Multi-Colour Guide and Directional Guide as Predictors of Students' Utilisation of Information Services in University Libraries in the United Kingdom

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ABSTRACT

This study was to examine library signage and students' utilisation of information services in university libraries in the United Kingdom. This study adopted survey research design. The study was conducted in university libraries in the United Kingdom. The population of the study was 4220 registered undergraduate students in faculty of education. The simple random sampling technique was used in selecting 2 Universities in the United Kingdom, alongside 4220 registered undergraduate students which constituted the sample size for the study. The researcher developed instrument entitled "Library Signage and Students Utilization of Information Services Questionnaire" (LSSUISQ), used in collecting data for the study. The instrument was given to three research experts for face validation. Two assessors were from the Department of Education Foundations, Guidance and Counselling and one from Library Science Unit of the Department of Educational Technology and Library Science. A trial testing of the instrument was carried out using 30 registered students who did not take part in the actual study. Thereafter, the internal consistency of the instrument was determined using Cronbach Alpha method. The reliability coefficient index of 0.86 was obtained. The Regression Coefficient Analysis was used to answer research questions of Simple Linear Regression Analysis, while the F-value of the Simple Linear Regression Analysis was used to test null hypotheses at .05 alpha level. The study concluded that multi-colour guide and directional guide foster independent and critical thinking. It solves way-finding problem in unfamiliar environment, it helps library user to use the appropriate data, tools and facilities of the library, bringing about coordination in academic libraries and aid students in way-finding and effective retrieval of the needed information. It was therefore recommended that the Government should increase budgetary allocation to universities to ensure adequate fund for provision of library signage in academic libraries. This will contribute to effective way-finding and utilisation of information services by students and other library users.

KEYWORDS: Library Signage, multi-colour, directional guide, Students' Utilisation, Information Services, University Libraries, Way-finding

Introduction

A good university library is characterized by well-designed, sufficient, and flexible space, and is equipped with an appropriate collection to support curriculum goals. Such library has a design that is based on consideration of the unique and diverse needs of the learners it serves, and utilises a good management system to ensure optimum utilization by

the university community. Johnston and Bishop (2011) noted that the academic library should be a place where students can find things easily and learn to be independent library users. Signage is seen as a comprehensive system of signs, arrows and directional guide that assist visitors in self-navigating through an environment. It is a powerful communication medium that encompasses visual, auditory and textual cues that help users navigate their way around a building or space. Ahn (2011) identified library signage to include; multi-colour guide, directional guide, instructional guide, regulatory guide and informational guide etc. For the purpose of this study, multi-colour guide and directional guide will be considered.

Multi-colour is a type of signage that makes access to resources with different colours, making it easy and fun to search for and retrieve information resources in the library. Colour is an important element to consider, because it has a significant effect on students' way-finding and spatial orientation abilities in university environment (Jansen-Osmann and Wiedenbauer, 2004). Library users need library environment to be interesting, and they make associations with colours and shapes rather than form. Colour is seen as the easiest material to change the characteristic of the environment and dominantly visible. Therefore, using colours in signage can provide visual interest, supply information for efficient navigation, and improve way-finding and spatial orientation abilities in the university library environment.

Directional signage is one of the key services expected to be provided in the university libraries. San Jose Public Library (2009) viewed directional guide as a signage that provides information to help library users find their way around the library. These include holidays, closing signs, rest room, copier signs, and many other signages at the library. Directional signs are also what turn a group of many individuals into a singular crowd. Directional signs keep people moving where they should not be standing still. So, students follow the directional signs until they find or identify the information needed in the library. The use of signage is an important strategy that must be utilised to improve students 'way-finding and therefore develop spatial orientation abilities in universities. Directional guide enables new and frequent students navigate quickly to their destination. Utilization is the process of making practical and proper use of the information resources that are available in the library. In view of the utilization of information resources in university libraries, Parvathamma and Reddy (2009) advocate that academic library need to take proactive approach in motivating users to use their resources, provide access to the internet and offer community-based services including literacy programs.

Statement of the Problem

As research on user way-finding in all library types is beginning to emerge, university library manuals seem to pay little or no attention to library signage and support that students need to increase usability of their services. Researcher's observation shows that new students are often confused when trying to locate specific areas of the facility, which may hinder utilisation of the information service in the library. This problem may be attributed to poor library signage in the university libraries. When students are not given adequate directional cues in university libraries, disorientation will hinder way-finding performance. It is therefore based on this contradiction that the researcher attempted to examine library signage and students' utilisation of information service in the United Kingdom.

Purpose of the study

The main objective of this study was to examine library signage and students' utilisation of information services in universities in the United Kingdom. The specific objectives were as follows:

1. To determine the extent to which multi-colour guide predict students' utilisation of information services in university libraries in the United Kingdom.
2. To determine the extent to which directional guide predict students' utilisation of information services in university libraries in the United Kingdom.

Research questions

The following research questions were raised to be answered.

1. What is the extent to which multi-colour guide predict students' utilisation of information services in university libraries in the United Kingdom?
2. What is the extent to which directional guide predict students' utilisation of information services in university libraries in the United Kingdom?

Research Hypotheses

$H0_1$.   There is no significant extent to which multi-colour guide predicts students' utilisation of information services in university libraries in the United Kingdom.

$H0_2$.   There is no significant extent to which directional guide predicts students' utilisation of information services in university libraries in the United Kingdom.

Literature Review

Concept of Library Signage

Library signage is one of the many touch points which a library user needs to navigate through the library confidently and independently. Lack of signage however, can trigger library anxiety a term coined by McPherson (2015) to describe the feelings of fear, uncertainty, and worry when visiting the library. Dalton (2014) postulates that whether a university is being built or a street fair is springing up, way-finding signage is one of the keys to a great visitor experience. The basic guiding principles behind the design and placement of those signs should be the same. Signs deliver information, and in way-finding signage, only a handful of different types of signs are necessary to deliver information. Knowing what those types of signs are is an integral part to creating a useful system of way-finding signage.

Dwight (2008) makes the most sense when he lists these four: identification, directional, informational and regulatory signage. Defining these four types of signs is simple, as knowing how to use them. When designing the system, librarians should remember, the simpler the way-finding signage system is made the better for all involved; from the designers of the way-finding signage system, to the visitors using it to get around. Dwight maintains that the idea behind designing signs is to convey as much information as necessary in as little space possible. That is why it helps to think of signs in these four different categories.

Ahn (2011) maintains that the roles of signage are divided into two, first as a visually delivery of necessary information and second as a composition of exterior and interior designs. The former roles permit or restrict certain behaviors of users and to help them find their destinations. The later roles maximize the harmony of spaces by displaying signs on walls, stairs, hallways, and floors of libraries. The library signs, therefore, not only provides easier ways of access for visitors, but also visually express the nature of organizations and the

function of areas, and worked as an image marketing strategy of library. Library signage serves two broad purposes; informing library users and trying to influence their behaviour (Ahn, 2011). It is important to help users to feel comfortable and confident in using the library to achieve this.

Concept of Utilization of Information Services

Clark (2012) posits that academic libraries are libraries established and maintained by tertiary institutions. They are meant to provide the informational, educational and recreational needs of the students. Libraries are considered as agents of social, political and cultural change in any society and provide a wide range of readership than any other type of library. The students are expected to make effective and efficient use of academic libraries to satisfy their research and informational needs. Users' satisfaction of the services rendered by academic libraries relates to effective use of the services and resources provided by the library. The satisfaction derived by students greatly influences the utilization of the services rendered by the library. Therefore, to justify the existence of any academic library, provision of effective services and resources necessary enough to attract potential users cannot be possible without library signage.

The primary role of academic library is to provide information service to support the educational, recreation, cultural, economic and technological needs of users. They are used as media for disseminating information and enhancing literature search and as tool for the development of intellectual compatibilities and promotion of cultural and social integration. In view of the Utilization of Information resources and services in academic libraries, Parvathamma and Reddy (2009) advocate that academic library need to take proactive approach in motivating users to use their resource collections, provide access to the internet and offer community-based services including literacy programs. Perhaps, this is possible if academic libraries apply appropriate signage or adopt signage system to provide the necessary guide and information required to aid utilization of library information by students and other library users. Perceived ease of use through signage may be the occurring factor influencing whether or not a particular information resource of the academic library is used (Ossai, 2009).

Multi-Colour Guide and Students' Utilization of Information Services

Colour is an important element to consider because it has a significant effect on students' way-finding and spatial orientation abilities in academic environments. Libraries users need library environment to be interesting, and they make associations with color and shapes rather than form. Therefore, using colour in signage can provide visual interest, supply information for efficient navigation, and improve students' way-finding and spatial orientation abilities in academic environment, but color must be considered carefully to ensure there is sufficient contrast between the text and background to allow a sign to be legible (Arthur and Passini, 2012).

Multi-Colour is a useful design element for spatial orientation and space definition for creating environmental information that supports children's way-finding abilities including helping students orient themselves in a new environment (Jansen-Osmann and Wiedenbauer, 2004), especially for younger children who may have limited reading skills. In academic library, the librarian had the four segments of the library strictly colour coded with all subject heading and Dewey Decimal signage in each section appearing in the designated color. This was a good use of color to create a system. The use of color in signage is an important aspect

of way-finding. The use of color can create a system to assist users in developing their way-finding scheme (Admi, 2016; Jansen-Osmann and Wiedenbauer, 2004; Read, 2010).

Interestingly, colours are found to have its negative effects. Besides of arousal effect, red is found to cause avoidance behaviour when subjects perceived it as a warning cue in performance related task, drawing away attention of high task demand and moderating the perception of perceived task. The negative effects were also detected on several colours such as blue (Knez, 2001; Stone, 2003), gray and beige are able to minimize attention or concentration. Blue is also said to have a drowsy and sleepy effect as tested by Kuller *et al.* (2009) using the electroencephalogram (EEG). In space circulation specifically related to exhibition space, lighter colour such as light beige evokes less covered area, less concentration and low in density of footstep compared to darker colour space. Therefore, colour is an important element of focal information that will determine human behaviour towards its surroundings.

Directional Signage and Students' Utilization of Information Services

Directional signage is one of the key services provided in the academic libraries. Dwight (2008) avers that when it comes to pointing the way, the directional or way-finding signs are the sign for the job. When using directional signage, the best rule to follow is to keeping it simple. When planning a way-finding system, try to plan it as early in the overall planning stage as possible. Unfortunately, way-finding plans often get left to the end, and don't receive the attention they deserve. Directional signs don't appear at the location, they appear around the location and on the way to the location. Directional signs need to be hidden in plain sight. They should appear at junctions, or anywhere a person on a way to a location might look to see which way to get to that location. Directional signs are also what turn a group of many individuals into a singular crowd. Airports, for instance, aren't made for standing around; they're made for transit. Directional signs keep people moving where they shouldn't be standing still. So, someone follows the directional signs until they find the identification sign. When they find that, they'll need an informational sign to know a little more.

Barclay and Scott (2012) caution that three considerations stand out when it comes to directional signage: Use minimal directional signage, use bump points to help with directional signage placement and consider the best placement of directional signs. It is not always better to have more directional signs than fewer, and it can actually be worse. In an entirely new space, one should resist the temptation to overload it with directional signs. Bump points are those places in any building where people routinely stop or slow down as they decide which way to go next. One good strategy in a new or remoulded space is to open with low-cost temporary directional signage and wait until one have determined the bump points before installing permanent directional signage.

Method

This study adopted survey research design. Analytical survey is used when collecting first-hand information from people in their natural settings for the purpose of getting detailed descriptions. The study was conducted in university libraries in the United Kingdom. The population of the study was 4220 registered undergraduate students in faculty of education. The simple random sampling technique was used in selecting 2 Universities in the United Kingdom, alongside 4220 registered undergraduate students which constituted the sample size for the study. The researcher developed instrument entitled "Library Signage and Students Utilization of Information Services Questionnaire" (LSSUISQ), used in collecting data for the study. The instrument was given to three research experts for face validation. Two assessors were from the Department of Education Foundations, Guidance and Counselling and one from Library Science Unit of the Department of Educational Technology and Library Science. A trial testing of the instrument was carried out using 30 registered students who did not take part in the actual study. Thereafter, the internal consistency of the instrument was determined using Cronbach's Alpha method. The reliability coefficient index of .86 was obtained. The Regression Coefficient Analysis was used to answer research questions of Simple Linear Regression Analysis, while the F-value of the Simple Linear Regression Analysis was used to test null hypotheses at .05 alpha level.

Result and Discussion

Research Question One: What is the extent to which multi-colour guide predict students utilization of information services in university libraries in the United Kingdom?

Table 1: Simple linear regression analysis for the extent to which multi-colour guide predicts students' utilisation of information services in university libraries in the United Kingdom

Variable	R	R Square	Extent of prediction	Remark
Multi-colour Guide				
	.325 Extent	**.106**	**10.6%**	**Low**
Students Utilization of Information services				

Result in Table 1 shows the R for the strength of the relationship and R^2 for the determination of the extent to which multi-colour guide predict or determine student's utilization of information service in university libraries in the United Kingdom. The R- Value of .325 indicates a low extent of relationship between the two variables. The calculated R^2 of .106 which is the coefficient of determinant indicates that only 10.6% of student's utilization of information service is predicted by multi-colour guide. This implies that multi-colour guide to a low extent predicts students utilization and information service in university libraries in the United Kingdom.

Research Question Two: What is the extent to which directional guide predict student's utilization of information services in university libraries in the United Kingdom.

Table 2: Simple linear regression analysis for the extent to which directional guide predicts students' utilisation of information services in university libraries in the United Kingdom

Variable	R	R Square	Extent of prediction	Remark
Directional Guide				
	.414 Extent	.172	17.2%	Low
Students Utilization of Information services				

The entries in Table 2 indicate the R for the strength of the relationship and R^2 for the determination of the extent to which directional guide and students' utilisation and information service in universities in the United Kingdom. The R- Value of .414 indicates a low extent of relationship between the two variables. The calculated R^2 of .172 which is the coefficient of determinant indicates that only 17.2% of students' utilization of information service is predicted by directional guide. This implies that directional guide to a low extent predicts students utilisation and information service in university libraries in the United Kingdom.

Test of Null hypotheses

Hypothesis one: There is no significant extent to which multi-colour guide predicts students' utilisation of information services in university libraries in the United Kingdom.

Table 3: Simple linear regression analysis for the prediction between multi-colour guide and students' utilization of information service in university libraries in the United Kingdom

Variables	Source Variation	Sum of Squares	df	Mean Square	F-Cal	F-Crit	Decision @ p< .05
Multi-colour Guide							
	Regression	98.202	1	98.202	46.743	3.89	*
	Residual						
		56.632	396	21.355			
Students utilization Information Service	Total						
		54.834	397				

*Significant at p< .05

The result in Table 3 shows that the calculated F-value of 46.743 is greater than the critical-F value of 3.89 at .05 level of significant with 1 and 397- degrees of freedom. With this result therefore, the null hypothesis which states that the extent to which multi-colour guide predict student's utilization of information service in universities in the United Kingdom is not significant is rejected. The result means that multi-colour guide significantly predict student utilization of information services in university libraries in the United Kingdom.

Hypothesis Two: There is no significant extent to which directional guide predicts students' utilisation of information services in university libraries in the United Kingdom.

Table 4: Simple linear regression analysis for the prediction between directional guide and student's utilization of information service in university libraries in the United Kingdom

Variables	Source Variation	Sum of Squares	df	Mean Square	F-Cal	F-Crit	Decision @ p< .05
Directional Guide							
	Regression	22.167	1	22.167	82.013	3.89	*
	Residual	32.667	396	19.779			
Students utilization Information Service							
	Total	54.834	397				

*Significant at p< .05

The outcome in Table 4 shows that the calculated F-value of 82.013 is greater than the critical-F value of 3.89 at .05 level of significant with 1 and 397 degrees of freedom. The result is significant; therefore, the null hypothesis which states that the extent to which directional guide predicts student's utilization of information service in universities in the United Kingdom is not significant is rejected. The result claims that directional guide significantly predict students' utilization of information services in university libraries in the United Kingdom.

Discussion of Findings

Multi-colour Guide and Students' Utilization of Information Services

The result of findings in Table 1 showed that all the identified items on multi-colour guide predict students' utilisation of information services in university libraries in the United Kingdom. The reason is because multi-colour guide is a useful design element for spatial orientation and space definition for creating environmental information that supports students' way-finding abilities. Similarly, the result of the data presented in Table 3 showed that the extent to which multi-colour guide predicts students' utilization of information services in university libraries in the United Kingdom is significant. This is simply because business multi-colour guide is useful in predicting behaviour, decision making and health of both female and male students. In other words, multi-colour guide is a subtle stimulation with salient impact on effective utilization of library resources by female and male students in academic libraries. This result is supported by Admi (2016), who maintained that the use of color in signage is an important aspect of way-finding. The use of color can create a system to assist users in developing their way-finding scheme.

Directional Guide and Students' Utilization of Information Services

The result of findings in Table 2 showed that all the identified items on directional guide predict students' utilization of information services in university libraries in the United Kingdom. The reason for the result is because directional signage is a sign that provide information to help library users find their way around the library. The goal of directional signage is to allow someone who has never entered any facility be able to navigate to any department, work cell, machine or process without asking a single question. Similarly, the result of the data presented in Table 4 showed the extent to which directional guide predict students' utilization of information services in university libraries in the United Kingdom is significant. This is simply because directional guide provides greater assurance of information retrieval to students when they enter the library and observe the attention to details that is placed on way-finding. The details on the directional guide will help students to

retrieve information sources in the library. And these will invariably enhance effective utilization of information services in the library without gender bias. The result is in line with Hahn and Zitron (2011) who postulated that the presence of directional guide in academic library help to reduce noise and traffic at the pedestrian, creating free movement from one section to the other.

Conclusion

Multi-colour guide and directional guide foster independent and critical thinking. It solves way-finding problem in unfamiliar environment, it helps library user to use the appropriate data, tools and facilities of the library, bringing about coordination in academic libraries and aid students in way-finding and effective retrieval of the needed information. Hence, library signage has great influence on students' utilization of information services in the university libraries in the United Kingdom.

Recommendations

Based on the findings and conclusion of this study, it was recommended that:

1. The Government should increase budgetary allocation to universities to ensure adequate fund for provision of library signage in academic libraries. This will contribute to effective way-finding and utilisation of information services by students and other library users.

2. The designers of library signage should ensure that the colour combination of signs do not result to colour blindness. Colour combination should be attractive to aid way-finding and special navigation. This will enhance visual stimulus and aid students' utilisation of library and information services.

REFERENCES

Admi I. D. (2016). *Different types of signage and their purposes*. Available at: http://www.contractil.com/different-types-of-signage-and-their-purposes/.

Ahn, I. J. (2011). Contents development of library signage manual in Korea. *International Journal of Knowledge Content Development & Technology*, 1(2): 15-27.

Arthur, P. and Passini, R. (2012) *Wayfinding:* People, Signs, and Architecture. New York: McGraw-Hill.

Barclay, D. A. and Scott, E. D. (2012). *Directions to Library Wayfinding*. Available at https://americanlibrariesmagazine.org/2012/03/20/directions-to-library-wayfinding/

Clark, S. O. (2012). *Fundamentals of library science*. Lagos: Functional publishers.

Dalton, T. (2014). *The four types of wayfinding signage*. Available at: http://www.blog.signsdirect.com/the-four-types-of-wayfinding-signage/

Dwight, E. (2008). Signs of the times. *American School & University*, 80(12), 38-40.

Hahn, J. and Zitron, L. (2011). How first-year students navigate the stacks: Implications for improving wayfinding. *Reference & User Services Quarterly*, 51(1), 28-35.

Jansen-Osmann, P. and Wiedenbauer, G. (2004). The representation of landmarks and routes in children and adults: A study in a virtual environment. *Journal of Environmental Psychology*, 24(2): 347-357.

Johnston, M. P. and Mandel, L. H. (2014). Are we leaving them lost in the woods with no breadcrumbs to follow? Assessing signage systems in school libraries. *School Libraries Worldwide,* 20(2): 38-53.

Knez, I. (2001). Effects of colour of light on nonvisual psychological processes. *Journal of Environmental Psychology,* 21(2), 201-208.

Kuller, R., Mikellides, B. & Janssens, J (2009). Color, Arousal, and Performance. A Comparison of Three Experiments. *Journal of Colour Research and Application,* 34(2), 141-152.

McPherson, M. A. (2015). Library anxiety among university students: A survey. *IFLA Journal*, 41(4), 317–325.

Ossai, N (2009). Library use patterns of law students at the University of Benin. *Article* 6(1) 1-2.

Parvathamma, N. and Reddy, S. (2009). Use of information resources and services in public libraries. A case of Bidar District, Karnataka State, India. *Annals of library and information studies,* 56(2), 249-254.

Read, M. A. (2010). Contemplating Design: Listening to Children's Preferences about Classroom Design. *Journal of Creative Education,* 20(2), 75-80.

Stone, N. J. (2003). Environmental view and colour for a simulated telemarketing task. *Journal of Environmental Psychology,* 23(1), 63-78