Online Instruction in Science Pursued in a Selected National High Schools in Sablayan North Schools Division of Occidental Mindoro: Basis for a Proposed Model

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ABSTRACT: The challenge of evolving meaningful classroom instruction in the tertiary level is faced with lots of constraints. A few of these are the inadequacy of textbooks and instructional materials and ineptness in the part of the teachers on the teaching methodologies/ approaches to use that impact knowledge and skills to the students; and importantly, appropriating technology and instituting initiatives to impact quality education.

The concerns, so far, have not been fully addressed, hence, the researcher in his desire to enhance technology instruction has designed and developed a Proposed Online Interactive Work Plan Model, a syllabus-based and experienced and empirical-based Model instruction.

It is in this context that this study is conducted since he believes, his proposed instructional tool will serve as a useful material for both teachers of science-technology and students of information communication technology subjects using online interactive approach.

This study is descriptive in nature where 6 schools administrators and expert in the persons of school principals and science supervisor, and science coordinators; and 14 teachers of science; and 172 students, representing the three (3) material high school of Sablayan North of the Schools Division of Occidental Mindoro as respondents of the study.

KEYWORDS: Organizational Context, Communication Technologies, Online Interactive Work Plan Model, Distance Learning System, Management Information System (MIS)

I. INTRODUCTION

In today's dynamic institution environment, learning is a continuous process. The challenge for education is to make learning available to its members when and where the need arises.

Increasingly, the challenge of learning and accessing information is made faster through information technology applications, one of the most innovative schemes in education.

At a time when learning is coming to be recognized as a critical component in an institution's success, new organizational structure is also challenging the way institutions support learning. Traditional centralized classroom learning is losing value in organizations that are becoming more decentralized and more global. Simultaneously, educators and trainers are now reexamining the entire learning process-when, how, and where learning occurs; and what is used to facilitate learning.

Equally, the advent of alternative approaches to institutions, such as the use of information technology tools, has increased the complexity of the relationship between teaching and learning. Nonetheless, the challenge for an organization is to make learning available to its members where and when the need arises, especially now that schools are lockdown because of the COVID-19 pandemic crisis. The essence of this challenge is reflected in the words of De Jesus as cited in Senge's "The Fifth Discipline" (2006).

Increasingly, the challenge of learning and acquiring faster than one's competitors is being met through I.T. applications using online instruction. Institutions, today, are using virtual, video, and video conferencing, audio, computer, internet, and even modular and distance learning technologies to train and retrain their students not only to deliver quality instruction but also to make them globally competitive. Some of the common strategies that need the training and retraining of people include: new alternatives to instructional strategies, skills training and retraining, professional educational approaches, management and staff development, student education. Undoubtedly, rapid change is sweeping over global education, especially in the area of instruction, intense global competition, imbalances in wage and productive policies between nations, the infusion of new technologies, and increasing customer demands for quality education during the pandemic crisis are occurring at the same time

that labor and financial resources are shrinking. This combination of circumstances puts unprecedented pressure on educational organizations to be more efficient and effective, even schools are lockdown.

The bottom line is that no organizations can remain the same and expect to service if it would not reduce its operating costs, automate production, and re- engineer their institutional processes. These actions are taken to satisfy students needs and improve the institution's competitive position. To ensure success of the organization, Kaplan and Norton[1] direct their proposal to learning and adequate investment in an organization's people, processes, and infrastructure which are critical to long term success. They are also of the opinion, that organization must be highly flexible and able to deploy new teams of employees in continuously changing configurations as market conditions dictate. These can only be made possible through the support of an efficient and effective and continually evolving skills and competencies of the workforce, since the source of today's wealth is not material; instead, information and knowledge applied to work to create value, even during emergencies. Relevant to this is the need for a paradigm shift, a demand for change to provide more collaboration, cooperation, and active learning strategies to address the education, especially in the level of basic education delivery. Wherefore the learning institutions provide traditional instructional methods, now interactive and cooperative learning is used since teachers are expected to be information givers and skill builders enhanced by using technology. This shift from teacher-centered to a student-centered learning situation allows student to construct new knowledge by building on existing scheme using information and communication technology (ICT) through cooperative teaching and learning – found more effective to meet the challenges in the areas of education, business and industry expectations.

There is at present a large market for IT professionals, not only locally, but also internationally. This demand for this kind of professional has been brought about by rapid advances in the field of information and communication technology which revolution has transformed the way people are educated do business. The use of IT tools has enabled people to produce more with some with the same or even less input, resulting in increased productivity which means business and, this in turn, leads to greater economic opportunities for everyone. Coupled with a high-end interconnectivity infrastructure such as the Internet and computer which make it now possible for anyone to gain knowledge and transact business, even get lessons from virtual institution right from their own personal computer. The world is just within the stroke of a keyboard or the click of a mouse, so to speak. Through these technological advancements, it has become apparent that, for one country to be competitive in the global market, it has to have competent IT professionals to design, evaluate, and implement IT.

Today, there are now more or less 1.6 million new IT jobs – a pool of programmers, systems analysts, engineers and the like – IT professionals whose skills are needed to adapt to the emerging technology needs of the local and global market. It is this deep concern and interest on the human resource development aspect of the institution's producing future competent technologically-trained professionals using an on-line interactive system approach and its implication to science education and industry prompted the researcher to conduct this study.

Research Question

How significant is the difference in the assessments of the school administrators, teachers, and students as regards the readiness of the schools in the aforecited variables?

II. RESEARCH METHODOLOGY

Both descriptive and normative method of research was employed in the study since the researcher will conduct a survey and use historical data of the status and profile of a state university with respect to its application of information technology and communication tools. According to Sanchez[35], it is gathering knowledge of facts concerning conditions desired or where one is at present, knowledge of conditions desired or where one wishes to be, and knowledge of how to get where one wish to be are gained from studies that deal with causation. Through observation of coincidence of certain conditions and certain apparent consequences, survey study furnishes valuable clues as to the cause-effect relationships.

There are three (3) groups of respondents. They are composed of the school administrators, teachers, and senior students of selected national high schools in Sablayan District of Occidental Mindoro. These include the Sablayan National High School, San Vicente National High School, and Pag-asa National High School which are in Occidental Mindoro, Region IV-A.

The first group was chosen using purposive procedure while the second and third group were selected through a random sampling design using lottery technique and stratified sampling in the case of the student respondents.

There were three (3) major groups of respondents. Table 1, reported that of the total 172 participants in the study, the highest was the 152 (88.37 percent) senior students while 14 (8.14 percent) were teachers. The least were 6 (3.49 percent) who were the school administrators and a science supervisor who succeeded to response and participate in the survey.

III. RESULTS AND DISCUSSION

The results typically, are in strong support of the research study conducted by International Society for Technology in Education[36] which surveys likewise were conducted to generate resources and ideas as to the use of technological tools in teaching-learning process and found no single, simple solution to this one educational-ill in education, but agreed strongly that

well-trained teachers not only make effective use of technology tools in teaching, but also help substantially reduce the number of dropouts and reduce absenteeism since teachers provide students both with technology and training using relevant curricula. Furthermore, a posthoc analysis using the t-test was utilized to determine if significant difference exists between sets of variables.

The result also reports on the application of the tool where the results are all significant on all the areas covered, except in Process People where the obtained t= -1.203 between administrators and student failed to exceed the significant level at critical t = 2.132 and t = 2.776 at one-and-tail test, that the Ho of no significant difference is accepted.

The areas where significant difference exists are in focus on the learners between administrators vs. teachers (t = 1.274), administrators vs. students (t = 5.935), and teachers vs. students (t = -9.368); in content/ subject matter between administrators vs, teachers (t = 7.374), administrators vs, students (t = 6.480), and teachers vs. students (t = -11.859); organizational context or setting between administrators vs. teachers (t = 1.993), administrators vs, students (t = -5.544), and teachers vs. students (t = -2.298); process people between administrators vs. teachers (t = 4.782) and between teachers vs. students (t = -4.704); and in communications technologies between administrators vs. teachers (t = 6.823), administrators vs. students (t = 3.965), and teachers and students (t = -8.893), respectively.

IV. CONCLUSIONS

The study yielded several important conclusions regarding the implementation and effectiveness of online instructional systems in selected national high schools. First, the approach was extensively pursued, as evidenced by a high composite mean score of X = 3.69. Second, the adoption of the Proposed Online Interactive Instructional System significantly enhanced the schools' application-based knowledge and skills in technology, with all F-values falling within the rejection region, indicating strong statistical support. Third, numerous issues and challenges were encountered by these schools in their efforts to integrate technology into educational initiatives, affecting areas such as skills, knowledge, training and development, and facilities. Fourth, the impacts of technology utilization were comprehensively addressed by the schools, with overall composite means of X = 4.05 for the institution and X = 4.03 for business and industry. Lastly, the Proposed Online Interactive Work Plan is expected to alleviate the burden on these institutions and meet the urgent need for innovative and responsive curricular offerings.

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