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AGGREGATING ICT FOR ORGANIZATIONAL USAGE OUTCOME

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ABSTRACT

This study determined the level of ICT integration of the College Students of CTU – San Francisco Campus. Specific sub-problems include the profile of the respondents as to, age and gender; civil status, device used, place of residence; ICT literacy as to, academic, personal and social; the perception of the respondents about ICT integration in terms of, performance expectancy, effort expectancy, attitude towards using technology and social influence; the extent of ICT integration in, community, home and school; and the congruency of the perception and the extent of ICT integration. In implementing the study, the unified theory of acceptance and use of technology (UTAUT) structure were used in assessing the perception and level of ICT integration. Survey questions were administered to the 130 number of students or 67 percent of the total population. Statistics used were the means, frequency, simple percentage, and average rank. It was found out that the ICT literacy of the respondents as to academic, personal and social is on Moderate level. While they only fairly agree to the perceptions towards ICT integration as determined through performance expectancy, effort expectancy, attitude towards using technology and social influence. However, their ICT integration in the community, home and school is only good. Yet, there is a significant congruency of the perception and level of ICT integration and thatthe perception of respondents when it comes to relatedness of level of ICT integration is 90^0 and the said congruency is very significant at 0.05 level and that the perception accounts 81^0 of the level of ICT integration. Based on the findings, the level of ICT integration is good but some areas need improvement. Thus, the study proposed an ICT integration development plan for immediate implementation.

KEYWORDS: ***Industrial Technology, Information Communication Technology (ICT) Integration, Descriptive Research, Cebu Technological University – San Francisco Campus***

Chapter 1
THE PROBLEM AND ITS SCOPE

INTRODUCTION

Rationale of the Study

The Universe is extremely dependent of Information and communication technologies (ICT) that become one of the central building blocks of modern society. People practice of it had many favorable significances, because they support interaction and collaboration which commonly can be seen in the workplace learning (Andriessen, 2003), and work performance (Jones and Kochtanek, 2004) in where the manpower is considered as one of the assets in promoting and maintain the quality of a company. Various studies illustrate that ICT investments are necessary and advantageous in attaining quality performance and improve productivity. The design, development and acceptance of information technologies have received substantial attention in the past few decades. Many

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theoretical models have been proposed to give explanations to end users' acceptance behaviour. The newest amongst them is the Unified theory of adoption and use of technology (UTAUT) by Venkatesh et al. (2003). However, ICT scheme changes from time to time; it is unconsciously noticed by the people, yet, the implementation of it continually requires both structural and individual changes (Rogers, 2000), and therefore user adoption and establishing the use of ICT systems have proven challenging in organizations who are right now very dependent with the use of various ICT facilities. The automatic service and transactions with the so-called computerization.

However, the use of technology is commonly being computer literate and it means that you are a technology oriented individual but the ability to use a computer is probably becoming an expectation of the growing society as the ability to read and write. In addition, ICT drives even so extreme as said that computers will replace books.

Within the professional world, companies are finding it necessary to train and retrain their employees to establish or increase their knowledge of computers. Colleges are frequently now adding some sort of computer training as a requirement for graduation. It is critical, that colleges should teach about computers so that their students can find these machines useful in many tasks, and can adapt to different, advanced, or newer computer experiences.

In social and economic rationales of ICT in education (Rodrigo, 2001) says there is also a need to develop proficiency in ICT to supply internal demands for technology literate personnel. The knowledge economies of the Western world depend on the knowledge of the workers who can acquire, manage, share and apply new information. Exposing students to technology creates future employees who may be later expected to use ICT to increase productivity, reduce costs, and improve results.

In addition, the Philippine national policy had, therefore, been formulated to advance the use of ICT in education. In March 2001, the Senate Committee on Education in cooperation with the DECS launched Project CARES (Culturally Affirming Responsive Education Specialist). It was designed to upgrade the use and application of ICT in public elementary and secondary schools nationwide. The project's primary concern is school administration and is a responsive to the need for accurate and timely data that administrators and teachers need to manage their classes.

In Cebu Technological University-San Francisco Campus, ICT was being used and is a curriculum since June 2005 up to present not only for Computer Technology students but to everybody who is taking up different courses before graduation. One may not get their diploma with incomplete grades in their official transcript of records (OTR) if not enrolled and passed into the subject. With its course code, Comp. 1 (Computer Literacy 1) which is about studying computer fundamentals and Information Communication Technology as well. It bounces into a challenge to sustain the eminence through maintaining the trainings and quality education of the students who are enrolled in this Campus with their corresponding field of specialization. That is why this particular study is conducted and be made in order to gather data and information with regards to ICT Integration Development Plan for the Campus.

Theoretical Background

This study is based from the theory of User Acceptance and Use of Technology (UTAUT) by Venkatesh (2003). Supporting theories that helps the study more meaningful and resilient are: Diffusion of Innovations Theory, also known as Innovation Diffusion Theory by Rogers (2000), Social influence Theory by Kelman (1950), ICT integration guidebook Revised 2008 and the four determinants of UTAUT theory such as: Performance Expectancy, Effort Expectancy, Attitude towards using technology.

However, ICT Integration is always being a problem in any group setting. In where, individuals have its unique and varied level and perception of the perceived usefulness and effects towards it. An institution's failure to implement new technology can be prevented by effectively communicating the need for the technological changes to their employees, and how it will affect them with their daily lives (Venkatesh et al., 2003). There are various theories and writings that could tell that ICT Integration should be a must in acquiring technology adaptation. The ICT guidebook revised 2008 (http://ictpd.net/techplan/, March 9,2016), stated that 91% of the students use technology to interact, assess, sharing content, organize materials and to communicate results and commonly of the students are the youths.

Another theory that supports the study is the Social Influence Theory developed by Herbert C. Kelman (1950). A theoretical framework for the analysis of social influence, based on a qualitative distinction between three processes of influence; compliance, identification, and internalization, consequences is postulated. The model is particularly concerned with specifying the conditions under which changes induced by social influence attempts are temporary and superficial and, by contrast, those under person's belief and value systems, Kelman (1950).

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In the classroom setting where formal education is stipulated, the knowledge and eagerness to recognize ICT is uncertain because of some factor that may affect his will. According to (Siruno, et.al. p.94), no child is born social in the sense that he can get along with others. He must learn to make adjustments to others, and this ability can be acquired only as a result of opportunities to be will all types of individuals. Our students have changed radically. Today's students are no longer the people our educational system was designed to teach. Today's students have not just changed incrementally from those of the past, nor simply changed their slang, clothes, body adornments, or styles, as had happened between generations previously, Marc Prensky (2001).

Rodrigo, 2001 have mentioned some of the pedagogical benefits of ICT in the Philippines along with other developing countries in Asia, Africa, and South America are generally interested in educational technology, particularly in ICT, hoping that their educational systems reap the pedagogical benefits associated with it. Drill and practice or tutorial software, for example, individualizes instruction and provides students with immediate feedback. Students can proceed at their own pace. Internet connectivity enables student to access remote sources of information. Some researchers believe that ICT fosters self-direction. Students learn to initiate their own learning by asking probing questions and seeking out answers using a variety of resources.

While the Philippine ICT roadmap of June 2006 have stated that each and individual's education and experience, though still critical, will no longer be enough. They have to be able to adapt, and learn new technologies and new ways of doing business if they are to prosper in the 21st century. It is this drive and demand for greater efficiency that is driving the growth of the information and communications technology (ICT) sector. And yet, it is also ICT itself that is opening more and more opportunities for greater efficiency. ICT allows governments to deliver its services faster and with greater transparency. On the other hand, the educators should be thinking about how to teach both Legacy and Future content in the language of the Digital Natives who are particularly the youth of today facing globally the challenging technology years of tomorrow.

On the other hand, the respondent responds to the three sections question. The first section incorporates the profile of the respondents and the ICT literacy level as perceived in their academic, personal and social using a three-point scale which is interpreted as follows: (1) low, (2) moderate, and (3) high. Next, is the perception of the respondents about ICT based on the four determinants of UTAUT theory using a five-point scale which is interpreted as follows: (1) strongly disagree, (2) disagree (3) neutral, (4) agree, and (5) strongly agree. The last section is the extent of ICT integration as observed in their community, home and school using a three-point scale such as: (1) poor, (2) good, and (3) excellent.

However, Garcia, et.al., concluded that the perception of ICT support from the cognitive, social and didactic perspective is generally more positive among the students at the virtual university. Moreover, greater use of technology in academic settings seems to conditions the students' informal use and not just the reverse. Venkatesh et al. (2003) suggested future research to address the link between user acceptance and individual for organizational usage outcomes.

To add, In the Philippines, ICT is already widely recognized as a potent tool for socioeconomic upliftment. No less than the 1987 Constitution gives cognizance to ICT's role in nation-building. The Arroyo Administration's Medium Term Philippine Development Plan (MTPDP) identifies ICT as one of the drivers of jobs creation and investments. But the literacy of ICT is always being an issue, some says that it is not enough to define computer literacy as "being literate in computers". The *Webopaedia* (2000), an online dictionary, defines computer literacy as "the level of expertise and familiarity someone had with computer. It generally refers the ability to use applications rather than to program. As we can see, most curricula for computer literacy training will be largely if not entirely focused on particular software programs. On the other hand, this is still vague description of computer literacy. Moursound (as cited in Duckett, 1992) gives computer literacy four parts, three or which are:

1. Knowledge and skill in operating a computer using a library of programs.
2. Knowledge of various ethical and social issues relating to computer use (A functional level of knowledge for the use of computers as an aid to problem solving).

Another significant part, which had appeared in the past two years with the Internet, is added by Sims (1996): "the ability to communicate or gain access to information by using the computer as a tool: "Normally, computer literacy education also covers hardware issues, ranging from turning on a computer and using a mouse, to knowledge of disk drives, expansion cards, memory, etc. Moursound's third element of computer literacy, is

3. Knowledge and skills in computer programming using high level language. Duckett found this note to be widely accepted, and most introductory computer literacy training courses nowadays do not include programming.

Lastly, Bradly (2010) deepens the understanding of how human centricity keeps the balance of ICT contributions to the society. Through her convergence model on ICT and psychosocial life environment, she

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suggests that any orientation of the development momentum lies in the ICT world should be checked against its effects on humans in terms of life environment, life role, and globalization. Bradly (2010) incorporated "information access to all" as one of the main goals that ICT should contribute to in order to approach the good form of ICT society. But, sad to note that not all environment is having the so called "information access to all" and some are even out dated of the happenings in the outside world. While the Philippine ICT roadmap of June 2006 have stated that each and individual's education and experience, though still critical, will no longer be enough. They have to be able to adapt, and learn new technologies and new ways of doing business if they are to prosper in the 21st century.

THE PROBLEM

Statement of the Problem

The purpose of this study was to examine the extent of ICT integration at CTU – San Francisco Campus, Cebu during summer 2016 as basis for development plan.

Specifically, this study intended to answer the following questions:

1. What is the profile of the respondents as to age and gender; civil status; device used; place of residence; ICT literacy (academic, personal, and social)?
2. What is the perception of the respondents about ICT integration in terms of performance expectancy; effort expectancy; attitude towards using technology and social influence?
3. As observed by the respondents, to what extent is the ICT integrated in community; home and school?
4. Is the perception of the respondents on ICT integration congruent to the extent of ICT integration?
5. Based on the findings, what ICT integration development plan can be proposed?

Significance of the Study

This study would be beneficial to: Students; Community; Municipal ICT board; Instructors/Educators; Business Administrators; Parents; Future Researchers

RESERCH METHODOLOGY

This chapter incorporates on the research design that will be used with the corresponding research environment, respondents, instruments, data gathering procedures, statistical treatment, and scoring procedures.

Design

This study utilized the descriptive research. The researcher used interview methods as the technique in collecting and gathering data about the perception and extent of ICT integration of the respondents to come up the researcher's longed output which was ICT Integration Development Plan for CTU-San Francisco Campus which is considered as one of the famous fishery Campuses of CTU system. The outcome of the survey instrument was tabulated, analyzed, and interpreted very well.

Flow of the Study

Inputs of the study are the different variables that include the respondents' profile, extent of ICT integration as perceived to their academic, personal and social; their perception about ICT integration based on performance expectancy, effort expectancy, attitude towards using technology and social influence; and the extent of ICT integration in the community, home, and school. Data gathered were analyzed and statistically treated in order to arrive at a conclusion and recommendation. A development plan is proposed.

Respondents

The respondents of this study were the 195 students for summer 2016. The respondents are: Education Students taking up Bachelor in Elementary Education (BEED) major in Content Education (CE) & Bachelor of Secondary Education (BSEd); Bachelor of Science in Industrial Technology (BSIT) major in Computer Technology (CT); and Bachelor of Science in Hospitality Management (BSHM). They will be identified using the stratified random sampling.

Out of the 195 populations, 67 percent of the entire population will be considered as sample respondents. Table 1 presents the course of the respondent, the total number of the population (N), the sampled population (n) and the percentage (%).

Environment

This study was conducted in Cebu Technological University – San Francisco Campus, San Francisco, Cebu.

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Research Instrument

To assist the gathering of the demographic profile of the respondents, a researcher-made instrument was utilized and some are based on the theories which are modified by the researcher.

First, the level of the respondents' Perception towards ICT Integration was assessed utilizing questionnaires which were made by the researcher.

Next, is the ICT integrated activities which were based from the four (4) determinants of UTAUT Theory. Individual question from each determinant are adapted from the questionnaire of the study of lolanda Garcia, Universitat Oberta de Catalunya,Anna Escofet, Begona Gros, University of Barcelona, Spain and few have been modified and qualified by the researcher.

Then, the assessment of the level of ICT integrated activity as observed in their community, home and school. The questionnaires are made by the researcher but are qualified from related studies and literature of the research can be seen in the previous pages.

Gathering Data

This study was done after gathering all the necessary permissions and endorsement through transmittal letters. The research instruments were finalized under the guidance of the thesis adviser. Proper coordination with the Campus Director and the Instructor/Professors was done to ensure one hundred percent (100%) retrieval of fielded questionnaires. The gathered data was tabulated, subjected to statistical treatment, analyzed, and interpreted very well.

Treatment of Data

The following statistical techniques used in this study:

1. *Simple Percentage*: This was used to treat the demographic profile of the respondents. The formula used was: %=*f*/nx100 where, it comprises the frequency of level and perception towards ICT integration the number of responses.
2. *Frequency:* This was used to see the frequency of perception towards ICT Integration and the extent of ICT integration as well.
3. *Average Weighted Mean using Likert-Type*: This was used to analyze the students' perceptions and the extent of ICT integration. With the aid of the formula composed of the *Average Weighted Mean, the sum of weighted mean and the number of cases.*
4. *Average Rank*: This was used to analyze and interpret the average of the data gathered with regards to the respondents' perception and extent of ICT integration using a formula which is the Average rank in getting the total average of items.

DEFINITION OF TERMS

Below is the operational definition of the terms that is necessary to be defined and described for further comprehension of the readers, to wit:

Aggregating. It refers to the combination of the outcome of the study in various organization such as community, home and school.

Computer/s. It refers to an electronic device used by the respondents.

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Computer Literacy. It refers to the ability/knowledge of the respondents in manipulating computer and its peripherals.
Computer Technology. A course major offered in CTU- San Francisco Campus that focuses on the study of software installation, hardware installation and its purpose, maintenance and troubleshooting.
Information Communication Technology. It refers to the technology that deals with the use of computers and adapting the newest trend of technology.
ICT Integration. It signifies the level of literacy of a person towards ICT.
Academic. It refers to the scholastic performance of a student with ICT aided activity.
Personal. It refers to the personal aspect of using ICT/Computer.
Social. It refers to the person who is highly socialized through ICT.
ICT Literacy. Refers to the ability of the respondent to use information technology to express oneself creatively to reformulate knowledge and to synthesize new information.
ICTIDP (Information Communication Technology Integration Development Plan) Framework. It refers the proposed framework of the output of the study.
Diffusion of Innovations Theory (DOI). Also known as **Innovations Diffusion Theory (IDT).** This theory developed by Everett Rogers by the year 1995.
Effort Expectancy Theory. It refers to the positive response of Expectancy Theory. It is also a strong support system to Performance Expectancy Theory.
Performance Expectancy Theory. This theory was developed by Thomas L. Quick published in July 1988. It is practical, is simple, is mainstream psychology, had been around a long time, is easy to apply, and most important.
Proposed ICT Integration Development Plan. This is the suggested Plan that would help the beneficiaries of this study in improving their perception and extent of ICT integration. It is designed to assist as the output of the study.
Unified Theory of Acceptance and Use of Technology (UTAUT). A theory developed by Venkatesh by the year 2003. It focuses on the model that combined eight major models of technology acceptance and their extensions (Venkatesh, Morris, and Davis & Davis 2003).

Chapter 2
PRESENTATION, DATA ANALYSIS AND INTERPRETATION

Integrating ICT as an effective delivery tool, is not as easy as learning how to use computers and the internet for basic work, Shahadat Hossain Khan (2004). The first perception is performance expectancy that had a mean score of 4.14 which described as Agree. While, effort expectancy had a mean score of 4.13 and is labeled as Agree. Then, attitude towards using technology had a mean score of 4.09 which is identified as Agree and social influence that had a mean score of 4.14 which described as Agree. The four perceptions have an over-all mean of 4.13 and described as Agree. As indicated, the four perceptions had almost the same mean score but we can notice two perceptions that had the highest mean score. For the reason that most of the respondents perceived ICT through social influence and on performance expectancy. They are obviously using technology in their socialization, leisure and satisfaction. To mention some, they are having so much fun with finding friends and communicating them. Updating the happenings of the outside world and keeping their selves up to date of the various prominent personalities in the different corners of the world. They can even express more in social media than sharing it with their friends personally. Hence, they are becoming more expressive in the day-to-day activity of living.

Chapter 3
SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary, findings, conclusions and recommendations of the study.

Summary

The study determined the extent of ICT integration of the selected students of CTU – San Francisco Campus. Specific sub-problems include the profile of the respondents as to: age and gender, civil status, device used, place of residence; ICT literacy level as to: academic, personal and social; perception about ICT integration as to: performance expectancy, effort expectancy, attitude towards using technology and social influence; extent of ICT integrated activity in: community, home and school; and the congruency of the perception and the extent of ICT integration.

Findings

In the profile of the respondents, the highest age of the students is 27 years and most of the respondents are at the age bracket of 20-25 years old which is 67 percent. Most of the respondents are females which covers 89 or 68

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percent and mostly they are single that had a total value of 117 or 90 percent. The devices used in the interaction of ICT are commonly television sets which had 59 or 45 percent and cellphones which had 41 or 32 percent. Utmost are living in the town of San Francisco in where the University is located.

As shown in table 7 is data presented the level of ICT literacy in where the respondents rated the three aspects such as: academic, personal and social as Moderate. It gained an over-all description as Moderate. It can be implied that it is fairly noticeable to the respondent's perception but it needs improvement as to keep update and sustainability of the keeping growing trend of technology.

As shown in table 12, the summary of perceptions of the respondents about ICT integration had an over-all account as Agree. The four determinants such as: performance expectancy, effort expectancy, attitude towards using technology and social influence had the same description which is Agree. With its verbal description that they affirm positively to the ICT usage of the four determinants of perception towards ICT. It can be understood that when it comes to keeping posted with technology, it should be at its maximum level, hence, the perception of the respondents should reach up to its peak.

As shown in table 16, the summary of the level of ICT integrated activity in community had a verbal description as Good. The same as in school and in home. Totally, it was rated as good which means that the extent of ICT integration in the respective areas of concern is satisfactory. Suggestion says that the three aspects should possess an excellent level which means that the extent of ICT integration in the respective areas of concern is remarkable that reach to its highest percentage which is 100 percent. In this way, it can for sure endure the challenge of sustaining ICT usability from generation to generation.

As revealed in table 17, the study determined that there is a congruency between the perception and the extent of ICT integration. The perception of respondents when it comes to relatedness of extent of ICT integration is 90^0 and the said congruency is very significant at 0.05 level and that the perception accounts 81^0 of the extent of ICT integration.

Conclusion

Based on the abovementioned findings, the extent of ICT integration is good but some areas need improvement.

Recommendation

After a review of the analysis and interpretations of data and findings, it is strongly recommended that the proposal for ICT integration development plan be adapted.

Chapter 4
OUTPUT OF THE STUDY

This chapter presents the output of the study. The data presents the following: rationale and objectives, implementation scheme of the school and community, proposed output of the study, ICT integration development plan, ICTIDP phades and road map with the corresponding attachment such as sample training plan and or sample seminar-workshop.

Rationale

The findings of the present study come up with the conclusion of the researcher about the extent of ICT integration which is good but some areas need improvement. To answer and meet maximum level of technology usability and sustainability, the researcher come up to propose and present and output of the study. A proposal entitled Information Communication Technology (ICT) Integration Development Plan (ICTIDPT).

In today's called nanotechnology every individual should possess the highest degree of the adaptation of technology. To respond with the globally competitive world of today, the awareness and responsibility towards technology usability relies ahead. Hence, the student is the focus of the transcending 21st century. Considering into their weaknesses, strengthening their strengths, developing their skills and capabilities, giving them the opportunity to expand and widen their knowledge and honing their expertise would surely meet the challenging world of technology tomorrow. With the findings of the current study, it shows that the extent of ICT integration was generally good or moderate. Yet there is a need for improvement to be at its maximum level of using ICT and technology usability.

This ICT integration development plan is designed to improve the level of perception of ICT by the college students of CTU – San Francisco Campus. This is to be done in order to improve and widened their understanding

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on the great effects of ICT towards their lives and adapt them as they are moving forward to their chosen field of specialization.

Objectives

The objectives of this plan are the following:

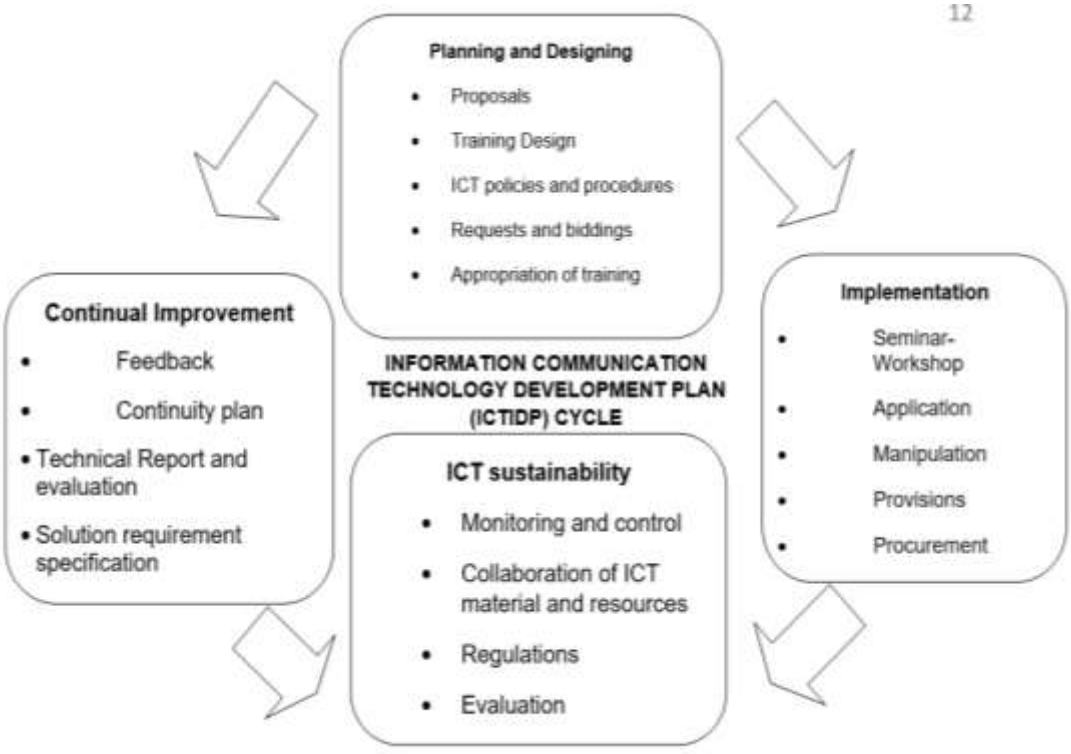
1. To improve and attain sustainability of the keeping growing trend of technology.
2. To maximize the perception and extent of ICT integration.
3. To endure the challenge of sustaining ICT usability from generation to generation.

Scheme of Implementation in School and Community

The ICT integration for students have to address school-wide and community-wide interaction that the management and society, personnel, faculty and staff, teachers and students could expedite and impart their expertise to the teaching and learning facilities in the school within and amidst other departments in Cebu Technological University – San Francisco Campus as needed in where the management system use these technology tools to have a stored essential data for governmental progressions and procedure. It is also mandated to have consistent data which are widespread and suitable for deliberate long term designing, planning, monitoring and evaluation for the attainment of lifelong learning and quality of manpower in an industry.

On the other hand, educators in the ICT education environments have to take on the more challenging role of facilitator and information provider. Many educators use ICT only as an accumulation to systematic instruction. In other words, educators use ICT to lengthen old-style pedagogical practices. The challenge is to integrate ICT into the pedagogy so that it becomes integrated with the education process. Such emphadis transpires at lesser level of what can be defined as a technology adoption hierarchy familiarization, utilization, integration, reorientation, and evolution.

According to the study of Information Technology and Business Process Association of the Philippines (IBPAP), in an industry road map commissioned by the Information Technology and Business Process Association of the Philippines (IBPAP) under the auspices of the former Commission on Information and Communications Technology (CICT), now reorganized as the Information and



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