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## **TREND OF INTERNET USAGE AND LEARNING STYLE OF DIGITAL NATIVES**

**Yin Ling Lai**

Senior Lecturer, INTI International University, Nilai, Malaysia  
[yinling.lai@newinti.edu.my](mailto:yinling.lai@newinti.edu.my)

**Joseph Lee**

Senior Lecturer, INTI International University, Nilai, Malaysia  
[joseph.lee@newinti.edu.my](mailto:joseph.lee@newinti.edu.my)

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### **Abstract**

*The use of internet has become a way of living since its inception in the 80s. With the advancement of informatics technologies, it has also created an unprecedented pressure to the education sector in keeping up with the pace of change in societal needs and technological innovations. It is with the aim of facilitating better learning outcomes attainment at tertiary education level among the digital natives, this study is set to find out how frequently technology savvy students use the internet and what the key internet activities are. The findings are subsequently analyzed to establish a correlation between the frequencies of internet usage and preferred learning style. It is observed that the primary internet usage of 784 respondents is in entertainment and communication in their daily internet routine. However, the association of the internet with the preferred learning style is inconclusive.*

### **Keywords**

Digital Natives, Internet Usage, Learning Style

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## 1. Introduction

The exponential advancements of informatics technologies and the increasing accessibility of internet have impacted individuals' life and are expected to transform the society in all aspects. As a result of such unprecedented rapid digitization, education today is faced with the pressure on keeping pace with the ever-changing societal needs and the challenge of adapting to ever increasing technological innovations. Other than understanding the value of technologies and technologies students prefer, it is of paramount importance to accept the fact that nothing has changed more than students themselves as the result of the digital revolution.

In the effort to facilitate for desirable learning outcomes in classrooms that have evolved into an environment dominated by technology, it is necessary to ensure shifting from instructional paradigm and traditional classroom to blended learning and online tutorial support is effective. When redefining the key roles required for a teacher in new digital era, Amin (2016) believes that the earlier generations' drive to study was robustly rooted in conscientiousness and the new generations have different motivational profiles: in their lives interest, emotions, and engagement matter much more.

This study is to explore the different learning styles of students today and to examine whether there is any correlation between the students' learning styles and the internet usage.

## 2. Learning in the Digital Era

Learning styles are the individual processes used for understanding and retaining information, thereby gaining knowledge or skills and many believe understanding of learning styles have become an essential factor in providing an effective learning experience. While there are a wide range of researches on the impacts of gender, cultural differences, and variations in disciplines to learning styles (Khan, 2009; Gündüz and Özcan, 2010; Ventura and Moscoloni, 2015; Loh and Teo, 2017; Lai and Lee, 2019), limited studies exist regarding students' internet usage and their learning style preferences.

The emergence of widespread technological use and innovation enable individuals from all generations and walks of life to connect with each other and interact like never before. With a simple click to access countless information and resources, the role of teachers as authoritative single provider of knowledge and skills have becoming challenging (Amin, 2016). In addition, with the popularity of social media, a student these days is never alone while learning (Sharma,

2017). Prensky (2001) points out digital natives who grow up with internet, computers and mobile devices think and process information fundamentally differently from digital immigrants who experience technology later in their life. He concludes that digital immigrant instructors who speak an outdated language from the pre-digital age are struggling to teach the digital natives that speaks an entirely new language. Similarly, Barnes, Marateo, and Ferris (2007) consider it is a daunting challenge to meet the needs of net-savvy students and believe these students learn in a different way than their predecessors.

Abundance of researches focusing on how to utilize technologies to engage students and to facilitate the learning process for better outcomes (Raines and Clark, 2011; Esteves, 2012; Lumpkin, Achen and Dodd, 2015) are available. There are also many studies looking into how technology is enabling people to participate, learn, and enjoy learning more. It is generally accepted that knowledge about the students' learning needs is importance to better utilize technologies that match students' preferred learning style.

The concept of learning styles has gained influence and appears to have wide acceptance not only among educators but also among parents and the general public (Pashler *et al.*, 2009). It is commonly recognised that students do have different learning styles, and some students may learn best by watching and listening, others by reading, and others by doing and moving or by a hands-on environment. Studies of learning preferences has been of interest for better understanding on how individuals can maximize effective learning. Investigation of the relationship between internet usage and learning preferences is therefore, valuable to effectively promote and improve learning in an environment where digital platforms are being integrated into our daily lives. As such, it is interesting to examine whether the students' internet usage differ based on their learning style preferences.

### **3. Research Methodology**

#### **3.1 Research Objective**

This research aims at understanding the relationship between students' internet usage and their learning style preferences. A questionnaire is developed with the objective to understand the time spent and type of activities on internet as well as to identify the learning style preferences of the students with demographic items necessary to describe the sample.

### 3.2 Research Instrument

The Index of Learning Styles (ILS), a self-scoring questionnaire of 44 questions, developed by Felder and Silverman of North Carolina University has been used to assess students' learning styles (Felder-Silverman Model, 1988) which since its inception is known to be a simple and easy-to-use instrument. This study adopts Index of Learning Styles (ILS) due to the convenience of administration procedures and the ease in answering the questions. In addition, with simple language and short questions of the Felder-Silverman ILS, it is believed that samples of diverse cultural backgrounds will be more responsive.

Generally, the ILS classifies students along four continua or dimensions where each dimension comprises two sub scales as below:

- intuitive (e.g., innovative, abstract thinker, oriented toward theory) versus sensing (e.g., practical, concrete thinker, oriented toward facts)
- verbal (e.g., prefers written and spoken explanations) versus visual (e.g., prefers to learn with pictures, diagrams, and charts)
- reflective (e.g., learns by thinking and prefers working alone) versus active (e.g., learns by doing and enjoys working with others)
- global (e.g., holistic thinking, learns in leaps) versus sequential (e.g., linear thinking, learns in small steps)

### 3.3 Participants

The population in this study consists of students mainly from the multi-racial society of Malaysia and international students studying or participating in study abroad programs in Malaysia. A total sample of 432 female and 353 male students ranging from 16 to 36 years old are collected. The following table presents the demographic profile of the respondents who participated in this survey.

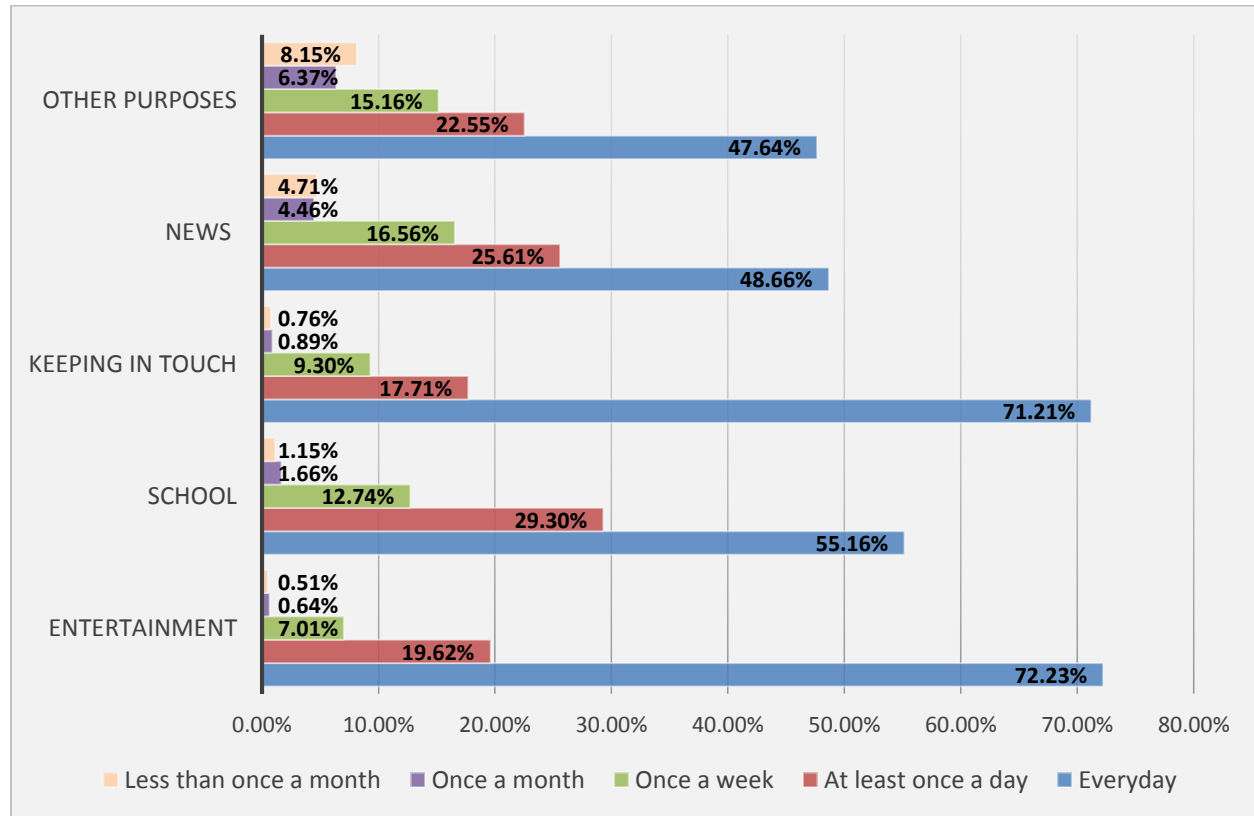
**Table 1: Profile of Participants**

	Sample Size	Percentage
<b>Gender:</b>		
Male	353	44.96%
Female	432	55.03%
<b>Type of Institution:</b>		
Polytechnic	377	48.02%
College/University	408	51.98%
<b>Nationality:</b>		
Malaysia	478	60.89%
Others	307	39.11%

## 4. Findings

### 4.1 The Internet Usage

Figure 1 presents the pattern of internet usage for each activity in terms of frequency of usage from the data obtained.



**Figure 1:** Pattern of Internet Usage versus Frequency of Usage

It is clearly shown that, majority of the respondent's access internet every day for various purposes which confirms that using internet has become their daily routine. The most frequently internet usage are for entertainment and communication (that is, keeping in touch with friends and family). A significant majority (72.23%) of the respondents use the internet frequently every day for entertainment with 19.62% of respondents at least once a day. Similarly, 71.21% use frequently and 17.71% use at least once a day keeping in touch with friends and family. In addition, the results also show that 55.16% of respondents use the internet frequently every day and 29.30% at least one a day for school related activities and leaves the remaining 15.54% once a week or less frequently. However, interestingly, it is observed from the figure that the usage of the internet for school related activities seems to be much lesser as compared with entertainment or communication purpose.

## 4.2 The Learning Style Preferences

Table 2 presents whether respondents have a balanced, moderate or strong preference for each dimension.

**Table 2:** Percentage of Learning Preference based on the ILS

	Strong	Moderate	Balanced	Moderate	Strong	
<b>Intuitive</b>	1.15%	6.62%	60.51%	25.48%	6.11%	<b>Sensing</b>
<b>Verbal</b>	0.38%	4.59%	41.91%	31.59%	21.53%	<b>Visual</b>
<b>Reflective</b>	1.27%	10.96%	63.31%	19.24%	5.10%	<b>Active</b>
<b>Global</b>	1.40%	9.17%	65.48%	20.00%	3.95%	<b>Sequential</b>

From the data in Table 2, the descriptive analysis of the 785 respondents exhibit a rather balanced preference in all dimensions except the verbal-visual dimension where they show a stronger preference towards visual learning. The most preferred learning style is visual at 53.12% while majority are balanced on intuitive-sensing (60.51%), reflective-active (63.31%) and global-sequential (65.48%) dimensions. This observation is similar to the outcomes of Moussa (2018) and Fang *et al.*, (2017).

## 4.3 The Connection between Internet Usage and Preferred Learning Style

In order to establish the relationship between internet usage and learning styles, the correlation coefficients between the frequencies of internet usage for various purposes and the scores of the four dimensions of ILS are calculated. The findings clearly indicate the linkage or the association is nearly nonexistent. The correlation coefficients of the internet usage with each learning preference dimensions are summarized in Table 3.

**Table 3:** Correlation Coefficient between Internet Usage Frequency and Preferred Learning Style

	Entertainment	School Related Activities	Keeping in touch	News	Other purposes
Intuitive	-0.01	-0.04	0.02	0.01	-0.02
Verbal	0.07	-0.03	0.07	-0.02	-0.03
Reflector	0.04	-0.05	-0.02	-0.07	-0.04
Global	0.06	0.02	0.03	0.03	-0.01

To further investigate the correlation, comparisons of learning style preferences between respondents with high internet usage (i.e. frequently every day) versus lighter users for education purpose are depicted in Table 4.

**Table 4:** Two-Sample T-Test for Internet Usage on School Related Activities and Learning Style

Learning Style	High Usage n = 433		Light Usage n = 352		t statistic
	Mean	Variance	Mean	Variance	
Intuitive	4.67	4.28	4.51	4.52	1.05
Verbal	3.52	5.13	3.42	4.39	0.60
Reflector	5.09	4.43	4.87	4.59	1.42
Global	4.97	4.07	4.95	4.26	0.16

Two-sample *t*-test is used to determine if there is any difference in learning style preferences between the high usage and the light usage groups. In comparison to the *t*- critical two tails of 1.96, differences in learning are implausible regardless the frequency of internet usage. These results are consistent with the findings of Cox (2008) who concludes that there is no relationship between the attitude towards the use of technology and learning style. Likewise, the study of Moussa (2018) reveals that learners have a positive perception of technology, but not correlated with learning styles. Similarly, Johnson and Broadley (2011) highlight Individual difference in learning styles may not be apparent due to the controlled nature of the digital environment at university.

## 5. Conclusion

Findings of this study indicate that students recognize that internet is a very important source of information. Students use internet primarily for entertainment and communication every day and they do use internet at least once a day on school related activities. These suggest that the advancement of connectivity technologies has put students into a more technological based kind of learning environment, i.e. blended learning mode. However, despite the heavy usage of internet, its association with students' learning style preferences is not apparent.



## 6. Acknowledgment

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