

A Critical Analysis Of The Uses and Gratifications Experienced By South African Users Of The Digital Doorway

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Abstract

The Digital Doorway is a computerized machine that was implemented in areas populated by disadvantaged communities throughout South Africa to promote computer literacy within these communities. Understanding the progress and satisfaction of users of the digital doorway is highly significant in capturing important facts that can be used to further improve the system in the future.

This study will provide a qualitative perspective regarding the use of the machine as well as the gratifications experienced by the users from their acquired computer access and knowledge. The researchers conducted content analysis of a sample of 100 narratives in order to identify the uses and gratifications experienced by the users. The collected data was obtained from a narrative inquiry that was conducted by a research team of the Meraka Institute. The third author is a member of that team. The findings of the study extended the knowledge base regarding the users' perspective of the machine. The project enabled the researchers to contribute to the achievement of the initial goal of the Digital Doorway namely to improve computer literacy in impoverished areas.

Keywords

Digital doorway, unsupervised learning, qualitative analysis, narratives, uses, gratifications, domains, courses

Introduction

The digital doorway is a unique South African computer artifact designed to bridge the digital divide between advantaged and disadvantaged communities. Gush (2011:16) commented that "(t)he Digital Doorway (DD) is a standalone rugged multi-terminal computer

system that is placed at various strategic sites in impoverished areas of South Africa. Multiple DD sites – over 200 – are currently in operation as of 2011.” Since it is now more than a decade since the first DD was operationally implemented and the researchers had access to a large dataset of narratives that were collected from users of the DDs, they engaged in a content analysis project of these narratives. This paper is one of the outcomes that resulted from this ongoing project.

The paper starts with explanations of the digital divide, and unsupervised learning. This is followed by a short history of the development of the DD concept. The last section of the literature review is dedicated to the uses and gratifications theory that was used to anchor the empirical part of the study.

The methodology followed by the researchers is subsequently explained after which they explicate their analysis and the findings.

Literature Review

The digital divide

The concept of the digital doorway has been developed in order to overcome the digital divide. The term ‘digital divide’ has been defined by many authors. A selection of definitions has been embedded in Table 1:

AUTHOR / AUTHORS	DEFINITION
(KEEBLE, 2003)	“THE TERM “DIGITAL DIVIDE” MAY BE TAKEN AT THE BROADEST LEVEL TO REFER TO THE GAP BETWEEN THOSE INDIVIDUALS AND COMMUNITIES WHO OWN, ACCESS, AND EFFECTIVELY USE ICTS AND THOSE WHO DO NOT”
(BROWN, CAMPBELL & LING, 2011)	“...THE DIGITAL GAP BETWEEN THOSE WITH ACCESS TO KEY COMMUNICATIONS TECHNOLOGIES AND THOSE WITHOUT ACCESS.”
(FUCHS & HORAK, 2008).	“THE TOPIC OF THE DIGITAL DIVIDE CONCERNS THE UNEQUAL ACCESS TO AND USAGE OF NEW TECHNOLOGIES”.
(GURSTEIN 2003)	“..DESCRIBES THE FACT THAT THE WORLD CAN BE DIVIDED INTO PEOPLE WHO DO AND PEOPLE WHO DON’T HAVE ACCESS TO – AND THE CAPABILITY TO USE MODERN INFORMATION TECHNOLOGY, SUCH AS TELEPHONE, TELEVISION, OR THE INTERNET”.

Although Brown et al. (2011) describe the digital divide only in terms of accessibility, all the other cited definitions also make mention of the ability to use these technologies. The authors of this paper concur with the majority view.

The impact of the digital divide in different societies is considered to be of major concern. The phenomenon that certain segments of a community fall behind in terms of technology and/or common literacy and knowledge creates a split economy with a vast number of individuals missing out on the benefits that knowledge alone can offer. Despite the rapid growth of the use of technologies among all communities, the impact on the general well-being of societies is not only positive. These digitized societies, more often than not, suffer from fragmented labour forces and segregation.

The bridging of the digital divide is essential to prevent a sub-divided economy that separates the “haves” from the “have-nots”. Furthermore, it is essential to provide opportunities for those who lack the means or the capacity of accessing these technologies (Keeble, 2003).

Macleod (2005) underscored the following statement made by Kofi Annan during his tenure as Secretary-General of the United Nations: “A wide consensus has emerged about the potential of information and communications technologies (ICT) to promote economic growth, combat poverty, and facilitate the integration of developing countries into the global economy. Seizing the opportunities of the digital revolution is one of the most pressing challenges we face”

Mitra & Dangwal (2010) consider the divide to affect individuals in learning societies that reside in impoverished areas. The authors state that the lack of well-established educational institutions affect children in these areas as they are denied the right to education. By bridging the gaps these gaps the disadvantaged societies can gradually become part of the technologically advanced world.

The role of the DDs in these disadvantaged learning societies features prominently in the following sections.

Unsupervised learning

The concept of the DD is based on the principle of unsupervised learning. The ideas and concepts behind the Digital Doorway were triggered by the ideas of Dr. Sugata Mitra of the National Institute of Information Technologies (NIIT) in India.

Mitra, (2003) brought about the notion of the Hole in the Wall (HiTW) which involved a novel idea to implement computer systems throughout impoverished areas in India in order to raise the level of computer literacy. The founder of the project considered a computer literate child as one who is able to switch on a computer, browse through web pages, send and receive email messages and use drawing tools (Mitra, 2000). According to Mitra, (2003), the project was initiated in order to investigate:

- The extent to which individuals have the ability to explore and learn for themselves on their own.
- The ability of a child or an adult to gain knowledge on their own by simply interacting with a system.
- Whether the use of computer systems can further develop an individual’s IQ and skills.

The first kiosk was implemented in 1999 in New Delhi. It was constructed in such a way that the computer system was placed and surrounded by brick walls, in other words, a computer system was simply inserted into a wall (Mitra, 2003). The computer was run on a Windows OS platform and offered Internet connectivity. The system included a computer screen, a touch pad and a keyboard (Mitra, 2000, 2003).

The kiosk was introduced without any public announcements and video cameras were installed to monitor the activities around the terminal. It was observed that children were highly motivated, encouraged and inspired to make use of these terminals without guidance or assistance and in turn, gained self-knowledge on how to use the systems (Mitra, 2000, 2003).

Users of the kiosk were mainly children between the ages of 5 and 16 years who had no previous experience with using a computer system. The following basic observations were made of users when interacting with the system:

- Users learnt to browse and acquired basic drawing skills within a few days of the systems implementation.
- The most used applications on the system were Paint and Internet Explorer.
- Users exhibited a form of peer learning by teaching each other what they had learnt and mastered.
- Users of the kiosk felt strongly about the idea of eliminating the system.

By 2010 approximately 300 terminals had been implemented throughout India.



Users at the kiosk in New Delhi. (Mitra, 2000).

The whole idea of using a self-learning mechanism in order to increase computer literacy and knowledge may seem speculative, if not impractical, however according to Mitra (2000), children are deemed to learn faster from their own inquisitive behaviour, ideas and thoughts, despite the absence of a supervisor or mentor. According to Mitra (2000) “(t)he acquisition of basic computing skills by any set of children can be achieved through incidental learning provided the learners are given access to a suitable computing facility, with entertaining and motivating content and some minimal (human) guidance.”

Furthermore, the term “Minimally Invasive Education” (MIE) denoted by Mitra, (2000) refers to an educational method that involves the act of motivational learning by children through the use of a suitable learning environment without any intervention or with minimal guidance. The ability to invite and attract users towards various terminals is initiated

through “self-interest”, a concept that induces the act of self-learning.

Within a month after the first kiosk was implemented in New Delhi in 1999, it was observed that children who made use of the terminals gained basic skills in English and Mathematics. After several months of usage, the users of the terminals displayed the following improvements:

- They had improved their English skills; vocabulary and pronunciations.
- They were now able to use email systems and search engines.
- They improved their scholarly skills in the field of science and mathematics.

(Mitra & Dangwal, 2010).

The children did not only have access to the facilities, they also developed a sense of confidence and were able to achieve “effective use” from these devices by gaining self-induced knowledge (Mitra & Dangwal, 2010).

A number of other projects have been instigated to promote the spread of computer literacy and bridge the digital divide. One of these projects comprise of the “One Laptop per child” experiment. The One Laptop per child (OLPC) project was instigated by Nicholas Negroponte and launched in 2005 to expand on the use of computers in poor remote areas around the world (Buchele & Owusu-Aning, 2007). According to Buchele and Owusu-Aning (2007) “(t)he vision of OLPC is to allow children who might otherwise not have access to quality educational opportunities to use the laptops to access information. Another project that promises similar benefits is the BingBee project. BingBee was also initiated to expand computer literacy levels and improve educational capabilities in rural areas in South Africa. According to Slay, Wentworth and Locke (2006) “...it is designed to allow users to become familiar with computers. More importantly however, it is designed to improve the education levels of its users through the use of “edutainment” games.”

The Digital Doorway

Introduction

The Hole in the Wall “HiTW” project that originated from Mitra’s ideas and conceptions served as the inspiration for the development of Digital Doorway projects in South Africa (Stillman, 2008). The DD projects according to Cambridge, Smith, & Gush (2008) is a joint progressive establishment between the South African Department of Science and Technology (DST) and the Meraka Institute.

The South African government’s obligation towards ICT development in South Africa was stated in 2002 by the country’s president, Thabo Mbeki, to resolve the challenges brought about by the digital divide in order to promote economic growth and productivity. Mbeki declared that technological literacy should become the main driving force if South Africa wants to hold its own in this scientifically advanced era (Stillman et al., 2011; Cambridge, 2008).

Stillman et al. (2011) state that the use of the “One Laptop per child” (OLPC) approach to

bridge the digital divide is considered to be an ineffective approach in spreading the use of ICT's in developing countries. Its lack of success validated this viewpoint. On the other hand the DD project is deemed to be a more effective initiative. This is a result of its durability and simplicity.

According to Cambridge et al. (2008), the first Digital Doorway (DD) was implemented in 2002 in Cwili, a small rural town in the Eastern Cape. Since then and as a result of the Cwili project, over 200 DD terminals have been implemented (Gush & De Villiers, 2010). Further-more, the DD project has been extended outside the borders of South Africa. According to Cambridge (2008), terminals have been installed at the offices of the United Nations Children's Fund (UNICEF) in New York, and on suitable premises in Addis Ababa, Lesotho, Uganda and Melbourne, Australia.

The Digital Doorway is simply a computer system implemented in the form of a kiosk which includes three computer screens or terminals and is mainly located in public areas for free access. Each terminal includes a keyboard, a screen, a camera and a foot step to accommodate for younger users.

The DD was initially established to support and promote the growth of computer literacy in impoverished areas in South Africa and to provide access to technology and information where such technologies are scarce and limited in number. The machine enables a form of self-learning or unassisted learning thereby encouraging curiosity, and self-discovery by individuals. Due to the Hole-in-the-wall project, the practice of self-learning of IT skills has now been viewed with a lot less suspicion (Gush & De Villiers, 2011). It was learnt that users of the DD terminals were able to acquire basic computer skills on their own without the assistance of a teacher or a supervisor (Cambridge, 2008).

According to Cambridge (2008) "(t)he information provided by the Digital Doorway enables learning by discovery rather than by lecture." Gush, Cambridge & Smith (2004), further stated that the Digital Doorway is not aimed at substituting classroom teaching with self-learning, but rather focuses on its ability to develop the minds of individuals in the absence of a teacher.

The following observations were reported during the implementation of the Cwili project:

- Different age groups used the DD terminals; from primary school kids to adults.
- Users initially spent between 30 and 60 minutes at the terminals for each visit.
- As users got more acquainted with the machine, they spent more time on it and grew more self-confident.
- Users gained basic knowledge and skills.
- Older age groups often worked together while the younger groups learned through competitive means.

Cambridge (2008);

The following photograph illustrates users engaging with the Digital Doorway in Cwili.



(Gush, Cambridge & Smith 2004)

Phases of DD development

Since the first development of the Digital Doorway in 2002, the hardware and software on the terminals have been improved and upgraded. The table below shows the phases of development of the DD. It also contains reasons for these upgrades and instalments:

PHASE/ AUHORS	INSTALMENT	REASON
<p>1</p> <p>(Gush, Cambridge &Smith, 2004).</p>	<p>DD HAD ONLY ONE TERMINAL; HENCE ONE SCREEN, ONE KEYBOARD AND ONE WEBCAM.</p> <p>Included software:</p> <ul style="list-style-type: none"> ▪ Windows XP ▪ Educational Applications ▪ Games ▪ Paint ▪ Internet access - email ▪ Educational documents in PDF and Office format ▪ Plastic keyboards 	<p>SIMPLY TO MAINTAIN THE LOOK AND FEEL OF A REAL COMPUTER.</p> <div style="text-align: center;">  <p>(http://www.digitaldoorway.org)</p> </div>

<p>2</p> <p>(Cambridge, 2008)</p>	<p>SINGLE TERMINAL CHANGED TO A FOUR SIDED PORTAL. HENCE EACH MACHINE HAD 4 SCREENS, 4 KEYBOARDS AND 4 WEBCAMS TO ACCOMMODATE FOR 4 PEOPLE OR EVEN MORE. THE UPGRADING OF THE MACHINE INCLUDED CABLE ACCESS FROM EITHER THE FLOOR OR THE ROOF, OR EVEN BOTH AND THE OPERATING SYSTEM CHANGED FROM A WINDOWS PLATFORM TO AN OPEN SOURCE. MACHINE WAS ALSO UPGRADED TO INCLUDE METAL KEYBOARDS</p>	<p>THE DESIGN ENABLED THE FOLLOWING:</p> <ul style="list-style-type: none"> ▪ Accommodated more users at a time and minimized crowding at a single terminal. ▪ Became more attractive. ▪ Contained equipment that could be easily upgraded and modified. ▪ Enabled less heat generation from within each terminal. ▪ Easy maintenance. ▪ Less damage to the keyboards due to new installment. <div style="text-align: center;">  <p>(http://www.digitaldoorway.org)</p> </div>
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<p>3</p> <p>(Cambridge, 2008; Gush, Cambridge & Smith, 2004)</p>	<p>THE THIRD PHASE OF THE PROJECT WAS FURTHER UPGRADED TO A THREE SIDED TERMINAL. HENCE EACH MACHINE HAD 3 SCREENS, 3 KEYBOARDS AND 3 WEBCAMS. OTHER INSTALMENTS:</p> <ul style="list-style-type: none"> ▪ The architecture of the system was further changed to a single server system ▪ Cable access could be adopted through the floor, the roof or the rear panel, or even all of these options. ▪ The Operating system was changed to Linux and the servers OS was changed to FreeBSD version 4.8 	<ul style="list-style-type: none"> ▪ LONG TERM ARCHITECTURE ▪ Made the system easily extensible. ▪ Three sided terminal being less expensive and could be installed in smaller spaces. ▪ Three sided terminals made the manufacturing process easier and faster with easier installations and maintenance. ▪ Linux and FreeBSD operating systems enabled remote monitoring of the usage of the machine. <div style="text-align: center;">  <p>(http://www.digitaldoorway.org)</p> </div>
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Other advancements according to Gush et al. (2011) on the DD terminals include:

- The design of a DD with grab handles in 2005 that accommodates disabled individuals and provides access for wheel chairs and the installation of a joystick in place of the touch pad.
- The design of a solar powered DD system in 2008. This DD is therefore able to work in areas that have no electricity or power supply.
- The design of a desktop DD terminal in 2008.

See figures below:



Solar DD Containers

(<http://www.digitaldoorway.org>)



Terminal for the disabled



Desktop Terminal

Recent studies on the DD

A number of studies have been carried out to monitor the success rate of the DD terminals in various areas. It is significant that in the majority of the cases the projects' administrators cooperated with communities that engage with the technology in order to secure successful utilization of the machine and to learn about the needs of the users (Gush & De Villiers, 2011).

As previously stated, Gurstein, (2003) clarified the significance of securing effective usage of systems rather than providing mere access. To secure "effective use" in these systems, a form of collaboration has to be established with communities to bridge the digital divide. For this reason, a number of qualitative research projects have been conducted to gather information and most importantly make use of the opinions and views of these communities when system adjustments are considered.

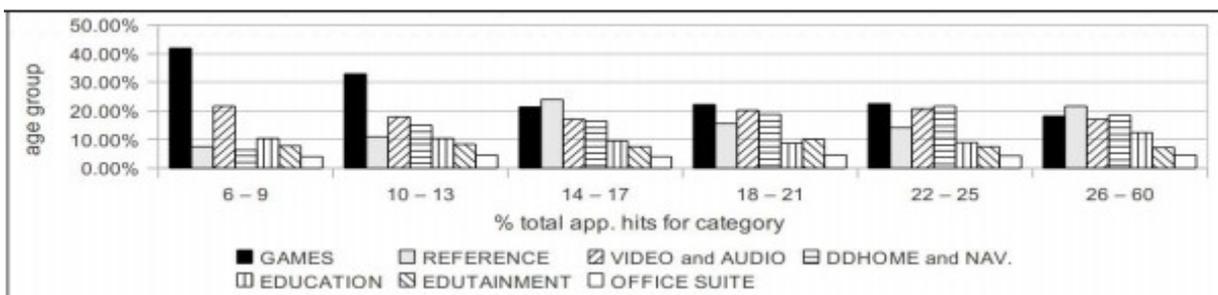
The application categories on the Digital Doorway according to Gush & De Villiers (2010) are:

- Edutainment – which are educational games
- Education – Educational applications
- System – File navigation and the DD
- Office – A word processor, spreadsheet and presentation software
- Reference – Encyclopedia referenced material
- Games – Software for entertainment
- Video/Audio – Audio and video applications.

The table below shows current research findings on the Digital Doorway:

AUTHOR/AUTHORS	FINDINGS
(Gush, 2008)	The proportion of male to female users: 75% of the users are male and the remaining 25% are female. English was the preferred language chosen by registered users.
(Gush & De Villiers, 2011)	Ratio of male to female at each site: 4 to 1. Percentage of usage on Activities: Games – 27% File navigation – 16% Encyclopaedia: 16% Educational software – 10 to 8% Applications that had south African Office applications- 4%
(Gush & De Villiers, 2010)	An observed decreased percentage in the number of individuals that make use of games as the age groups increase - 17% of game usage for users over the age of 26.

The graph below from Gush & De Villiers (2010) indicates the usage percentage for each application for the different age groups:



(Gush & De Villiers, 2010).

Many findings have showed that the male to female ratio in terms of utilizing the machine is quite unusual. There have been concerns regarding the low percentage of female users

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of the Digital Doorway. It has also been observed that a higher percentage of users come from the younger generation. According to Gush and De Villiers (2010) older individuals do not have the curiosity, the patience and the mind-set of the younger users. They therefore do not engage with the system.

Current research simply quantifies the usage of the digital doorway in terms of what it is used for, the age groups of the users, how often it is used, and the time spent on the machines. Very little research has been carried out in terms of user fulfillment and gratification in order to incorporate the users' opinions and needs into the research process.

The researchers addressed this need for an analysis of the uses and gratifications of the users of DDs in this paper. The following section provides a brief review on the extant literature on the "Uses and Gratifications" theory as a research process.

The uses and gratifications theory

The Uses and Gratifications (U&G) theory is an approach that tends to examine the effects of media in society. A number of research theories have been grounded on the Uses and Gratifications theory in order to investigate the reasons and motives behind the preferences for the various media and media types. This approach has therefore been used in a number of communications research projects to determine the gratifications that bind society to certain kinds of media and to determine what content in the media fulfill the needs of society (Ruggerio, 2000).

According to Ruggerio (2000) Wimmer and Dominick stated that the U&G theory commenced in the 1940's, a period where researchers became interested in investigating the reasons why different societies associated with different media. The focus then fell on newspapers and the radio. During that period, U&G studies exposed different reactions and responses from various audience types. It resulted in these responses being categorized into significant clusters of meaning. In addition, the U&G theory assumes that the media itself is aware that various needs of societies are fulfilled by their products and that they mainly compete with each other to optimally gratify the needs and desires of their users (Longsdale & North, 2011).

The U&G theory typically considers that different users of media have reasons for utilizing it in the first place as it further provides them with contentment and gratuity that fulfils their various needs (LaRose, Mastro & Eastin, 2001). Furthermore, this type of research involves firstly describing the particular media and its uses, secondly, understanding the significance of the media and its impact on society and finally, coming to a conclusion by analysing the responses that link the various media to the gratifications experienced by society (LaRose, Mastro & Eastin, 2001).

In order to effectively generate various responses and reactions from users of certain media, researchers are required to ask participants to provide feedback on their individual motives and the reasons why they utilize various media. Furthermore, the theory assumes that participants are fully aware of the motives behind their use of certain media types (Lonsdale & North, 2011).

The U&G theory has also been implemented in research that were aimed to examine the motives behind Internet usage (LaRose et al., 2004; Stafford et al., 2004).

It is thus evident that the Uses and Gratifications theory is essentially useful for examining the fulfillment achieved from the use of different types of media. This approach is therefore a significant tool for determining how satisfied, fulfilled and gratified the users of the Digital Doorway are and whether the implementation of the system provides them with rewarding results. This study will therefore look at areas that concern the following:

- Why people use the Digital Doorway
- Whether their needs have been satisfied
- Whether what they have on the system goes hand in hand with what they want or expect to have.

Methodology

The dataset from which the sample was drawn consists of 1327 narratives collected from the users of the DD in seven South African provinces. "One site per province was purposely selected. This method of site selection was chosen to ensure that as much as possible of the diversity of the DD deployment contexts are represented, namely: the geographical location, the type of community, the configuration of the installed DD and type of installation (e.g. at a school), the targeted users and the relevant social or cultural factors" (Van der Vyver & Marais (2013:6). The data collection process took between 2 and 7 days per site. Interviews were conducted in English and/or the local language. Local community members who are proficient in English assisted the researchers with the interviews. "Paper-based survey instruments were used and the stories that were elicited by the relevant questions were recorded (with permission) using a voice recorder" (Van der Vyver & Marais (2013:6). The third author was part of the research team that designed and implemented the data collection process.

For the purpose of this paper the researchers conducted a purposive sample of a cluster of a 100 narratives for analysis. The data analysis process was conducted by way of content analysis. The researchers implemented the principles of hermeneutics to make sense of the data. "The idea of the hermeneutic circle suggests that we come to understand a complex whole from preconceptions about the meanings of its parts and their interrelationships" (Klein & Myers, 1999:71). One of the leading philosophical thinkers in the field of hermeneutics Gadamer explains that it entails a dynamic and iterative process in which the movement of understanding is constantly from the whole to the part and back to the whole. Our task is to extend in concentric circles the unity of the understood meaning" (Gadamer, 1976:117). The recommended methodology makes provision for a number of concentric iterative "tours" through the data in order to identify and analyze the parts.

"Hence, in a number of iterations of the hermeneutic circle, a complex whole of shared meanings emerges" (Klein & Myers, 1999:71). Although all three researchers implemented a variation of the methodology on other parts of the full data set, the data cluster that was analyzed for the purpose of this paper was inspected by the second author. He conducted three analytical iterations on the selected data cluster.

Analysis

The analysis took place within a framework of categories that the researchers created before they conducted content analysis on the narratives. The following categories feature in this study: domains, uses, specific subjects/topics, and gratifications. The domain category contained macro fields i.e. educational, economic, technological etc. to which the comment(s) in the narrative pertained. More than one domain could be represented in one narrative. In Table 1 the domain analysis is reflected:

Table 1: Domain analysis

DOMAIN	%
Education	57%
Technological	24%
Entertainment	28%
Economic	24%
Psychological	20%
Community	8%
Informational	20%
General	2%

The users also reported on what they use the DD'S for. Table 2 contains the usages that featured most prominently.

Table 2: Usage analysis

ACTIVITY	%
Internet	10%
Games	20%
Research	15%
School work	22%
Information	44%
Homework	16%
Assignments	10%
Creative activities *	4%

*drawing, writing, photography

The researchers also analyzed the school subjects and/or topics that were mentioned in the narratives. Table 3 reflects the counting.

Table 3: Analysis of courses/topics

ACTIVITY	%
Maths	4
Science	5

Physics	1
Astronomy	1
Computing	4
Language	1
English	3
Sotho	4
Eng. Lit.	1
History	4
Buseco	4
Economics	4
Geography	4
Art	4
Life orientation	4

Lastly, the researchers analyzed the gratifications reported by the respondents. Table 4 reflects the responses.

Table 4: Analysis of gratifications reported by users

GRATIFICATION	PERCENTAGE OF RESPONDENTS REPORTING IT
Pass (exams) ("pass" search term)	4
Good marks/marks ("marks")	3
Helps with homework, etc. ("help" search term)	9
Learning ("learning")	2
Skills ("skills" + "cleverer")	1
Finding/googling information	6
Understand	1
Future (hope) ("future" or "hope" search term)	4
Opens the mind ("open")	1
Improve ("Improve")	1
Quality of life/ makes lives/life good (" fighting boredom")	2
Quality of life/ makes lives/life good ("confidence)	1

Access = to computers/information ... ("access")	6
Don't have to pay/pay/free	3
Relaxation/fun/enjoy ("relaxation")	1
Relaxation/fun/enjoy ("games")	4

Sixteen percent of the respondents reported gratifications directly related to school work whilst 3% referred to general learning or skills development. Six percent found gratification in finding/searching for information and 1% in the understanding of it. Access to computers and or information brought gratification to 6% of the respondents. Another 3% were grateful that they didn't have to pay for the access. To nine percent of the users access to the DDs brought psychological/motivational gratification. Respondents made mention of hope for the future or a better life. Five percent mentioned gratification achieved from relaxation and/or game playing.

Findings

The respondents who were interviewed mostly use the DD for educational purposes. Fifty seven percent of the responses fell within the realm of the educational domain. Only 28% of the responses related to entertainment. This comparison is however moderated by the fact that the games available on the DD are all of an educational nature.

Comments on technological aspects of DD usage accounted for 28% of the responses whilst 20% of the comments had a psychological/motivational connotation.

The breakdown of reported usage validated the domain analysis. A combined total of sixty three percent of the respondents reported educational uses. This percentage includes 22% of the users who reported they used the DD for school work, 16% - homework, 15% - research, as well as 10% to do assignments. 44% of the respondents used it to find [other or unspecified] information. Twenty percent reported that they used it for entertainment purposes, 4% for other creative activities and 10% to access the Internet. It needs to be noted that the DDs in the sample do not offer Internet access.

The courses/topics that the respondents researched are depicted in table 3. It reflects an equal distribution among school subjects with five respondents reporting research on physics and four each mentioning mathematics, economics, business economics, history and computer science.

Regarding the gratifications reported by users the researchers found that 19% reported on educational gratifications that they achieved. These reports related to exams passed, good marks as well as one report on skills obtained. Some form of emotional gratification featured in 9% of the reports. The respondents referred to hope, improved quality of life, and the opening of the mind.

Seven respondents made mention of finding and/or understanding of information. The concept of "googling" featured among these responses. Access to technology and/or information provided gratification to 6% of the respondents while 3% were grateful that they didn't have to pay for it.

Five percent of the respondents found gratification in the relaxation activities offered on the DD.

Conclusion

The findings of this study provide evidence that the majority of usage is aimed at achieving short term educational objectives. This viewpoint is underscored by the domain analysis as well as the narrative clues discovered by way of content analysis. This conclusion is in contrast with the findings of Gush and de Villiers (2011) that pointed to game playing as the dominant activity among users of the DD.

The diversity of responses as well as the detailed feedback embedded in the narratives serve as proof that the respondents still make ample use of the DDs in their respective areas.

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