Enhancing Web Accessibility for Blind and Low Vision Users: A Model for Text Descriptions on E-Commerce Product Pages

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Submitted to OCAD University in partial fulfillment of the requirements for the degree of Master of Design in Inclusive Design, Toronto, Ontario, Canada, 2025

ABSTRACT

Typically, blind and low-vision (BLV) individuals who browse e-commerce product pages use assistive technology to decode the information on these pages. In the absence of information indicating visual properties, such as the colour name, a BLV user is inadequately informed about and often exits the webpage unable to make a purchase decision. Alternatively, they might resort to asking a friend to decipher visual information by adding a product to their digital cart and reviewing it with them later. Both of these scenarios present a problem of the inaccessibility of decipherable sensory cues and specifications for product information pages on the web. From the initial semi-structured interviews, this study identified three main themes (missing visual properties and cues, the role of a friend in purchasing decisions, and accessibility for social inclusion) in the shopping experiences of BLV users. By conducting a series of case studies, co-design sessions, and product description evaluations informed by user testing and agile iterations, aspects of product descriptions were understood to a) provide useful descriptive information for understanding the details on the product webpage and b) ideate a model that could provide the participants with agency and confidence in their purchase decision.

KEYWORDS

Online shopping, Accessibility, Blind or Low Vision Users, Product descriptions, Inclusive Design, HCD, HCI

ACKNOWLEDGEMENTS

Dr.Peter Coppin

Prof, you are an incredible mentor and guide for learning Inclusive Design. Your breadth of knowledge and dedication to the field are truly inspirational to me. I want to take this opportunity to sincerely thank you for the dedication you show towards research, as well as the learning outcomes of your mentees. The advising sessions every week were where most of my initial ideas were developed. I have to mention that your way of offering critique is what empowered me to explore additional research areas and topics to bring in. Your demonstrations through examples and thoughtful tangents, as well as considering conceptual blending, showed me how to stay open-minded and optimistic in building effective ICT solutions that are genuinely grounded in research. Thank you for being a remarkable mentor and guiding me with both empathy and expertise.

David James Barter

The Inclusive Design masters experience would not have been the same without your consistent and supportive guidance. Whether it was answering questions, organizing lab meetings, or coordinating research group discussions, your steady presence was foundational to bringing this research paper to completion. I am especially grateful for your availability on MSTeams, even during the busiest times at the end of the semester-knowing I could reach out and receive timely support was truly reassuring. Thank you for the dedication you and Prof. Peter showed toward my learning outcomes and for believing in me.

My Co-researchers and Participants of the Research Group at PAL lab, OCADU

Thank you for making this experience both memorable and enriching. This research wouldn’t have been the same without Mingran Yang, Amin Farootan, Shaymayma Mobin, and Alex Kurk, whose parallel research topics sparked rich discussions and brought novel user testing experiences to our research group meetings in the PAL research group.Thank you to the participants who so patiently explained their accessibility issues and were truly inspirational on how to have independence, positivity, and look forward to life with optimism.

My family and Friends

Thank you for believing in my dream of pursuing my dreams of a masters degree in Canada. This masters education would not have been possible without your support and well-wishes.

Table of Contents

ABSTRACT 2
KEYWORDS 2
ACKNOWLEDGEMENTS 3
LIST OF FIGURES 5
1. Introduction 7
1.1 Project background and purpose 7
1.2 Context and Aim 8
1.3 Research Questions and Objectives 9
1.4 Preview: A Model for Two-factor Sensory-Perceptive Information Design Framework 10
1.5 Significance 11
1.6 Limitations and scope 11
1.7 Outline 11
Part I 12
2. Theories and key concepts from the literature review 12
2.1 Information Visualization Perception for Design, Colin Ware 12
2.2 J.J. Gibson's Affordance & Perception Action Cycle 13
2.3 Role of Affective Neuroscience in Branding and Communication 13
2.4 WCAG 2.1 Compliant Product Description 14
3 Methodology 15
3.1 Study Design 15
3.2 Semi-structured interviews 16
3.3 Co-design sessions 17
Part II 25
4 Discussion of Findings and Model 25
4.1 Case study 1: Designing a Perceptive-Sensory Information Model with a 2-factor information delivery system for product descriptions 25
4.2 Case study 2: Inclusive Design Principles in Action - Positive User Experience 30
5. Conclusion 32
References 33

LIST OF FIGURES

Fig.1. A product page from Amazon website user shopping walk through

Fig.2 MAC lipstick product page

Fig.3 Byredo Lipstick product page

Fig 4. Wireframe model

Fig.4 ASOS menswear product landing page

Fig.5 Amazon black shirt menswear product landing page

"In general, our scientific understanding of how visualisations work is still in its infancy. There is much about visualization and visual communication that is more craft than science. For the visualization designer, training in art and design is at least as useful as training in perceptual psychology. For those who wish to do good design, the study of design by example is generally most appropriate, but the science of perception can provide a scientific basis for design rules, and it can suggest entirely new ideas and methods for displaying data that have not been tried before." - Coin Ware, 2013

1. Introduction

1.1 Project background and purpose

In today's world of digital commerce, sighted users of information-communication technology (ICT) solutions experience product advertisements in two modes of persuasive influence: the immediate visual appeal of a product image and the persuasive power of metaphorical names, such as labelling a lipstick shade "lush carnation." This visually loaded stimulus of a coloured lipstick image automatically evokes emotional resonance, and when coupled with the expressive message, can garner a purchase decision as an aftereffect of multisensory cues. However, for Blind and Low Vision (BLV) users, this experience is fundamentally non-existent or markedly different. The Web Content Accessibility Guidelines (WCAG 2.1; W3C, 2025)- advised accessibility of product pages must include require a concise and easily comprehended alt text description (e.g., "product_lipstick image/lipstick_damask"), as a general example, which routinely fails to convey the nuanced colour, texture, or emotional resonance conveyed in the visual. As a result, BLV users are not included in the full emotional and sensory experience that influences buying behaviour. When text descriptions intentionally include elements of metaphor and sensory-rich language, such as "a lush carnation-red lipstick with petal-touch satin finish," this can trigger resonance from a similar emotional experience (Coppin, Hung, Ingino, Quevedo, Sukhai and Syed, 2024; Section F.4.4), enabling BLV users to participate in e-commerce with confidence and improve self-reliance. This issue presents a major accessibility gap in text descriptions, as a text description lacking metaphor-rich language in product descriptions often fails to elicit emotional simulation for the BLV individuals who use assistive technologies (Manirajee, Shariff, & Rashid, 2024). Hence, it is hypothesized in this study that

including sensory-driven language in product descriptions allows BLV users to access product information via mental imagery of such prior experiences and connect emotionally to the product's use in their life, effectively picturing the experience of owning the product and using it, akin to the findings of Coppin et al. (2024; Section F.4.4). However, addressing this major user need gap requires ideating a new model to bridge between an inaccessible product description and forming an accessible product description recommendation model for BLV users, with an added emphasis on accessibility through text, while improving the product pages' compliance with WCAG 2.1 (W3C, 2025) standards. So, in this current frame, the question that arose is "how can product text descriptions effectively convey the essential visual properties and details of e-commerce products for BLV users of assistive technology such as screen readers?"

1.2 Context and Aim

There is a high number of BLV individuals who prefer online shopping due to the convenience, as noted in Coppin et al. (2024). According to another study on online consumers with visual impairments -,"convenience reduces effort, time or other resources that people must spend when shopping online. Finally, online shoppers must trade-off between the costs and benefits of shopping online and shopping in-person, removing face-to-face social interactions and option of experiencing product in person while creating independence and eliminating transportation problems" (Scarborough & Childers, 2009p.18)

While WCAG 2.1 (W3C, 2025) standards promise equitable access, the inaccessibility of websites costs approximately 6.9 billion in annual revenue

(TestParty, 2025), indicating that accessibility is critical. Owing to the nature of rapid product design, development, and deployment in e-commerce, there is less focus on the accessibility of information available for a user with diverse needs, such as a BLV individual. E-commerce giants such as Amazon prioritize visual imagery, often neglecting detailed text descriptions for BLV users. Another related factor is that cosmetic retail branding often focuses on naming the product in unique ways to improve product personality, conveying the symbolic meaning of the product to improve the preference of the product through congruence effect (Govers & Schoormans, 2005). These two factors, when combined, contribute to the frustration experienced by a user with mismatched needs, in this case, a BLV individual for whom the unavailability of indications of colour and texture in the product names and descriptions leaves them with insufficient information to guide astute purchasing decisions.

From initial BLV participant shopping walkthroughs, conventional accessibility definitions (e.g., WCAG-compliant alt text) do not suffice for e-commerce product pages. Participants struggled to understand lipstick colour names due to vague descriptions, despite using assistive technologies such as “Be My Eyes.” The main aim of this paper is to address this accessibility gap and improve the usability of ICT interfaces for BLV shoppers by developing sensory-rich text descriptions.

1.3 Research Questions and Objectives

The main research question is: “How can user experience design (UXD) for accessibility provide the necessary agency for BLV individuals to access branding

materials through screen readers?" The primary objective of this study is to explore possible sensory design-driven branding models for influencing which sensory modalities marketing information is available in to BLV individuals when shopping.

Objectives: a) Understand accessibility issues faced by BLV users on e-commerce product pages, particularly incomprehensible colour names. b) Through co-design, explore how BLV individuals adapt to use ICTs and how these adaptations inform new design approaches. c) Develop a model for product descriptions that increases BLV users' confidence in purchasing decisions.

1.4 Preview: A Model for Two-factor Sensory-Perceptive Information Design Framework

This model was developed from behavioural and observational research during co-design with BLV participants. As an initial step, the principles from Ware (2013) informed the foundational knowledge of how humans perceive and access information. Secondly, by combining those principles with the affective neuroscience research of Panksepp (Davis and Montag, 2019), who identified seven primary emotions which are originate from the mammalian structures of the human brain, and that a BLV user might have access to given proper attunement to these principles by those who write product descriptions. Thirdly, through the affordances and perception-action cycle theories of J.J. Gibson (1979) this study proposes a model of information design for screen readers that improves text description efficacy by focusing on simple, clear colour names and sensory details to evoke positive emotions.

1.5 Significance

Most websites in Canada and North America adhere to WCAG 2.1 (W3C, 2025) standards, but inaccessible product imagery and descriptions that rely on imagery in e-commerce sites remain incoherent to BLV users. An understanding of how visual processing of concrete pictured objects (Ware, 2013) evokes emotional responses (Davis and Montag, 2019) is applied to an e-commerce website to help understand what it is that BLV users lack access to.

This project is significant because it provides BLV users with accessible text descriptions to enhance self-reliance. By prioritizing visual and textual storytelling, brands can improve the product experience for all users and elevate accessibility for BLV individuals.

1.6 Limitations and scope

The study's limitations include the need for more time and co-design sessions to test the model. It would be beneficial for e-commerce product brands to undertake this model as an exploratory study into building a more efficient product description delivery system. The recommendations were not tested in a proven marketing framework, requiring future testing and iteration.

1.7 Outline

The format of this paper is designed to hold information in two distinct parts. Part I will present the theories, methodology, inductive research activities, and findings that led to the ideation and development of the model. Part I begins with Section 2.0, which outlines the main concepts that provide a foundation on which the model was

developed. The study's recommendation model involves Ware (2013) provides the scaffolding to understand Information Visualization and perception in humans, while Davis and Montag (2019) discuss Affective Neuroscience, particularly the emotional systems discovered by Jaak Panksepp, while J.J Gibson's (1979) foundational work which covers the perception-action cycle and affordances principles.

In section 3.0, the methodology and research activities are summarized, which included semi-structured interviews, iterative design research, and co-design activities. Part II focuses on the model through a series of findings and recommendations. Section 4.0 will involve a discussion of the findings and their relevance in specific case studies from e-commerce shopping which will be presented and interpreted using the model.

Part I

2. Theories and key concepts from the literature review

2.1 Information Visualization Perception for Design, Colin Ware

Ware (2013) provides an account of how the human visual system detects edges and perceives boundaries - concepts fundamental to both object recognition and effective information visualization. The visual system's sensitivity to edges, explaining how early, rapid-processing mechanisms in the brain segment the visual field by detecting boundaries and contrasts. This boundary detection by our visual system is what helps us to distinguish objects from their backgrounds and is essential for recognizing shapes, textures, and patterns, and even extends the understanding to a larger meaning synthesis from information presented, which is directly relevant to how users interpret product images and descriptions in e-

commerce settings. Ware's work (2013) suggests that clear, concise information presentation aids perception, which is critical for designing accessible text descriptions for BLV users.

2.2 J.J. Gibson's Affordance & Perception Action Cycle

Affordances are the action possibilities offered by the environment, directly perceived by an organism (Gibson, 1979). Perception and action operate in an ongoing cycle, each informing the other (Gibson, 1979). The affordances of a product are determined as the information perceived by the user that suggest action possibilities in the way that they are represented in the user's environment (e.g. flat surfaces at approximately the same height as a person's waist affords the action-possibility of sitting on it). According to Gibson (1979), a user perceives an action possibility from the information available to them, which indicates that intuitive text descriptions not only enhance the user's awareness of action possibilities, but the product may become relevant to the user in a direct fashion. By using these foundational frames of good product design, designers and brands can increase the chance of the user interacting with their page, given that the information is written to convey the usability and the relevance of the product, which also closely aligns with the WCAG 2.1 (W3C, 2025) model of accessibility.

2.3 Role of Affective Neuroscience in Branding and Communication

Jaak Pankespp's work in affective neuroscience provides a model to understand the neural origins of emotions in mammals and humans. (Davis and Montag, 2019). These seven primary emotional systems are: SEEKING (associated with expectancy and curiosity), RAGE (related to anger), FEAR (related to anxiety), LUST (sexual

desires), CARE (nurturing behaviours), PANIC/GRIEF (associated with sadness and social loss), PLAY (social joy and playfulness). Panskepp's research suggests that these primary-process emotions emerge from ancient brain structures such as the amygdala and hypothalamus (Ghosh & Chatterjee, 2024) rather than the cerebral cortex (Davis & Montag, 2019). These studies also lead to positive evidence that the Emotional Systems (seeking, rage, fear, lust, care, panic, grief, and play) are deeply rooted in subcortical brain structures (Satizabal et al., 2019) and are believed to be conserved across mammalian species and these systems are not contingent on vision, meaning BLV individuals experience and act upon these emotional drivers (Lerner et al., 2015) just as sighted people do. This shows a clear potential link between the emotional experiences of BLV individuals and sighted individuals that creators of product marketing and branding materials have yet to consistently leverage in meaningful ways. This indicates that BLV users do not need visual branding materials, but accessible brand materials in text format to build confidence in the sensing of the product.

2.4 WCAG 2.1 Compliant Product Description

WCAG 2.1 (W3C, 2025) guidelines ensure accessibility through perceivable, operable, understandable, and robust content (W3C, 2025). Key recommendations include:

- Perceivable: Accessible via screen readers with clear alt text.
- Operable: Keyboard navigation support.
- Understandable: Clear, concise language.
- Robust: Compatible with assistive technologies like JAWS, NVDA, and VoiceOver.

These guidelines informed the development of accessible text descriptions.

3 Methodology

3.1 Study Design

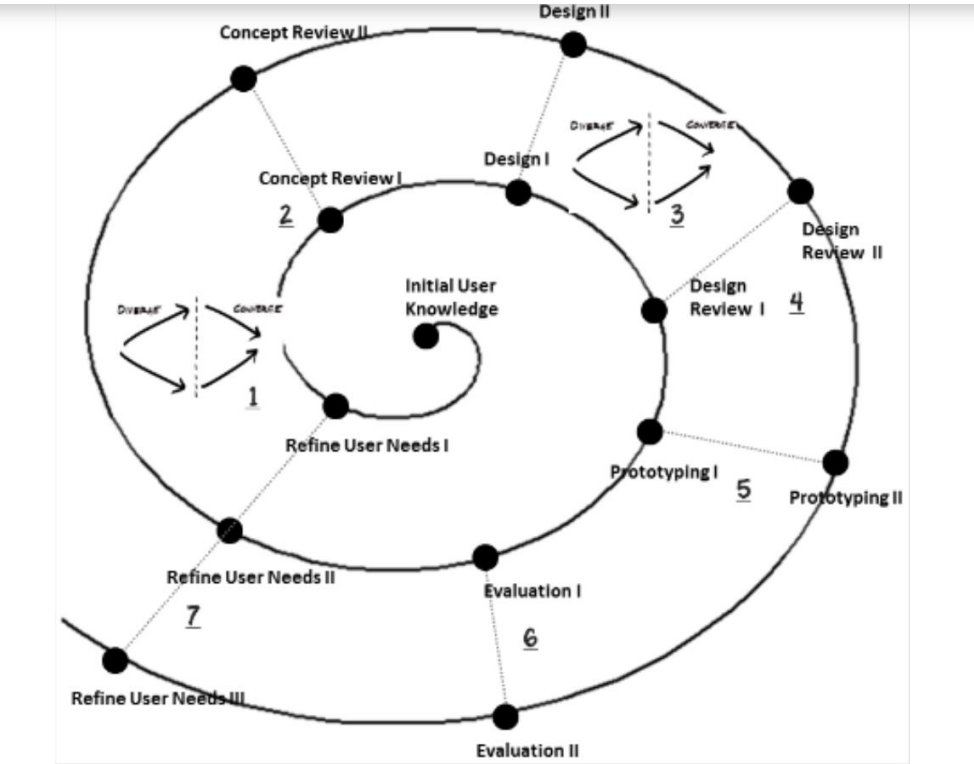

Fig.1. A spiral ux design model (Guo, 2015)

The study used a participatory design approach, involving qualitative discussions, user journey walkthroughs, and co-design sessions to identify and address accessibility issues for BLV users. The iterative design spiral (see Fig. 1) reflects the theme that each development cycle should progress the product concept and involve the same sequence of steps that comprise the overall spiral model, which involves requirement definition, requirement validation, design alternatives, validations of design alternatives, and prototyping.

3.2 Semi-structured interviews

The semi-structured interviews informed and guided the project, which helped discover new normative models of behaviour patterns exhibited by BLV individuals. This hypothesis was then formed into research objectives and questions. The participants were recruited via the extended research network of OCAD University's Perceptual Artifacts Lab (PAL), under a joint research ethics application aimed at studying BLV individuals' accessibility challenges involving everyday use of ICTs. The participant group contained a total of 5 participants, who had varying visual capacities. The analysis of themes was synthesized by note-taking as well as by forming affinity maps of the themes and topics, which informed the case studies.

The objectives of this activity were to gain perspective and observational evidence into the context of the e-commerce shopping behaviours of this group of BLV participants, to inform evidence of how the ICTs used in this context were inaccessible. Emerging themes were discussed in order to record the reactions and interpretations of the issues. Two sessions were conducted: the first interview was a walk-through of the Amazon shopping experience, and the process of information foraging for products (Pirolli and Card, 1999). The main theme that arose from these sessions was the lack of informative descriptions of visual properties for the products (specifically, lipstick). The second semi structured interview session was informative regarding the adaptations that BLV individuals have made to navigate the information space, namely asking a friend for assistance to guide them through the information present on the screen. Another theme that arose was the social inclusion needs of BLV individuals and positive user experiences as a result of the use of good inclusive design principles in designing and developing them.

3.3 Co-design sessions

In this first semi-structured discussion, with five BLV participants (two completely blind participants, two partially sighted, and one color blind). The discussion was centred around the topic of online shopping, and how the participants navigate shopping websites, as well as how they complete their purchases. P1 helped us walk through their shopping experience on the Amazon shopping site; this discussion was guided by the theme of the research question. From this semi-structured discussion, a theme emerged that revealed difficulties identifying concrete features of pictured objects:.

a) The assistive technology “Be My Eyes”, an app on an iPhone that utilises computer vision and AI to describe visual features of an environment or an image, to understand the basic visual properties of a product, however the colour name was not simple enough for the BLV user to comprehend (i.e. it failed to represent the actual colour of the product because of the ambiguity in the name).

b) In the case of when [P2] fails to comprehend the visual properties of the product, their family member helps them to identify it. This was mainly because BLV users only had access to the text component of the descriptions, “the ambiguous colour name” lacked any real representation of what the colour is. However the sighted family member could look at the visual imagery of the product and describe the colour accurately beyond the information that was available as part of the name and text description.

c) Colour, Texture, Finish of the Product: An e-commerce cosmetics webpage is usable when the product properties of the cosmetic product (lipstick in this case), as understood through its text descriptions, provide the means for a BLV shopper to

navigate to it. Confidence in a product that could induce a purchasing decision comes by way of evoking sensory images(Krishna et al., 2016) in the users' minds. This information usually includes the display of product infographics (sometimes audiovisual) and text description materials; the ease of accessing these accessible materials for the sighted user provides a platform for purchase decision making. The use of visual graphics, such as the product image, also contributes significantly to the success of the product promotions. Unlike a retail store, a digital webpage display gives BLV users no spatial access to the product's properties, such as looking at or holding the product. Additionally, the regular use of the web page over a product sales cycle means that its promotional materials are used continuously, indicating that it is an area that could bring return on investment (ROI) to the brand if it could be made more accessible. Two examples from our interview discussions capture how users rely on the information provided on the web page to make purchase decisions. BLV users rely on the colour name in the description to ascertain if they are browsing the product page that is intended and correct. This product information is even more critical as the BLV individual is not privy to the image.

> ["I always make sure that my daughter is with me when I make this decision, they can tell me so much about the product that I would not have access to otherwise"] #P2

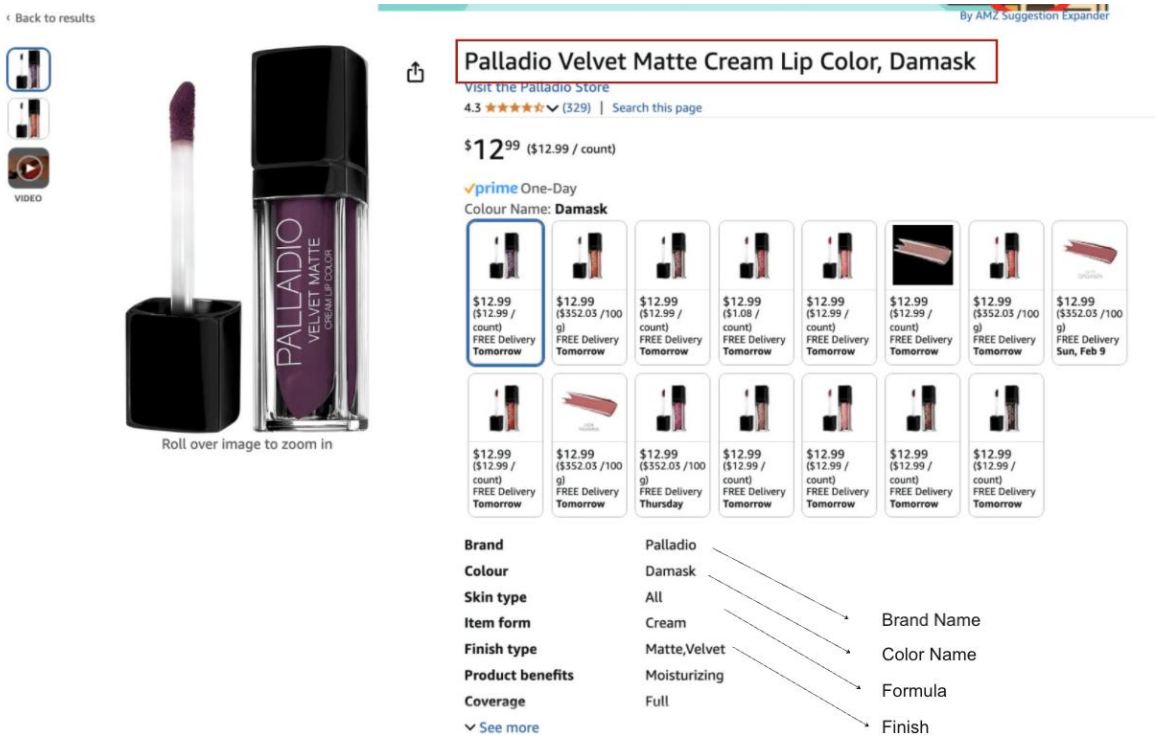

Fig 2. Product page from the Amazon website. The attached image is a typical product page that exists on Amazon. This particular page was returned to the BLV individual, as P1 searched for "Lipstick-red". In this particular case, the shade is mentioned as Damask, and the product description details are missing to indicate the simple color name.

The participants detailed how they could not access product information through a screen-reader and had to rely on assistive technologies such as "Be My Eyes", and even after this they struggled with comprehending the basic features of the product as a concrete object representation in their minds, mainly due to the assistive technology thoroughly lacking additional information about the real colour, shape, and texture, other affordances etc. For example, during this interview, the inaccessible or ambiguous colour names prompted the use of "Be My Eyes", however, if the actual "colour indicator" name had been available for the BLV user in the product name for the screen reader, this could have been avoided. For example, during the first interview session, P1 described how they relied on Be My Eyes, and

further illustrated a difficulty by explaining how the product descriptions did seemingly include the colour, but used unfamiliar terms such as “carnation” that do not implicitly relate unless the person can see it (since carnations come in many colours, so the purpose of this name as a descriptor is to be perceptually and conceptually combined with a specific lipstick colour that can be seen). Some of the discomfort experienced by P1 during the interview is captured in these quotations:

> "What is Damask? There is a colour for you."
> There is also _Angora, _Boucle"

> "So I could just picture like a pale pink. That's what carnation is?"

In describing the arrangement of the attached materials, P1 explains that there is a “theoretical” order to the web surfaces' information they seek through a screen reader. P1, when using a screen reader, first wants to hear information that is a simple, easy-to-understand color name, then other details such as formulation, finish, etc… They are also interested in the make of the product. Again, this alludes to this shared and multi-purpose use of the product page not being afforded for the screen reader as a key pain point, in part because of the missing details such as a “simple colour name identity”. Likewise, it was noted that the spatial indication of product qualities through descriptive language, such as the feel of the product in the text description, has a bearing on how well the product is “felt” by the BLV user and how much of a difference it makes when it is present for the accessible technologies.

Continuing from the last session, this new topic became apparent after making the observation that BLV users often seek the help of their friends and family to detect

the accuracy of the information on product pages. As for a sighted user, most of the information was provided by the infographic advertisement, operating as a display of the product. However, for BLV users, it was an inaccessible format. Some of the discomfort experienced by these participants during the interview is conveyed here:

> "Honey, I'm colour blind as I've never seen colour. Oh, that's a neat colour, and so like that, it's just this concept for me. So something is colour-coded. I wouldn't understand that like colour-coded. Maybe like something you know, if you see it.. Something like that. It's attached to some meaning, like each colour has some meaning."
>
> -P3
>
> "If things are at a solid like and it has I, I don't know how to describe it. A solid colour like this is white. Yeah, and I know it's white because it's big. I don't. I know it's got a dark stripe in it, but I don't know what colour it is. I know it's dark. … If it's a solid red. I'm I'm. I can tell you it's red if it's a solid green and it's not sitting next to red. I can tell you it's green. But there's … no reason, mix it all these colours together"
>
> -P2

By asking for the availability of a sighted friend or a family member to decode the colour name, the infographic detail and colour name becomes available as the decisive product description detail for BLV users. Thus, this concretizes a topic of interest that a BLV user asks a friend or family member for help with the product details, to decode the full details of the product. Participant P2, expressed that if it is a "creative or cutesy name," they have significant discomfort deciphering the identity

of the colour name, or in the case of a pattern that states “dark stripe” and white, in this case it is unclear what to expect the product colour to be. They will then ask for the help of their daughter to decipher the information for them, by first adding all the products to the cart and reviewing it with their daughter in one go. Thus, it is fair to indicate that the “accessible advertisement side” from the sighted user is combined with the information description from the BLV user’s screen reader in separate capacities, which merge into a single decision-making unit. Then, a decision to purchase is made by combining the advertisement side and the description side, extending the functional utility of the “product image advertisement” with the text description to the BLV individual.

This section focuses on how generic alt-text descriptions (such as “product name_lipstick_shade”) fail to provide accessible color names for BLV users relying on screen readers. It highlights a common shortcoming in product descriptions, which is that instead of using the product description space to provide practical, accessible information indicating the product’s colour and other descriptions, the product image alt-text is inaccessible content which fails to support the real-world needs of BLV shoppers, especially those relying on assistive technologies for everyday lifestyle product purchases. At this point, it is fair to assume that for the web page to operate effectively, the working of the web pages relies on a specific product infographic that indicates the feel of the product, including the colour identity to be decoded by a sighted user for a BLV user. Thus, if the efficacy of the product details in the description is increased, it will likewise increase the ease of web page use by the sighted user as well as the BLV individual.

In some respects, websites that have ‘working’ information of this sort affixed to them are relevant to the community that they cater to; indeed, from a functional perspective, it is a way of navigating the world, knowing you may rely on assistance from technology, and by extension, feel confident in self capacities. Some of the quotes from the discussion were centred on accessibility and its role in social groups, as we discussed news trends and how information is passed around in the participants' social groups:

> “I think they may have the accessibility there(United Kingdom). Yeah, but they're not putting it out. Yeah, as well as they do here. Or maybe it's just the group homework, because like, my five best friends are all legally blind, and we've all known each other for years. And I go home and teach them apps, OK, because they don't. They haven't been shown on, they don't know them. They don't. They don't, you don't. So they don't use that”
>
> -P3

> “[The] ASOS website, they have this engine section that you can choose by colour. That’s right. …I think they have it here. …. They have, like, clothing website. Yeah. Then you can choose by colour. Oh, that's neat.”
>
> -P4

As a part of the discussion, the theme that emerged during this session analysis, social inclusion and positive user experience, also indicated that the BLV individuals enjoy website services that can comprehend their user needs, and knowingly make effective use of inclusive design principles. This also acted as relevant social

inclusion and self-independence, meaning that BLV individuals often share information about apps that make the lives of the people around them easier, and enjoy bonding over them. More “seeking/care/play” effect of social bonding emotions are represented by overcoming community knowledge gaps. Another factor is that BLV individuals frequently care about how they are perceived in their social group, and prefer to know about new products in the market that can increase their independence.

This topic discovery also validates findings from Liu, Ding and Yu (2019), which highlights trends of purchasing decisions by BLV individuals are often to gain social inclusion. This observation from the interview further illustrates the same point, as participant P3 expounded that it is her mother who prefers her to see in bright colors, whereas she prefers less visually stimulating colors and participant P1 mentioned that she has a style advisor who informs her on trends and styles and helps her pick out her wardrobe. These examples serve the social inclusion theme that BLV individuals often take great care in how they are perceived by others and want to be seen as part of the social fabric (Liu, Ding and Yu, 2019).

To summarize the co-design sessions and tie together the emerging themes from the two sessions, the main theme that arose from session 1 is the lack of colour or feature description that is typically present when navigating with a screen reader, which reduces the accessibility of the website. A topic that emerged from the same activity is that BLV individuals often ask a friend or family member for assistance. From session 2, the theme that emerged is how accessibility increases social inclusion and positive user experiences.

Part II

4 Discussion of Findings and Model

4.1 Case study 1: Designing a Perceptive-Sensory Information Model with a 2-factor information delivery system for product descriptions

After the first two interview sessions, cosmetic brands in the market were researched, and positive evidence was found that many prominent brands utilize sensory-evoking language in their product descriptions (Labbrand, 2024). Among the brands studied were Amazon Cosmetic retailers, Mac Cosmetics, L'Oréal, Bare Minerals, as well as Byredo, a fragrance and beauty brand. The initial analysis showed that "Many brands rely on high-quality product images to convey information quickly, but sensory language in descriptions is less common, even though it makes products more engaging." (Shopify, 2025). As a result, many prominent brands still failed to describe the product in a suitable way for screen reader access.

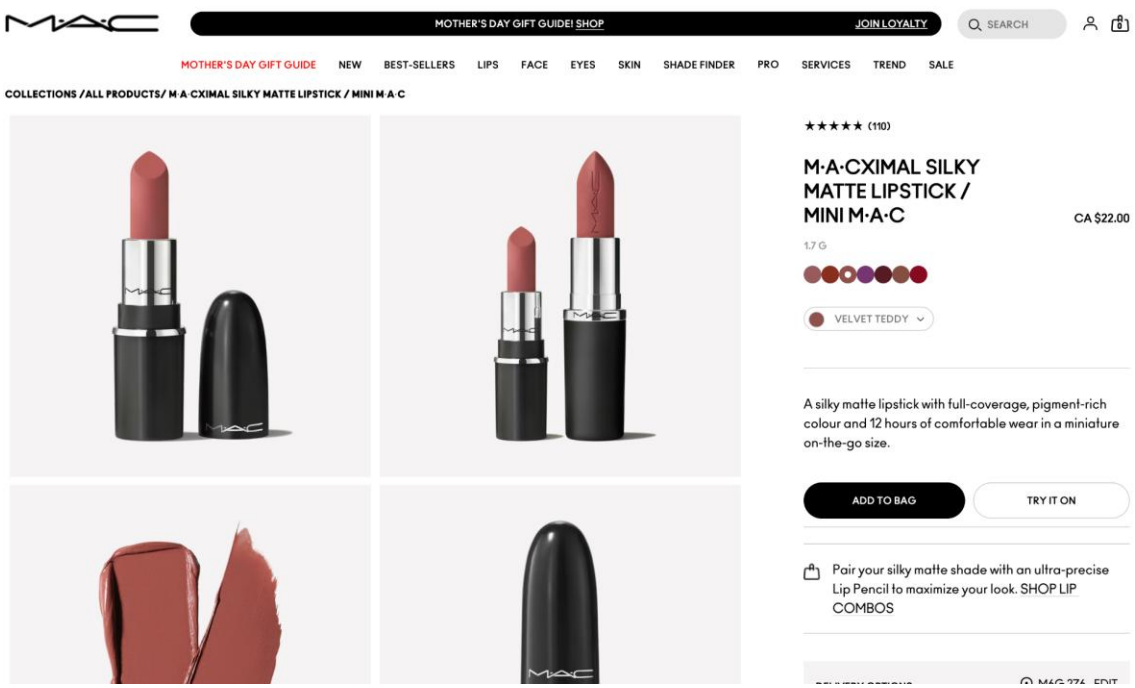

Fig 3, MAC lipstick product page, the product page is heavy on the visuals, but offers few affordances for the BLV user's screen reader to inform them of the visual properties displayed on the screen. The name of the lipstick here is "Velvet Teddy," which has no real indication of what the colour is.

Next, Byredo (a fragrance and cosmetic brand) had a balance of clear visual depiction as well as written materials that are accessible via the screen reader's voice output on its branding pages.

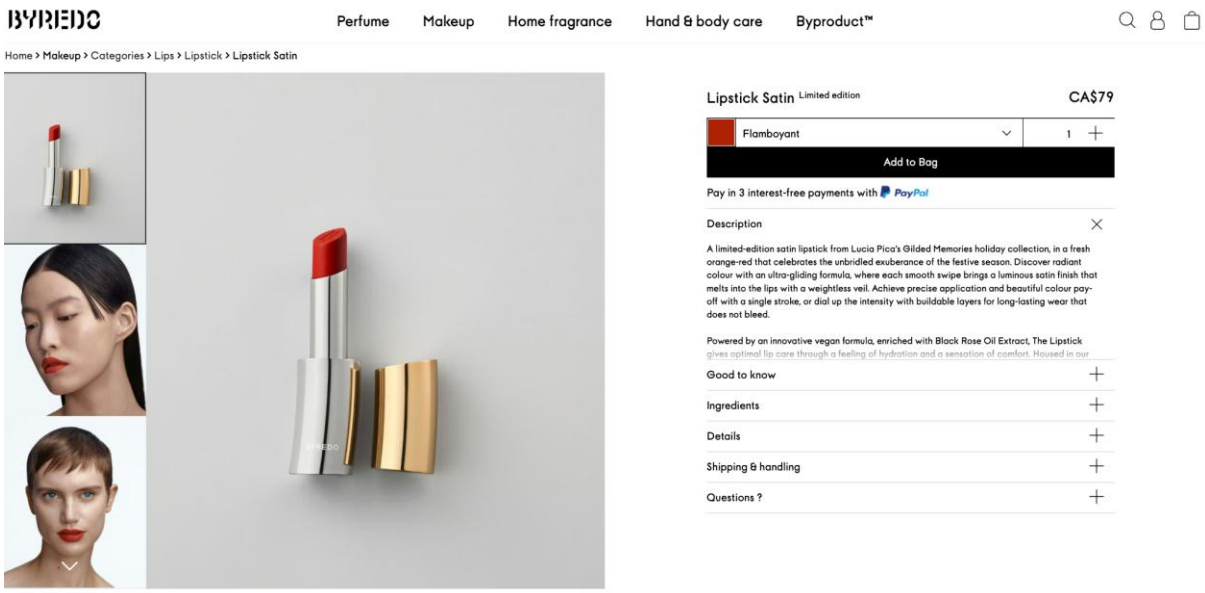

Fig. 4, Byredo Lipstick product page, with a balance of visuals as well as supporting written descriptions. The descriptions cover the colour name in a simple, understandable way, inform about the finish and texture, and what additional benefits it affords the user.

In the first co-design session after the semi-structured interview, product descriptions adopted from the Byredo lipstick category web pages were tested, with highly positive participant feedback. The following is a full excerpt of the written descriptions from Test 1 along with an analysis of the benefits of the product, and

which parts of the Pankseppian Emotional Systems (Davis & Montag, 2019) that the text description fulfilled as a keyword:

- A “limited-edition” satin lipstick in a fresh orange-red that celebrates the unbridled exuberance of the festive season. **Seeking/Colour**
- Discover radiant color with an ultra-gliding formula, where each smooth swipe brings a luminous satin finish that melts into the lips with a weightless veil. **Seeking/Novelty**
- Achieve precise application and beautiful color payoff with a single stroke, or dial up the intensity with buildable layers for long-lasting wear that does not bleed. **Care/ Improving appearance**
- Powered by an innovative vegan formula, enriched with Black Rose Oil Extract, The Lipstick gives optimal lip care through hydration and comfort. **Care/Benefits**
- Housed in our iconic teardrop-shaped mixed-metal bullet, the Lipstick is a contemporary talisman to treasure indefinitely. **Care/Product Model**
- The Gilded Memories makeup collection embraces festivity and celebration, celebrating the sophistication and creativity of the holiday season and the coming together of family and friends. **Social Inclusion/Play/Description of the environment/social connections.**

In the next few co-design sessions, the Byredo product page was also tested via the Be My Eyes app possessed by one of the participants, which elicited major positive responses and delight among the participants regarding the details provided about the packaging of the product (Accessibility Technology for Blind & Low Vision People

- Be My Eyes). As one of our participants described, “I can feel exactly what the lipstick looks like, it tells me everything I need to know”. In the session that followed, an exploration into understanding the role of WCAG 2.1 (W3C, 2025) guideline-driven product description in user experience was conducted, with a checklist ideated on with the help of Perplexity AI, to aid in informing a model.

4.1.1 Co-Design Session - User Feedback and Suggestions

An overview may now be discussed for how the text descriptions that adhered to the WCAG 2.1 (W3C, 2025) standards were formed. This standards-based description model was used for feedback and testing in the co-design sessions that followed. This product description model was ideated using the previous discoveries from Test 1, adhering to the WCAG 2.1 (W3C, 2025) guideline.

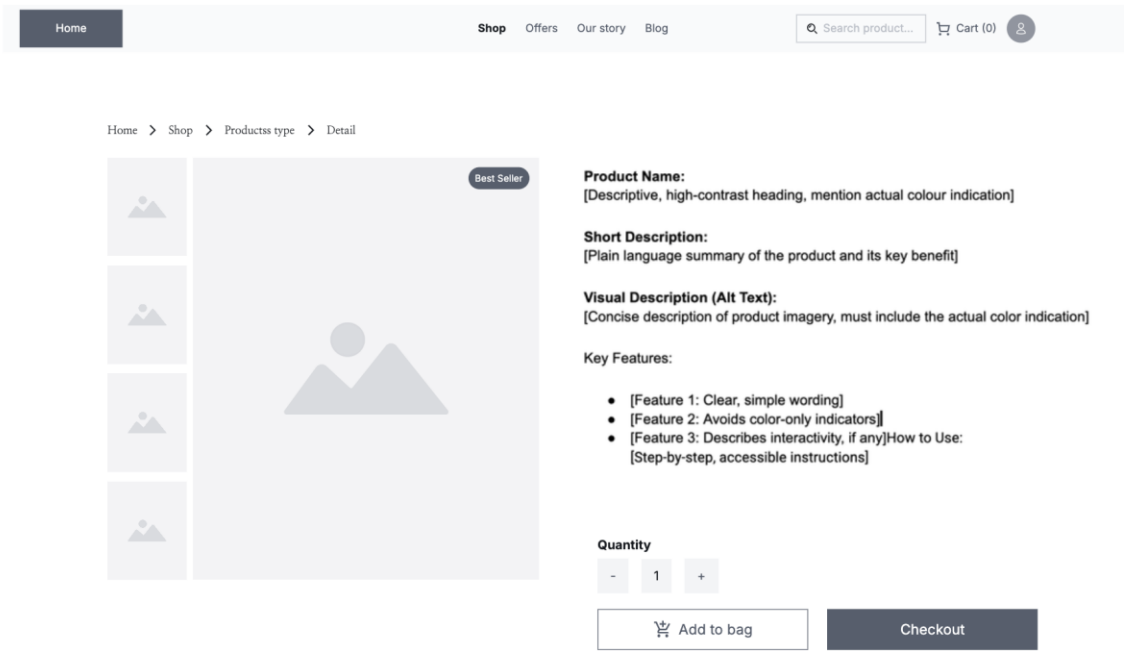

Fig 5 : The above figure is a demo-wire frame for representing the user feedback based findings from the co-design sessions, in which the colour name is preferred in the first

sentence of the product description. The subsequent descriptive information is compliant with WCAG 2.1 standards.

4.1.2 Recommendations: A Sensory-Language Rich Branding Model for E-Commerce Websites

If the e-commerce product pages were to offer a sensory-rich language-driven text description model, in addition to the highly curated audio-visual images, it could potentially increase the relevance of the product through text information available for assistive technologies. From the example text description from the user feedback session, the colour name is provided in the first line of the product description, which greatly increases the positive affect associated with Seeking, Care, and Play (Davis & Montag, 2019), and improved the confidence for BLV users as they may have the sense of being able to decode the product description at hand.

Hence, the main recommendations for the sensory-rich description model can be divided into two main areas as follows:

1. Positive emotional systems such as (SEEKING, CARE, PLAY) could be actively engaged at every stage of product discovery to foster exploration, trust, and product relevance.
2. Negative emotional systems could be minimized (FEAR, SADNESS, ANGER) in order to ensure that the image alt-text as well as the product description contains identifiable sensory and metaphorically-rich language.

The main suggestion here is that, by engaging with sensory marketing strategies in text descriptions, and avoiding focus on solely the audio-visual cues, a BLV user will

have the agency and the available affordances to effectively perceive and ascribe relevance to the products.

4.1.3 How can the communication of product descriptions through ICTs be made significantly more efficient? Further suggestions

The above sensory branding model is only effective when the positive sensory cues from the branding materials are amplified, and the negative affordances are minimized.

4.2 Case study 2: Inclusive Design Principles in Action - Positive User Experience

This case study concerns the ASOS website, which provides enhanced affordances for BLV users over cluttered product pages, making their shopping lives significantly more manageable.

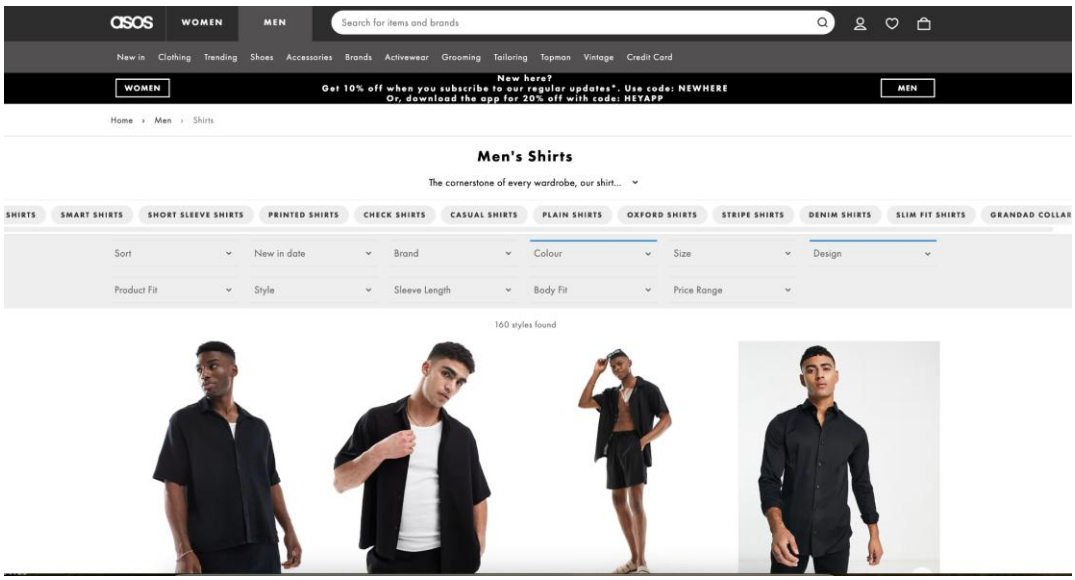

Fig 6, ASOS menswear product landing page preview, it seems that ASOS' webpage surface behaves as a catch-all for easy navigation, where there is no other obvious filter left

out, thereby granting the user more agency over what products they see and how much or how little information density they must navigate.

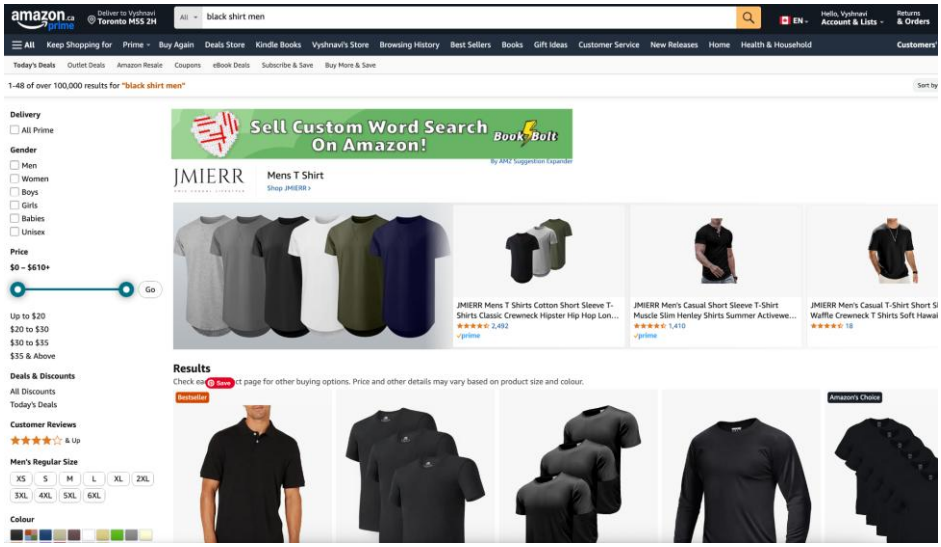

Figure 6, Amazon black shirt menswear product landing page, it seems that this webpage surface behaves as a catch-all for multiple styles of shirts, where the filter does not work as a filtration system of categories, but as multiple options of different products being piled into the same product category.

An illustration of this is evident in the following excerpt from the interview: P2 mentioned that when they shop for apparel, they mention the colour as solid or patterned, because if they indicate “shirt black,” it will return patterned black shirts along with it. This heterogeneity of materials jostling for space and attention in a regular product category page on Amazon.com, with a mixed results of solids and patterns, stands in marked contrast to how the shopping experience can be made more inclusive for all, as it is on the ASOS website. The ASOS website is thus more a well-categorized (Sharma, 2024) assemblage of products, with the use of AI . ASOS’ web pages even feel as though they afford greater perceptual organization potential.

4.2.1 Recommendations: For Inclusive Design in E-Commerce

The above example of the ASOS website is a prime example of improving the affordances and perception of action-possibilities (Gibson, 1979) by simplifying the user interface into filters that afford BLV users with optimal control over what they see on the screen. Provide more affordances for controlling the selection filters the user.

Some of the good practices of inclusive design from the ASOS team are to involve people with disabilities in the design process, Continuously collect and act on feedback from customers with disabilities, embed inclusivity into core brand values and strategy while balancing creativity with accessibility to drive innovation.

5. Conclusion

This project was a revelation in terms of learning about the unique wayfinding behaviours that BLV users exhibit while foraging for product information using e-commerce websites. The concept was to gain an understanding of the e-commerce design, information model and behavioral models that drive actions in accessibility user experience design settings, beyond what is conventionally known in absence of the accessible interaction design context.

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