The Educational Impact of Adopting Electronic Notes Pre Covid-19

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Abstract - This paper seeks to understand the educational impact of using Electronic Notes (e-notes) with undergraduate students at a South African University. The majority of research studies done in this area indicate that students prefer printed notes to e-notes. This study seeks to investigate if the same trends hold true for the selected group of students, who transitioned from the regular printed notes to e-notes prior to the COVID-19 pandemic. A questionnaire was developed to gather students' perceptions on e-learning material, specifically e-notes, and its impact on their learning experience. The population included students within the Computer Science and Information Systems and Technology faculties of the selected institution. The quantitative research method was adopted and data was analysed using SPSS. The areas of effort expectancy, performance expectancy, social influence, facilitating conditions, and self-efficacy associated with e-note usage were investigated. The findings indicate that some of the positive trends observed in the literature review hold true for this group of students and that the use and implementation of e-notes primarily have a positive impact on these students.
Keywords: E-Learning, E-Notes, Online Learning, Student Perceptions

I. INTRODUCTION

While the COVID-19 pandemic has propelled the adoption of online learning and its related resources, even prior to this pandemic there existed a shift at South African universities, with the gradual adoption of e-learning materials (MacGregor, 2008). At the selected institute, this shift towards incorporating online tools and materials was adopted as part of an extension of its undergraduate learning formats, to support its traditional delivery methods. As of 2016, this University stopped the handing out of printed lecture notes to first and second year students. Instead of receiving printed notes (which include module outlines, lecture slides, content notes, tutorial and practical outlines, and assignment questions) from lecturers, students are required to view these notes online on the prescribed Learning Management System (LMS), Moodle. While using e-learning materials for educational purposes offers a range of both advantages and disadvantages (Anuradha & Usha, 2006; Ebied & Rahman, 2015; Lim & Hew, 2013), students have encountered hurdles in the adoption of e-learning materials, such as electronic notes, at a tertiary level (Anuradha & Usha, 2006). Wirth (2003) define e-notes as "a clear and concise electronic form of lecture notes provided openly to students". For the purpose of this research e-notes includes any notes which would have previously been provided to students in a paper format, that relate to the module being studied. These would include module outlines, lecture slides, content notes, tutorial and practical outlines, and assignment questions. The aim of this research is to determine students' perceptions on e-learning material, in particular, e-notes, and its impact of this shift from paper-based notes, to electronic notes, on their learning experience. This will be achieved through investigating the factors that can influence the successful adoption of e-notes. The study thus explores the following:

1. How easy is it to use e-notes?
2. How useful is e-material in the learning experience?
3. What facilitating conditions exist to assist the use of e-notes?
4. Is adoption of e-notes influences by other peoples' opinions?
5. What are the attitude and behaviours of students regarding using e-notes?
6. How accessible are e-notes?

The effectiveness of the adoption of e-notes in the current learning environment is yet to be assessed at the selected institute. Thus, this study, which aims to determine students' perceptions on e-notes and the impact that this has on their education, will help provide a better insight as to whether the initiative should continue or be terminated. The unified theory of acceptance of technology and use of technology (UTAT) is a technology acceptance model, which aims to explain the user intentions to use an information system or new technology (Venkatesh *et al.*, 2003). A major part of incorporating this new technology is how willing students are to use it and whether or not they accept and embrace the change. The theory focuses on four key constructs namely, performance expectancy, effort expectancy, social influence, and facilitating conditions. For the purpose of this study, an extended UTAUT framework will be used. The addition of self-efficacy will aide in understanding students' feelings towards e-notes and in turn how it impacts student learning.

II. LITERATURE REVIEW

E-learning material has been around since the dawn of the internet. The "next generation", people born between 1980 and 1994, are largely exposed to the benefits of the internet and incorporate its use in their everyday life (Kennedy, Judd, Churchward, Gray, & Krause, 2008). This generation prefers to access information quickly and have it readily available. It seems only natural that the shift towards

learning online is influenced by this 'net' generation of learners. E-learning aids students with accessing relevant information easily, in conjunction with being able to access it at any location and time (Ruiz *et al.,* 2006). Historically there have been two types of e-learning, distance and computer-assisted (Ruiz, Mintzer, & Leipzig, 2006). Students are exposed to e-notes and e-learning material with both types of e-learning. The ubiquitous availability of e-learning material, during e-learning, makes it an ideal platform to deliver lectures and notes through. The use of e-learning material depends largely on how willing a student is to make use of this type of learning and how engaged the learner is while making use of e-learning material (Schmidt & Winterhalter, 2004). There is a current gap in knowledge regarding the perception and personal effort that a student has with regards to accessing and adopting e-learning materials. Another noticeable gap is that the effectiveness of e-learning materials and e-notes are unknown (Ruiz *et al.,* 2006). Although numerous studies have been conducted there is still a great deal that is not understood on this topic (Girard, 2014; Kennedy *et al.,* 2008; Lim & Hew, 2013).

As more universities, internationally and in South Africa, move towards the trend of using e-learning material (MacGregor, 2008) it is prudent to determine how this shift affects students, particularly with regards to how it impacts their educational experience. Anuradha and Usha (2006) define e-books as "an electronic version of a printed book, which makes use of electronic features…which can be read on a personal computer or hand held device designed specifically for this purpose". Similarly, e-notes refer to an electronic version of printed notes that can be viewed using any electronic device. Reiterating, for the purpose of this research e-notes includes any notes which would have previously been provided to students in a paper format that relate to the module being studied. These would include module outlines, lecture slides, content notes, tutorial and practical outlines, and assignment questions.

Usage of e-learning materials for academic purposes increased from 2012 to 2013 by approximately 9% globally (Carroll, Corlett-Rivera, Hackman, & Zou, 2016). As the academic world shifts towards the usage of e-learning materials, it is important for tertiary institutions to follow the trend, to prevent students from falling behind. Numerous factors affect the student learning process, making it difficult for researchers to determine whether a single variable, namely the use of e-learning material, can positively or negatively affect a student's ability to absorb and retain information (Girard, 2014; Rohleder, Bozalek, Carolissen, Leibowitz, & Swartz, 2008). Kissinger (2013) mentioned the concept of automaticity, stating that more mental effort would be required to use e-Learning materials. Students who are more familiar with printed material perform tasks and learning more automatically with them, having done it most of their lives. Lim and Hew (2013) conducted a study to determine students' perceptions on the usefulness of e-learning materials. The study found that students reacted positively to using e-learning materials as

an alternative method of learning. Student engagement with the material was high and they were able to share thoughts and ideas effortlessly. A thought provoking comparison was done by Ebied and Rahman (2015) which highlighted key differences between printed material and e-Learning material. This comparison helps identify influential factors in the use of e-learning material in the context of education. Below is a list of the differences, in order of importance in terms of educational impact:

1. *Educational Effectiveness:* Research has proved that use of electronics makes for a more engaging learning experience, which is where e-learning materials pull ahead compared to printed notes.
2. *Media Access:* The biggest barrier that prevents the worldwide adoption of e-learning material is the lack of access to technology. Unlike an e-learning material a printed book requires no form of technology to view its contents.
3. *Cost:* The high cost of printing notes, both environmentally and economically, often make e-learning materials cheaper to publish than printed books. Although purchasing a device to view e-learning material can be costly.
4. *Searching Ability:* It is much easier to search for relevant information using e-learning material than to search for information in printed material.
5. Updatability: e-learning material can easily be updated whereas their hard copy counterparts cannot.
6. *Reader Health:* Printed notes offer much less strain on a reader's eyes as opposed to viewing e-learning material.
7. *Accessibility for Special Needs:* Printed notes cannot be altered to suit a user's needs whereas e-learning Materials can, they also cater to blind users by incorporating text-to-speech software which reads to the user (Ebied & Rahman, 2015).

An important part of the learning process is the facilitators' or educators' attitude towards using e-learning materials. It can be argued that if educators do not make proper use of e-learning materials and e-notes then students cannot use them to the full extent. A study conducted by the Indian Institute of Science delved into the usability of e-learning materials in a research and academic environment, focusing primarily at staff members and also at students (Anuradha & Usha, 2006). A clear trend between e-notes and printed material emerged from the literature, with students showing a preference towards printed material despite the boom in online learning. This preference is attributed to the fact that students find printed material easier to read from, are more familiar with it and are able to read more efficiently from it (Anuradha & Usha, 2006; Kang, Wang, & Lin, 2009; Rowlands *et al.,* 2007). Despite the student's familiarity with computers and electronic notes it was concluded that students still prefer to use printed notes when possible (Woody *et al.,* 2010). Macedo-Rouet, Ney, Charles, and Lallich-Boidin (2009) found that most students would prefer to print the electronic notes instead of reading them online because printed notes are easier to read from their

perspective. Vernon (2006) also found, through research, that students preferred to print electronic notes instead of reading them online. Slater (2009) conducted research at Oakland University, in the USA, to examine the usage of printed and electronic books. It was concluded that students studying in the fields of science, computers or technology opted for the use of electronic textbooks whereas students studying subjects in humanities opted for the use of printed books (Slater, 2009). Research has shown that students are more engaged with e-learning material than printed material, making the learning experience more pleasurable (Ebied & Rahman, 2015; Kissinger, 2013). The use of e-learning materials helped give students a higher sense of self-efficiency and competence and demonstrated that e-learning materials can enhance the learning experience (Kissinger, 2013).

Almost all South African universities make use of some form of e-learning tools or material, with a movement towards this trend that dates back to the early 2000's. The success of this initiative largely depends on the university's ability to provide support and teach students how to make use of this feature. Despite all the constraints e-learning has faced in South African universities, it plays a huge role in the teaching and learning of today's students (MacGregor, 2008). Vernon (2006) stated that more research is required to determine if it is viable to switch from printed notes to electronic notes. While many of the studies referenced in this Literature Review indicate a general acceptance of e-notes by students, most of these studies were conducted in the context of e-notes adoption in e-learning courses. At the selected institute, this study was conducted prior to the COVID-19 pandemic, when the regular form of delivery was face-to-face. Thus this study will add to the body of literature on the adoption of e-notes, particularly focusing on this adoption in traditional, face-to-face environments.

III. RESEARCH METHODOLOGY

This study was undertaken at one of the five campuses of a South African University, prior to the COVID-19 pandemic. The target population for this study was primarily students in their second year of study studying Computer Science (CS) or Information Systems and Technology (IST) at this campus. This study primarily adopted a quantitative approach with the design of an online questionnaire which consisted of thirty-three multiple-choice questions and three open-ended questions. The questionnaire was piloted with 3 students to ensure the understand ability, logic and accuracy of the questions proposed. Minor language editing was effected on the questionnaire post the pilot study. The random sampling strategy was adopted. A sample of 39 second year CS and 30 IST students were achieved, out of a population of 217 second year students. The total number of valid responses included in this analysis was 61. The questionnaire was distributed via email to the selected population. Meeting the required ethics procedures, participants had to complete an informed consent section, to accept and confirm their participation in the study, prior to

proceeding with the survey itself. The statistical package for social sciences (SPSS) was used to perform the analysis. A significance level of .05 is used throughout. Descriptive statistics in the form of frequencies and percentages for categorical variables and means and standard deviations are used for reporting of results. Tables and graphs are used to summarise appropriate results. The one-sample t-test will be applied to all the items measured on a semantic agreement scale (1= strongly disagree to 5 = strongly agree) to test for significant agreement or disagreement. Spearman's rho was applied to pairs of items to determine if there was a monotonically increasing or decreasing relationship between the items. The independent samples t-test was used to test for significant differences across gender. To enhance interpretation of results, single composite constructs were formed, where possible, by combining multiple single items. These were tested for reliability using Cronbach's alpha. An alpha value of at least .7 was considered to indicate reliability and consistency of measurement. All variables were tested for normality and, in view of the fact that some items deviated from normality, all analysis was checked using non-parametric tests to ensure validity of results.

IV. RESULTS

The sample (Table I) includes approximately equal male (52.5%) and female (47.5%) students with a small majority (55.7%) being under 21 years of age. The vast majority of the sample is Indian (75.4%); and the sample falls mostly into the middle (50.8%) and upper middle (27.9%) income bracket.

TABLE I DEMOGRAPHICS OF THE SAMPLE

Variable	Categories	N (%)
Gender	Female	29 (47.5)
	Male	32 (52.5)
Age	17 – 20	34 (55.7)
	21+	27 (44.3)
Race group	Black	13 (21.3)
	Coloured	1 (1.6)
	Indian	46 (75.4)
	White	1 (1.6)
Family Income	Low	8 (13.1)
	Middle	31 (50.8)
	Upper middle	17 (27.9)
	High	2 (3.3)
	Unknown	3 (4.9)
Academic year of study	Second	55 (90.2)
	Third	4 (6.6)
	Fourth	2 (3.3)
Number of years registered as a student at the institution	Two	30 (49.2)
	Three	26 (42.6)
	Four or more	5 (8.2)

Over 90% are in their second year of study; with a similar proportion being registered at the institution for two (49.2%) or three years (42.6%).

<div align="center">TABLE II DEVICES AND COURSES</div>

Variable	Categories	N (%)
Device	Personal computer	57 (93.4)
	Smart phone	38 (62.3)
	Tablet	28 (45.9)
	Other device	1 (1.6)
Course	Comp 100/200	24 (39.3)
	ISTN 100/102	44 (72.1)
	ISTN 211/2IP	7 (11.5)
	Other Course(s)	7 (11.5)

Students were asked to indicate which device(s) they use to view e-notes as well as the modules for which they have been using (or at least provided) e-notes (Table II).

Personal computers (93.4%) and smart phones (62.3%) are used by the majority to access e-notes (Table II); and the largest percentage usede-notes in ISTN 100/102 (72.1%).

A. Factors that can Influence the Successful Adoption of E-Notes Ease of Use

In order to assess how easy, the students find using e-notes, two questions were asked of them.

Results (Table III) show that there is significant agreement ($p<.0005$) that the transition to e-notes was easy (mean=3.9) and they are comfortable using them (mean=3.7). Analysis of the overall measure for 'ease of use' shows there is significant agreement ($P<.0005$) that e-notes are easy to use (mean=3.8). No factors comparing perceptions of ease of use of e-notes were considered significant across gender.

<div align="center">TABLE III EASE OF USE</div>

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
I am comfortable using e-notes	1(1.6)	6(9.8)	10(16.4)	25 (41)	19(31.1)	61	3.9(1.012)	6.961	60	<.0005*
Making the switch from printed material to e-notes was easy for me	3(4.9)	7(11.5)	18(29.5)	12(19.7)	21(34.4)	61	3.7(1.207)	4.348	60	<.0005*
Overall	Items included			Cronbach's alpha		n	Mean (SD)	t	df	p-value
Ease of use	1 and 2			.876		61	3.8 (1.051)	5.850	60	<.0005*

<div align="right">* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree</div>

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use of e-notes were considered significant across gender.

B. Usefulness of E-Notes

The usefulness of e-notes was assessed using five items as described in Table IV.

<div align="center">TABLE IV USEFULNESS</div>

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. I find it easier to study from e-notes than printed notes	8(13.1)	15(24.6)	25 (41)	7(11.5)	6 (9.8)	61	2.8 (1.123)	-1.368	60	.176
2. e-notes help me accomplish a task faster than printed notes	7(11.5)	8 (13.1)	19(31.1)	16(26.2)	11(18)	61	3.3 (1.237)	1.656	60	.103
3. e-notes help to increase my productivity	5 (8.2)	10 (16.4)	22(36.1)	14(23)	10(16.4)	61	3.2 (1.16)	1.545	60	.128
4. e-notes help me to study for tests and examinations	4 (6.6)	7 (11.5)	12(19.7)	22(36.1)	16(26.2)	61	3.6 (1.184)	4.219	60	<.0005*
5. Having access to e-notes anywhere helps me to study more frequently	3 (4.9)	4 (6.6)	12(19.7)	20(32.8)	22(36.1)	61	3.9 (1.127)	6.135	60	<.0005*
Overall	Items included			Cronbach's alpha		n	Mean (SD)	t	df	p-value
Usefulness	1, 2, 3 and 4			.875		61	3.2 (1.003)	1.819	60	.074

<div align="right">* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree</div>

Results show that, while there is significant agreement (p<.0005) that e-notes help with studying for tests and exams (mean=3.6), and also result in more frequent study (mean=3.9), there is neither significant agreement nor significant disagreement that using e-notes facilitates studying, speeds up tasks or increases productivity. In each of these latter cases, the largest group was undecided.

Analysis of the overall measure for usefulness shows there is neither significant agreement nor significant disagreement that e-notes are useful for the learning experience. Comparing perceptions of usefulness of e-notes across gender, analysis shows that, while males neither agree nor disagree that it is easier to study from e-notes than printed notes (mean=3.10), females show significant disagreement in this regard (mean=2.53, p=.046). No other factors comparing perceptions of usefulness of e-notes were considered significant across gender.

C. Facilitating Conditions

Facilitating conditions that could affect the use of e-notes were assessed using the items in Table V.

There is significant agreement (p<.0005) that they have the knowledge required to use e-notes (mean=4.6) and that the infrastructure at the institution supports this use (mean=3.9). It is unclear whether staff are available to assist as shown by the nearly 50% who were undecided on this item. There is an approximately 'even' spread across responses to whether they could purchase other devices if needed. A comparison across gender shows that males (mean=4.28) agree significantly more than females (mean=3.59) that the institutional infrastructure supports the use of e-notes, p=.033.

TABLE V FACILITATING CONDITIONS

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. I can purchase additional devices to view e-notes if my current device fails	8 (13.1)	14 (23)	18 (29.5)	13(21.3)	8 (13.1)	61	3 (1.231)	-.104	60	.918
2. I have the required knowledge to use e-notes	-	2 (3.3)	1 (1.6)	15 (24.6)	43(70.5)	61	4.6 (0.687)	18.448	60	<.0005*
3. There is trained staff available to help me if I encounter trouble obtaining e-notes	5 (8.2)	10(16.4)	29 (47.5)	10 (16.4)	7(11.5)	61	3.1(1.063)	.482	60	.632
4. Infrastructure (hardware and software) supports the use of e-notes	5 (8.2)	5(8.2)	5 (8.2)	21 (34.4)	25 (41)	61	3.9 (1.256)	5.711	60	<.0005*

* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree

D. Influence from Other People

In response to being asked whether their usage was influenced by what their peers were doing and whether their lecturers and the institution have supported the change, analysis shows that there is significant agreement (p<.0005)

that there is lecturer and institutional support (mean=4.0). However, there is a split opinion on the peer pressure issue (Table VI). Neither of the factors comparing perceptions of social influences on e-notes adoption was considered significant across gender.

TABLE VI SOCIAL INFLUENCES

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. I am less inclined to use printed notes now since most of my peers are using e-notes	9 (14.8)	10 (16.4)	23 (37.7)	14 (23)	5 (8.2)	61	2.9 (1.153)	-.444	60	.658
2 .The Institution and my lecturers have supported the change to e-notes	1 (1.6)	-	10 (16.4)	37(60.7)	13(21.3)	61	4.0 (.730)	10.695	60	<.0005*

* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree

E. Attitude and Behaviour towards Using E-Notes

The attitudes of students towards using e-notes and what they do when they get these notes was assessed. Results of analysis (Table VII) indicate that they believe e-notes are a suitable substitute for printed notes; and they make the effort to download these e-notes as soon as they are made available. While together males and females disagree that they download e-notes just before an exam, males (mean = 2.07) disagree significantly more than females (mean = 2.88), p=.023.

F. Accessibility

Accessibility of e-notes was explored and the results (Table VIII) indicate that overall, there is significant agreement that e-notes are easily accessible.

TABLE VII ATTITUDE AND BEHAVIOUR

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. e-notes are a suitable substitute for printed notes	4(6.6)	6(9.8)	9 (14.8)	23(37.7)	19(31.1)	61	3.8 (1.189)	5.062	60	<.0005*
2. I make an effort to download e-notes the moment they are made available	4(6.6)	9 (14.8)	11(18)	19(31.1)	18(29.5)	61	3.6 (1.240)	3.992	60	<.0005*
3. Having access to e-notes whenever I want makes me lazy	6(9.8)	12 (19.7)	23(37.7)	15(24.6)	5(8.2)	61	3.0 (1.088)	.118	60	.907
4. I wait just before and exam/test to download and view the notes	21 (34.4)	13 (21.3)	9(14.8)	12(19.7)	6(9.8)	61	2.5 (1.398)	-2.839	60	.006*

* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree

TABLE VIII ACCESSIBILITY OF E-NOTES

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. I find e-notes easier to obtain than printed notes	2 (3.3)	5(8.2)	4 (6.6)	15 (24.6)	35(57.4)	61	4.3 (1.105)	8.803	60	<.0005*
2. I can easily access e-notes	2 (3.3)	1(1.6)	2 (3.3)	28 (45.9)	28(45.9)	61	4.3 (.882)	11.467	60	<.0005*
3. I can easily download e-notes	1 (1.6)	1 (1.6)	4 (6.6)	23 (37.7)	32(52.5)	61	4.4 (.820)	13.119	60	<.0005*
Overall	Items included		Cronbach's alpha			n	Mean (SD)	t	df	p-value
Accessibility	2 and 3		.908			61	4.3 (.815)	12.803	60	<.0005*

* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree

G. Students' Perceptions on the Impact of Using E-Notes on their Learning Experience and Results

Results regarding the perceived impact of e-notes on the learning experience and student results, in particular, show that there is significant agreement that e-notes have positively affected the students' learning experience and results (Table IX). This is felt significantly more by males (mean = 3.81) than by females (3.36), p=.035.

TABLE IX EFFECT OF E-NOTES ON THE LEARNING EXPERIENCE

Item	Responses as Frequency (%)					n	Mean (SD)	t	df	p-value
	SD 1	2	3	4	SA 5					
1. e-notes have positively affected my examination and test performance	2 (3.3)	4 (6.6)	30 (49.2)	17 (27.9)	8 (13.1)	61	3.4 (.920)	3.480	60	.001*
2. e-notes have helped to enhance my learning experience	-	6 (9.8)	18 (29.5)	23 (37.7)	14 (23)	61	3.7 (.929)	6.201	60	<.0005*
Overall	Items included		Cronbach's alpha			n	Mean (SD)	t	df	p-value
Enhancement of learning	1 and 2		.791			61	3.6 (.841)	5.330	60	<.0005*

* indicates significance at the 95% level, SD – strongly disagree, SA – strongly agree

H. Relationships between Factors

To determine if there was a relationship between perceived support from the institutional infrastructure and ease with which e-notes can be downloaded, Spearman's rho was applied. A moderate positive relationship was found to exist, rho = .430, p=.001. Thus the perception of more support from the institutional infrastructure is related to a perception of greater ease in downloading e-notes. Analysis to determine whether the level of comfort students feel using e-notes is correlated with their belief that e-notes are a suitable substitute for printed notes, it was found that a strong positive relationship exists, rho = .559, p<.0005. A strong correlation (Table X) was also found to exist between the perceptions that e-notes help to accomplish tasks faster than printed notes and an increase in productivity when using e-notes, rh0 = .739, p<.0005. There is a strong relationship between usefulness, ease of use and 'enhance'. Accessibility is only weekly correlated with ease of use.

TABLE X CORRELATIONS

Particulars			Usefulness2	Ease of Use	Accessibility	Enhance
Spearman's rho	Usefulness2	Correlation Coefficient	1.000	.631**	.129	.681**
		Sig. (2-tailed)	.	.000	.323	.000
		N	61	61	61	61
	Ease of Use	Correlation Coefficient	.631**	1.000	.259*	.721**
		Sig. (2-tailed)	.000	.	.044	.000
		N	61	61	61	61
	Accessibility	Correlation Coefficient	.129	.259*	1.000	.208
		Sig. (2-tailed)	.323	.044	.	.107
		N	61	61	61	61
	Enhance	Correlation Coefficient	.681**	.721**	.208	1.000
		Sig. (2-tailed)	.000	.000	.107	.
		N	61	61	61	61
**. Correlation is significant at the 0.01 level (2-tailed)						
*. Correlation is significant at the 0.05 level (2-tailed)						

V. DISCUSSION

Generally, the results of this study concur with other studies conducted in the area of the adoption of online learning. The younger generation is more open to the inclusion of technology in the learning process. This was illustrated by Prensky (2001) where it was stated that 'the new generation of students entering higher education considers it (technologies) as a natural part of their environment. It was noted that a large majority of the students adopted personal computers. As Weeks (2002) noted "reading on a screen is an unpleasant experience", so it seems that students feel more comfortable reading on a larger screen. While recent studies have revealed that students in general feel that they require better support to transition to an online environment (Bhaumik & Priyadarshini, 2020), the respondents in this study felt comfortable transitioning from paper-based notes to e-notes. e-Notes is just one item in an online environment, which does not require much skills, so this could account for the ease of use of e-notes expressed. Since e-notes are available online, they were more accessible by the students at any time. Thus, students felt that having these e-notes readily accessible to them allowed them to study more frequently and thus engage with the material provided better. Similar findings were reported by Dhawan (2020), "…flexibility in online learning…allows a learner to schedule or plan their time" at their convenience. However, the issue of "equity challenges", as outlined by Tobias (2020), for those students who do not have stable and reliable network access, should also be considered.

Rizana et al., (2020), present six characteristics for success in online learning which include infrastructure and system quality, and organizational support. Similarly, this study reveals that students laid importance on infrastructure at the institution, and support by staff, for them to adopt e-notes successfully. Social influence by their peers often influences a student's perception of technology adoption learning, and these may influence their willingness to adopt the technology in question (Kurdi et al., 2020). However, in this study, students were not significantly influenced by their peers in the adoption of e-notes. This result could be related to the forced migration from paper-based notes to e-notes, leaving the students with little choice, but to adapt to the change. According to Kirby & Anwar (2020) "the adoption rates of e-books for academic use remain low", however this study revealed that these students concur that e-notes are a suitable substitute for printed notes thus they make the effort to download these e-notes as soon as they are made available. A possible reason for this result is that e-notes are

not as extensive (in terms of file size and content) and expensive as e-books. The fact that the notes are easily accessible, as indicated by the respondents, could also account for the positive views expressed on the adoption of e-notes.

VI. CONCLUSION

The main purpose of the study was to determine the effect that e-notes have on students, primarily in the teaching, learning and assessment areas. The study found that the accessibility of e-notes in conjunction with the supporting institutional infrastructure and staff support encourage the seamless adoption of e-notes at this institution. Students reflected confidence with using e-notes and find these e-notes useful in supporting their studies. There remains a minority, who is unhappy with this change and prefers notes. At the time of this study it was clear that the era of e-notes was just beginning, with universities. However, the current pandemic, has propelled the adoption of e-notes, making it a necessity, to ensure 'no student is left behind'. Thus it is imperative that the influence that e-notes have on learning is thoroughly understood and their negative effects mitigated, to maximize educational performance and experience.

VII. LIMITATIONS

This study was conducted prior to COVID-19 pandemic so it focused on the adoption of e-notes in a typical face-to-face environment. The sample size achieved was not significant hence the results cannot be projected onto the general population.

VIII. FUTURE RESEARCH

It would be interesting to conduct a follow-up study to determine student perceptions of the 'forced shift' to e-notes, during the COVID-19 pandemic.

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