

การกำหนดรูปแบบการเรียนรู้ผ่านการใช้โทรศัพท์มือถือของนักศึกษาระดับปริญญาตรี
ด้านวิทยาศาสตร์คอมพิวเตอร์

Profiling BSCS Students Learning Style Preferences
in Relation to Their Mobile Phone Utility

Joe Anthony M. Milan and Others

บทคัดย่อ

ผู้เรียนมีวิธีการเรียนรู้และเข้าใจบทเรียนในรูปแบบที่แตกต่างกัน ขึ้นอยู่กับรูปแบบการเรียนรู้ที่แตกต่างกันของแต่ละบุคคลในการศึกษาเรื่องใดเรื่องหนึ่ง การศึกษารังนี้มีวัตถุประสงค์เพื่ออธิบายถึงลักษณะการเรียนรู้ของนักศึกษาระดับปริญญาตรีวิทยาการคอมพิวเตอร์ในการใช้โทรศัพท์มือถือเพื่อการเรียนรู้ วัตถุประสงค์เพื่อศึกษารูปแบบการเรียนรู้ของนักศึกษาระดับปริญญาตรีด้านวิทยาการคอมพิวเตอร์ ในการใช้โทรศัพท์มือถือ และเพื่อศึกษาความสัมพันธ์ของรูปแบบการเรียนรู้ของนักศึกษาระดับปริญญาตรีด้านวิทยาการคอมพิวเตอร์กับการใช้โทรศัพท์มือถือ การวิจัยครั้งนี้ใช้วิธีการวิจัยเชิงปริมาณ โดยใช้แบบสอบถามและการวิจัยเชิงบรรยายเพื่อร่วบรวมข้อมูล ใช้แบบสำรวจและแบบสอบถามเกี่ยวกับรูปแบบการเรียนรู้และการเรียนรู้ผ่านโทรศัพท์มือถือ ในการศึกษารูปแบบการเรียนรู้และการใช้โทรศัพท์มือถือของนักศึกษาระดับปริญญาตรีด้านวิทยาการคอมพิวเตอร์ ครอบคลุมกลุ่มตัวอย่าง 213 คน ผลการวิจัยพบว่า นักศึกษาระดับปริญญาตรีด้านวิทยาศาสตร์คอมพิวเตอร์นิยมการเรียนรู้แบบเคลื่อนที่ โดยมีค่าเฉลี่ย 39.39 และนิยมการเรียนรู้แบบสัมผัส โดยมีค่าเฉลี่ย 38.09 นักศึกษาส่วนใหญ่ (คิดเป็นร้อยละ 96.20) ใช้โทรศัพท์มือถือเพื่อการศึกษา โดยเฉพาะอย่างยิ่งการศึกษาผ่านอินเทอร์เน็ต และนักศึกษาส่วนใหญ่ (คิดเป็นร้อยละ 92.30) ใช้อินเทอร์เน็ตในการค้นหาข้อมูล นอกจากนี้ผลการวิจัยพบว่า รูปแบบการเรียนรู้ของนักศึกษาและการใช้ประโยชน์จากโทรศัพท์มือถือเพื่อสนับสนุนการเรียนรู้ เป็นสิ่งสำคัญในการส่งผ่านบทเรียนไปยังผู้เรียน

คำสำคัญ: นักศึกษาระดับปริญญาตรีด้านวิทยาศาสตร์คอมพิวเตอร์/ รูปแบบการเรียนรู้ที่เกี่ยวกับการรับรู้/ เครื่องมือสื่อสารไร้สาย

ABSTRACT

Every learner in a classroom preferentially learns and understands lessons in different ways. This study aims to describe the BSCS students learning preferences in relation to their mobilephone utility. Specifically, to determine the learning preferences of BSCS Students; the uses of mobile phones; and the association of the BSCS Students' learning styles and their mobile phone utility. In order to achieve the objectives of the study, a quantitative approach using questionnaire was taken to gather the data in which the descriptive method of research was employed. Perceptual Learning Style Preference Survey Questionnaire and Learning Style Survey, and Mobile Learning Survey Questionnaire were administered to 213 BSCS Students in order to determine their preferred learning styles and mobile phone utilization, respectively. The researchers found out that BSCS Students preferred kinesthetic (39.39) and tactile (38.09) as major learning styles; majority or 96.20 % BSCS students utilized their mobile phones for academic purposes specifically via browsing the internet and searching for information with 92.30%; and students' learning preferences are necessary in utilizer of mobile phones to support learning.

KEYWORDS: BSCS STUDENTS/ PERCEPTUAL LEARNING STYLES/ MOBILE PHONE UTILITY

Introduction

Every learner in a classroom preferentially learn and understand lessons in many different ways. This comprises the diverse learning style preferences of the individual in any study program which makes one distinct from the others. Learners desire to study predominantly with their eyes or with their ears. Some prefer to be kinesthetic or tactile learners where they choose to gain knowledge by experience or by hands-on tasks. Whereas, some learn better when they work independently while others prefer to learn in groups. However, one of the major concerns is, do the Bachelor of Science in Computer Science (BSCS) students of the Don Mariano Marcos Memorial State

University – South La Union Campus (DMMMSU-SLUC) have different preferred learning styles in relation to their mobile phone utilization?

Learning styles is a group of a common ways of learning. Learning styles theory is based on the understanding that differences between individuals' processing capabilities lead to significantly different learning requirements as cited by Alqunayeer and Zamir (2015) on their study entitled Identifying Learning Styles in EFL Classroom. Furthermore, every learner may have a combination of learning styles, as he or she prefers different learning styles and techniques. Whereas some learners may have only one dominant style of learning. Thus, it becomes inevitable for a teacher to identify the learning style of students to be able to use a variety of teaching techniques that are best and necessary to cater the needs of students, hence, providing quality education.

On the other hand, Rossing, et al. (2012) stated that the growing use of mobile technology on college campuses suggests the future of the classroom, including learning activities, research, and even student faculty communications, will rely heavily on mobile technology.

As discussed by Foti and Mendez (2014) on their study entitled Mobile Learning: How Students Use Mobile Devices to Support Learning, the use of mobile learning devices to access and share information is a trend in higher education and is redefining the manner in which learning takes place and how instruction is delivered. Mobile learning presents students and professionals with the unique opportunity to access information instantaneously regardless of location. This means that learning can occur anywhere at any time through the use of these devices.

In addition, Chen, et al. (2015) stressed that mobile technology is ubiquitous in the lives of today's college students. Although 83% of adults between the ages of 18 and 29 own a smartphone, mobile device ownership among college students is even higher; according to a 2014 EDUCAUSE report, 86% of undergraduates owned a smartphone as of last year, and nearly half (47%) owned a tablet.

According to Brenner (2015), college students reported using their cell phones an average of 11 times per day in class where 92% reported using their cell phones to send text messages during class. Thus, several studies have compared students who texted during a lecture versus those who did not. Those who texted frequently took lower quality notes, retained less information, and did worse on tests about the material. Students themselves realize that cell phone usage does not promote learning wherein 80% of students agreed that using a mobile phone in class decreases their ability to pay attention. On the other hand, smart phones and other mobile devices can be used for positive purposes in the classroom. As instructors might choose to employ a variety of applications that encourage class participation and provide them instantaneous feedback about student learning can be accessed by mobile devices.

Chen, et al. (2015) highlighted that mobile technology as an integral part of students' daily lives has changed how they communicate, gather information, allocate time and attention, and potentially how they learn. The mobile platform's unique capabilities — including connectivity, cameras, sensors, and GPS — have great potential to enrich the academic experience. Learners are no longer limited to the classroom's geographical boundaries, they can now record observe and analyze data on location. Furthermore, mobile technology platforms let individuals discuss issues with their colleagues or classmates in the field. The ever-growing mobile landscape thus represents new opportunities for learners both inside and outside the classroom. Accordingly, technology adoption in higher education is more than applying technical innovations. Wide-scale institutional implementation requires clear university policy, device availability, and readily accessible technical and pedagogical support.

Based on the aforementioned statements, findings of this study will be essential to further understand the way BSCS students learn, thus, helping the faculty members of the College of Computer Science recognize the diverse needs of the BSCS students and improve the selection of teaching strategies best suited to improve and fully implement the output-based

education to students. In addition, to provide a basis that enables instructors to knowledgably develop a variety of instructional methodologies to benefit all students with regards to the learning style preferences in relation to mobile phone utilization.

Research Objectives

This study aimed to describe the BSCS students learning style preferences in relation to their mobile phone utility.

Specifically, to achieve the following objectives:

1. To study the learning styles of BSCS Students;
2. To study the uses of mobile phones as perceived by the BSCS Students; and
3. To study the relationship of the BSCS Students' learning styles and their mobile phone utility.

Research Methodology

In order to achieve the objectives of the study, a quantitative approach through questionnaire was taken to gather the data. Furthermore, the study utilized the descriptive method of research as Ethridge (2014) discussed that descriptive research can be explained as a statement of affairs as they are at present with the researcher having no control over variable. Moreover, descriptive research may be characterized as simply the attempt to determine, describe or identify what is, while analytical research attempts to establish why it is that way or how it came to be. In addition, Hale (2016) accentuated that descriptive research method are pretty much as they sound, it describes situations. They do not make accurate predictions, and they do not determine cause and effect. Basing from the above mentioned definition, the researchers used descriptive research in order to determine the learning styles and the uses of mobile phones as perceived by the BSCS students, and to determine the relationship of the BSCS students' learning styles and their mobile phone utility.

On the other hand, as Hale (2016) discussed that participants answer questions administered through interviews or questionnaires in survey method research. After participants answer the questions, researchers describe the responses given. In order for the survey to be valid, it is important that the questions are constructed properly. Questions should be written so they are clear and easy to comprehend.

Hereafter, the researchers administered the Perceptual Learning Style Preference Survey Questionnaire developed by Joy Reid and Learning Style Survey adapted from Cohen, Oxford, and Chi in order to determine the preferred learning styles of the BSCS students, whereas, the Mobile Learning Survey Questionnaire was utilized to determine the uses of mobile phones as perceived by the BSCS Students.

Explanation of learning styles for the Perceptual Learning Style Preference Survey Questionnaire was adapted from the C.I.T.E. Learning Styles Instrument, Murdoch Teacher Center, Wichita, Kansas and it was found to be valid, reliable and suitable in identifying learners' learning styles since it was used by Obračić and Akbarov (2012) in their study, Students Preference on Perceptual Learning Style. The questionnaire was composed by thirty statements that covered Reid's six learning style preferences, with a rating scale from one to five for each one of them. Students answered them as they applied to their study on a 5-point Likert scale. Learning styles is classified as Major, Minor or Negligible. Major is a preferred leaning style, Minor is one in which learners can still function well, and Negligible is the one that can do learning the learning process more difficult. When the numerical value was assigned to the corresponding learning style, the numbers were added to obtain a total score and then it was multiplied by 2 determining the major, minor or negligible learning style. After that, all the results were analyzed by categorizing them into according to the aforementioned learning style preferences and presented in the findings. The main aim was to find out information related to learning styles.

On the other hand, the Learning Style Survey is designed to assess the general approach of learning. It does not predict the behavior in every instance, but it is a clear indication of the overall style preferences. There are 11 major activities representing 12 different aspects of the learning style. The format of the Learning Styles Survey and a number of dimensions and items are drawn from Oxford's Style Analysis Survey, J. Reid's Learning Styles in the ESL/EFL classroom and other key dimensions and some of the wording of items comes from Ehrman and Leaver's E&L Questionnaire. By totaling the points based on the scores given on every activity were considered, the overall learning preferences for each student are demonstrated. The higher number in each part and if they are close both will be selected as the preferred learning styles. The scores were interpreted by giving general descriptions of the students learning style preferences.

Lastly, the Mobile Learning Survey Questionnaire containing Likert-Scale items and open-ended items was utilized to obtain both quantitative and qualitative information regarding student use of mobile devices in their academic role was adapted. The tool was not tested for validity or reliability but it was utilized in the study of Foti and Mendez.

The respondents of the study consisted of the Bachelor of Science in Computer Science (BSCS) students of the College of Computer Science, Don Mariano Marcos Memorial State University – South La Union Campus, Agoo, La Union during the academic year of 2016-2017. They were considered since they are involve in the delivery of quality instruction in the college. There were a total of 213 respondents from the first year to fourth year students. Table 1 reveals the distribution of respondents where Cochran's formula was employed to get the sample size. Furthermore, they were selected using the stratified convenience sampling procedure. This sampling method was used to ensure that the respondents were representative of the BSCS students' composition.

Table 1 Distribution of Respondents

Year Level	N	n
BSCS I	78	17
BSCS II	366	79
BSCS III	313	68
BSCS IV	224	49
Total	981	213

Legend: N = total sample

n = sample size

Research Findings

Learning Styles of BSCS Students

Table 2 depicts the preference of the BSCS Students Perceptual Learning Style Preference where tactile and kinesthetic were regarded as major learning style preference whereas visual, auditory, group and individual learning styles were classified as minor. The least popular style was the group style having a mean of 36.43 though it was not considered as negligible but it indicates that BSCS students could complete their work well when working and interacting with other students.

Table 2 BSCS Students Perceptual Learning Style Preference

Learning Style	Mean	Category
Kinesthetic	39.39	Major Learning Style Preference
Tactile	38.09	Major Learning Style Preference
Visual	37.83	Minor Learning Style Preference
Auditory	37.74	Minor Learning Style Preference
Individual	36.87	Minor Learning Style Preference
Group	36.43	Minor Learning Style Preference

Legend: Major Learning Style Preference: 38 – 50

Minor Learning Style Preference: 25 – 37

Negligible: 0 – 24

On the other hand, several learners preferred working alone, which signifies that students remember and understand information best when they learned it independently as depicted on the individual learning style with a mean score of 36.87 and denoted as a minor learning style preference.

Also, it could be noticed that the auditory style receiving a 37.74 mean score was identified as minor learning style preference implies that BSCS students perceived to learn from hearing words spoken and from oral explanations. Furthermore, it entails that they may remember information, especially when they are learning new material by reading aloud, hearing audio tapes and lectures during class discussions, and having conversations with their instructors and classmates.

Mean score indicates that the most representative and common style was kinesthetic garnering 39.39 and labeled as major learning preference of the BSCS students, this means that learners absorbed the lessons best by being involved physically in classroom experiences. Students remember information well when they actively participate in activities and game-playing in the classroom.

In addition, the score also reveals that the tactile was the second learning style acquiring a mean of 38.09 and also considered as a major learning style which insinuates that most learners' preferred opportunity of learning by having hands-on experiences with the lessons. That is, working on experiments in a laboratory, handling and building models, and touching and working with materials provide them the most successful learning situation.

Also, it can be seen that the visual style (37.83) was ranked third which preferred as a minor learning style of BSCS students. It means that students were educated well by seeing words in books, on the chalkboard, and in workbooks. They remember and understand information and instructions better if they read them. They do not need as much oral explanation as an auditory learner, and they can often learn alone, with a book. There is a need for these learners take notes of lectures and oral directions if they wanted to remember the information.

In relation to the aforementioned findings, table 3 shows the learning style preferences of the BSCS students when they are working on different scholarly activities.

As to how the learners use their physical senses, results came out that BSCS students preferred tactile or kinesthetic learning style with the highest mean of 2.66 which means that they learn more from doing projects, working with objects, and moving around such as playing interactive games, building models and conducting experiments.

With regards to how the learners expose their selves to learning situations, students perceived to be introverted obtaining 2.66. This indicates that they prefer to do more independent work, thus, studying, reading or learning alone with a computer or enjoy working with one other person they know well.

Concrete-sequential learning style (2.90) was favorable to BSCS students signifying that they are likely to be more present-oriented, prefer one-step-at-a-time activities, and want to know where they are going in learning at every moment than being more future-oriented, speculating about possibilities and enjoying abstract thinking with reference to how learners handle possibilities.

Concerning with how learners deal with ambiguity and with deadlines they desired to be closure-oriented (2.80) where they probably focused carefully on most or all learning tasks, strive to meet deadlines, plan ahead for assignments, and want explicit directions than having discovery learning in which they have to pick up information naturally and having learning without concern for deadlines or rules.

Table 3 BSCS Students Learning Style Preference

Activity	Learning Style	Mean
Part I. How I Use My Physical Senses	Visual	2.37
	Auditory	2.07
	Tactile/Kinesthetic	2.66

Activity	Learning Style	Mean
Part 2: How I Expose Myself To Learning Situations	Extraverted Introverted	2.33 2.66
Part 3: How I Handle Possibilities	Random-Intuitive Concrete-Sequential	2.86 2.90
Part 4: How I Deal With Ambiguity and With Deadlines	Closure-Oriented Open	2.80 2.39
Part 5: How I Receive Information	Global Particular	2.66 2.83
Part 6: How I Further Process Information	Synthesizing Analytic	2.71 2.64
Part 7: How I Commit Material To Memory	Sharpener Leveler	2.64 2.57
Part 8: How I Deal With Language Rules	Deductive Inductive	2.62 2.44
Part 9: How I Deal With Multiple Inputs	Field-Independent Field-Dependent	2.62 2.43
Part 10: How I Deal With Response Time	Impulsive Reflective	2.64 2.85
Part 11: How Literally I Take Reality	Metaphoric Literal	2.62 2.37

Regarding on how the BSCS students receive information, they intended to be particular (2.83) which means that they are focus more on details and remember specific information about a topic well. Also, it was revealed that BSCS students are synthesizing individuals (2.71) where they can summarize material well, enjoy guessing meanings and predicting outcomes, moreover, to notice similarities quickly when they process information.

When pertaining to how the students commit material to memory, they preferred sharpener style of learning (2.64) as they tend to notice differences and seek distinctions among items as they commit material to memory. They enjoy to distinguish small differences and to separate memories of prior experiences from memories of current ones. Thus, they can easily sort and retrieve different items because they store them separately.

The BSCS students were disclosed as more deductive learners (2.62) where they prefer to go from the general to the specific, to apply generalizations to experience, and to start with rules and theories rather than with specific examples when dealing with language rules.

As to how they deal with multiple inputs, BSCS students chose to be more field-independent (2.62) in style preference, meaning, they adore to extract material from within a given context even in the presence of distractions. Consequently, they may, however, have less facility dealing with information holistically.

It could be discerned that the BSCS students are reflective learners which reaped a highest rating over impulsive learning style. In this regard, BSCS students think things through before taking an action and they often do not trust their gut reactions when considering about how they deal with response time.

Lastly, metaphoric learning style was preferred by BSCS students with a mean rating of 2.62 as to how learners literally take reality and it can be annotated that they learn the lessons being discussed more effectively if they conceptualize aspects of it, such as the grammar system, in symbolic terms. They make the material more comprehensible by developing and applying an extended representation to it.

Findings corresponds to the conclusion made by Rossing, et al. (2012) that determining students learning styles will help and contribute a lot to the learning process. Matching learning and teaching styles in order to provide suitable learning atmosphere and provide better teaching procedures. Moreover, instructors should define students' profiles and define their learning

style, as well as create learning environment which includes and appreciate students learning styles so that learning will be optimized.

Uses of Mobile Phones as Perceived by the BSCS Students

Majority or 98.10% of the BSCS students responded that they owned a mobile device where 79.20% are android smartphones. Results also revealed that 96.20% BSCS students utilized their mobile phones for academic purposes, whereas, 43.10% feeling very comfortable while 45.10% were fairly comfortable in using their mobile devices and 89.60% were using mobile devices regularly or multiple times a week.

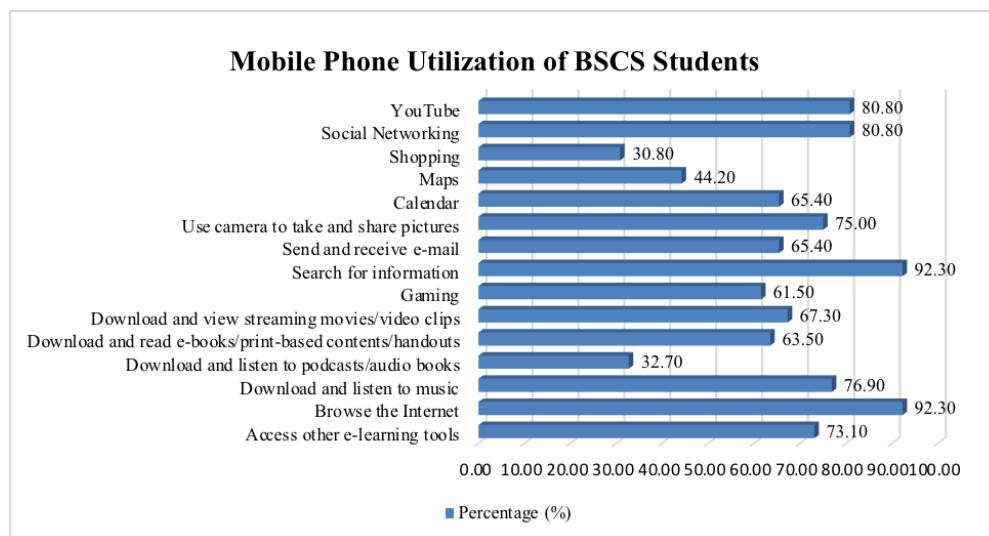


Figure 1 Mobile Phone Utilization of BSCS Students

As shown in Figure 1, BSCS students generally utilized their mobile phones for browsing the internet and searching for information with 92.30% whereas shopping got the lowest having 30.80%. In this context, mobile phones prove to be a useful resources to students in which it provides them with instant access to information they needed and help them in their studies while students do not usually utilized their mobile phones for purchasing online products or goods.

Most of the BSCS students or 86.90% of the respondents used their mobile devices as learning tools. Students turn their mobile devices into learning tools through installing mobile applications or apps. A majority of students reported the use of programming language apps and tutorials such as Java, Turbo C, and C as a study tool in their hands-on activities. Through the use of their mobile phones, BSCS students are able to access some programming hubs that may help them in dealing with their programming case studies and enhancing their programming skills as well.

Apart from programming apps and tutorials, office suits applications like MS Word and MS Excel where downloaded and used by BSCS students in preparing their reports and working on their worksheets. Moreover, they also utilized their mobile phones through downloading an integrated development environment (IDE), a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a source code editor, build automation tools and a debugger, thus, it supports BSCS students to create, compile, interpret, and execute programs developed by students to solve programming related activities.

To support student role as BSCS course learners, students make use of mobile devices through the utilization of apps. Students were able to use their mobile phones as communication tools. Applications such as Facebook enable the BSCS students to access course contents and lecture notes or handouts as well as uploading assignments and downloading pdf files in the group created and managed by their instructors. Other functions include communications outside of the classroom via Facebook App or Facebook Messenger to discuss details of school projects, assignments, school announcements, group activities, and to ask queries regarding their lectures and school related responsibilities. There is an easy way on how students communicate with each other via social networks through the groups created, moreover, they can directly send a private message to their classmates discussing necessary information that would help them in their lessons.

According to the respondents, through social media they can get opinions of their classmates regarding the topics or articles they have read, aside from that, their classmates could also give comments and suggestions to improve their outputs to be submitted as a requirement on the course.

Furthermore, the BSCS students conveyed that through Google Mail App they can access and receive significant e-mails from their colleagues and instructors as well as to send back response to them. In this light, the ability to retrieve e-mail through mobile phones enables students to stay informed, especially with regards to changes in deadlines, course syllabi, meetings, lectures, and trainings. Hence, instant access to e-mail facilitates prompt response to their professors and classmates, thereby communication has been improved.

Finally, when the BSCS students asked to provide suggestions on the integration of mobile devices in their class discussions, results revealed the aspiration of the students to utilize mobile phones to make learning interactive and dynamic with the presence of the different applications. In that way, the use of mobile devices as personal response systems or clickers allow students to answer questions synchronously and anonymously during lectures through a live quiz or questioning system. The implementation of devices in this manner enables participation, which in turn makes learning more interactive. Further, students suggested the use of online classroom tools and programs to supplement lectures with activities that would allow them to work independently on their devices. The ability to access scholarly activities in real-time may open up a discussion between students and instructors. Therefore, this makes the learning process more dynamic as students were able to have a self-directed role and become an active members in the learning process.

Results are supported by the statements of Shen, et al. (2009) that students felt comfortable and happy with the use of interactive mobile learning in their computer science class. Far from rejecting the technology, students want more—more varieties of interaction, more types of content,

and more features. Student acceptance of this emerging technology represents a step toward anytime, anywhere learning that brings students together instead of isolating them from their classmates.

Relationship of the BSCS Students' Learning Styles and their Mobile Phone Utility

The results from this study reveal that BSCS students preferred to learn their lessons best by being involved physically in classroom experiences. Students remember information well when they actively participate in activities and interactive games in the classroom. In addition, they rely more on their tactile and kinesthetic abilities when they used their physical senses to learn; work independently when they exposed to learning situations; enjoy abstract thinking when handling possibilities; want explicit directions when dealing with ambiguity and with deadline; focus on details when receiving an information; enjoy guessing meanings and predicting outcomes when processing information; tend to notice differences when they commit materials to memory; start with rules and theories when dealing with language rules; choose to be more field-independent when dealing with multiple inputs; think things through before taking an action when they deal with response time; and lastly, they learn the lessons being discussed more effectively if they conceptualize aspects of it when they literally take reality.

On the contrary, BSCS students use using mobile devices for both academic purposes and for support outside of the classroom, thus, it indicates that learners were adapting to innovations that is to study with their mobile phone. These findings are consistent with those of previous studies investigating the use of mobile devices in higher academic settings. As Miller (2012) found that the capabilities of these devices encourage learning and engagement. This is evident in students' reports of using their mobile devices to access course content and use apps to support their learning. Notably, these devices played a significant role in students' creation and utility of study materials.

Efforts are needed to translate students' worthy learning habits from the classroom to mobile phones. These findings have lead researchers to clinch that learning with the utilization of mobile phones must be prepared well to be more stimulating and engaging to foster competition, collaboration and participation among students. Consequently, establishment of online communities such as Facebook groups should be considered to have an open forum where all members could contribute and respond to posts pertaining to assignment due dates, clarification of lecture topics, and the sharing of web-based media and videos to teach concepts to augment the idea of sharing and cooperation among students through the use of mobile devices.

Findings signified that students have utilized various strategies to support and to succeed on their academic performance. Most notably, they have chosen to form online communities through the use of social networks to easily access course contents and lectures, share information, and strategize on their projects. Furthermore, the portability of mobile devices serve as a means for students to seize the opportunity to make learning anywhere and anytime possible.

These results are consistent with Rossing, et al. (2012) findings that mobile devices can be utilized to facilitate adaptation of the course content to fit students' learning styles and pace. The apps that can be downloaded to these devices provide students with interactive visual representations of the information. The touch screen capabilities of mobile devices allow students to enlarge or rotate images with ease, thereby making learning more hands on (Miller, 2012; Geist, 2011).

Conclusion and Discussion

The study has the following findings:

1. The BSCS Students favored kinesthetic (39.39) and tactile (38.09) as major learning styles as well as they rely more on these learning styles when they used their physical senses to learn, introverted style when they exposed to learning situations, concrete-sequential style when handling possibilities, closure-oriented when dealing with ambiguity and with deadline, particular

when receiving an information, synthesizing when processing information, sharpener when they commit materials to memory, deductive when dealing with language rules, field-independent when dealing with multiple inputs, reflective when they deal with response time, and metaphoric when they literally take reality.

2. Majority or 96.20% BSCS students utilized their mobile phones for academic purposes specifically through browsing the internet and searching for information with 92.30%.
3. Students' learning style preferences are necessary in the delivery of lessons as well as utilization of mobile phones to support learning.

Based from the findings, the following conclusions were drawn:

1. Kinesthetic and tactile were the major learning styles preferred by the BSCS students in which they learn their lessons best by experience or by hands-on.
2. Mobile phones were highly utilized by students as a learning tool and a support system as learners of the BSCS program.
3. Mobile phones can be used to adopt to the style or preferences of the students to encourage and support learning.

The researchers recommend the following:

1. The faculty members of the College of Computer Science shall depend on the learning style of the students in the delivery of instruction.
2. Integration of mobile devices in class discussions could be taken into consideration to make learning interactive and dynamic to BSCS students.
3. Mobile phones can be utilized to improve teaching strategies and methodologies necessary to students' learning styles and pace.
4. Determining the students learning styles will help and contribute a lot to the learning process in order to provide suitable learning atmosphere to students.

5. Future study should be conducted to explore whether the utilization of mobile phones have an impact in gauging students' learning style to improve academic performance.

References

Alqunayeer & Zamir. (2015). Identifying learning styles in EFL classroom. *International Journal of Learning and Teaching*, 1(2), 82-87.

Brenner, T. (2015). *The use of mobile devices in the college classroom*. Retrieved from <http://bokcenter.harvard.edu/blog/use-mobile-devices-college-classroom>.

Chen, et al. (2015). *Students' mobile learning practices in higher education: A multi-year study*. Retrieved from <http://er.educause.edu/articles/2015/6/students-mobile-learning-practices-in-higher-education-a-multiyear-study>.

Ethridge, D. E. (2004). *Research methodology in applied economics*. John Wiley & Sons, p.24.

Foti, M. K. & Mendez, J. (2014). Mobile learning: how students use mobile devices to support learning. *Journal of Literacy and Technology*, 15(3), 58-78.

Geist, E. (2011). The game changer: Using iPads in college teacher education classes. *College Student Journal*, 45(4), 758-768.

Hale, J. M. S. (2016). *The 3 basic types of descriptive research methods*. Retrieved from <http://psychcentral.com/blog/archives/2011/09/27/the-3-basic-types-of-descriptive-research-methods/>.

Miller, W. (2012). *iTeaching and learning: Collegiate instruction incorporating mobile tablets library technology reports*. Retrieved from <http://web.ebscohost.com.ezproxy.stockton.edu:2048/ehost/pdfviewer/pdfviewer?sid=78fc5fe4-4a07-4ff9-a11cc7516f6087c5%40sessionmgr115&vid=4&hid=127>.

Obralić, N. & Akbarov, A. (2012). Students preference on perceptual learning style. *Acta Didactica Napocensia*, 5(3), 32-42.

Rossing, Jonathan P., et al. (2012). iLearning: The future of higher education? student perceptions on learning with mobile tablets. *Journal of the Scholarship of Teaching and Learning*, 12(2), 1-26.

Shen, Ruimin, et al. (2009). *Mobile learning in a large blended computer science classroom: System function, pedagogies, and their impact on learning*. Retrieved from https://www.researchgate.net/publication/224570991_Mobile_Learning_in_a_Large_Blended_Computer_Science_Classroom_System_Function_Pedagogies_and_Their_Impact_on_Learning.

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Authors

Joe Anthony M. Milan, Don Mariano Marcos Memorial State University – South La Union Campus E-mail: joeanthony.milan@dmmmsu-sluc.com

Maria Concepcion G. Balcita, Don Mariano Marcos Memorial State University – South La Union Campus
E-mail: mariaconcepcion.balcita@dmmmsu-sluc.com

Nema Rose D. Rivera, Don Mariano Marcos Memorial State University – South La Union Campus E-mail: nemarose.rivera@dmmmsu-sluc.com