Factors Influencing Adoption of Instructional Technologies by Faculty Members of the Mindoro State College of Agriculture and Technology

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Abstract - This paper provides empirical research-based evidence on the status of the level of adoption of instructional technologies by faculty members of the Mindoro State College of Agriculture and Technology. Factors associated with said adoption were highlighted. Instructional technology use for class preparation and faculty-directed student use of technologies were employed only several times a year. Frequency of use was even lesser in the case of technology uses for instruction delivery in classroom, for documenting and evaluating instructional activities and the use of professional email, which were all practiced once or twice a year. The level of instructional technology adoption by the faculty members was significantly related with their age, gender and tenure, but not with their civil status, educational attainment, academic discipline, length of teaching experience, actual teaching load, academic rank, number of technology-related trainings attended during the last five years and

on whether they assume an administrative position or not. The faculty members' perceived value of the instructional technologies, their self-efficacy on using the technologies, perceptions on the instructional resources, professional development opportunities and educational leadership in the college were to a certain extent significantly related to their level of adoption of the technologies. To improve on the level of adoption of the instructional technologies, creation of an Instructional Technology Unit in the College is proposed, so with, among others, the programming of professional development activities, building core values for use of technology among the faculty, equitable use of technology, standardizing technology systems and procedures, developing program for maintenance and repair of equipment and expanding access to internet.

Keywords – instructional technology, self efficiency, technology adoption

INTRODUCTION

The rapid advances in technology have led to a very strong force of change in various sectors of our society. These forces have created a challenge that is pervasive particularly to the education sector. The emergence of the new technologies compels educational institutions to move apace with these technology-driven changes.

Many changing needs and issues posed by an increasingly technological society are needed to be addressed by the education sector. Of significant concern are issues particularly confronting higher education such as changes in workforce needs, advances in disciplines, global issues and resource constraints, among others. All these call for a corresponding revolution in the delivery of educational services.

Utilizing technology itself in the schools and classrooms provide new teaching-learning context to enable both teachers and students to adopt and respond to the societal changes. Technologies applied to

instruction, referred to as instructional technologies would comprise an obvious change agent for education.

Instructional technology uses a variety of teaching tools to improve student learning. It includes computers and computer software as cutting edge technologies, as well as all tools that are used for teaching and learning such as cameras, compact disc player, global positioning system devices and other new tools that connect education to our changing world.

The integration of technology in the teaching and learning process is potentially one of the most viable interventions towards educational reform in our country. Consistent with the strategic direction of pursuing Philippine Higher Education Subsector efficiency and effectiveness, the Commission on Higher Education has laid down action areas for the utilization of state-of-the-art information and communication technology and other innovations in education (Biglete, 2003).

The big push to include technology in classes is accounted for its being very effective and beneficial for the learning process. Educators contend that with the use of instructional technologies, the traditional classroom setting gradually adopts to an increasingly global classroom where communication and interactivity are promoted to enhance learning. Moreover, educators note that instructional technologies can have an impact on student motivation, creativity, improve classroom management and organization and expands the use of other educational resources. Also, the use of instructional technologies, if correctly designed offers more depth into the curriculum content. While working in more depth with the content, students are able to move beyond knowledge comprehension to application and analysis of information.

Taking cognizance of these contentions by educators, it becomes so vital to determine whether or not the teachers or faculty members of the Mindoro State College of Agriculture and Technology (MinSCAT) are effectively integrating the available technologies into instruction. Despite existing evidence that instructional technologies have tremendous potential benefits for faculty who carefully design and integrate it into their classroom, the benefits of the above mentioned instructional technology use by the faculty cannot be realized if faculty members do not adopt it, and this problem need be addressed.

Findings of this study laid the groundwork for the steps the College need in order to help create a positive impact on the level of utilization of technologies toward enhancing instruction in the College

OBJECTIVES OF THE STUDY

This study aimed to determine the factors associated with the adoption of computer-based instructional technologies by the faculty members of MinSCAT.

Specifically, it sought to reveal the profile of the faculty in terms of age, gender, civil status, highest educational attainment, subjects taught, length of teaching experience in the College, length of total teaching experience, teaching tenure, academic rank, administrative position, and number of technology-related trainings attended during the last five years. The study also disclosed the faculty members' perceptions on predictor variables such as value of instructional technologies, their self-efficacy on using instructional technologies, as well as their perceptions on the instructional technology resources, professional development opportunities and educational leadership in the College. Also, the faculty members' perceptions on the criterion variable which is the current level of technology use in terms of class preparation, delivering instruction in classroom, faculty-directed student use of technology, documenting and evaluating instructional activities, and use of professional email were determined. Moreover, the assessment made by the faculty members on their level of adoption of the instructional technologies when grouped by college campus was tested for significant difference. Likewise, the assessment on the level of technology use was tested for significant relationship with the faculty profile and faculty perceptions which served as the predictor variables.

MATERIALS AND METHODS

The study used the descriptive-survey research method whereby the prevailing status of utilization of the technologies for instruction by the faculty members in the three campuses of the MinSCAT and several specific variables influencing said utilization were ascertained.

Differences in instructional technology utilization among the faculty members in the said campuses were likewise ascertained. Moreover, correlation study was employed to analyze the relationship between the predictor and criterion variables.

The respondents of the study were extracted through stratified random sampling from the population of all full-time faculty members in the three campuses of the MinSCAT, namely, Bongabong Campus, Calapan City Campus and the Main Campus which served as the strata in the sampling process. By drawing 80% from the faculty population per campus the sample size of 132 was derived comprising of 36 from Bongabong Campus, 56 from Calapan City Campus and 40 from the Main Campus. Retrieval rates of the survey forms was 100% for both Bongabong and Main Campuses while 90% for Calapan City Campus.

Data were gathered by administering a structured questionnaire prepared by the researchers. This questionnaire consists of four parts. Each part dealt with a particular variable of the study and contains items which are indicators of that variable. Said variables include the independent variables which are the personal and job-related attributes of the respondents; faculty perceptions pertaining to the value of the technology which were rated using a four-point rating scale depicting level of agreement to indicators of the variable from "strongly agree", "agree," "disagree," and "strongly disagree;" their self-efficacy on using the technology rated by using a five-point rating scale indicating extent of ability from "very high," "high," "moderate," "slight," and "low;" the instructional technology resources, professional development opportunities and educational leadership in the college which were all rated using the earlier mentioned four-point rating scale for extent of agreement. The dependent variable is the level of adoption of the instructional technologies classified by category of technology use and rated in accordance with frequency of use during the SY 2008-2009 by the respondents on a five-point rating scale from "several times a week," "several times a month," "several times a year," "once or twice a year" and "never."

The research questionnaire was validated by presentation to education and IT experts and researchers of the College who served as evaluators of the proposal during its presentation in the College Research Council. Their comments and suggestions have been noted

for the improvement of the instrument. Moreover, the questionnaire was pilot-tested with the cooperation of a group of ten faculty members from the three college campuses and who are not respondents of the study. The reliability of the questionnaire was established through the test-retest method which yielded a Spearman rank correlation coefficient of 0.91 denoting very high correlation..

Data gathered were collated, then analyzed by making use of descriptive statistics such as frequency, rank, percentage, arithmetic mean and weighted mean. The test for differences in the assessment on the criterion variables among the respondents when grouped by college campus was employed using Friedman's two-way analysis of variance by ranks. To measure the strength of relationship between each of the independent variables with the dependent variable, simple correlation analyses were done making use of Pearson product moment correlation coefficient and Chi-square test for independence as deemed appropriate for each pair of variables. Findings of the analyses were subsequently interpreted in the light of the specific problems posed for study.

RESULTS AND DISCUSSION

1. Personal and Job-related Attributes of the Faculty member-respondents

There were slightly more female than male faculty members. Their age ranged from the 20-30 years old bracket to over 60 years old and were mostly married. Only about 30% earned master's and or doctoral degrees. However, majority of those who have not earned graduate degree have earned master's units and or pursuing graduate studies on account of the need to grow professionally and upgrade their educational qualification. About one-third was into teaching for five years and less and the rest had experience of more than five years to as long as more than 20 to 30 years and more. About three-fourths were of permanent tenure and the rest were under contractual status. Two-thirds had academic rank of Instructor and the rest had faculty rank of Assistant Professor, Associate Professor and full-fledged Professor. One-third assumed designated key administrative position of Vice-Presidents,

Campus Administrators, Directors, Department Chairpersons and Laboratory High School Principal. They taught the subjects in both the general education area of course curricula such as Language, Mathematics, Social Sciences, Natural Sciences and Physical Sciences and in the major and professional areas like Agriculture, Agribusiness, Agricultural Engineering, Agroforestry, Entrepreneurship, Education, Fishery, Industrial Technology, Information Technology, Criminology, and Hotel and Tourism Management.

Three-fourths of the faculty had attended no more than five trainings, and about one-half of this group had not attended any training at all. The rest comprised of those who had attended more than five trainings with a few of them having undergone even more than ten trainings. Considering that majority of the faculty members in the College were in the service for not less than five years, this finding shows that training opportunities were not evenly apportioned to the faculty.

2. Faculty Perceptions on Predictor Variables of Instructional Technology Adoption

Value of instructional technologies. The faculty member-respondents strongly agreed that using technology promotes active learning strategies in the classroom, increases their access as well as students' access to information resource, arouses students' interest in class activities and increases students' comprehension, increases their productivity and facilitates their work as instructor/professor and increases their enthusiasm for teaching. Moreover, they agreed that using technology enables them to address the different learning styles of students, improve students' performance in tests and enables them to use leisure time effectively. These findings serve as a good indication for drawing optimism on creating a positive impact on the use of instructional technology to the education process. This is counted on to the conviction that in order to achieve the desired impact from technology use in the instruction process, first and foremost, the faculty members who are instrumental in the instruction delivery process lay much confidence on the value of using the technologies. This is founded on the report by Spotts (2007) that from studies on factors

influencing use of instructional technologies in higher education, the content factors such as learners, faculty and environment were not as important as a faculty member's attitude and the value they perceived in technology use.

Self-efficacy in using instructional technologies. The faculty members' general perception of their personal belief about their own ability to use an instructional technology competently was of moderate level. Specifically perceived as moderate was their ability to manage computer desktop, ability to use a variety of computer system input/output devices, ability to use specific applications such as software programs or tools like Microsoft Word, ability to store, organize and retrieve data files, ability to access research sources on the internet and ability to integrate technology into curriculum activities. This finding offers a good expectation for the College to improve further in its delivery of instructional services through its force of faculty who are recognizable enough in terms of know-how in using computers. Although they did not regard themselves to have high to very high level of knowledge and skills on using computers, the prospect for developing proficient and effective instructional technology users among the faculty of the College seems propitious.

Instructional technology resources in the College. Generally, the faculty members agreed that there is evidence of easily accessible and readily available equipment, reliable newer equipment, reliable network service provider and recent software being used. However, they disagreed that "There are computers in every classroom", that "There is a well-equipped media center," that "There is wireless internet access for faculty use" and that "Digital cameras and LCD projectors are available for faculty use." The respondents' general perception for these technology resources was described as "disagree." This calls into consideration the need to improve on the instructional technology facilities, particularly the provision of computers in every classroom, well-equipped media center and making accessible wireless internet, digital cameras and LCD projectors for use of faculty. Anent to this provision of said facilities, it is imperative for the facilities to cater to the needs of all the faculty members.

Professional development opportunities. The respondents were in disagreement that "A program for technology-related professional development for faculty is implemented throughout the year," that "There is a variety of technology-related professional development activities in the College," that "In-school technology-related professional development programs are offered at times that are convenient to faculty members," that "Professional development activities are offered by a variety of technology experts," that "One-on-one training sessions are available to faculty members," that "Faculty members are exposed to a variety of technologies and a variety of instructional uses of those technologies," that "Professional development activities are followed by support to help faculty members implement new practices," and that "focus on professional development activities is on how to integrate technology into specific areas of the curriculum." These findings set down the condition on how the faculty members' knowledge and skills about use of instructional technologies will be enhanced.

Among the different indicators for professional development opportunities, the respondents showed agreement only in the condition that "Technology-related professional development opportunities are relevant to faculty needs." This is suggestive that available opportunities for technology-related professional development of the faculty find applications to the teaching-learning process and may connote a certain extent of appreciation on the part of the faculty. However, there seems to be a big room yet for improvement on concerns about developing the faculty to become effective instructional technology users.

Educational leadership. The respondents agreed most to the condition that "There is a clear vision of how technology can change teaching and learning" and that "Educational leaders used technology themselves and encourage faculty and staff to embrace it." Also, they agreed that "Technology expertise is emphasized in faculty hiring practices." They were also in agreement that "Strong emphasis is laid on linking technology and curriculum," that "Technology funding is derived from multiple sources," that "Planning, monitoring and evaluation activities in the College consider technology use

for instruction and that "The College has and follows a long-term technology plan." These findings show that top management in the College is of utmost realization of the essential use of technology in the education process such that it is being given due consideration in the management functions. Visioning how technology can change teaching and learning processes in the College is part of the planning function of management. Likewise, following a long-term technology plan and considering planning, monitoring and evaluation activities are practices in planning. Taking into account technology expertise in hiring faculty is a desirable practice in the staffing function. Similarly, deriving technology funding from multiple sources is a desirable practice in budgeting. Further, being in an educational institution, it is but essential for the educational leaders to direct the faculty in finding applications of technology in the different subjects being taught in the academic programs. And more so desirable is that they model the way to technology adoption.

However, the respondents were not agreeable to the condition that "Personnel in technology positions have strong technology and academic background." This finding is of interest to note considering that these personnel in the three campuses of the College actually possess the appropriate educational background, being holders of related degrees in Computer Science, Computer Engineering and Information Technology. However, it would also be worth considering the fact that computer technology is a dynamic discipline. Both computer hard wares and soft wares are continuously and rapidly updated and so are their applications in instruction. Consequently, it is essential for said personnel to keep abreast of technology developments and be able to relate these side by side with instruction.

3.   Faculty Perceptions on Their Level of Instructional Technology Use by Category of Technology Use

Technology use for class preparation. Relatively, use of computer for class preparation by the faculty was found to be of most frequent use in creating test, quiz or assignment. However, the respondents indicated that they do this not so often but only several times a year. "Making handouts for students using a computer" was indicated as being also done only several times a year, so with performing research

and lesson planning using the internet and preparing presentations for class. This finding goes to show that the use of computer by faculty members was not a regular activity undertaken by them to facilitate their work but an otherwise occasional task. Technology adoption for class preparation by the faculty was therefore quite low. This is in consideration of the fact that preparing for class is supposed to be a task regularly undertaken by a teacher.

Technology use for instructional delivery in classroom. The level of utilization of computer for instruction delivery in classroom was perceived to be very low with frequency of use only once or twice a year. This is an indication that the computer-based technologies were not utilized into advantage in imparting of the lessons in class by the faculty and as a way for students to learn and think and understand. Sad to say, this is tantamount to considering computer use as a luxury, not a necessity in the actual delivery of lessons in the classroom. Among the specific technology uses for instruction delivery in classroom which were very seldom employed by the faculty are incorporating word processing in delivery of class lessons, utilizing spreadsheet in discussing class lessons and using presentation soft wares, CD ROMs and LCD projectors to demonstrate topics in class.

Faculty-directed student use of technology. Compared to technology use by the faculty members for instruction delivery in classroom, faculty-directed student use of technology was employed more frequently at several times a year. This extent of use is, however, considered to be low considering that many and various class lessons and instructional activities in the different disciplines offered in the academic programs of the College may actually incorporate technology. Therefore, with such a low frequency of use, it is hardly possible to foster individualization of learning which was claimed by Hadley and Sheingold (1999) to be an advantage offered by use of instructional technologies. They pointed out that when the teacher asks students to perform an activity aided by the computer, the students tend to get involved in more active, more independent and self-motivated learning. Among these activities which may be asked by the faculty for students to do are presenting information to the class using a

computer, prepare research and term papers using computer, creating multimedia projects, producing graphs or charts using the computer, producing pictures and artworks, videos and movies and playing educational games.

Because of the low level of use of these instructional technologies by the students as directed by the teacher, it is sad to note that computers, which as Tinio (2002) claimed are supposed to serve as best tools to help learners acquire the needed foundational skills is not being realized. These foundational learning skills include skill on how to find information, skill on how to determine if information is relevant to the task at hand and determine if the relevant information is correct. This further implies that students in the College are not sufficiently trained for research activities which inevitably, they need to embark like when they would have to undertake thesis work which is a requirement for most of the course programs.

Technology use for documenting and evaluating instructional activities. The use of computers may also find application in documenting and evaluating instructional activities such as recording and computing students' grades, and recording, exploring and analyzing class data. Unfortunately, these uses were indicated by the respondents to be employed by them only once or twice a year. This implies that the faculty members employed a different method option in performing the mentioned tasks which very likely entails the traditional "class record book."

Professional email. The professional use of email by the faculty such as in consulting with experts, other teachers in school, in communicating with the college administration, corresponding with students and parents of students and also, with other institutions or agencies was indicated as being done only once or twice a year. This may connote the more common use of other forms of communication by the faculty members whenever they need to make consultations and correspondences with others. In short, the use of email, despite its practicality and convenience is peripheral to teaching and learning for the faculty members and students. Even in the case of faculty members who have relatively higher level of ability in using computers and

the internet, the use of email for instruction-related purposes is not usually practiced. They may be making use of the internet for emailing but not necessarily for instruction purposes. This may be related to the research findings of USEIT (2004) that the extent to which technology is used is left largely to the teacher's discretion. Moreover, this is associated with the research findings of Becker (2001) on "Internet Use by Teachers: Conditions of Professional Use and Teacher-directed Use'" which revealed that although the vast majority of teachers were using technology for some aspects of their professional activities, non-instructive technology uses were pervasive.

4. Comparison on the Level of Adoption of Instructional Technologies by Faculty Members Among the Three College Campuses

Among the categories of technology use, instruction delivery in the classroom and faculty-directed student use of technology showed significant difference among campuses. This may be attributed to some differences in the course programs offered, and to some extent, to the difference in the instructional resource facility set-up. The faculty in the Main Campus indicated the highest level of adoption. The use of professional email was also regarded as significant different among the campuses with the Main Campus garnering the highest rating. A probable reason for this is that some of the faculty members in this campus are assigned to perform relatively more communication tasks since consolidation of reports and other outputs from all the campuses is usually being done in the Main Campus.

Employing the other technology uses such as technology use for class preparation and for documenting and evaluating instructional activities indicated no significant differences among faculty members in the three campuses. This may imply that faculty members in all the three campuses of the College exercise similar discretion as regards to class preparation, documentation and evaluation works. The methods or techniques in performing the activities entailed in preparing for class through preparing presentations, making handouts for students, creating a test, quiz or assignment and performing research and lesson

planning maybe regarded to be left largely to the teachers' discretion rather than influenced by other factors. Same is true with the methods entailed in recording and computing students' grades and in recording, exploring or analyzing other class data.

5. Relationship of the Predictor Variables on the Level of Adoption of Instructional Technologies

Faculty personal and job-related attributes and level of instructional technology adoption. A significant relationship between age and level of instructional technology adoption by the respondents was found out. Level of technology adoption decreased at higher age brackets. Likewise, gender was found out to be significantly related to level of adoption. Extent of adoption was higher among male faculty members who applied the instructional technologies several times a year while only once or twice a year in the case of the female faculty members. Maybe, this finding may have to do with the growing interest of our male population nowadays in tinkering with computers. It is of interest to note also that teaching tenure also played significant influence on level of technology adoption. Faculty members of permanent status employed instructional technologies less frequently compared to those who are under contractual status. This finding may be associated with the younger age of the contractual faculty members. It has been mentioned earlier that older faculty members tended to apply the technologies less frequently than the younger ones.

On the other hand, civil status did not have to do with technology adoption, so with the length of teaching experience, number of teaching hours per week of the faculty and academic rank. Moreover, educational attainment of the faculty did not exert significant influence on their level of use of technologies. Both the groups of faculty members who have earned graduate degree(s) and those who have not similarly made use of instructional technologies only several times a year. Likewise, having administrative position or not did not play a significant factor to technology adoption. Faculty members who have administrative position in the college performed similarly with those who do not have.

Faculty perceptions on certain predictor variables and level of instructional technology adoption. The relationship of the perceived value of instructional technologies with level of utilization of technologies was significant in the case of faculty members in the Bongabong Campus (r =.33) and Main Campus (r =.34), while insignificant at Calapan City Campus (r = .27). The indicated correlation coefficients denote low correlation. Although the faculty perceived the instructional technologies as highly valuable, as indicated by their strong agreement on the different advantages of integrating these technologies in the teaching-learning process which was earlier mentioned in this paper, they were utilizing the technologies only from once or twice a year to several times a year. This finding shows that it is not enough to fully realize the potential and viability of the use of technology to education in order to employ them in their instructional activities. Other factors tend to play some role on the faculty members' decision to adopt the technologies.

There was marked or moderate correlation between faculty members' perception of their self-efficacy in use of instructional technologies with their level of technology use in all the three campuses (r =.53; r =.58 and r =.59). The relationship was found highly significant. This is an anticipated finding because it certainly requires a faculty member to know first how a technology is put to use prior to employing it. This then implies that directing attention to efforts in upgrading knowledge and honing skills of the faculty on computer applications to instruction will be of great help.

The correlation between perception on instructional technology resources and level of utilization of instructional technologies by faculty members in the Bongabong Campus was of marked or moderate extent (r =.64). The relationship was found highly significant. This implies that steps to enhance the instructional technology resources in said campus will likely raise the level of use of the technologies by its faculty members. On the other hand, negligible correlation and insignificant relationship were obtained in the cases of Calapan Campus (r =.20) and Main Campus (r =.13).

There was significant relationship between the technology-related professional development opportunities offered in the College with the level of adoption of technologies by faculty members. A marked or

moderate positive correlation between these variables were indicated in the Bongabong Campus (r =.56). This implies that more support for the development of the faculty in the said campus in terms of professional training on educational applications of technology will likely lead to greater extent of instructional technology use. The same may work true also in the other two campuses, although correlation between professional development opportunities and level of instructional technology utilization was found out to be just slight (r =.25; r = .26).

A significant relationship was found out between faculty members' perception on school leadership and their level of utilization of instructional technologies in the Main Campus. A moderate correlation was indicated (r =.40) This suggests that paying some more regard to technology considerations in the instruction process by the concerned persons responsible in performing the managerial practices in planning, organizing, directing and controlling in the College need be exercised. In the Bongabong Campus and Calapan City Campus, however, insignificant relationship was indicated with low to negligible correlation (r =.31; r =.10), respectively.

CONCLUSIONS

The faculty of the College were comprised of slightly greater number of female than male members with age more or less evenly distributed from 20's to 60's. Majority were married, without graduate degree, of permanent status and on the teaching service for not less than ten years, with academic rank of Instructor, had actual teaching load of not less than 21 hours per week and had attended not more than five technology-related trainings during the past five years.

The use of instructional technologies was perceived by the faculty members as very relevant and useful to the instructional process. They perceived their self-efficacy in using instructional technologies to be of moderate level. Generally, they did not agree that the desired status of instructional technology resources is evident in the College. Also, they were generally not agreeable that technology-related professional development programs and activities in the College are optimally offered them. On the other hand, they were agreeable that educational leadership in the College is strong enough on building support for use of technology in instruction.

The faculty members in the College perceived themselves to be using technology in their instruction function at quite a low extent. Technology use for class preparation and faculty-directed student use of technologies were employed by faculty members only several times a year. Frequency of use was even lesser in the case of technology uses for instruction delivery in classroom, for documenting and evaluating instructional activities and the use of professional email, which were all practiced only once or twice a year.

The faculty members in the three campuses of the college significantly differed in terms of their technology use for instruction delivery in the classroom, on faculty-directed student use of technology and on the use of professional email. On the other hand, there were no significant differences in terms of technology use for class preparation and for documenting and evaluating instructional activities.

The level of instructional technology adoption by the faculty members was significantly related with their age, gender and tenure, but not with their civil status, educational attainment, academic discipline, length of teaching experience, actual teaching load, academic rank, number of technology-related trainings attended during the last five years and on whether they assume an administrative position or not.

The faculty members' perceived value of the instructional technologies, their self-efficacy on using the technologies, perceptions on the instructional resources, professional development opportunities and educational leadership in the college were to a certain extent significantly related to their level of adoption of the technologies.

RECOMMENDATIONS

Advances in science and technology developments in the national and international societal arena compel HEIs to revolutionize approaches in the delivery of educational services. Consistent with progressive national policies that support technology in education and other new developments in pedagogical practices, every institution for higher education should take responsibility in designing ways to maximize the use of the cutting edge technologies in the pursuit for quality education. The means to achieve this end in MinSCAT calls for some necessary shift in institutional policies and practices

for the mobilization of adoption of the computer-based instructional technologies by its faculty. The major findings of this research lay grounds for some proposed reforms, policies and innovations as follows:

1. Creation of an Instructional Technology Unit in the College. The findings of this research uncover many issues and concerns on the use of technologies which need to be resolved. As to who, where and how these issues and concerns be acted upon is unclear. There must be one such unit to exclusively handle such concerns. This may be formed as a sub-unit of the Instruction Department but shall be closely linked to the Administrative and Auxiliary Services Department, as well as with the Research and Development Unit of the College. This sub-unit, to be managed by a Technology Coordinator shall serve as a coordinating arm for the use of technology support for instruction. It shall be responsible in planning and implementing the different approaches and mechanisms for technology applications in the different academic disciplines that form part of the course programs offered in the College. Anent to this is the provision of facility and associated technological support services, including professional development activities in line with technology integration in the curriculum.

2. Programming professional development activities. The faculty of the College should be continuously engaged in professional development activities related to technology use. A year-round training program should be formulated and implemented. Hands-on experience with software programs and with the range of interactive media now available should be given to the participants. Moreover, in the trainings, emphasis should be given to developing an understanding of how each program or media shapes the cognitive, affective and social interactions of the learners. Outside technology experts and consultants may be invited. The local technology experts need to undergo training also on new computer programs/ applications as they will serve as the local technology consultants.

3. Building core values for use of technology among the faculty. The use of technology in the different instructional activities is left largely to the discretion of the faculty. Oftentimes, it would be hard to push them to make use of it, so they first need to be encouraged in order

to be convinced. Technology adoption is a voluntary process. During professional development trainings and seminars for the faculty, they may be given lessons to help them alter deeply ingrained and strongly reinforced pedagogical beliefs and habits to be able to change into a new and more effective learning paradigm. It is through affective and social support which may lead to genuine behavioral changes in their educational practices**.**

4. Equitable use of technology. It is important for every member of the faculty to gain access with the equipment or facility. When computers are not enough, time scheduling mechanisms can be done to enable faculty members to work at their most convenient time. The bulk of the faculty members' use of technology goes beyond the time of their classes and this comprises activities such as lesson preparation, computing and recording students' grades, and professional emailing. It is reasonable then to be desired that the facility should be made available to them at their convenient time. It is also important to have a technology staff who is trained to support faculty users. Although a faculty member should also have knowledge in computer trouble shooting, trouble shooting beyond their knowledge should be referred to a technology staff who should be readily available during office hours.

5. Standardizing technology systems and procedures. A technology plan for the College should be prepared and implemented. Policies on procurement as embodied in Republic Act 9154 should be enforced. Adopt a single institution-wide computer operating system. Technological skills of the users can also be standardized at the local level.

6. Developing program for maintenance and repair of instructional technology equipment. The proposed Instructional Technology Unit should take charge of the maintenance and repair needs of equipment. A program/schedule for repair should be developed to ensure efficiency of equipment.

7. Improving access to internet. Expand coverage of internet services in the college campuses to encourage high level of utilization of professional email.

8. Separating system units. Faculty and students should have separate system units for use. System units for hardware servicing and for programming also need be segregated.

9. Developing active collaboration among educators in the College. Faculty members form the educators' group. They can form a team to work together in developing insights about an innovation. Together, they can create instructional modules, database, virtual presentations, videos and the like. The use of technology becomes more meaningful if developed into applications for learning in the different disciplines. Working in collaboration fosters a shared vision for pedagogical practices.

10. Acquiring more application software, installers, tools and equipment. The acquisition of software, installers and other devices must be made on a continuing basis for an upgraded facility.

11. Granting rewards and incentives to effective and productive technology users. An avenue for developing quality instructional materials, programs and methods with the use of technology should be provided by recognition of the technology user. Faculty members can present their instructional outputs which can be recognized as model by the other faculty members.

12. Developing alternative strategies for generating instructional technology resources. Scouting for possible sources of fund grant, facilities grant for technology use in the College need be done to meet the initial and continuing costs of technological facilities.

13. Continuous monitoring and evaluation of technology programs. Progress in technology use has to be evaluated using feedback from the groups responsible for implementation. Checklist or survey forms on evaluation and assessment can be prepared. Essentially, the evaluation process shall be facilitated through research-based empirical evidence from researches to be coordinated with the Research Department of the College.

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