The ubiquity of computers and ever increasing connectedness to the Internet have positioned technology as an agent of change in every sphere of life, be it economic, social or cultural. By the end of 2014, three billion of the world’s population was online [1]. In developing countries the percentage of Internet users was 32%.

Over the years, Mauritius has witnessed an exponential growth in household computer ownership and home Internet access (Figure 1), and by extrapolation, it is foreseen that Internet access will pass the threshold of 50% by 2015. In 2014, there were 370,000 Facebook users in Mauritius, the most common users being in the age group 18-24 [2]. Figure 2 shows that these data point to the fact that the young generation is “connected” and “technology-oriented”. The highest percentage (85.2%) of computer users is in the age group 12-19 [3].

The last part of the study investigated if there was any gender bias in the use of technology and the findings revealed that girls were at par with boys with regards to the different computer-based activities and the perception of ICT as a learning tool.
From the government’s perspective, the vision as set out in the National ICT Strategic Plan (2011-2014) is to make ICT the fifth pillar of the country and position the island as a globally recognized ICT hub and regional gateway to Africa [4].

Figure 1: Computer ownership & Internet use

Government’s strategic plan for education 2008-2020 makes provision for all schools to be technologically equipped by 2015, thus ensuring that ICT becomes a tool for teaching/learning in the classroom [5].

However, the uptake of ICT in the learning environment encompasses a number of issues, including access to the equipment, provision of relevant digital learning content and the readiness of both teachers and students to adopt technological tools for pedagogical gains. All these issues have been intensively researched in depth and breadth but there is a dearth of research dealing with students’ motivation and readiness to embrace technology in their learning.

The starting premise of this research paper rests on the understanding that while ICT tools are revolutionising the ways we conduct business and other activities, these same tools have yet to be tamed to put educational gains on equal footing with gains in other sectors. Today’s young generation of learners, technology savvy, probably have more to gain from ICT tools for their learning. The presence of computers and other related technological tools in our classrooms is often more a political advocacy than a pedagogical justification. Cuban [6] rightly pointed out in his book “Oversold but underused computers” that it is much easier to buy a computer than to learn to make efficient use of it. The promises of ICT are highly acclaimed and expected by stakeholders, but policy implementation dangles on slippery roads to make ICT integration mere “digital busywork” [7]. We are therefore at a major crossroad where we hope to see ICT reshaping the learning abilities of students. This research is of particular interest as Mathematics learning disabilities are rampant among too many students [8] and it is worth investigating if ICT can offer prospective avenues to remedy the situation.

2.0 LITERATURE REVIEW

Technology is set to transform the educational process in our schools and universities, where more and more computing devices are being infused into the system. Mega reviews of research studies in this area unanimously advocate the potential benefits of incorporating ICT in the learning process [9], [10], [11], [12], [13]. The gains achieved through the integration
of ICT in the educational process are undeniable: great strides have been made towards taming the technology to meet the emerging demands for education [14]. Hawkridge [15] purported four rationales to justify using computers in schools, with the pedagogical rationale specifically based on the belief that computers can be used to teach and learn.

Research has been carried out to investigate the factors affecting the readiness of learners in ICT adoption and these include availability of technological infrastructure, level of computer literacy, perceptions and attitude towards technology, provision of appropriate digital learning content and motivation from ICT-skilled teachers and school management [16], [17]. In a meta-analysis which brought together 15 years of investigations on the effect of teaching and learning with technology on student cognitive and affective outcomes, Lee, Waxman, Michko and Lin [18] found that in terms of magnitude and direction, the overall effect sizes for the two outcomes exhibited a positive effect in teaching and learning with technology. The debate around the real and true objectives of technology use in the classroom remains open. Are we aiming more at technology for direct instruction or as a support for instruction? Tamim et al., cited in Lee et al. [18] observed that technology was found to have a greater effect in learning when used to support instruction rather than for direct instruction. At times technology is a mere vehicle for content delivery and does not influence learning any more than the grocery delivery van affects our nutrition [19].

In a study commissioned by the Mauritius Research Council, Khedo, Suntoo and Elaheeobocus [20], found that many students were using Online Social Networks (OSNs) for educational purposes and were ready to adopt this new method of learning as a complement to the traditional one. Furthermore, they argue that, though the integration of Educational Networking as a learning tool is at the centre of numerous debates worldwide, it is still lagging behind in Mauritius due to the reluctance of teachers to use this technology to complement learning as they categorize it as inappropriate and incompatible for studies. According to Jhurree [21, p.253], most primary school pupils displayed positive attitudes towards their ICT class and strong motivation to follow it. Generally, most pupils found that their ICT classrooms provided them with enjoyable and useful experiences.

Technological devices, more specifically, mobile phones, still and video cameras, music and video players and computers have witnessed sky-rocketing sales over the last fifteen years. The trend is such that the number of mobile phones today surpasses the number of inhabitants and many households own more than one computer or tablet. Technology usage in many sectors including the economy, health, communication and entertainment has reached mammoth proportion, yet when it comes to education, we have to admit that both teachers and students are still grappling with ICT tools to meet the emerging demand for education. Not that the equipment is lacking, but from provision to integration, the gap remains to be bridged, and for various reasons. ICTs are still somehow external to traditional school curricula [22].

Today we are well aware of the extensive use of technology by young people. Youngsters juggle phone features with disconcerting ease. Others produce fascinating video clips with simple smartphones. Youngsters have a flair for technology and the latter has become an integral part of their living. These acquired skills can be translated into school settings to help students engage in constructive learning in an already friendly environment [23]. Barnes, Marateo and Ferris [24] mentioned that the Next Gen or Net Gener learn differently from their predecessors, being unique in that they are the first to grow up with digital and cyber technologies. Not only are Net Gener acculturated to the use of technology, they are saturated with it. This media saturation and ease of access to digital
technologies [25] is driving the next generation to think, communicate, and learn in distinctive ways. Probably the greatest asset of technology is the motivation it elicits in young learners to take control of their learning and become independent learners [26].

According to the Mauritius Internet Usage Policy of the Ministry of Education, it is expected that, in line with the aim to produce independent learners, the use of ICT and the Internet are important tools, particularly in developing research skills and individualized learning programmes for students [27]. Despite the abundance of research studies on the benefits of ICT as a learning tool, scant information exists for Mauritius. Furthermore as at date the authors have hardly come across any in-depth study of the technological profile of young Mauritian learners and their preparedness to embrace ICT as an alternative, if not, complementary tool, for learning. This study seeks to unveil this profile and evaluate the adoption of ICT tools in the learners’ two most important environments, namely the home and school. At the beginning of 2014, more than 26000 tablets were distributed to secondary school students of form 5 (year 10). Expectations are great but apprehensions are also not lacking. ICT affordances have yet to be channelled for these tablets to be of any pedagogical worth in the classrooms.

2.1 Gender Bias

Gender bias among computer users have been intensely researched. Heemskerk, Volman and Admiraal [28] suggested that there might be gender differences in the use of technology at school, while Sanders [29] reported that there is no general trend regarding gender differences in the use of information technology. It appears that there are inconsistencies in the findings, at times related to the methods of data collection on gender differences. There is also a general belief that computer skills are associated with Mathematics knowledge and coupled with the belief that boys perform better than girls in Mathematics, the overall perception is that boys would be more at ease with computer-related activities. This research study therefore also seeks to analyse the present situation in Mauritius where the policy is to provide equal opportunities and access to both sexes.

3.0 AIMS AND OBJECTIVES

This research paper aims at investigating the readiness of learners to embrace technological tools for learning benefits. After assessing the range of technologies used by them, it further analyses if familiarity with the latter can trigger the motivational aspect of learning. This assessment should eventually inform educationalists of the way forward for successful ICT integration in our schools.

The following five main questions will be answered in this study, namely:

1. Which technologies are most popular among young people, and how often do they use them?
2. In which computer-based activities are they involved in schools and at home?
3. How do students perceive the value of ICT for learning benefits?
4. What are students’ assessment of ICT facilities in their schools?
5. Is there any gender bias in young learners’ usage of technology?

This study befits an overall research project which aims at investigating how to boost mathematics learning performance with technology. Mullis, Martin and Foy [14] have reported that those who used the computer at home and/or at school showed significant difference in mathematics achievement.
4.0 METHODOLOGY

A mixed method approach was adopted to collect both quantitative and qualitative data. A questionnaire was administered to 220 students attending 45 schools from both private and state secondary schools at the H.S.C level, covering all regions of the island. This age group was particularly selected because of their maturity and ability to provide a good indication of what the school population voiced on matters pertaining to ICT and education.

The questionnaire, an adapted version of the PISA one [30], comprised five major sections, meant to collect data on students’ demography, their home and school technology usage, their attitude and beliefs of the pedagogical worth of ICT, their readiness to embrace ICT in their personal learning experience and the barriers impeding the effective integration of technology in learning. In all there were 80 items, many of which were designed using a five-point Likert scale.

Focus group discussions were held with groups of four to five students. Focus group research is “a way of collecting qualitative data, which—essentially—involves engaging a small number of people in an informal group discussion (or discussions), ‘focused’ around a particular topic or set of issues” [31]. Through semi-structured interviews, students were solicited to confirm, explain and extrapolate some of the responses provided in the completed questionnaires. The questions posed also helped to seek further clarifications, unveil perceptions and discuss unforeseen issues. Strict confidentiality was observed and no names of students or schools were recorded.

5.0 DATA ANALYSIS

The items of the questionnaire were analysed in depth using Excel 2010 and SPSS 21.0, to yield both descriptive and inferential statistics about the sample of learners under investigation. The findings are reported in the following sections.

5.1 Descriptive Analysis

The average age of respondents was 17.2 years with a slightly higher percentage of male students (54%). There was a proportionate representation of learners from both rural (46%) and urban areas, and their schools were also located in both rural and urban areas with a higher percentage for the latter region. In Mauritius, 58.7% of higher secondary school students attend state schools. In our sample, 55% of students surveyed were from state schools. On account of these general demographic variables, the respondents constituted a fair and close representation of the student overall population, making this sample appropriate for generalization of findings.

5.2 Inferential Analysis

Using SPSS 21.0, various inferential bivariate analyses were carried out in relation to the research issues mentioned above.

5.2.1 Used Technologies at Home and School.

Students reported making use of a large panoply of technological devices (Figure 3) including the computer, laptop, mobile phone, music player and photo/video camera both at home and in schools, though in the latter case, usage was quite limited among them. This indicates that young learners are to a large extent digital natives, making use of technology in various activities. The computer which is increasingly regarded as a learning tool is accessed by only 35% of students at school. Internet access, which is reported by nearly 90% of students at home is quite limited within the school environment with only 33.5% of access. Around
75% of students used the computer regularly (5-7 times/week) at home for learning purposes which points to a shift in learning style of young people.

**Finding 1:** Schools have much to gain by widening both computer and Internet access to students as the latter demonstrates strong familiarity with different technologies for their daily activities, including learning. All schools in Mauritius are equipped with computers but these should not be mere “digital busywork” as reported by Gilbert [7].

![Figure 3: Comparison of technology usage (Home & School)](image)

**5.2.2 Computer Applications used at Home and School.**

One section of the questionnaire investigated the particular use of computers by students at home and school. The most common uses included searching on the net, downloading learning materials, playing music and communicating. Application programs were also quite intensively used by learners with the word processor as the most common one. Around 50% of respondents reported learning as a regular computer-based activity. This analysis once again confirms the relative lower number of students using the computer in the school environment. Application programs like Excel, Power point and even databases are not very popular among more than 70% of our students, hence confirming the findings of a study by Albion, Jamieson-Proctor and Finger [32] who reported that students tended to be confident in only a limited range of ICT applications, such as word processing, email and web browsing.

**Finding 2:** Learners are at ease with the computer at home for various purposes including learning. This is indicative that young people will become more independent in learning in their future and technological tools will become an integral part of their study.

Furthermore, a correlation analysis carried out revealed that there was no statistically significant relationship between the frequency of computer use and level of ICT skills. While 73.1% students reported making intensive use (5-7 times/ week) of the computer at home, yet only 30% mentioned they had excellent ICT skills. So learners did not need much ICT skills for such activities involving video, music, Internet search and social networking.
Finding 3: Young learners practised many computer-based activities without necessarily having a mastery of high-level ICT skills.

![Figure 4: Comparison of computer use (Home & School)](image)

![Figure 5: Impact of ICT in learning](image)

5.2.3 ICT- a learning tool. Students’ Perception

Seven items of the questionnaire captured students’ perceptions and beliefs of the benefits of ICT as a learning tool. Cronbach Alpha measures the internal consistency of a test, which describes the extent to which all the items of a test measure the same concept or construct, and hence it is connected to the inter-relatedness of the items within the test [33], with acceptable values lying between 0.7 and 0.9. The test yielded a value of $\alpha = 0.672$, which being close to 0.7, confirmed the internal validity of the items measuring the belief that ICT can provide pedagogical gains.
More than 70% students agreed that ICT helps them to be more independent in their learning, provides for flexible learning, facilitates the assimilation of difficult concepts, encourages alternative ways of mastering learning concepts, fosters research in their studies and make learning an easier journey (Figure 5).

Finding 4: This study posits that learners are prepared to take greater control of their own learning, hence confirming the finding of Tubaishat and Lansari [26], which views the promotion of independent learning as one of the important pedagogical attributes of ICT. Moreover, the majority of respondents perceived ICT as a useful pedagogical tool. A similar finding [34] was revealed by a study which purports that students reported strong belief in the ability of their mobile devices to assist with homework and schoolwork.

5.2.4 Evaluation of ICT Facilities in Schools.

The last section of the questionnaire captured students’ opinions of ICT facilities available in schools. A Cronbach Alpha value of 0.8 confirmed the internal consistency of the seven items of this construct. Around 42% of students agreed that schools provided enough computers. While many learners (86.8%) reported that their schools provided access to computers, yet only 31.9% considered this access was easy. Sixty-four percent of the students used a computer only once a week at school. Nearly 50% of the respondents declared that they were self-confident in using ICT for learning. However, 60% of them wished teachers could motivate students to make use of ICT in their learning.

This confirms the mismatch between teaching and learning styles. While teachers continue to remain within the traditional practice, young learners are embracing alternative modes of acquiring instructions and knowledge.

![Computer facilities in school](image)
Bivariate analysis revealed one significant though weak association between students’ ‘self-confidence to use ICT for learning’ and their ‘level of ICT skills’ (Spearman rho 0.204, p= 0.003). If we want to see students be more self-confident in using ICT for learning, it is important they receive appropriate training to develop their ICT skills. Note that the extent of computer use for simple activities was not correlated with level of ICT skills, so that even those with low level of ICT skills were practicing different computer activities.

**Finding 5:** There is a pressing need to not just provide more computers in our schools but also to make them easily accessible. Students were generally not satisfied with the Internet speed. The school timetable must provide for greater flexibility for ICT-based learning.

Only around 30- 35% were satisfied with the antivirus policy, the working conditions of computers and the availability of digital learning resources.

**5.2.5 Other Findings.**

As at 2014, few Mauritians (20.1%) used the Internet for learning purposes [3]. But this study has revealed that there is a large majority of young learners using the Internet for learning, either to search for supplementary notes (74.9%) or to download past exam papers (78.1%). We can conclude that within the home environment, young learners have already taken the initial step towards tapping the affordances of ICT for their learning. There is no reason why such affordances cannot be channelled for more profound cognitive processes and thus take learning to a new dimension.

It was worth noting that students demonstrated awareness of the need to have an antivirus program to safeguard against relevant hazards. Because of cost implications, most of them (89.5%) opted for free versions of antivirus programs, which unfortunately cannot help succumb all hazards related to computer viruses. Schools should set the good example and ensure that all computers are loaded with a proper antivirus program, which was not the case as revealed in the focus group discussions.

Broadband connectivity was the most common mode of Internet connectivity for most of the learners (92%). Students can thus have access to large volumes of information, including instructional videos. It was worth noting that nearly all students (97%) were aware of computer-related health hazards, although it was not clear if they were skilled or sensitized enough to take precautionary measures to minimize such risks.

Data so far confirmed that young learners spent hours behind the computer screen but what share of computer time was devoted to learning purposes was measured by one specific item of the questionnaire. Out of 10 hours spent on the computer, the average time spent on entertainment (5.43 hours) exceeded that spent on learning (4.32 hours) by 1 hour and 7 minutes. But group discussions which also focused on this aspect brought a truer picture revealing that the difference was in fact much greater, reaching in some cases up to 80% of time spent on entertainment.

**5.3 Gender Comparison**

The issue of gender bias was also investigated for various items of the questionnaire, be it for the technological devices used, computer-related activities and perception of ICT as a potential learning tool. As regards the various technologies used and their frequency of use, there was no significant difference between boys and girls. Even regarding the level of ICT skills, there was no gender difference. Boys and girls also performed with the same regularity for different computer-related activities, except that boys had an edge in using Excel software (U=...
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4453.000, \( p = 0.002 \). In the school environment, boys were more involved in the use of databases \((U = 4508.000, p = 0.002)\) and in communication activities \((U = 4438.000, p = 0.002)\). Even though online shopping was a rare activity among students, yet boys made greater use of such facilities than girls \((U = 4542.000, p = 0.003)\). Only 22.4\% of girls agreed that “Boys are more at ease using ICT”, indicating that girls felt quite confident with the use of computers. In fact, girls were more in favour of the concept that ICT makes learning more flexible \((U = 4895.000, p = .014)\). The study unveils that girls spent more computer time for learning than boys \((U = 4365.5, p = 0.004)\), a trend which was confirmed by Osman and Alfred [35] who reported that female students were more positive with learning of ICT.

**Finding 6:** This research shows that there is no gender bias in Mauritius regarding use of technology and that both boys and girls are equally at ease with this tool, hence confirming that there is no such thing as “male culture of ICT”, or that computing is a male-dominated culture.

The semi structured questions were aligned with the major themes of the questionnaire and included the following amongst others:

1. Which were your most common computer activities?
2. Why do students use less computers in school?
3. How would you compare your computer time with regards to learning and entertainment?
4. Describe the types of learning activities associated with the use of computers?

The purpose of these focus group discussions was to validate some of the responses obtained from the questionnaires and also to seek some further details about the responses.

**5.5 Results of Discussions:**

A much greater share \((\approx 60-70\%)\) of computer time than that captured in the questionnaire was spent on entertainment, for such activities related to music, photos and social networking.

Moreover, the concept of computer-based learning was mostly associated with the use of the Internet to download additional lesson notes and past exam papers. Students preferred online learning materials to DVDs and CD-ROMs as the former are only a mouse-click away.

They confirmed the same list of barriers as mentioned in the questionnaire and these included the lack of dedicated computer labs for subject learning, slow internet access, poor maintenance of old computer systems and the lack of updated antivirus software.

The anxiety to access inaccurate, incomplete and outdated learning content was also experienced by learners who solicited greater support from teachers to identify and prescribe reliable learning websites. This is a signal for teachers...
who must prepare for their new roles as the guide on the ride rather than the sage on the stage.

6.0 CONCLUSION AND RECOMMENDATION

The home-take messages of this study are multifaceted, offering useful insights to stakeholders who undertake to reshape learning with the advent of technology. This research describes Mauritian learners as digital natives as defined by Prensky [36]. For most students, technology was an integral part of their living, with a considerate share of computer time devoted to learning purposes especially within the home environment. Many students perceived ICT as a tool that facilitates the mastery of difficult concepts and encourages flexible learning, making them independent learners. This research paper however points to the sharp contrasting situation in technology usage between home and school, where a still low usage prevailed in the latter. The tenets of learning are constrained to remain within traditional practices, where technology transformation takes place at the surface level only as reported in a study by Punie et al., cited in Biagi and Loi [22]. The lack of limited and inadequate ICT facilities in schools is also reported in this study. Regarding gender bias boys and girls show no difference in the use of technology. This study purports that students are ready to embrace ICT for pedagogical gains. We are also aware that teachers’ perception and beliefs of the merits of ICT are on the positive side [8]. The schools in Mauritius therefore have two of the most important ingredients to make ICT integration a successful learning endeavour. However the following recommendations should accelerate the ICT integration process.

Firstly we need to build specialized computer-learning labs so that both teachers and learners can have regular access for computer-based learning activities. Secondly teachers need to be equipped with the appropriate pedagogical skills to help students learn with technology. Thirdly schools should revamp learning strategies around computer affordances to promote independent and self-learning and the development of cognitive processes of higher order thinking levels, and thus motivate learners to be critical, logical, analytical and reflective.

Computers are omnipresent in educational settings. Familiarity of young learners with technology can have rippling effects for motivational learning. The findings of this paper should reassure those in the driving seat that we are heading in the right direction and by paying attention to all relevant sign posts we are likely to reach our destination. Thus we can envision an emancipated learning paradigm where technology is an integral part of the curriculum rather than an add-on.

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