

# Preferences and Use of Digital and/or Printed Copies of Learning Resources by Students of a Coastal University in Ghana

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**Abstract:** In recent times, there has been an upsurge in the use of softcopy (digital) materials for learning especially among students on university campuses because digital devices abound. This has raised concerns of whether students now prefer the softcopies of learning resources to using hardcopies. This exploratory study therefore investigated the preferences of students (between softcopy and hardcopy materials) for reading. A descriptive survey was employed as the research design and questionnaires were used to gather data from respondents. Students from the University of Cape Coast, Ghana specifically, in their second to final years of some selected programmes were used in the survey. Data was analysed with the use of descriptive statistics. Despite the fact that students were observed to have more taste for their academic materials in electronic formats, the findings revealed that students preferred hardcopies to softcopies though they agreed that they make use of both depending on the situation. It was thus recommended that instructors should make course materials available in both digital and print formats for students to access for the studies.

**Keywords:** Hardcopy (printed materials), Softcopy (digital materials), digital devices, learning resources.

## I. INTRODUCTION

The sale of electronic books is gradually taking over printed books on the internet (Woody, Daniel & Baker, 2010). Books and printed materials in the form of newspapers and journals formed the major repositories where information is obtained and where educational and personal developments took place. Apparently, the rapid change in the technological aspects of the world today caused a lot of transformation in the last few years. It seems that the ultimate goal is to ensure clients read from mobile gadgets which now come in various forms rather than printed books.

The idea of e-books started with electronic versions of books that usually already existed in print format. Currently, many e-books are produced originally as e-books which never existed in print format (Krajcik & Sutherland, 2010). Softcopy use has attracted a remarkable development in the use of e-learning in recent times and communication through the use of technology has attracted more attention because of easy access and its portability. When softcopy usage was first initiated in e-learning, it created interest among researchers and practitioners (Looi et al., 2010). Many research educators have developed high expectation for softcopy use, because softcopy has made access to information and communication

easy through technology and eventually led to a new transformation in education. A hardcopy could also be described as any information which has been printed on paper. Hardcopies make way for information to be read even when there is no computer available. It is also often required when a document needs to be signed for approval or processing. Hardcopy could also be defined as a permanent reproduction, or copy, in the form of a physical object, of any media suitable for direct use by a person of displayed or transmitted data (Ingram & Gray, 1998). Examples of hardcopy include teleprompter pages, continuous printed tapes, computer printouts, and photo prints.

Numerous researches have been conducted on the acceptance of electronic books in the academic environment with much focus on electronic books against actual classroom usage (Nicholas, Rowlands, & Jamali, 2010; Rowlands, Nicholas, Jamali, & Huntington, 2007). The National Association of College Stores (NACS, 2010; 2011) have indicated that students prefer hardcopy materials to electronic books during classes. However, they did not investigate the reasons that follow why students prefer hard prints to soft prints. On the contrary, a closer look indicates that students in Ghana prefer both electronic and printed material. The researchers decided to embark on this study when one Sunday, the preacher called on congregants to get their Bibles and open to a particular text at a popular church on a university campus, most people rather got their smartphones and tablets instead of the printed or Bible hardcopies. Most of the congregants were students so the researchers sought to ascertain how popular or otherwise, softcopies of relevant materials were to students and their studies. Across Northern America, libraries and universities begun to invest heavily in electronic books by taking away old books from the library shelves and replacing them with electronic format of books so that students could make use of e-books for their studies (Findley, 2010). It was assumed that this will make copies of relevant course materials readily available to students and also save a lot of library space for other ventures. This trend had an influence on many issues concerning the publication companies and the way people utilize books, how libraries juxtapose them and all the processes pertaining to library service and publishing or bookkeeping in business. It appears more students now prefer to take notes during lectures using laptops, tablets, or smartphones by either recording or using special applications

to write and capture relevant points and take pictures of what cannot be copied rapidly. However, it also appears that many other students have decided to continue using the traditional paper and pen to take notes maybe because of costs. When it comes to reading for pleasure most students especially the college students would prefer electronic format of books but in the area of research, about two-thirds would go in for electronic formats.

An experiment was conducted in Norway where people were given a short story to read either on a Kindle or in a paperback book. They were later quizzed and results from the experiment indicated that, those who read the hardcopy material were more likely to remember plot points in the right order than those who used the electronic material (Zekpe & Leach, 2010). Despite the merits of softcopies that have made people to choose it over the printed materials, there appears to be some problems associated with the use of softcopies relating to the radiations from the light emitting screens. It is reported that artificial light exposure from light-emitting e-readers may interfere with users' ability to sleep, ultimately leading to adversarial impacts on health (Woody, Daniel, & Baker, 2010). Additionally, high levels of light rays from the screen of the electronic devices can lead to visual fatigue, a condition marked by tired, itching and burning eyes. It has been recounted that reading an e-book before bedtime reduced the production of melatonin, a hormone that prepares the body for sleep (Feldstein et al., (2012). Feldstein et al. (2012) equally reported that e-books also weakened alertness the following day. On the contrary, individuals with poor vision or reading disorders like dyslexia can profit more from e-books because, in using such electronic devices, options are given for regulating the font size and line spacing for easy reading. Baek and Monaghan (2013) observed reading comprehension and speed in 103 high school students with dyslexia and found that people with dyslexia read more effectively, and with greater ease, when using the e-reader compared to reading on paper. Many book-lovers still prefer the traditional option and value the tactile sensation of a bound-paper book. Passionate readers also tend to prefer reading on paper as more and more students found that easier and preferable (Looi & Chen, 2010).

Johnson and Sengupta (2009) explained that California passed a law requiring all college textbooks be made available in electronic form by 2020. Also, in 2011, Florida lawmakers passed legislation demanding public schools to convert their textbooks to digital versions (Fletcher, Schaffhauser, & Levin, 2012). In view of this, students, teachers, policy makers and parents might assume that students' familiarity and preference for technology translates into better learning outcomes which has been found that it is not necessarily true (Schepman et al., 2012). Though technology in schools has made information more accessible and portable, it would not be prudent to conclude that all students prefer softcopy format of books. To explore these patterns further, Mangan, Walgermo and Brønning (2013) in three different studies explored college students' ability to comprehend information on paper and from

screens. After allowing students to read two passages, one online and one in print, the learners were given three assignments to complete. When they were done, questions were asked to judge their comprehension performance. Findings revealed that, students preferred reading in digital formats to printed formats. It was also discovered that, reading online was faster than in print. Hence students concluded that, they understood the texts better when they read online than in print.

Maepa and Nkosi (2013) however confirmed, that the topic of e-books in Africa remains a notion that has not fully materialised in a larger percentage. Only few countries such as Nigeria and South Africa have electronic book publishers in business. He also identified some factors that thwart the prevalent use of softcopies in Africa and this include high cost of electronic book prices, scarcity of e-books produced, lack of internet services and lack of legal framework to address digital publishing. Bwalya, Du Plessis, and Rensleigh (2012) also identified that in Africa, e-books are mainly accessed in urban areas where more than half of the internet connectivity is located. They also identified that most libraries in Africa lack budgets on e-books. Most libraries in Africa do not have e-book budgets. Of the libraries that have e-books some do not have an e-book budget. Twenty four percent indicated that they can spend less than 1% of their budget on e-books. While 14% of public libraries in Africa can reserve 3-5% of their budget to purchase e-books, only 7% of libraries have more than 5% of their budget available for e-books (Maepa & Nkosi 2013). At the University of Namibia, the allocated budget of e-books is less than 5% of the overall library budget.

Studies on the acceptance and use of e-books indicate various levels of e-book use. However, most studies in Africa revealed a low use of e-resources, especially e-books. For instance, Jenkins (2008), Maepa and Nkosi (2013), Ikoja-Odongo (2013), Bassi and Camble (2011), Connaway and Wicht (2007) and Agaba (2003) identified the following factors as barriers for the adoption of e-books:

- Lack of standard formats for e-books and hardware developments
- Unrealistic prices
- Inconsistent purchase model
- Limited editions.

A survey by Allen and Kaddu (2014) was conducted to establish the status of e-books in Africa focusing on their availability and usage in particular. The emphasis was on public libraries and library associations' involvement in public libraries. The majority of respondents (91%) suggested that library resources should be both in e-resource format as well as print format. Minority would prefer eBooks only or print form only. It was also established that eBooks existed in 14 libraries (i.e. 67% of the total libraries used). The survey also concluded that eBooks and e-learning are not yet available to all library institutions in Africa. This probably implies that computers and laptops are the commonly reading devices for

eBooks in Africa. Based on the above statistics, the researchers sought to find out how popular e-resources were with students at the University of Cape Coast and how they were using these resources to facilitate their studies.

*Objectives of the study*

The main objective of this study was to investigate into the preferences of students of the University of Cape Coast with regards to the use of printed and/or digital materials such as books and any other resources that aid or facilitate their learning as far as their respective areas of study is concerned.

II. METHOD

A descriptive survey design was used to allow for the collection of quantitative data. This method was employed because the researchers attempted to establish a range and distribution of some social characteristics of the sample drawn for the study such as their programmes of study, preferences to read for extended periods of time, ease of using either digital or printed materials among others. This guaranteed that data characteristics of the sample used for the study could be quantified for statistical analysis whilst ensuring that none of the variables were influenced in any way. It also allowed for cross-sectional sections of the same group were studied.

*Participants*

The respondents for the study were second to final year students pursuing undergraduate degrees in various study areas from different departments. Respondents were randomly selected to ensure that the results of the study could be generalised to the population under study.

*Data analysis*

The collected data were analysed statistically by the use of descriptive statistics such as means, standard deviations, percentages and frequencies.

III. RESULT ANALYSIS AND DISCUSSION

Table 1: Age of Respondents

Age range	Percentage	N
18-24	130	71.2
24-30	46	25.0
30-36	7	3.8
Total	184	100.0

Table 1 shows that the ages of the respondents' ranges from 18 years to 36 years. Responses show that, majority of the students representing 71% (n=130) fell within age 18 to 24. Also, 25% (n=46) of respondents are between the ages of 24 to 30 years. The least proportion (3.8%, n=7) of the respondents stated that they are between the ages of 30 to 36 years.

The gender of the respondents revealed that majority (64%, n=118) of the respondents were males while the remaining

36% (n=66) were females. Hence, more males responded to the instrument than females.

Table 2: Students' Programme of study

Programme	Frequency	Valid Percent	Cumulative Percent
B. Ed Computer Science	47	25.5	25.5
B. Ed Mathematics	59	32.1	79.3
B. Ed Arts	38	20.7	100.0
Total	184	100.0	

The results in Table 2 indicate that students from four different programs took part in the survey. Twenty six percent (n=47) of the total students pursued B. Ed. Computer Science, 40%(n=22) also offered B. Ed. Management whilst 32%(n=59) offered B. Ed Mathematics. The remaining 21% (n=38) offered B. Ed. Arts.

Table 3: Number of hours students spent in reading for school

Hours spent in learning	Frequency	Valid Percent	Cumulative Percent
Less than 1 hour	14	7.7	7.7
1 hour	33	18.1	25.8
1 and half hours	24	13.2	39.0
2 hours	62	34.1	73.1
Over 2 hours	49	26.6	100.0
Total	182	100.0	

Table 3 shows the results of the number of hours spent in reading with its corresponding frequency and percentage. It was realised that majority (34%, n=62) of students read two hours per day. This is followed by 27%(n=49) of students who read over two hours a day. Another 18%(n=33) indicated they read one hour per day and 13%(n=24) stated they read one and half hours a day while few students, 8%(n=14) read less than one hour per day. Two items were missing depicting that, two respondents skipped this question.

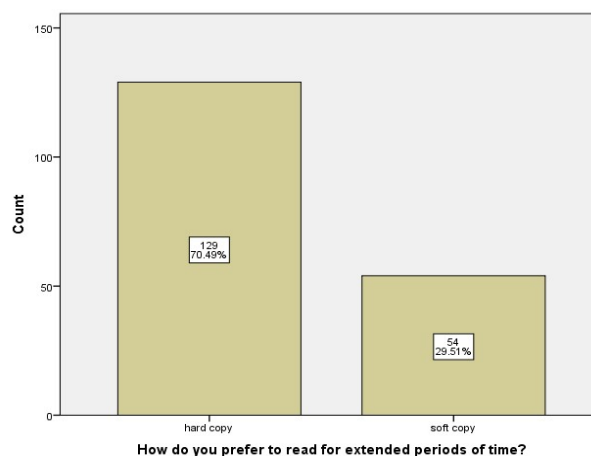


Figure 1: Preference between digital and printed copies

Figure 2 displays the results of the respondents' preference for digital materials and printed materials. Results indicated that, out of the total number of students who spent some time in reading, most of them (71%, n=129) preferred hardcopies or printed copies for reading while the rest of them, 30% (n=54) preferred softcopies for reading. This signifies that most of the respondents prefer using hardcopies for learning.

Table 4: Number of e-books or digital materials read

Number of books	N	Valid Percent
1-2	73	39.9
3-4	60	32.8
5-6	21	11.5
more than 6	29	15.8
Total	183	100.0

Table 4 also shows the number of e-books or digital materials read by the respondents. It must be emphasised here that "read" as used here refers to either reading completely or consulting a material during learning. Out of the total number of students who stated that they preferred digital copies for reading, a large proportion (40%, n=73) of them indicated that, they read one to two e-books or digital materials. 33% (n=60) of respondents indicated that they read three to four e-books or digital copies. Also 16% (n=29) stated they read more than six digital materials. Just a minimal number of 21(n=12) stated that they read five to six digital materials in a session.

Table 5: Number of courses registered in a semester

Number of courses	N	Percentage
4	6	5.6
5	20	13.9

Table 6: Preference for hardcopies over softcopies

Items	SD	D	U	A	SA	Mean
	N (%)	N (%)	N (%)	N (%)	N (%)	
No eye straining	16(49.1)	57(32.4)	21(11.9)	63(35.8)	19(10.8)	3.93
Not easily damaged	3(1.7)	22(12.4)	19(10.7)	74(41.6)	60(33.7)	3.07
Pages can easily be flipped through front and back	3(1.7)	12(6.9)	9(5.1)	90(51.4)	61(34.9)	4.11
No battery or electricity needed	7(4.0)	11(6.3)	7(4.0)	62(35.2)	89(50.6)	4.22
Reading with hardcopy material is more interesting	7(3.9)	18(10.1)	13(7.3)	80(44.9)	60(33.7)	3.94
Pages can be folded for easy location	3(1.7)	17(9.6)	13(7.3)	85(48.0)	59(33.3)	4.01
Hardcopies are less expensive	23(13.1)	76(43.2)	24(13.6)	36(20.5)	17(9.7)	2.07
Very portable	15(8.6)	60(34.3)	20(11.4)	58(33.1)	22(12.6)	3.07
I am used to hardcopies very much	11(6.1)	25(14.0)	21(11.7)	78(43.6)	44(24.6)	3.07

SD (Strongly disagree), D (Disagree), U (Undecided), A (Agree), SA (Strongly disagree)

6	54	37.5
more than 6	62	43.1
Total	144	100.0

Table 5 gives a detailed description of the number of courses registered by the respondents, their frequencies and the percentages. Results showed that majority of the students (43%, n=62) registered more than six courses. Also, 38% (n=54) registered six courses. 14% (n=20) of the respondents registered five courses. 6% (n=8) registered four courses within the semester.

The researchers investigated into the number of courses for which lecturers advocated for the use of softcopies for learning. Out of the number of courses registered per semester, most of the students (49%, n=90) indicated that very few courses had lecturers directing them for the use of softcopies for learning. Of this, 27% (n=49) of the respondents stated that most courses issued by lecturers make use of softcopies for learning. Also, 14% (n=25) of students indicated that half of the courses issued by lecturers make use of softcopies. Only a small portion of students (10%, n=19) responded that all courses had lecturers calling for the use of softcopies for learning.

The results of the devices used to access e-books in addition to their frequencies and percentages as investigated is presented here. The outcome revealed that, out of the total number of students who offered courses that make use of e-books, 62% (n=113) of the students responded they use smartphones to access e-books. Additionally, 21% (n=39) of the respondents used laptops to access e-books. Also, few of the students which represent 17% (n=31) stated that they use multiple devices (smartphones, laptops and iPads) to access e-books whereas none of the students used iPads to access e-books.



Results from Table 6 revealed that majority of the students (86%, n=151) agreed pages of hardcopies can easily be flipped through front and back. Whilst 86% (n=151) of respondents stated that with hardcopies, no battery or electricity is needed for reading, 81% (n=144) of students agreed that pages can be folded for easy location. Whereas 78% (n=140) stated that reading with hardcopy material is more interesting, 75% (n=134) of respondents also agreed that hardcopies are not easily damaged. Moreover, 74% (n=122) agreed that they are used to hardcopies very much while 47% (n=82) agreed they experience no eye straining when reading with hardcopies. Forty six percent (n=80) agreed that hardcopies are less expensive while few students representing 30% (n=53) also responded that hardcopies are portable.

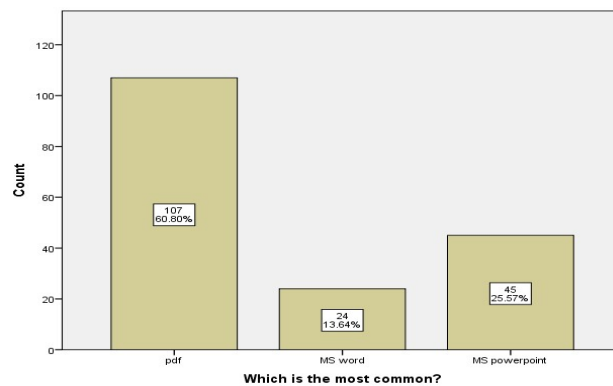


Figure 2: Most common Softwares for reading

The next figure indicates the most common electronic formats used by students.

Students responses indicated that the most common format used for reading is pdf which represents 61% (n=107) of the total responses. The next most prevalent format used is MS PowerPoint representing 26% (n=45) of the total responses while MS Word is rarely used for reading by students. MS Word thus represents only 14% (n=24) of the total response.

Table 7: Preference of softcopies to hardcopies

	Items	SD	D	U	A	SA	Mean
		N (%)	N (%)	N (%)	N (%)	N (%)	
1	Softcopies are less expensive or usually free	12(6.7)	8(4.5)	8(4.5)	73(41.0)	77(43.3)	4.10
2	Softcopies are easily accessible at all times	11(6.3)	21(12.0)	10(5.7)	67(38.3)	66(37.7)	3.89
3	Softcopies are handy and can be carried anywhere easily for use	4(2.3)	15(8.6)	9(5.2)	68(39.1)	78(44.8)	4.15
4	With softcopies, font size can be adjusted for easy reading	6(3.4)	8(4.5)	8(4.5)	74(41.8)	81(45.8)	4.22
5	Can be easily searched for among a lot of books	4(2.3)	10(5.7)	16(9.1)	84(47.7)	62(35.2)	4.08
6	Enables copy and paste at most times	2(1.2)	11(6.4)	9(5.2)	83(48.3)	66(38.4)	4.47
7	Reading is independent on availability of energy	8(4.6)	22(12.6)	18(10.3)	74(42.3)	53(30.3)	3.81
8	Easy to share with people	3(1.7)	2(1.1)	6(3.3)	76(43.4)	88(50.3)	4.39

SD (Strongly disagree), D (Disagree), U (Undecided), A (Agree), SA (Strongly disagree)

From Table 7, responses of students on the preference for softcopies over hardcopies were recorded. Results indicate that, 94% (n=164) of the students responded that hardcopies are easy to share with people. 88% (n=155) also stated that with softcopies, font size can be adjusted for easy reading. Another 87% (n=149) of respondents also agreed that Softcopies enable copy and paste at most times. 84% (n=150) also agreed that softcopies are less expensive or usually free. Another 84% (n=146) of the students agreed that softcopies are handy and can be carried anywhere easily for use. Also, 76% (n = 133) stated that Softcopies are easily accessible at all times and the least among all, 73% (n= 127) respondents agreed that softcopies are easy to share with people.

#### IV. DISCUSSION

Several findings of the present work have confirmed what previous researchers had found while others contradicted literature. Results from the study showed that most students prefer hardcopy materials to softcopy materials. This is in line

with The National Association of College Stores (NACS, 2011) which found out that students have a preference toward using printed textbooks. Further findings revealed that, reading with hardcopies is found to be more interesting since it can easily be folded for easy location and remembrance and this confirms what Looi et. al. (2010) discovered in his research which revealed that students find reading on paper more interesting than in digital copies. Since reading with hardcopies is found to be interesting to students, it could be a factor that can enhance their performance. This can be confirmed by Zekpe and Leach (2010) and Mangen, Walgermo and Brønnick (2013) who revealed that students who read paperback book performed better than students who read in softcopy formats since they understand better when they read with printed materials.

Students from the present study also agreed that they would prefer reading with softcopies because font sizes can easily be adjusted for easy reading. This is confirmed Baek and

Monaghan (2013) finding that using softcopies for reading especially students with dyslexia helped improved their reading skills since font sizes, styles and color could be adjusted to suit the reader. Respondents also stated that they would prefer hardcopies to printed copies because with hardcopies, no eye straining is encountered unlike the digital copies where prolong usage of electronic devices could cause health hazards. This finding also concurred with Feldstein et. al., (2012) study that prolongs usage of e-books could cause insomnia. Woody et. al. (2010) also support this view as he discovered that light emitted from electronic devices could cause inability to sleep, fatigue and burning eyes. It is therefore concluded that though students from the University of Cape Coast make use of electronic formats of books and course materials, they still preferred making use of printed materials in studying their courses on campuses. It is therefore recommended that, lecture notes and handouts given to students should not only be in electronic formats but should also be made available in printed formats for students to access in order to help improve their performance.

#### REFERENCES

- [1] Agaba, D. 2003. Utilization of Makerere university libraries electronic information resources by academic staff: challenges and the way forward. Unpublished Master of Science (Info Sc) dissertation, Makerere University, Kampala, Uganda. Aharony, N. 2014. The effect of personal and situational factors on LIS
- [2] Allen, M., & Kaddu, S. (2014). A Report on the Survey of the eBooks and eLending in African Countries. IFLA International Leaders Programme, Group, 3.
- [3] Baek, E. O., & Monaghan, J. (2013). Journey to textbook affordability: An investigation of students' use of eTextbooks at multiple campuses. *The International Review of Research in Open and Distributed Learning*, 14(3), 1-26.
- [4] Bassi, M.D. & Camble, E. 2011. Gender differences in use of electronic resources in University Libraries of Adamawa State, Nigeria. *Library Philosophy and Practice*, 549. Retrieved from <http://digitalcommons.unl.edu/libphilprac/549/>
- [5] Bwalya, K. J., Du Plessis, T., & Rensleigh, C. (2012). A snapshot overview of the digital divide: e-Inclusion and e-government in the Zambian context. In *Handbook of Research on E-Government in Emerging Economies: Adoption, E-Participation, and Legal Frameworks* (pp. 71-89). IGI Global.
- [6] Connaway, L.S. & Wicht, H.L. 2007. What happens to the e-books revolution? The gradual integration of e-books into academic libraries. *JEP: The Journal of Electronic Publishing*, 10(3). Retrieved from <http://quod.lib.umich.edu/jjep/3336451.0010.302?rgn=main;view=fulltext>
- [7] Feldstein, A., Martin, M., Hudson, A., Warren, K., Hilton III, J., & Wiley, D. (2012). Open textbooks and increased student access and outcomes. *European Journal of Open, Distance and E-Learning*, 15(2).
- [8] Findley S. (2010). From E-books to no books, Macleans University blog. Retrieved from 05.01.2011 <http://oncampus.macleans.ca/education/2010/10/05/from-e-books-to-no-books/>.
- [9] Fletcher, G., Schaffhauser, D., & Levin, D. (2012). *Out of Print: Reimagining the K-12 Textbook in a Digital Age*. State Educational Technology Directors Association.
- [10] <https://www.businessinsider.com/students-learning-education-print-textbooks-screens-study-2017-10?IR=T>
- [11] Ikoja- Odongo, J. R. & Okello- Obura, C. (2013). Electronic Information Resources Utilization by Students in Mbarara University Library. *Library Philosophy and Practice*(e-journal). Retrieved from <http://digitalcommons.unl.edu/libphilprac/869>
- [12] Ingram, W., & Gray, E. (1998). *A Federal Standard on electronic media*. US Department of Commerce, National Telecommunications and Information Administration.
- [13] Jenkins, A. 2008. What is inhibiting the proliferation of e-books in the academic library? SCROLL,1(1). Retrieved from <http://fdt.library.utoronto.ca/index.php/fdt/article/view/4905/1764>
- [14] Johnson, H., & Sengupta, R. (2009). Closing the gap: Meeting California's need for college graduates. *Public Policy Institute of CA*
- [15] Looi, C. K., & Chen, W. (2010). Community-based individual knowledge construction in the classroom: a process-oriented account. *Journal of Computer Assisted Learning*, 26(3), 202-213.
- [16] Maepa, M.E. & Nkosi, D. 2013. The uptake of e-books on the African continent: challenges and prospects. African Library Summit, 3-5 July 2013, UNISA, Pretoria. Retrieved from [http://uir.unisa.ac.za/bitstream/handle/10500/10128/maepa\\_e\\_als.pdf?sequence=1](http://uir.unisa.ac.za/bitstream/handle/10500/10128/maepa_e_als.pdf?sequence=1)
- [17] Mangen, A., Walgermo, B. R., & Brønnick, K. (2013). Reading linear texts on paper versus computer screen: Effects on reading comprehension. *International journal of educational research*, 58, 61-68.
- [18] MILLAR, M. (2015). Digital or printed books: which do students prefer? Page 1-3
- [19] National Association of College Stores (2010). *Electronic book and e-reader device report*. Retrieved from [http://www.nacs.org/LinkClick.aspx?fileticket=blmPMgdQ\\_LA%3d&tabid=2471&mId=3210](http://www.nacs.org/LinkClick.aspx?fileticket=blmPMgdQ_LA%3d&tabid=2471&mId=3210)
- [20] National Association of College Stores (2011). *Electronic book and e-reader device report*. Retrieved from <http://www.nacs.org/LinkClick.aspx?fileticket=ulf2NoXApKQ%3d&tabid=2471&mId=3210>
- [21] Nicholas, D., Rowlands, I., & Jamali, H. (2010). E-textbook use, information seeking behaviour and its impact: Case study business and management. *Journal of Information Science*, 36(2), 263-280.
- [22] Rowlands, I., Nicholas, D., Jamali, H., & Huntington, P. (2007). What do faculty and students really think about e-books? *Aslib Proceedings: New Information Perspectives*, 59(6), 489-511
- [23] Schepman, A., Rodway, P., Beattie, C., & Lambert, J. (2012). An observational study of undergraduate students' adoption of (mobile) note-taking software. *Computers in human behavior*, 28(2), 308-317.
- [24] Woody, W. D., Daniel, D. B., & Baker, C. A. (2010). E-books or textbooks: Students prefer textbooks. *Computers and Education*, 55(3), 945-948. Elsevier Ltd.
- [25] Zekpe, N., & Leach, L. (2010). Improving student engagement: Ten proposal for action. *Active Learning in Higher Education*, 11(3), 167-177.
- [26] Krajcik, J. S., & Sutherland, L. M. (2010). Supporting students in developing literacy in science. *science*, 328(5977), 456-459.