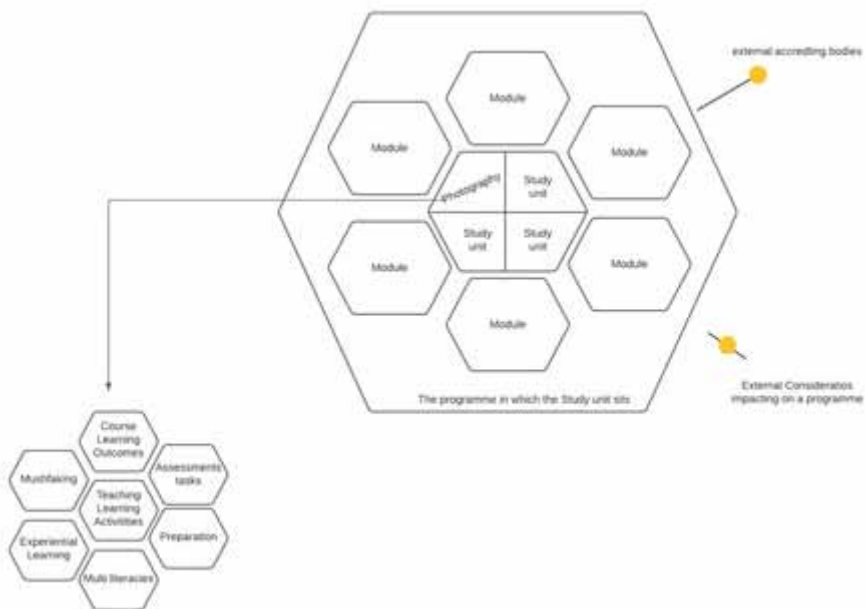
et al 2006:303). The concept of mushfaking is offered as an instructional tool that might potentially provide a beneficial framework for integrating multi-literacies for a digital photography course in a resource-constrained environment. Although the university espouses 4IR practices in teaching and learning, the existing resources do not adequately cater for the teaching and learning requirements of students and teaching staff. We therefore explore the potential of mushfaking as an underlying learning design principle to be utilised as a tool to overcome the above structural constraints. If the design of the learning opportunity were to attempt to mitigate the existing resource challenges, this would help to re-imagine the use of the existing photographic tools and available software and hardware. We believe the learning opportunity could expose students to experiential teaching and learning by allowing students to explore the five descriptive characteristics (Szarkowski's, 1966) of photography in a practical way.

PHOTOGRAPHY EDUCATION

For the practice of photography, a comprehension of Szarkowski's (1966) five descriptive characteristics of photographic images is necessary. According to Szarkowski (1966), photographs include five descriptive properties: 'the thing itself,' 'the detail,' 'the frame,' 'time,' and 'vantage position' (Szarkowski, 1966; Wells, 2003:466; la Grange, 2013). Szarkowski defines the five characteristics as first describing the physicality and tactility of the photographic image, secondly describing the content of the photographic image, or what the actual viewer of the photographic image sees, and finally referring to what the viewer of the photographic image confers in meaning beyond the mere descriptive explanation.- the descriptive features that go beyond the descriptive explanation. While the discourse of the five descriptive characteristics of photography is critical to how we see photographic images, the decoding of the photographic image relies on understanding photographic images as visual text. Hence, in photography education, photographic images are represented as both visual texts and written language. We bring who we are and where we come from to the processes of production and reception of spoken, written and visual texts (Janks, 2010). It is what Barthes (1981) calls the co-existence of two messages, the one without a code (the photographic analogue), the other with a code - the 'art', or the treatment, or the 'writing', or what Mitchell (1994) terms the rhetoric of the photograph. Janks, Mitchell, and Barthes all highlight the complex multi-modality of photography education, research, theory, and practice.

Visual literacy, as the opening quote shows, illustrates a critical aspect of photography education, allowing educators to develop students whose photographic knowledge is embedded in the contexts and histories of the world they live in (Bogre, 2015). As such, photography education needs to move beyond its confines of transmitting technical and practical skills and knowledge (Brown, 2011; Newbury, 1997) and seek to consider the delicate balance between visual literacy, visual communication, and technical proficiency (du Toit and Gordon, 2007). Visual communication refers to the act of conveying information through the use of visual language, whereas visual literacy in this context primarily refers to the capacity to comprehend, negotiate, and create meaning from information supplied in the form of an image (Kress & Van Leeuwen, 1996). This shows the importance of developing reflective practice in future photographers. However, this reflective practice is not easy to develop in students as there are conflicts between what the student expects – "immersion in practice" – and "the distancing necessary for reflection to take place" (Brown, 2011: 4; Newbury, 1997).

Photography educators have reflected on how they strive to develop this reflective professionalism, even at beginner level. Du Toit and Gordon (2007) developed a programme that challenged students' understanding of visual culture and guided them to critically reflect and communicate through photography. Creative self-expression was also a key element of the photographic exercises outlined by Siegle (2012), which included both discussions about photography as well as game-based photography. Siegle (2012) contends that the use of digital cameras was advantageous for the students as analogue cameras would have been expensive to develop. Macdonald (2012) discusses the

importance of traditional analogue photography and darkrooms in providing students with foundational and transferrable skills that they will use for digital photography. In an effort to develop students' visual literacy, they outline several both individual and collaborative activities for their students. They understand visual literacy as the ability to read and write photographs – where reading refers to "an active and complex comprehension of relationships and the assignation of meanings, as well as the exploration of the interaction between the reader and the image" (Abrahmov & Ronen, 2008:4).

In HE, basic photography education has traditionally taken place in predominantly practical courses, where photographic skills are learnt by shooting, developing and printing black and white images using analogue photographic techniques and materials (Abrahmov & Ronen, 2008). The evolving demands of an artform/industry that has migrated from analogue to digital and continues to develop presents unique resourcing challenges for a department with a large enrolment but limited funds that seeks to deliver a relevant digital photography curriculum. What is similar with the authors that attempt to tackle photography education is their recognition of the rapidly changing photographic technologies and their pertinent questions to readers about how they will use, leverage or be stuck in the romance of outdated photographic technologies (Abrahmov & Ronen, 2008 ; Smith & Lefley, 2015; Bogre, 2014; Rand & Zakia, 2006).

Central to our argument is that mushfaking can be used in a digital photography education teaching and learning scenario within resource constrained environments We do this by suggesting physical constraints can be used as a tool for teaching the fundamentals of photography. We draw on Sean Perry's comments from his photography fundamentals class at Austin Community College in the United States, who questioned what kind of teaching resources are required to provide a conducive environment for the implementation of experiential learning tasks and assessments that promote critical thinking skills (Perry, 2006 as cited in Zakia et al 2006: 303). Perry goes on to say that students have

…one camera, one lens, and single type of black and white film, there are no flash units or tripods. Within these limitations a beautiful phenomenon occurs in which the distance between emotion and the final image is reduced. Free from the fog of unnecessary choices, these students enjoy a more intimate relationship with their subject. A limited choice of tools increases the probability of making a successful image. They have given themselves a better chance to be lucky, to be in the moment (Zakia et al 2006:303).

For Perry the conscious decision to limit the resources is similar to bricolage (and by extension mushfaking), for his students to experience the fundamentals of teaching and learning photographic theory and praxis. However, for this paper the idea is not about creating limitations, but rather acknowledging and working with existing limited resources to create engaging and meaningful photographic images.

The design of the learning opportunity as an intervention as discussed in this paper is informed by creating and integrating a series of multimedia artefacts in the delivery of a technology-supported digital photography course. The multimedia artefacts are intended to complement a face-to-face experiential learning drawing on Kolb's four-stage experiential learning model, that fosters a "learn to be a professional" as a graduate attribute. Furthermore, we attempt to critically examine the perception of the role of digital photographic education as a transformative process, where we refer to photography as a medium that transforms light to images and the reading of images as a constant transformation of idea to artefact (Bogre, 2014: 12). The production of the photographic artefacts has the potential to promote transformative learning to foster students who are socially and culturally aware, using a mix of inexpensive solutions. Potentially transformative learning can take place during the creation of photographic images which have the ability to give meaning to the common practice of teaching and learning. Because a photographic image is the end product of photographic practice, the resultant image becomes an artefact in which the linguistic, visual, auditory, gestural, spatial, and kinaesthetic modalities of meaning are a multimodal representation of the modern world.

LITERACIES AND MUSHFAKING

In this paper, we present an approach to re-designing a digital photography course within a resource-constrained environment. In the context of this paper, the resource constraints include students' ability to access Digital SLR cameras (DSLR), and access to adequate personal computing devices such as a laptops or desktop computers. The personal computing devices allow for digitising, archiving, and editing photographic images with software appropriate to photo editing.

An understanding of what literacy is in the context of this paper and how it relates to disciplinary knowledge is critical to foreground mushfaking. Literacy has traditionally been understood as the ability to read and write. However, several other literacies have been recognised and acknowledged over the years, including academic literacy, digital literacy, and visual literacy. Additionally, the singular term 'literacy' has become less popular with the argument that within the reading and writing domain, there are multiple sets of practices that the student needs to learn to become proficient – hence the shift to the plural literacies. According to Cope and Kalantzis (2009), plural literacies include the multilingual and multimodal "multi" dimensions of "literacies." In the context of this paper, the plurality of literacies takes into account digital literacy abilities, photography practice, and the theory that supports reading of photographic images. Our interest is in written text, visual literacy, and its intersection with digital literacy. As mentioned earlier in the paper, visual literacies refer to the ability to both read and write images – which relates to capturing and communicating photographs (writing) as well as interpreting and critiquing (reading) other people's photographs based on some pre-defined or pre-conceived criteria or understanding. Hence visual literacies cannot be seen as one literacy to be developed, but rather as a set of multiple literacies that the professional photographer needs to attain.

In addition, there are subtle differences between reading written text and visual text. Kress and van Leeuwen (2006) propose a semiotic approach to language literacy within the context of the discussion of multiliteracies, in the form of "representational meaning, interactional meaning, and compositional meaning" (Kress & van Leeuwen, 2006:n.p.). Therefore, in pictorial texts, unlike in written texts, meaning is derived from the grammar of the design of the visual text in which colour, perspective, framing and composition all play an important role (Kress & van Leeuwen, 2006). Visual texts, such as photographic images can be challenging for some novice readers because they may be governed by a logic that differs from that of written or visual text. An example of this is how John Berger (1972) talks about seeing when looking at photographic images that establishes our place in the surrounding world. We explain that world with words, but words can never undo the fact that we are surrounded by it. This "[relationship] between what we see and what we know is never settled". (Berger 1972: 7). Berger is mostly interested in how we view visual. He does this by referring to how painting has influenced our way of seeing. Furthermore, how the modes of representing various subject matter mutates to the medium of photography in relation to the formalistic view of reading visual images both photographic and painted. It is this form of reading photographic images that we hope will address the photographic theory component of the reconceptualised digital photography course.

According to Sontag (1977), the ability to read images involves understanding the emotion of images which are its use in various forms of depiction as a form of "[transforming] the present into the past and the past into pastness" (Sontag 1977: 77). Photographic images have the ability to influence people's opinions because they lead viewers and readers to form opinions about what is true and aesthetically beautiful. Furthermore, photographs have the capacity to transform "old" and "ugly" objects into beautiful objects (Barthes, 1993:119). They also expand the concept of written text beyond the borders and boundaries of a printed book and the frame of the photograph (Serafini, 2012:150-164). This is evident in Szarkowski's writings on photography when he states that, unlike paintings, photographs are 'made', based on traditional skills and theories.

Supporting the development of the above multi-literacies is a complex process, and James Paul Gee (2008) provides a valuable lens for framing literacies and how they can be developed or learned. He contends that literacies are usually specific to a group of people – meaning that language and its

meanings are socially and contextually framed and understood (Gee, 2008). He speaks of discourse (small 'd') as language in practice and contends that this language can only be understood as it is framed by Discourse (capital 'D'), which refers to the ways of being (or identity) of specific groups of people (Gee, 2008; 2015). In other words, to understand photography discourse and be able to acquire the requisite visual literacies, one has to have some understanding of photographic practices and how those literacies fit into that practice. Therefore, to describe the process of developing an analogue image, for example, one needs to have some level of understanding of the photographer's identity or Discourse. Gee (2008) defines Discourse as "ways of behaving, interacting, valuing, thinking, believing, speaking, and often reading and writing, that are accepted as instantiations of particular identities (or 'types of people') by specific groups" (p. 3). Hence, to be seen as photographers by members of that Discourse community, students need to acquire particular sets of practices (or literacies) and an understanding of how those practices fit into being a photographer (identity).

To develop these requisite sets of practices for a particular Discourse, Gee (2008) differentiates between learning and acquisition. With acquisition, the student is an apprentice, and is repeatedly exposed to not only the practice but the written and visual text for photographic images. The photographic practices are therefore acquired subconsciously through trial and error. Learning, on the other hand, takes place in a formal classroom setting where the student gains meta-knowledge about the Discourse that may not always translate well into practice. A combination of these two approaches is critical, although Gee (2008) contends that acquisition is usually the more desirable and effective approach. Gee (1989) notes that students whom he terms 'non-mainstream' face many challenges in acquiring the Discourses dominant in the academy and may never fully acquire mastery or feel at home within them. Gee's notion of mushfake Discourse provides an appropriate lens from which to try to solve the issue of delivering a digital photography education within a resource constrained environment, as addressed in this paper. These "problems require the use of particular language functions that are not found in other types of academic register discourses" (Schleppegrell, 2004, Faltis 2014:64). Here we refer to mushfaking to be applied to the teaching of a practical course and using language that some students might have not been familiar with prior to studying the photography course - noting that students might have already engaged with the practice of photography in a superficial form. This application and use of language introduces students to the fundamental components of photographic theory and praxis.

"Mushfake" (Faltis, 2014; Foster, 1982: Gee, 1989; Mack, 1989) is a term from the American state of Ohio's prison culture described as "the process of producing contraband items from whatever materials are available in federal penal institutions" (Foster 1982: 19). Extrapolated to an education context, mushfaking was defined as the temporary use of social practices that provided access to academic vocabulary and language practices of others and participation in an imagined community of high school subjects associated with "sounding smart" (Faltis 2014:56). In addition, "mushfake" means "to make do with something less, when the real thing is not available" (Mack 1989:160). Gee (1989) appropriates the term "mushfake" and reconceptualises it as mushfake Discourse, which in this context means not only providing students with learning strategies that could allow them to circumnavigate the obstacle of limited resources, but using the mushfake Discourse to afford students an opportunity to develop multimodal-literacies required in the application of theory and praxis for digital photography education (Faltis, 2014). The subsequent application of the concept of mushfake Discourse shifts our focus from understanding its use as a 'make do' concept of working, to using the concept as a tool for initiating cognitive learning strategies (Weinstein & Meyer, 1991), such as problem solving. The lack of equipment creates an environment which forces both the educator and students to embrace and engage with deeper concepts of photography. As mentioned earlier, for Gee, a Discourse is 'a way of being in the world' and thus a "socially recognisable identity" (Gee 1989: 14). In essence one could say that the mushfake Discourse promotes the idea of faking it until you make it (Faltis, 2014), but in this instance 'making it' into a world of photographic theory and praxis

understanding rather than the possibly more superficial 'making it' of knowledge for the purpose of securing a job.

Central to our argument is using Gee's notion of 'mushfake Discourse' focusing on how the concept of "mushfaking" in digital photography education can support the mastery of multi-literacies with the aim of guiding practice-based teaching and learning. We suggest that Mushfaking used in language instruction and practice-based teaching and learning can show the complexities of language in written and visual text. By extension mushfaking can be used as a tool to introduce a broad range of multi-literacies required to read, analyse, and make photographic images (Szarkowski, 1966; Wells, 2003:466; la Grange, 2013). According to, Mitchell "writing makes language (in the literal sense) visible not just as a supplement to speech, but as a 'sister art' to the spoken word" (Mitchell, 1994:113). In this context, mushfaking can be used to teach written and visual photographic language. Szarkowski's (1966) five photographic characteristics mentioned earlier in the paper, in which photographic images allow us to construct a visual language by combining sight, sound, picture, and speech.

According to Faltis (2014) "The distributed knowledge is coordinated so that the practices and beliefs, resources and technologies are distinguishable and most importantly, recognisable to its members" (2014:64). Additionally, for Faltis (2014), the members would be the community sharing the same space. In the context of this paper, the members of Faltis' community and Gee's closed context would be the student photographers. mushfaking allows for and encourages the use of 'make do' methods in the context of digital photography instruction. To make a digital pinhole camera, the lens of the DSLR camera is not used for this learning opportunity. Instead, the lens cap is replaced with other readily available household materials, such as a sewing needle. We recommend using a DSLR camera, a lens cap, a can of soft drink, a sewing needle, and duct tape. We posit that Mushfaking offers an opportunity for the lecturer to leverage a limitation of resources and transform what would ordinarily be seen as a problem or obstacle into an opportunity for teaching and learning to take place. The make-do strategy can be used as a learning design tool to foster creative thinking and multi-modal literacies in the teaching and learning of digital photography.

Mushfaking as a concept is applied differently here to "bricolage" within an educational context. According to Maxwell (2012), the term bricolage was taken from the work of the French anthropologist Claude Levi-Strauss (1968), who used it to distinguish mythological from scientific thought. Gravemeijer (1994), Huff (2008), Lester (2005), and Maxwell (2012) hold a similar view on the usage of bricolage. Maxwell (2012) uses the term bricolage to describe an approach to qualitative research. Lester (2005) uses the term to describe the process of instructional design. Gravemeijer (1994), Huff (2008), Lester (2005), and Maxwell (2012) view the construction of theory as similar to a handyman or "bricoleur" (Huff 2008:7), who uses whatever tools are available to come up with solutions to everyday problems and apply their notion to the construction of theory in research design; "meaning: our creations are assembled from available parts; what we start with predicts what we create" (Huff 2008:7). Bricolage and mushfaking share similar concepts but have different goals. The difference here in using the concept of mushfaking refers to adapting the existing set of photographic equipment to a majority group of students that would not necessarily afford the set of tools which are normally required to engage in photographic education and praxis. The lack of sufficient quantities and quality photographic resources presents structural challenges that need creative teaching and learning opportunities. The next section will discuss a potential learning design – digital pinhole photography – that incorporates the principles of mushfaking in supporting students to acquire digital photography practices. Bricolage, according to Baker and Nelson, means "making do with what is available" (2005: 329), which, when used correctly, is synonymous with mushfaking. Students may be able to interact with what Szarkowski (1966) refers to as "the thing" using digital pinhole cameras. In this case, the camera is "the thing" and the tool they can use to exploit "physical, social, and institutional constraints" (Baker & Nelson, 2005).

DIGITAL PINHOLE AS A MUSHFAKING LEARNING DESIGN PRINCIPLE

Gee uses the term mushfake Discourse to describe "partial acquisition of a discourse coupled with meta-knowledge and strategies to 'make do'' (1996: 147). He suggests that students who are faced with a lack of prerequisite skills and digital literacies can learn through mushfaking. Mushfaking as a concept promotes the introduction and appropriation of existing resources with the intention of recasting the functionalities of the resources. A lack of adequate teaching resources requires everyone in class using that which is accessible (Abrahmov & Ronen 2008). Mushfaking as a concept allows for a learning design principle of using existing DSLR cameras and recasting them as tools of the study which students need to be familiar with and as tools for teaching multi-modal literacies. The design of the learning opportunity of the digital pinhole activity is a response to a lack of adequate teaching resources for a first-year class. The idea is to reduce the digital camera to a simple black box that admits light through a pinhole aperture without contemporary digitally mechanised lenses. This is achieved by importing traditional pinhole camera making construction techniques from analogue photography.

The use of the digital pinhole photography as a learning design tool marries traditional photography making skills with digital photography making skills. The process of turning a DSLR camera into a pinhole camera involves a few items which are, a sewing needle, black tape, fine grain sandpaper, a piece of aluminium from a can of cooldrink, and a hobby drill or normal drill with a small drill bit. The process involves removing the lens from the camera body, drilling a small hole on the body cap of a camera, which comes with a purchase of a DSLR to protect the camera from dust. In this case additional body caps were purchased so that each student could use their own. The costs of creating digital pinhole cameras are low because most of the additional materials can be found easily, and if students are required to purchase certain materials these can be shared amongst a group of students, and some of the materials used can be sourced from home. Students share a camera within their allocated groups but make use of their own body caps. In most cases once camera users put on the lens of a camera, they will most likely not ever use the camera body cap anymore. The digital camera body cap is a low-cost item, and body cap already has a perfect fit screw that fits a DSLR's lens mount. This means that before each student can take a photograph using the camera, they must remove the body cap of the classmates and replace it with their own body cap. Consequently, students are simultaneously required to engage with photographic language and create some of the tools they will use in the production of photographic images.

The hole made on the body cap would need to be covered with a piece of thin metal, or a piece of aluminium which is cut from a soft drink can. The aluminium piece is then pierced with a sewing needle to make the pinhole. As mentioned before the body cap comes with the DSLR camera. For the purposes of this intervention the digital camera body caps can be bought in bulk enabling each student to have their own tool to create a digital pinhole camera. In relation to photography education, it is important to embed language, multi-modal literacies (here we refer to visual, digital, and written literacies) and praxis, in module design in pursuit of an aligned curriculum with a focus on teaching and assessing for understanding and learning transfer. The digital pinhole camera as a tool for producing photographic images can facilitate practice-based teaching and learning in conjunction with Web 2.0 and industry 4.0 technologies. These tools through learning design provide students with learning opportunities facilitated in a face-to-face and online setting. Thus, the digital pinhole affords students the opportunity to use the five characteristics theorized by Szarkowski (1966). In the practical application of making the digital pinhole camera, students may experience the image making firstly, through a hands-on technical process of making images and secondly, by actively making use of the photographic language to talk about the photographs they produce. This process of making photographic has the potential to help students improve their awareness of light, subject matter, and ways to frame the world into compositional boxes (Horner,2016).

The issues created by the lack of resources provide an opportunity for academic staff and students to mushfake. We argue that for students studying creative disciplines like photography, it is not only learning through reading and writing text but learning by making new text in the form of artefacts which is as important in digital photography education. We use Szarkowski's (1996) five characteristics as a base for introducing photographic theory and technical application of the language of photography. In the context of lesson design, students are required to be conversant with the complex multi-modality of digital photography education, research, theory and practice photographic theory. Our understanding of mushfaking overlaps with bricolage, but it also broadens our proposition on digital photography education and the potential of mushfaking to foster multiliteracies in students studying digital photography. By recombining existing resources for designing teaching and learning opportunities, with the goal of embracing structural elements and boundaries in resource-constrained contexts. Rand et al. stress the importance of problem-solving in photographic education, arguing that;

One of the truths of photographic education is that we solve problems to learn. It is through learning by doing that we make the greatest strides in learning photography… in photography most of the learning to make images is about solving problems within the processes and methods. (Rand et al., 2015:109)

Photography education can be seen as a social practice, which relates to Gee's (2008) concept of Discourses. Therefore, it is vital to "recognise that making photographic images and writing about photographic images cannot be separated from embodied action (doing), practice and critique" (Janks, 2010: 58).

CONCLUSION

Mushfaking as a framework provides the flexibility needed to respond to current students and their contexts by drawing on appropriate design principles which could be informed by an iterative process. The mushfaking concept indicates that a lack of adequate resources within a resource intensive photography module could be compensated for by using inexpensive tools and learning design solutions. The mushfaking concept offers a useful 'make do' framework to foster multi-modal literacies within a dominant pro industry 4.0 technologies discourse whose emphasis is creating a relatable curriculum.

Mushfaking well implemented can be a useful approach that can be used to plan, implement, and evaluate the introduction of the digital pinhole photography lesson to the photography for first-year students proved useful because of the rapidly evolving photographic hardware and software. This study attempts to provide a learning design tool using inexpensive solutions to deliver a digital photography course leveraging educational technologies, which are relevant to a resource constrained HE environment.

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ENDNOTE

[1]   Analogue photography is the practice of taking pictures using an analogue camera and film, a substrate that is sensitive to light. Light interacts with chemicals to form photographic images when a roll of film is inserted into a camera that only uses film. The pictures on your film roll come to life when it is developed in a photo lab. versus a digital substrate found in contemporary digital cameras.

Bongani Khoza is currently a Lecturer in photography and Digital media, in the Multimedia department at the Faculty of Art, Design and Architecture (FADA), University of Johannesburg (UJ). an experimental video artist, animator and photographer with demonstrated history of working in the eLearning industry, helping course teams develop and produce Massive Open Online Courses (MOOCs) for the University of the Witwatersrand. Bongani uses a wide range of photographic and art practices, including stop- frame animation, and experimental video installations. His current focus is on using photography and video installations to re-contextualize public and private structures within the public space, capturing the occupation, usage, contestation, and physical detail of these structures. His work engages with interdependencies and segregations evolved in modern day South African life. His current PhD research focus is on practice-based and process-oriented teaching and learning with a particular focus in teaching photography and digital media.

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