



**UTILIZATION OF USER MAINTENANCE MODULE IN ENHANCING
THE PROGRAMMING SKILLS OF ICT STUDENTS AT SHS IN TUY**

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ABSTRACT

Programming is one of the core and desirable skills of computing students (e.g., Computer Science, Information Technology, and Information Systems). Unfortunately, learning to program is difficult. Programming requires exceptional skills since it requires strong foundation on the knowledge on computers, programming languages, and programming tools. The difficulty in understanding the procedures in creating a simple to complex programs and applications is a barrier for students taking this subject.

This study was conducted to determine the effectiveness of user maintenance module using Visual Basic .Net in enhancing skills in programming. The study utilized the descriptive method of research. Descriptive method was applied in developing the user maintenance module using Visual Basic .Net and through actual testing among the students. Purposive sampling technique was used to select the respondents of the study. Since it only focuses to the students who are enrolled in programming subject, a total thirty (30) Grade 12 ICT students were the respondents of the study. T-test and mean percentage score were used to analyze and interpret the data gathered. Results showed that the user maintenance module using Visual Basic .Net improved the student's mastery in programming skills and students were able to create more complex programs such as enrollment system, attendance monitoring system, and inventory system. It is then recommended to utilize the user maintenance module in teaching programming to help the students possess the necessary skills needed in programming.

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Keywords: Computer programming, user maintenance module, programing skills, procedure, complex, programs, applications

I. Context and Rationale

Computer programming is the process of developing and implementing various sets of instructions to enable a computer to do a certain task. These instructions are considered computer programs and help the computer to operate smoothly. The language used to program computers is not understood by an untrained eye that only programmers can do it so. It's no secret that a career in programming requires great skill.

In recent years, the demands for programmers and student interest in programming have grown rapidly; an introductory programming course has become increasingly popular. (Winslow 1996) Learning to program is hard; novice programmers suffer from a wide range of difficulties and deficits. Programming courses are generally difficult, and it is generally accepted that it takes a long-time experience to turn a novice programmer into an expert programmer.

Learning to program is not easy. In a good overview of what is involved du Boulay (1989) describes five overlapping domains and potential sources of difficulty that must be mastered. These are: (1) general orientation, what programs are for and what can be done with them; (2) the notional machine, a model of the computer as it relates to executing programs; (3) notation, the syntax and semantics of a particular programming language; (4) structures, that is, schemas/plans as discussed above; (5) pragmatics, that is, the skills of planning, developing, testing, debugging, and so on. According to Scherz, Goldberg and Fund (1990), one beneficial effect of learning computer programming may be improvement in students' logical skills and abilities.

As part of the school target for student's achievements on their choice for ICT strand, students enrolled on this track should at least possess necessary skills in programming. Programming is a very complex subject that requires effort and a special approach in the way it is learned and taught. To become a good programmer, a student must acquire a series of abilities that go well beyond knowing the syntax of some programming language.

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Upon assessing the ICT grade 12 student's skills in programming almost all of them suffers difficulties in learning to program specifically in following the procedures in creating basic programs.

With this, the researcher seeks an intervention tool that focus in enhancing the student's skills and learn to program in easier way.

The result and finding of this study may show the effectiveness of the user maintenance module using Visual Basic .Net in enhancing the student's skills in programming.

II. Innovation, Intervention and Strategy

In today's world programming skills is one among those core competencies aimed to be developed among students in ICT strand and planned to enroll in Computer Science or IT courses upon entering college. Similarly, having equipped with enough skills related to programming, may also be a great advantage to the students in mastering the subject.

Programming subject requires hands-on activities to develop the students' mastery in programming skills and knowledge in creating simple to complex programs and applications.

Realizing the difficulties in learning to program, the user maintenance module using Visual Basic .Net seeks to give the basic standard in creating a program. The user maintenance module using Visual Basic .Net was created by the researcher since the researcher itself is the programming teacher too. The purpose of the user maintenance module using Visual Basic .Net is to enable the students acquire the skills that needed in programming.

Monitoring and evaluation of the results have been conducted upon creating simple to complex programs and applications.

III. Action Research Questions

This study aimed to determine the effectiveness of user maintenance module using Visual Basic .Net in enhancing skills in programming. Specifically, it sought to answer the following:

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1. What is the level of performance of students in programming?
2. What computer programming module can be developed in enhancing the skills in programming?
3. How effective is the developed user maintenance module?

IV. Action Research Methods

A. Participants and/or other Sources of Data and Information

The researcher used purposive sampling in choosing the respondents. (Cresswell & Plano Clark, 2011) This involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest. A total of thirty (30) students of SHS IN TUY from twenty-three (23) male students and seven (7) female students from Grade 12 ICT track were the respondents of the study.

B. Data Gathering Methods

Researcher used the descriptive method of research to determine the effectiveness of user maintenance module using Visual Basic .Net in enhancing skills in programming. Best and Khan (2003), discussed that descriptive method of research is designed to gather information about present existing conditions. This method is applicable in the study because it helps the researcher come up with definite fact information relevant to this study.

C. Data Analysis Plan

T-test and mean percentage score were used for the treatment and analysis of data.

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V. Discussion of Results and Conclusions

1. What is the level of performance of students in programming?

Table 1.1
Level of Pre-test and Post Test Performance in Programming

Pre-Test MPS	Interpretation	Post Test MPS	Interpretation
34.83	Not Mastered	91.17	Mastered

Legend: 80 above – Mastered
61 – 79 – Moving forwards to Mastery
60 below - Not Mastered

Table 1.1 shows the pre-test and post-test performance in programming results of the respondents which was assessed through hands – on computer performance test.

In terms of pre-test MPS, it clearly described that the student’s performance was not mastered as evidenced by the MPS of 34.83 percent. However, the post-test MPS of student’s performance shows mastery as evidenced by the post-test MPS of 91.17 percent.

As a whole, the table shows that the pre-test result signifies that the students have no advanced knowledge with regards to programming. However, the post-test result signifies that there is a great advancement which shows student’s mastery in programming.

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Table 1.2

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE	6.97	30	2.173	.397
	POST	18.23	30	1.194	.218

Table 1.2 shows the paired samples statistics between the pre-test and post-test performance of the students in programming. It clearly described that the pre-test of student’s performance was low as evidenced by the Mean of 6.97 compared to the post-test of student’s performance as evidenced by the Mean of 18.23.

Table 1.3

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 PRE & POST	30	.176	.353

Table 1.3 shows the paired samples correlations between the pre-test and post-test performance of the students in programming. It clearly described that the pre-test and post-test performance scores were significantly positively correlated ($r = .176$)

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Table 1.4

Paired Samples Test

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	PRE - POST	-11.267	2.288	.418	-12.121	-10.412	-26.966	29	.000

Table 1.4 shows the paired samples test between the pre-test and post-test performance of the students in programming. The Sig. (2-Tailed) value in the table is .000. This value is less than .05. Because of this, it is concluded that there is a statistically significant difference between the student's pre-test and post-test performance in programming.

2. What computer programming module can be developed in enhancing the skills in programming?

Addressing the issue of how well the students learn to program, the user maintenance module for enhancing skills in programming was developed. It covers the design and codes in creating user maintenance module using Visual Basic .Net programming language.

The user maintenance module includes the log-in form, add user form, update user form, and delete user form. The basic code that connects data from database using Microsoft Access to Visual Basic .Net application was designed through module connection. (See Appendix A)

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3. How effective is the developed user maintenance module?

As evidence of the effectiveness of the user maintenance module, the students were able to create more complex programs that were typically used in transaction processing systems. The transaction processing systems includes the enrollment system, attendance monitoring system, and inventory system. *(See Appendix B)*

Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. The student's level of performance in programming was assessed through performance test. The pre-test result signifies that the students have no advanced knowledge with regards to programming. However, the post-test result signifies that there is a great advancement which shows student's mastery in programming. It is concluded that there is a statistically significant difference between the student's pre-test and post-test performance in programming.
2. The user maintenance module was developed to acquire the skills that needed in programming.
3. The effectiveness of the user maintenance module was determined through actual hands – on programming activities in creating more complex programs such as enrollment system, attendance monitoring system, and inventory system.

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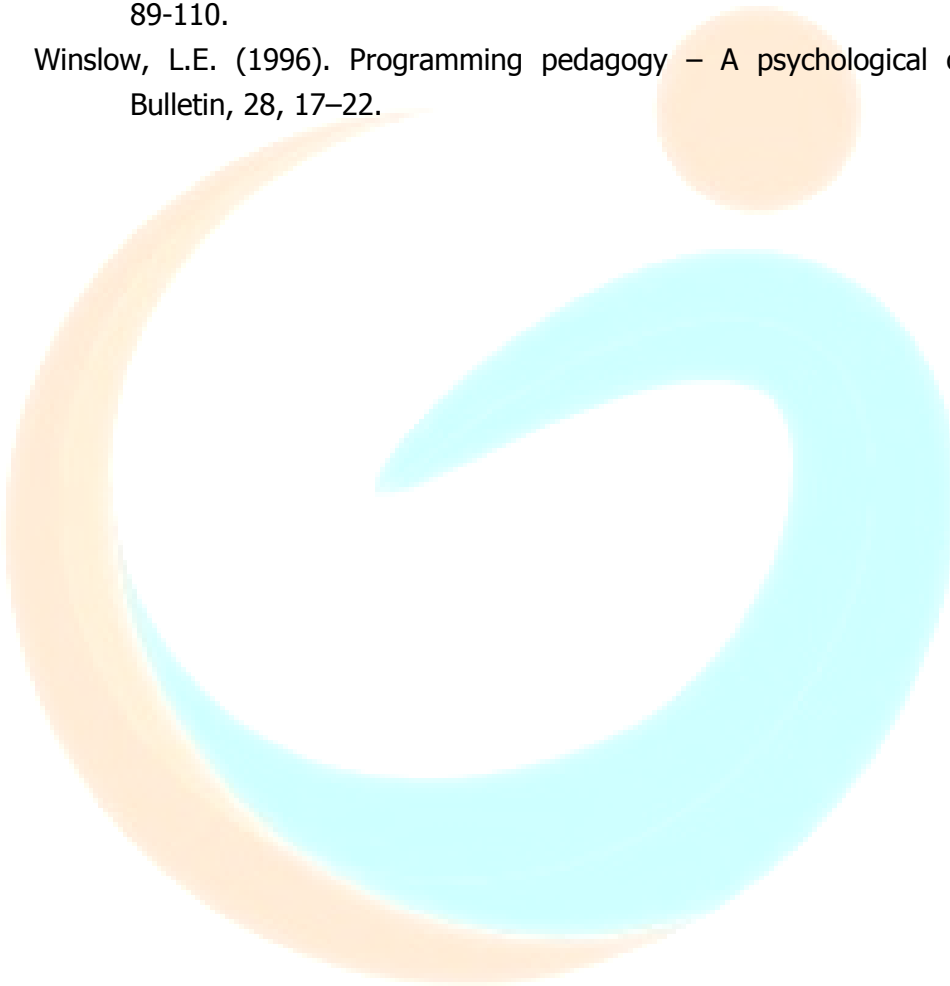
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