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# Adapting Flat Design Concept in Digital Graphics to Wayfinding Signage Development: Redirecting Movement and Recreating the Environment

*by:*

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## Abstract

People visiting built environments are desirous of accomplishing their aim of visiting such place within the shortest possible time, devoid of negative feelings/ spatial anxiety. Meanwhile, some environment such as hospital, academic setting among others are known for complex structures whereby navigation can become daunting especially when characterised by poor wayfinding system. This therefore necessitated a study on development of wayfinding signage adapting flat design which ordinarily was a design concept invented for digital screens. Innovatively, the wayfinding system was printed for Fine and Applied Arts Building, Olabisi Onabanjo University, Ibogun Campus, relying also on colour psychology, typography, shape and user experience. Research method adopted for the study was mixed method: experimental and survey. User perception of the wayfinding system was sampled using questionnaire administered to 313 respondents. After thorough analysis, results indicated there is consistency in the interior and exterior signage colours, signage textual information are bold and descriptive. The wayfinding system with its shapes added better aesthetic to the environment. This study succeeded in demonstrating how creativity can be put into practise. Thus, recommended that Visual designers (especially in Africa) should be open to new and diverse design concepts for effective visual solution.

**Keywords:** Signage, Wayfinding, Flat design, Colour Psychology, Typography, User Experience

## Introduction

The environment is a natural habitat for humans, consisting many features especially buildings. People visiting built environments are desirous of accomplishing their aim of visiting such places within the short possible time and devoid of spatial anxiety or negative feelings. Ordinarily, when people are in an unfamiliar environment, they look for information that assists in directing them to their destinations usually in form of maps, building directories wall signs, using arrows and texts with a description of building features. The inherence of mobility to human existence makes wayfinding a necessary human activity required for survival. Thus, irrespective of the edifice within the environment, they can be made more habitable in many ways and one of them is through using graphics to develop wayfinding system. Wayfinding is an information system that guides movement in a physical environment and facilitates understanding of built space. It is a natural action people engage in, in their entire lives anytime they transit from one place to another or from one spot to another (Wang, 2005). Summarily, it involves finding one's way to a destination in a known and unknown place with the aid of visual cues available in the environment. On the other hand, wayfinding signage system incorporates the visual cues: inscriptions, icons (vectors), colours and bitmap images etc. There are still signage crafted crudely, as it can be deduced from the studies of Ahmed (2021). They are characterised by illegible fonts, poor colours, confusing signs among others. All these, actually call for digital graphics as a solution for improved better results especially in an era of advance technology.

At the surface level, adoption of graphical element will sound easy but examining it critically from the perspective of advance technology will signal it is not a child's

play as digital graphics is also anchored in advance techniques and concepts. The question then comes to mind that how possible and what exactly can an innovative wayfinding system look like? Glaringly, the use of icons plus typography is key in wayfinding signage creation and their presentation (icons/ text) can be achieved through 'flat design' or 'skeuomorphism'. These in actual fact are notable terms and design strategy for icon display in user interface design, an aspect of digitized graphics. However, this is exactly where creativity comes in: if they (flat design or skeuomorphism) are utilised as a design concept in digital platforms such as web, can they also be adopted for a wayfinding signage system meant for Prints and if used, would the design still be aesthetically presentable? Flat design that dwells largely upon the elements and principles of art and design in the real digital sense points to visual icons that lean on 2D dimensions (Figure. 1) while skeuomorphs can be likened to icons in 3D perspective. The two icons' presentation style (flat design and skeuomorphism), though each has its distinct features, to achieve its effects, the duo rely heavily on common traits of: colour, white space, rhythm, and balance to mention but few and importantly creative use of inscriptions: text, shapes, patterns etc. Boone (2022) listed that uber-minimalism, abstraction, 3D/ Colour gradients, thick line/ stroke (i.e. Line Art) and Emojis are all icon presentation styles but Workerbee (2016) singled out that flat design is strictly about geometric forms in minimalism employing the power of contrast while it also *"embraces the digital interface and makes it look, well, digital!"* (Figure 1).


**Figure 1** Flat design originally meant for digital screen
(User Interface Design)
Source: Clearbridge Mobile (2020) & Workerbee (2016)

Inferably, flat design is rooted in digital graphics, Clearbridge Mobile (2020) also emphasised that the main essence of flat design is functionality; no 3D elements such as: drop shadows, texture and gradients etc. but rather, solid colours and strokes (Figure 1). Resultantly, making it an effective design option for navigation system.

At this juncture, it should be noted that the main reason for wayfinding signage is strictly to aid navigation (i.e. direction). Wayfinding is a critical component of complex-built places such as campuses, supermarkets, hospitals, hotels, airports and transportation hubs. However, the complexities of structures in academic environments necessitate the need for functional visual elements such as maps, signs, and signage to assist visitors, students and staff to their precise destinations. Innovatively, therefore, this study aims to adopt flat design styles/ approach for the development of a wayfinding signage system. This would rather be printed, digressing entirely from the digital screen orientation which flat design concept is known for. The production would then be mounted on Fine and Applied Arts (FAA) two-wing building; in Ibogun campus (where none exists), Olabisi Onabanjo University. It is the first state/ public University in Ogun State, Nigeria, a multi-campus higher citadel of learning. The research focuses on prioritizing user experience, human factor and aesthetics embedded in design elements to create user-centric solution, tailor-made for the academic environment.

## Literature Review

The in-depth understanding of one's environment and surrounding objects is often referred to as 'spatial orientation'. Hunter (2010) in his theory posited that effective wayfinding systems allow users to 1) select their location within a setting, 2) determine the destination, and 3) develop a plan that directs people from their location to their destination. He also opined that successful wayfinding systems are made up of a series of identifiers: 1) identification and marking of spaces, 2) grouping spaces and 3) linking and establishing spaces through both architectural and graphic means. Wayfinding facilitates the connection between spatial image and the cognitive picture to enable the interpretation of information that guide actions. However, studies in neuropsychology have shown that patients suffering from brain lesions are often incapable of mentally recalling their areas of habitation or recognising places they are familiar with in which mental representation of immediate spatial information is known as cognitive map (Reginald, 1999). Lynch's theory of imageability emphasised the components of "identity" and "structure" that constitute the basic factors affecting environmental image (Damayanti & Kossak, 2016). Lynch's theory explained that the quality of a city is based on legibility or visible elements perceived by residents and visitors to the city. The term 'visible' or 'legible', is a visual component implying the studying of mental images because of human memories and denotations. Lynch (1960) noted that identity implies a distinction from different objects while the structure is the connection to a whole pattern of other elements which is of emotional value to the viewers. Lynch further explained that the mental image of a place can be strengthened by emblematic components: maps, a set of constructed instructions, machines giving direction, holding the perceiver; or reshaping the built environment (Wang 2005). *"Environmental information plays a central role in the conceptualization of wayfinding; it is fundamental in the making of decisions and decisions plan as well as in their execution"* (Doğu and Erkip 2002, p. 25). Frank (2009) suggested that people living in dissimilar cultural groups perceive the world differently because the processes and structures of the mind develop in response to the unique experiential and socialisation forces to which it is exposed. Montello (2005) provides a contrary submission noting that a reasonable amount

of spatial cognition encountered by humans during their development process is essentially the same. Language and culture, however, are not the only human elements that affect wayfinding.

The impact of gender on spatial abilities and wayfinding is an area that has received substantial interest (Linn & Petersen, 1985). Studies have proven that differences exist in male and female spatial navigation and performance (Chai & Jacobs 2009; and Jonasson, 2005), with men usually performing better than women in many spatial activities in wayfinding. Lawton (2010); Kanakri, Schott & Palme (2016) researched into wayfinding systems in university buildings to establish a significant impact on wellness and performance of the students. The result of the study indicated that signs are more critical for precise mobility in academic buildings with many floors. It can also be inferred from the study that difficulty in wayfinding increases the subjective stress experience. Studies have highlighted indicators of an efficient wayfinding system which are: the ability of the information systems to enable users to determine their location within an environment, acknowledge their destination, and create a way of accessing their destination from their location (Hunter 2010). Models have been developed as well to determine the functionality and usefulness of wayfinding signage. Downs and Stea (1973) created a framework that appraised the functionality of the wayfinding system. An effective wayfinding system enables users to have an idea of their destination at the inception of the journey as well as establish their arrival at the desired place. Such a wayfinding system gives users the confidence that they are moving in the appropriate direction and enables them to identify their location; orientating them within the relevant space. Downs and Stea (1973) also maintained that effective wayfinding system enables the target user to have prior knowledge of possible potential hazards within an area and how to safely navigate the place in a situation of an emergency.

The planning of an environment, a building, a park or a city is an integral part of wayfinding. An adequately planned environment enhances understanding of the environment and enables users to coordinate their movement in achieving a sense of orientation. Manning, Lew and Kahana (2014) applied the Magellan model to a cognitive map-based model of human wayfinding. This model is used to measure experience-based improvement in accessing the efficiency of taxi drivers, the

respondents were asked to select and deliver passengers virtually. Findings revealed that the respondents learnt the environment priorities and routing the environment, the result envisaged that landmarks are mentally visualized. The participants' cognitive maps evolve easily with experience. Wayfinding challenges have been related to negative physical and psychological effects (Carpman and Grant, 2002). Shumaker and Reizenstein (1982) hinted that in a healthcare environment, wayfinding problems can cause confusion, frustration, anger, stress, elevated blood pressure, headaches, and fatigue. Wayfinding problems have also been found to negatively affect how people view businesses (e.g., shopping centres and hospitals) and make visitors intrude on staff for help finding their way (Arthur & Passini, 1992). While much of the difference in individuals' wayfinding usefulness can be accounted for by factors intrinsic to people (Kirasic, 2000), a growing body of literature shows that environmental factors — such as the complexity of a building's layout (Slone, Burles, Robinson, Levy, & Iaria, 2015); landmarks (Davis, Therrien, & West, 2008), and the attributes of corridors (Vilar, Rebelo, & Noriega, 2014) also play critical roles in the wayfinding process.

- **Empirical Studies**

It is worthy of stating categorically that, while a considerable body of literature exists on distinct and separate phenomena associated with wayfinding, no study has collated the available empirical evidence into a single source of knowledge, which prompted this very empirical review; it therefore offers a foundation for future studies and design decisions. Several types of research have been conducted to determine the importance and challenges of wayfinding in an academic environment. Li and Klippel (2012) conducted library wayfinding studies, identifying limited visibility, layout complexity, and familiarity with the space as essential elements to consider in this setting. In research conducted at Ontario university, 70% of surveyed respondents noted that accessibility and navigation of interiors was the most difficult wayfinding task on campus (Oyelola, 2014). Precisely, the location of lecture rooms was cited as the most challenging task students are likely to encounter when finding their ways because they crave for easy and effective wayfinding system devoid of apprehension (Scott-Webber,

Marini & Abraham, 2000). Duran (2016) investigated the relationship between utilised signage types with familiarity and confidence of cognitive maps in academic libraries. The results of the study showed signs are very important when developing wayfinding for multi-layered academic buildings and functional signs reduce time and stress commonly experienced when accessing a high-stressed environment. The structural design of academic buildings is critical in wayfinding. This prompted Maina and Audu (2016) in the analysis of their study: "Wayfinding in Educational Buildings: A Case Study of the Faculty of Environmental Design, Ahmadu Bello University" to enunciate that the cross points of walkways, corridors and the open areas on third-floor upper floors have high visual integration. They are physical features chosen by users for wayfinding purposes within an academic complex.

## Colours and Typography: Essentials of Digital Graphics for Wayfinding System

Yin, 2016 & Feeter, Read (2003) observed that colour is a visual component that provides environmental information (e.g. identification and description) and also enhances users' wayfinding abilities. Colour association have a powerful influence on occupants and guests in a space. Psychologically, colours are effective and influential in inducing activities and feelings. Gibson (2009) noted that colours can help users connect emotionally to a destination. Sheehan, Burton and Mitchell (2006), agreed also that those with special needs, such as dementia patients, have also been proved to be able to find their way easily when colour is used together with signage as a navigating tool. Colour is influential in codifying spaces and helping to create visual memory (Spence, Wong, Rusan & Rastegar, 2006). Coding of colours in wayfinding can be efficient in reducing text clustering within a limited space. Symonds (2017) posited that several competing textual contents in signs lead to information cluttering. Ranjbar, Fasllija and Aksel (2016) in their study examined the effects of colour-coding on users' wayfinding performance in a virtual Shopping Mall. The experiment was conducted in a virtual environment using two different spaces consisting of colour-coded and neutral schemes. The study inferred that spaces with white and grey (Neutral) colours were perceived to

be sterile and boring by users, whereas spaces with warm (Red) colours showed a high level of attractiveness. Stone (2003) explained that warm colours nudge people to focus outwards and increase their consciousness, in contrast, cool colours turn people inward and make them concentrate on visual and mental tasks. Cromwell Architects and the students at the University of Minnesota in 2012 found that colour helped 72% of respondents to find remote locations in a pediatric clinic (Matheny, 2021). The floors of some public complex buildings are colour coded with different hues and variations to facilitate a psychological influence on the people. Typically, emergency and lobby areas of hospitals are decorated with intense colours while the Intensive Care Units are filled with subtle shades of blue. Educational facilities embrace wall and floor cueing to create a strong visual link to guide new entrants to their appropriate classes in the school (Valsparm, 2015). Colour coding effectively enhances navigational behaviour and direct mobility as colour choices are equally gender-based. Yeung and Wong (2018) emphasised that colour preference by gender begins to fade among the 18-22 age group and the interest vanishes from age 60; for those between the ages of 8 and 12, there is a significant difference in preference. They further stressed that in a shared space between both genders, a section of the female gender favours warm tone colours (Red-Purple) and (Red-Green) while men have a preference for colours from blue to green. However, colours go hand-in-hand with typography which is the style and appearance of textual information.

The development of typography for wayfinding is anchored on readability and legibility, both are essential features of typography that enable people to decipher information on wayfinding signage instantly. Frutiger, Helvetica and Arial are extensive fonts in the signage industry (Stuart de Rozario, 2015). In the same vein, “Clearview” typeface is a combination of mixed cases and more recognisable by drivers of all ages than standard Alphabets while Ralf Herrmann (designer of Wayfinding Sans) discovered that San Serif family does not compromise beauty in its legibility and suitability for signage projects globally (Wei2019). An independent empirical study on signage typefaces for wayfinding, conducted at the University of Applied Sciences Berlin equally indicated Wayfinding Sans Pro (bold extended) to be the most suitable. It is significantly more legible and also functional than all other typefaces that were tested in the research (Feeter, 2019).

Large Format innovation (2021) emphasised as well that Sans Serif fonts such as Helvetica and Verdana are appropriate for wayfinding signs because they are easy to read at a glance.

**Usability in Wayfinding design**

Usability in design is the user-centeredness and usefulness of a design. It is a measure of the efficiency of a definite user in a particular context relating with a product/design and actualising a definitive goal, effectively and pleasingly (Interaction Design Foundation, 2021). The goal of usability is to focus on maximizing user experience as it is about human behaviour. Usability in wayfinding is the spatial affordance of the system. Effective wayfinding systems should reduce stress and be effortless by being intuitive and navigable. The usability of wayfinding is enhanced by the interface design of the system. Interface design is focused on optimising human interaction with the system. The essence of user interface design is to facilitate efficient user interaction in a simplified way. Cognitive user psychology is embraced in the conception of wayfinding interface design. In perceptual and cognitive psychology, there is the understanding of how human brain and memory work in harnessing complicated decisions to complete tasks and achieve goals. Users' interests in a product emanate from the perception of its usability in which the memory is engaged. According to Dillon (2006) the user rely on both short term memory (to handle current information) and long term memory (to facilitate the planning and interpretation of the system). Information is processed and transformed progressively from the perception of the stimulus to the comprehension of the visual cue leading to response which necessitates action and the use of the message. The physical activity emanating from the decision-making process occurs repetitively as human interacts with the system. Neisser's model of perception (see Figure 2) explained that the cognitive structure determining processes of perception, attention and categorisation, is a set of anticipatory schemata (Chimir, Waheeb & Horney, 2005). The schema theory based on this assertion then revealed that the mind consists of organised mental templates of information to enhance perception and information processing. Humans are thus, involved in a continuous cycle of information

transformation when exploring a dynamic environment with different spatial information.

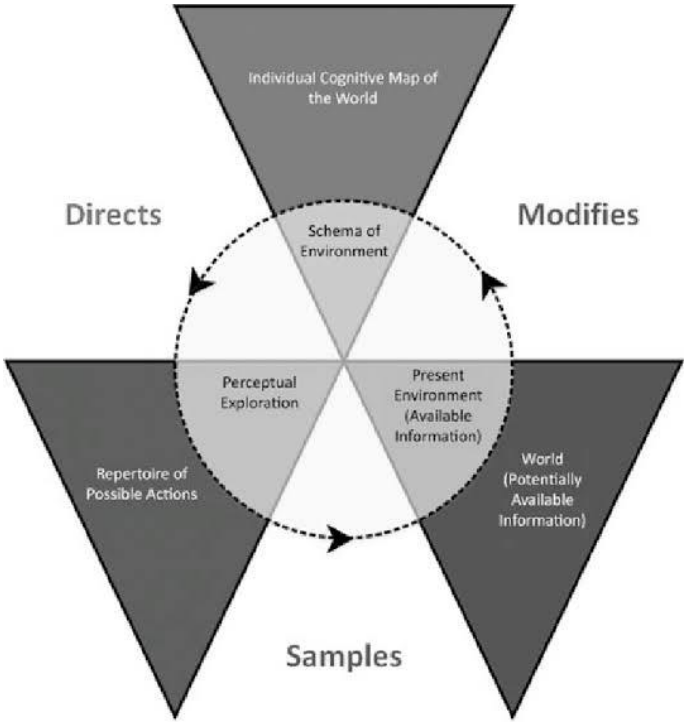


**Figure 2** Neisser's Model/ Cycle of perception
(Source: Chimir, 2005)

In user interface design, the psychology of colour influences emotion and user's perception. Aesthetics help to achieve positive user experience and enhance the functionality of interface design. The mood and tone of the interface colours have a psychological and physiological impact on the audience. Human memory associates certain experiences with colours; an attribute which also determines the usefulness of the designed interface. Moreno (2021) emphasised that contrasting colours create dynamism in the interface, harmonious colours enables logical interface design and colour scales minimizes the cognitive load. Hence, harmonious and contrasting colours are often utilised in wayfinding interface design. Efficient user interface design facilitates seamless user orientation of a physical environment. The design process must synergize functionality and visual aesthetics in actualising a system that is not only operational but also usable and responsive to the user's needs. Wang (2005) concluded that a positive wayfinding

experience should be functional i.e. effective, efficient, pleasurable and enjoyable to the users.

## Wayfinding Language cum Flat Design Concept: The Nexus

Wayfinding designers are consistently faced with the challenges of providing information for multilingual audiences. International airports such as Denver Airport handle over one hundred thousand passengers daily. A large chunk of these passengers speaks different languages in which wayfinding signages in transit hubs should cater for the diverse target audience. Symonds (2022) posited that colour coding is a way of solving the challenges associated with multiple languages. This is achieved by adorning the walls or floors of different areas in different colours (Helvacıoğlu and Olguntürk, 2011). The cognitive processes are easily activated when the audience can correlate the colours. Darken and Peterson (2002) expressed that wayfinding is also considered to be a mental process in creating a cognitive representation of the perceived environment by utilising spatial characteristics. Icons and pictographs can reduce semantic challenges in wayfinding design for multilingual audiences. Internationally recognised symbols are often used by designers to communicate effectively; in which most standard pictographs listed by the International Standard Organisation are meaningful signs (Symonds, 2022). The use of pictographs and colour-coded texts aids cognitive experience irrespective of language backgrounds; deductively, this is another cogent reason designers came up with the concept of flat design. Correct visualization of words (also pictography) and less texts are essential as a language for wayfinding system and this is aptly the highlight of flat design. Extending flat design concept to the creation of wayfinding signage means such production would be rich with images e.g. icons and coloured texts (but minimal). Icons are better used in wayfinding signage system, flat design equally supports icons, importantly in 2D (Workerbee, 2016). This is essentially to yield more utilitarian effect with less distraction. When a wayfinding signage is functional, humans will find navigation seamless and profiting.

## Research Methodology

Research design adopted for this study is both survey and experimental, anchored on the concept of flat design. The research is also practice-based, a method which allows researcher to incorporate his/ her own creative ideas into the research design and form part of the research output. This helped to achieve the aim of the research which is primarily to develop a Wayfinding Signage System. The survey was used to elicit response on the efficiency of the signage system after it was produced. Thus, the crux of this research design is the mixed method approach. Fine and Applied Arts departmental Building in Olabisi Onabanjo University, Ibogun Campus, is a two-wing building (see Plate 1). This building houses: Head of Department Office, Lecturers' offices, Gallery, Photo studio among others. The multi-purpose usage of this building necessitated the development of a wayfinding signage system which would improve its visibility and functionality of the building.

**Plate 1** Full view: Fine & Applied Arts Departmental Building
(© Siyanbola Afeez 17/12/2021)

## The Development Framework

This study adopts five phases of ADDIE design framework (Analysis, Design, Development, implementation and Evaluation) in the wayfinding system production work flow. The framework is discussed accordingly in connection to the work flow:

## Analysis

The analysis is centred on identifying and labelling the designated offices in the academic building. Each offices to be designated was identified, numbered and tagged with the created dummy signs. Dramatic roundish shape and cutout 'extended' numbering of the exterior and interior signs were anchored on creativity which typifies the Department of Fine and Applied Art. Similarly, colour interplay on the signs was vibrant colour reinforcing the specificity of the colour theory as colours, shape, typography and legibility etc. are fundamentally, elements of art. The conceptualisation and design of the wayfinding project was driven by aesthetics, psychology and functionality putting into consideration the 'flat design' technique.

## Design (Prototyping)

Thumbnail sketches were developed being the design blueprint for the directional wayfinding system; additionally, sketches were done in stages before the final shape and model outlook were achieved (see Plate 2 and 3). The dummy of the main wayfinding systems and the designated signs were created while each office was labelled accordingly (Plate 4 and 5). Computer-generated prototype/ mockup designs were created and dimensioned according to the specified measurements (see Figure 3-6).

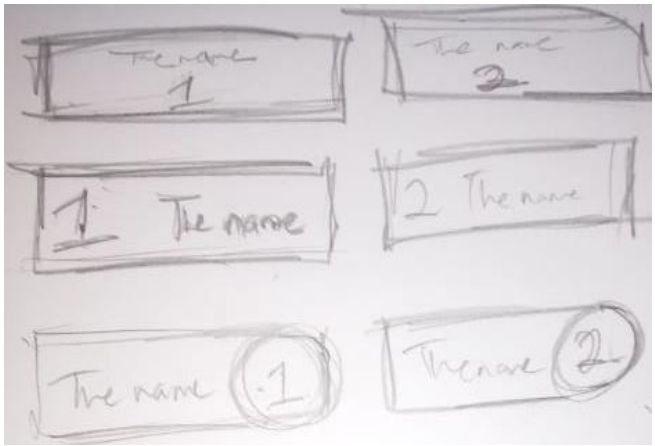


**Plate 2** Iteration sketches of the main wayfinding system
(© Siyanbola Afeez 15/11/2021)

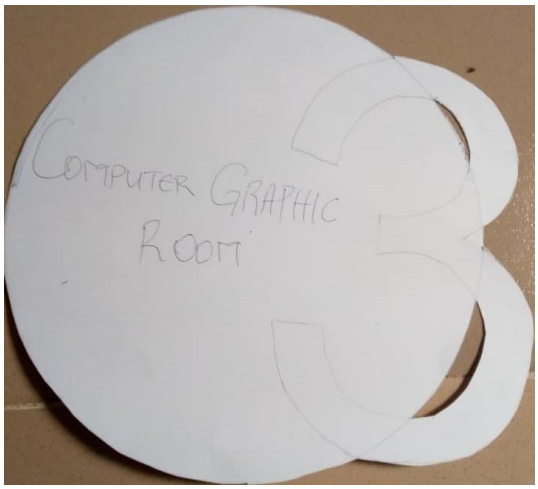


**Plate 3** Mockup model of number tags anchored on 'flat design'
(© Siyanbola Afeez 15/11/2021)


**Plate 4** Sectional mockup model of the signage system
(© Siyanbola Afeez 15/11/2021)

**Plate 5** Tagging of Doors with designated numbers
(© Siyanbola Afeez 17/11/2021)

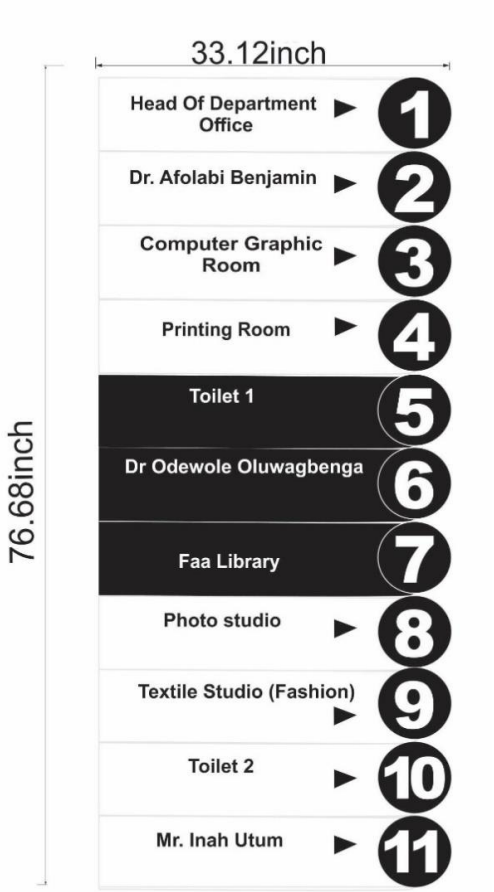


**Figure 3** Dimensioning of the Exterior Wayfinding System dwelling on Colour Contrast; which is key in flat design concept
(© Siyanbola Afeez & Afolabi, 17/11/2021)


**Figure 4** Dimensioning of the Interior Signs, strictly 'flat design Concept'
(© Siyanbola Afeez & Afolabi, 17/11/


**Figure 5** Computer generated 'flat' designs of the wayfinding System
*Highlights: Solid colours, Icons, and Minimal text*
(© Siyanbola Afeez & Afolabi, 21/11/2021)

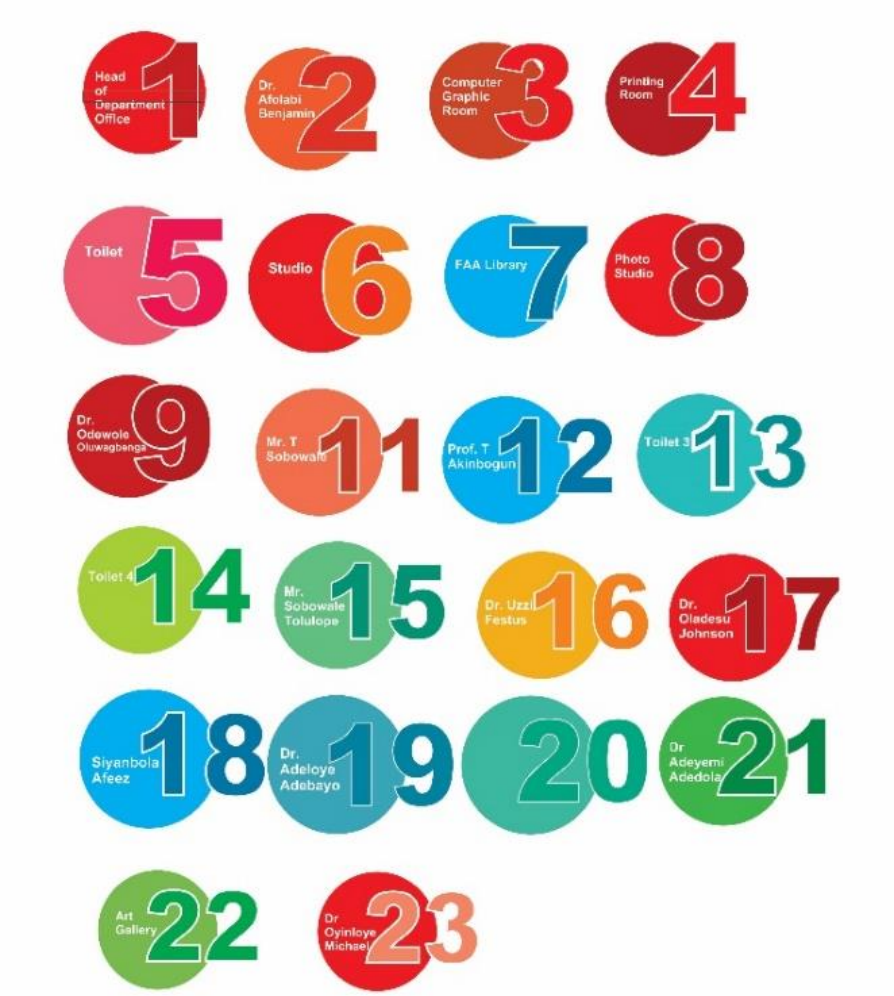


**Figure 6** Computer generated 'flat' designs of the number tags with designated names(© Siyanbola Afeez & Afolabi, 21/11/2021)

## Development

The numberings were done sequentially in descending order. Exterior and interior systems were synchronized basically with colour coding. Meanwhile, the interior signs contain the designated office names for easy identification. The flat design was created with CorelDraw and Photoshop; both digital graphics program. The final edit and information was then printed on self-adhesive vinyl material using a large format printing machine.

## Implementation

The prints were pasted on a heat-resistant non-ignitable board known as Arco Board (See Plate 6). Cutting of the board into required shapes and dimensions was achieved with the aid of a French Saw (See Plate 7). Interior signs (Plate 10-11) identifying the designated offices were mounted at 1200mm height above the floor for easy visibility to visitors/ different passers-by. Evaluation of the wayfinding system (Plate 8-9 and 11) was done through the survey questionnaire, subjected to statistical analysis.


**Plate 6** Pasting of Digital Prints on Arco Board
(© Siyanbola Afeez 17/11/2021)

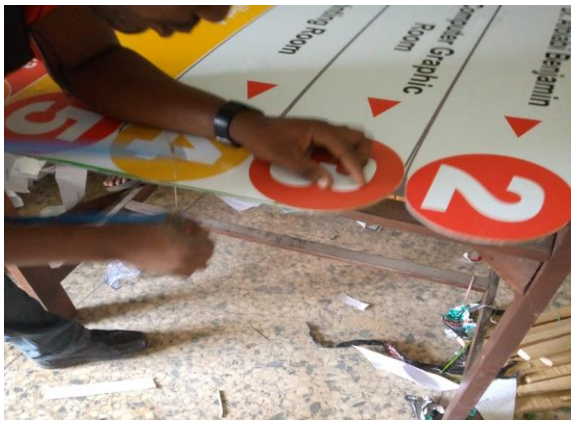

**Plate 7** Cutting of board into required shapes
(© Siyanbola Afeez 19/11/2021)

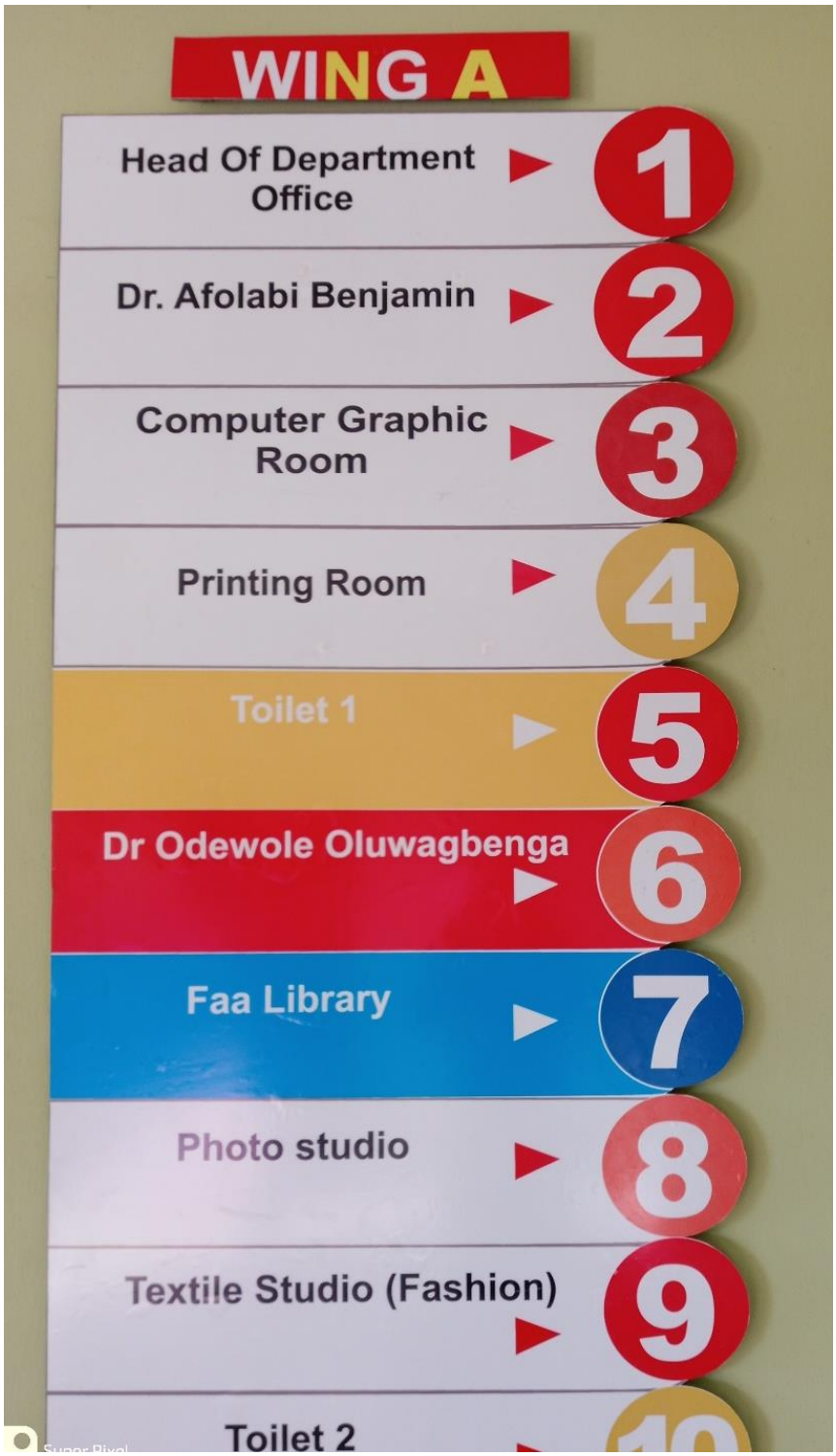


**Plate 8** Mounted Exterior Wayfinding System for Wing A
Icons/ Texts beautifully presented via flat design
(© Siyanbola Afeez 17/11/2021)


**Plate 9** Mounted Exterior Wayfinding System for Wing B depicting the 'Flat Design Concept'
(© Siyanbola Afeez 17/11/2021)

**Plate 10** Fixing of the Designated Interior Signs
(© Siyanbola Afeez 17/11/2021)


**Plate 11** Mounted 'Flat' Interior Sign
(© Siyanbola Afeez 17/11/2021)

**Evaluation (Statistical Analysis)**

The opinions of users constituting three hundred and thirteen (313) students and academic staff on campus were sampled to evaluate the usability and effectiveness of the developed wayfinding system. Closed-ended questionnaire that uses Likert Scale was employed in gathering raw data which was analysed using the mean and percentages. The nominal scores were based on the Likert scale model: Strongly Agree =5, Agree=4, Undecided=3, Disagree=2 and Strongly Disagree=1. These were calculated as 5+4+3+2+1 =15/5 =3 (Likert Scale Criterion). The score of each item was added and the arithmetic mean was calculated for each item. The mean is equated with the Likert Scale criterion above (Adepeko 2016 & Angyol 2015). If the mean is equal to or above (greater than) the Likert criterion (3.0) then the item is accepted and if the mean is lower than 3.0, then the item is rejected.

**Table 1**. Efficiency of the Developed Wayfinding Signage System

| S/N | Questions/ Var. (VARIABLES) | Strongly Agree | Agree | Undecided | Dis-Agree | Strongly Disagree | Mean | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | Consistency in the interior and exterior colours on the signs enhances functionality of the wayfinding signage. | 144 (46.0 %) | 147 (46.9 %) | 22 (7.1%) | | | 4.3 | Accepted |
| 2 | Textual information on the signs is bold and descriptive. | 50 (15.9 %) | 135 (43.1 %) | 128 (40.9%) | | | 3.75 | Accepted |
| 3 | Wayfinding system accentuate the environmental aesthetics. | 173 (55.3 %) | 96 (13.9 %) | 16 (5.1%) | 28 (8.9% ) | _ | 4.3 | Accepted |
| 4 | Use of solid colours of different tone/ gradients makes the wayfinding system appealing | 105 (33.5 %) | 123 (39.2 %) | 30 (9.58%) | 34 (10.9 %) | 21 (6.7%) | 3.8 | Accepted |
| 5 | The shape of the exterior and the interior signs | 181 (57.8 %) | 117 (37.3 %) | 7 (2.2%) | 5 (1.6% ) | 3 (0.9%) | 4.6 | Accepted |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | enhances efficiency of the wayfinding system | | | | | | | |
| 6 | Positioning of the interior and exterior signs makes it visible to all users | 64 (20.4 %) | 99 (31.6 %) | 56 (17.9%) | 23 (7.3% ) | 71 (22.7 %) | 3.1 | Accept ed |

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The corresponding accuracy of colour coding in the signs enhances efficiency of the wayfinding system (Mean=4.3). The interior sign becomes functional in the context of the exterior colour designation. Colour in any exterior must be considered in the context of its surroundings. This finding buttresses the position of Read (2003) that colours enhance users' wayfinding abilities. Studies have also shown that users who are unfamiliar with a colour-coded environment have a strong sense of direction as compared to noncolour-coded environments (Evans et al., 1980). The visual semantic of colours creates certain emotions in users and facilitate the understanding of the textual information. The textual information on the signs is bold and descriptive (Mean=3.75). The background colours significantly contrast the textual information on the signs, complying to flat design guideline. In achieving a uniform standardised set of signs devoid of ambiguities, Arial bold fonts are used across the developed wayfinding system; the textual information is simple and intuitive. Proactive Design (2021) posited that signage texts should be concise and easy to read. The colourful ambience of the Fine and Applied Art Departmental building in Ibogun is accentuated by the installed wayfinding system (Mean=4.3). The design and implementation of the exterior and interior wayfinding signage stimulate a sensorial experience in users of the building. Thus, the directional wayfinding signage that leverages on flat design concept also succeeded in creating an aesthetically driven user experience.

It is logical reiterating that humans work better with aesthetically pleasing objects (Norman, 2004). Consideration of aesthetics in wayfinding design helps users find their way with ease and pleasure (Wang, 2005). The use of solid colours in different tones makes the wayfinding appealing (Mean=3.8), this is because colours connect the users to the anticipated destination emotionally. Spence et al. (2006) observed that colours are influential in codifying spaces as they help to create visual memory. The application of analogous and complementary colours in the wayfinding interface design creates harmony and contrast; this is glaringly the strength of flat design. Colours are emotive and persuasive in influencing actions and feelings. The readability and legibility of textual information on wayfinding signage are enabled by the good use of harmonious and contrasting colours. Wang (2005) certified that the efficiency of wayfinding signage is anchored on legibility, readability or accessibility. The shape of the exterior and interior signs enhances the efficiency of the wayfinding system (Mean=4.6). Dramatic shapes of the wayfinding signs (in flatness) appeal to the consciousness of the users. The variable on shape also had the highest mean percentage (see Figure 7) depicting it is powerfully relevant; thus interesting signage shapes create enthusiasm and capture the attention of visitors who are not familiar with the environment.

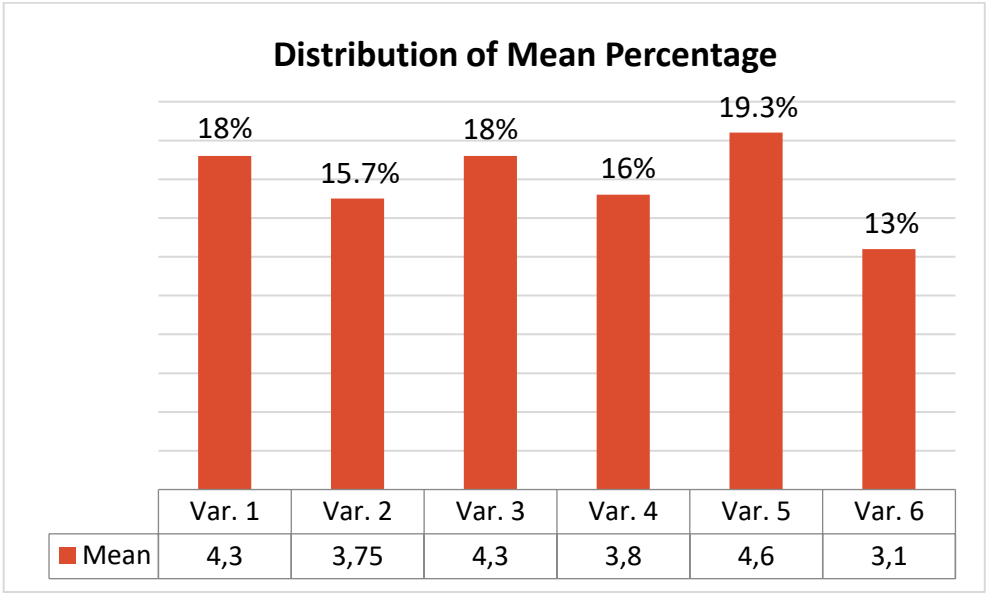


**Figure 7** Percentage Distribution of Mean
Source: Afolabi, 2021

People often find satisfaction in design solutions that combine refined graphic design with precise engineering and unique appearance. The combination of roundish and square edges in the exterior signs of the developed wayfinding system supports usability while the roundish interior signs with cutout numbers facilitate the noticeability of the signs. Visibility is a key component of efficient interior signs, opinionatedly, the positioning of the interior and exterior signs makes it visible to all users (Mean=3.1). The mounting of the interior signs, placed above eye level, was guided by the specification of Arthur and Passini (1992); to enable visibility to different categories of users and forestall possible human contact that could lead to damaging of the wayfinding signs.

## Conclusion and recommendation

Basically, flat design is mainly ascribed to interface design targeted for icon display on digital screens. This study on the other hand has shown that this design concept 'flat' is equally relevant when it comes to design meant for Prints especially the wayfinding signage system - an integral part of a functioning environment. The study has proven that human interactions with spaces are heightened by interesting sensational shapes of wayfinding systems with the integration of vibrant colours. Hence, reinforces the relevance of flat design as a concept and strategy in the development of an effective wayfinding signage system for academic environment. This is essential to increase well-organised wayfinding signs and reduce staff/ students' frustration. Movements in an environment should be coordinated and guided to create a positive enjoyable experience in the mind of visitors and residents of such environment. Effective wayfinding reduces confusion and anxiety normally experienced when navigating a complex space which most times is typical of academic setting. The development of an effective wayfinding system for such an environment requires the knowledge of psychology, colour, and planning to achieve the desired goals.

In the developed wayfinding signage, typography resonates with consistency and legibility while the colours on the texts are sufficiently in contrast to the background colours for improved readability - this is notably flat design strategy in operation. The hierarchical relationship in information on the wayfinding

system helps in directing the user's eyes and facilitates coordinated understanding of spatial information. Academic environments characterised by an intuitive pathway, clear wayfinding information with easy-to-read graphics will definitely contribute to the well-being and performance of the people in such environment. In all, this study has clearly demonstrated how creativity can be put into practise for communication solution. It is therefore recommended that visual designers (especially in Africa) should always spread their creative tentacles to grasp different design ideologies and be open to changes. It is certain that through this, they will be creatively and dynamically updated. Thus, be strategically positioned to solve design challenges of the 21st century in a rapidly changing world of advance technology.

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