

Evaluation of Competencies of English Teachers and Students of Public Senior High Schools in Palembang City Using Information and Communication Technology

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Abstract— The study aimed to evaluate the competency of English teachers and students of public senior high schools in Palembang City in using ICT in their teaching and learning in the classroom. The study used a survey method by distributing questionnaires and conducting some interviews. The population comprised all teachers of English and students of public senior high schools in Palembang City. The data were analyzed with correlation coefficients, t-tests, and one-way analyses of variance followed by Scheffé's post-hoc comparisons. The results of the study showed that the teachers applied their computers every day doing their jobs in administrative and teaching tasks. Using the computers frequently made the teachers more proficient and had good attitudes against the computer uses. A more current ICT use by the teachers and students seems to predict the proficiency of the teachers and the students in using technology generally.

Keywords: *competency, ICT competency, English language teachers, students*

I. INTRODUCTION

This study aimed to find out the competencies of teachers of English and students of public senior high schools in Palembang City in using the information and communication technology and information. How people collect and use data and information changes along with the progress in technology. Therefore, the advancement in technology widens the information sources and communicating ways.

The change from an agricultural to an industrial economy resulted in people having increased productivity. In the Industrial Revolution, the use of machines developed how people efficiently and fast improved their productivity. Therefore, increasing a

product needs a speed of work. According to [1], a computer could meet the needs since it has a quite incredible speed to accomplish some work. It is no doubt that currently a constant change has occurred to many people in the world due to computer revolution. It is in line what [2-4] point out that computer-based device penetrate all aspects of human lives, a lot of jobs involve computer technology, and computers extremely transform other jobs from others. In the digital era, people cannot be separated from the technology because it supports and fosters people to have high productivity and persistent growth for the country. Modernization in communicating electronic devices such as facsimile, modulator-demodulator and fast internet connections, mobile phones, desktops, laptops, tablet computers, and many others link anyone to each other without limitation. The innovations progress quickly and pave the way to new worlds of inquiry and communication. [5] point out that cellular/digital phones, e-mail, telephone, video calling, and FAX machine change how people communicate in the world. In other words, the momentum of the swift changes of technology shifts people's way of life and provides favorable circumstances for people to obtain a better life.

This study aimed to evaluate the competencies of English teachers and students of public senior high schools in Palembang City in using information and communication technology (ICT). Teachers and students have to be skillful in using the computers for the purposes of teaching, learning, and administrative tasks. There are a lot of schools communicating very important information every day to their administration staff and supervisors, as well as their students through any communication device. Data bases such as student scores, written reports, report cards, etc., are stored on computers.

What is more, teachers will use the information for the purpose of making decision of their daily teaching and administrative tasks. In other words, the operation of modern schools relies heavily on the computers. Consequently, a school management has to be familiar with computer hardware and software since they are very important and fundamental. Teachers need to take into account the prices, capability, availability, compatibility, and quality of the needed hardware and software. All of these have to go well together with the priorities of the school [6]. It is important for teachers and students to use computers for their teaching and learning process.

II. METHODS

This study was quantitatively descriptive. The data were collected using questionnaires distributed to teachers of English and students of public senior high schools in Palembang City. The questionnaire consisted of statements related to teachers and students in using their computers on word processing tasks, printing out a hard copy of a file, running certain software, using a modulator-demodulator, accessing and downloading images and files from a compact disc, using and taking pictures digitally, setting or arranging any necessary auxiliary devices such as a mouse, keyboard, expansion cards, graphics cards, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras to connect to and work with the computer.

To find out the teachers' proficiency in doing their administrative tasks, the questionnaire asked whether teachers could apply productivity tools for their professional use covering creating database, using some application for financial and cost plans, retrieving student database information, creating and presenting data or information with Powerpoints, practicing or using technology responsibly, making use of a scanner for preparing and improving as well as setting image transparency, using software of word processor for specific job activity, using and creating a computer application for organization, analysis and storage of data in tabular forms, using computer programs designed to present information with text, pictures, sound and video.

The internet use covered questions of using electronic technologies to access and exchange information, i.e. whether the respondents' computers were connected to an internet, computers at their schools were connected to an internet, administrative work was conducted using an internet, the respondents sent texts using an internet, conducted internet searches using search engine, and used a web browser to explore resources.

The questionnaire items also asked the teachers' instructional proficiency in collecting data, managing information, solving problems, making decision, communicating, and presenting, for instance, recording classroom activity, keeping a continuous record of students' grades and achievement, preparing a schedule, noting down results of classroom evaluations, keeping in record of any discipline for further action, seeking for resources of curriculum, preparing curriculum, graphs, and charts.

A. Population and Sample

The population was public senior high school teachers of English and students. The number of the sample was 50 teachers of English and 250 students taken purposively by judging that they were familiar with the use of a computer.

B. Measuring Instrument

The instrument for collecting the data consisted of a series of questions distributed to the respondents. It was tried out to find out its reliability and validity. The questions comprised demographic information, administrative use of computers, internet use, proficiency of using hardware and software, instructional proficiency, administrative proficiency, training, effects of computer use, and attitude toward computers

C. Content Validity of the Questionnaire

There were five groups involved in the review process of content validity in order to find out the survey covering all elements in accordance with the purpose of the study. Then, three reviewers were asked to look into the items that sufficiently represented the questions concerning the computer use by teachers of English and students of public senior high schools. The reviewers were administrators in a graduate program at Sriwijaya University. They recommended the researchers that reviewing other surveys and literature be important for having other additional questions on the questionnaire

D. Data Collection Techniques

The questionnaires were distributed to the samples and they answered all items given in the questionnaire for 30 minutes. All questionnaires were treated confidentially.

E. The Technique of Data Analysis

Analyzing the collected data used the SPSS to perform the required calculations as follows: firstly, all variables were calculated descriptively statistically. The continuous variables were calculated for their average scores and standard deviations. Categorical variables were calculated for the frequencies and percentages. Secondly, the demographic variables separated the data, and the relationships between the demographic and computer proficiency variables were assessed using inferential statistics. Thirdly, a profile of a very modern electronic technology was tested by conducting exploratory analyses

III. RESULTS AND DISCUSSION

This section refers to the results and discussions on the use of computers by teachers of English and students of public senior high schools. In particular, the discussion covers teachers' and students' skills of applying the computer and its peripheral devices in the learning and teaching contexts, administrative tasks, and all skills of exploiting the computers.

A. Descriptive Data

Frequencies and percentages of the responding teachers of English and students are separated according to demographic

categories which are put in Table 1. More than half of the respondents had five years or less in using computers for administrative tasks. There were more females than males. A majority had earned their bachelor degree and few earned their master's degree. All respondents owned a home computer.

Meanwhile, the responding students (Table 2) consisted of grades 10, 11, and 12 which amount to 29 students (11.6%), 187 students (74.8%), and 34 students (13.6%) respectively. Most of them had five or fewer years of computer use experience, and only 22.8% had six to ten years of experience. There were 132 male students (52.8%) and 118 female students (47.2%). Almost all of them (95.6%) had a home computer.

TABLE I. DISTRIBUTION OF RESPONDING TEACHERS OF ENGLISH, N = 50

Demographic Categories	N	%
Years of Experience		
1-5	29	58
6-10	14	28
11 years or more	7	14
Gender		
Male	11	22
Female	39	78
Degree		
Bachelor (S1)	43	86
Master (S2)	7	14
Doctorate (S3)	0	0
Home computer ownership		
Yes	50	100
No	0	0

TABLE II. DISTRIBUTION OF RESPONDING STUDENTS ACROSS DEMOGRAPHIC CATEGORIES, N = 250

Demographic Categories	N	%
Grades		
10	29	11.6
11	187	74.8
12	34	13.6
Years of Experience		
1-5	193	77.2
6-10	57	22.8
11 years or more	0	0
Gender		
Male	132	52.8
Female	118	47.2
Home computer ownership		
Yes	239	95.6
No	11	4.4

Table 3 shows the frequencies and percentages of the computer types used by the teachers of English. They reported that they used a computer. The types of computers they used included 66% laptops, 34% desktops, and no one used PDA and tablet PC. They used computers for their jobs every day.

Table 4 shows the frequencies and percentages of the computer types used by the students. There were 188 (75.2%) respondents making use of laptops. Meanwhile, a desktop computer was used by about one-fourth of the student sample.

They made use of a computer every day for their study such as doing their assignments, papers, and searching for references to support their learning process.

TABLE III. USE OF COMPUTERS BY RESPONDING TEACHERS OF ENGLISH, N = 50

Demographic Categories	N	%
Computer Types		
Laptop		
Yes	33	66
No	17	34
Desktop		
Yes	17	34
No	33	66
Personal digital assistant / Tablet PC		
Yes	0	0
No	50	100

TABLE IV. USE OF COMPUTERS BY RESPONDING STUDENTS, N = 250

Demographic Categories	N	%
Types of Computer Used		
Laptop		
Yes	188	75.2
No	62	24.8
Desktop		
Yes	62	24.8
No	188	75.2
Personal digital assistant / Tablet PC		
Yes	63	25.0
No	189	75.0

The results of internet use by the responding teachers of English and responding students are shown in Tables 5 and 6. They made use of the Internet, had access to the Internet at home and at school, and applied their computers for sending mails, conducting searches of finding professional and educational resources. Yet, not many of them could organize a display of a web page, mail search, visual image, sounds, and attachments.

TABLE V. INTERNET USE BY TEACHERS OF ENGLISH, N=50

Internet use	Frequency	%
Access to the internet at home		
Yes	31	62
No	9	38
Access to the internet at school		
Yes	43	86
No	7	14

Internet Use		
Yes	50	100
No	0	0
Internet use for sending electronic mail		
Yes	40	80
No	10	20
Use of a search engine to conduct an internet search		
Yes	18	36
No	32	64
Use of a web browser for educational and professional resources		
Yes	18	36
No	32	64

TABLE VI. INTERNET USE BY STUDENTS, N=250

Internet use	Frequency	%
Access to the Internet at home		
Yes	199	79.6
No	51	20.4
Access to the Internet at school		
Yes	115	46
No	135	54
Use of the Internet		
Yes	250	100
No	0	0
Use of the Internet to send email		
Yes	210	84
No	40	16
Use of a search engine to conduct an Internet search		
Yes	250	100
No	0	0
Use of a web browser for educational resources		
Yes	235	94
No	15	6

The proficiency of the respondents applying the hardware and software is shown in Tables 7 and 8. They were divided into three levels of proficiency, namely beginner, intermediate, and advanced. For teachers of English, almost all of them responded that they belonged to a moderate or expert level of proficiency in having their computers for typing, activating a printer, running a program, and using a modem. Yet, there occur few of them felt confident in their skill of using a CD-ROM, a digital camera, setting up a computer and peripheral devices, and evaluating software for administrative purposes. Most of them were at the novice level of competency in scanning data, graphics, and photos. In some proficiency levels, students reported that most of them were quite proficient in using a computer to accomplish a word processing, commands to run a program, a scanner to scan

data, graphics, and photos, a modem, and accessing information on a CD-ROM.

TABLE VII. PROFICIENCY OF TEACHERS OF ENGLISH USING COMPUTER HARDWARE AND SOFTWARE, N = 50

Hardware and software proficiency levels	N	%	SD
1. Use a computer to accomplish a word processing task			0.53
Beginner	4	8	
Intermediate	36	72	
Advanced	10	20	
2. Use commands necessary to activate a printer to secure a hard copy			0.47
Beginner	2	4	
Intermediate	9	18	
Advanced	39	78	
3. Use commands to run a program			0.59
a	3	6	
b	31	62	
c	16	32	
4. Use a modem			0.71
a	7	14	
b	18	36	
c	25	50	
5. Access information on a CD-ROM			0.74
a	18	36	
b	22	44	
c	10	20	
6. Use a digital camera			0.75
a	10	20	
b	28	56	
c	12	24	
7. Set up a computer and peripheral devices			0.70
a	26	52	
b	21	42	
c	3	6	
8. Use a scanner to scan data, graphics, and photos			0.66
a	24	48	
b	19	38	
c	5	10	
9. Evaluate software for administrative purposes			0.61
a	14	28	
b	30	60	
c	6	12	

The scale was a=Novice, b=Moderate, c=Expert

TABLE VIII. PROFICIENCY OF STUDENTS USING COMPUTER HARDWARE AND SOFTWARE, N = 250

Hardware and software proficiency levels	N	%	SD
Use a computer to accomplish a word processing task			0.53
a	20	8	
b	180	72	

c	50	20	
<i>Use commands necessary to activate a printer to secure a hard copy</i>			0.47
a	10	4	
b	45	18	
c	195	78	
<i>Use commands to run a program</i>			0.59
a	15	6	
b	155	62	
c	80	32	
<i>Use a modem</i>			0.71
a	20	8	
b	90	36	
c	140	56	
<i>Access information on a CD-ROM</i>			0.74
a	18	36	
b	22	44	
c	10	20	
<i>Use a digital camera</i>			0.75
a	0	0	
b	189	75.6	
c	61	24.4	
<i>Set up a computer and peripheral devices</i>			0.70
a	105	42	
b	130	52	
c	15	6	
<i>Use a scanner to scan data, graphics, and photos</i>			0.66
a	120	48	
b	95	38	
c	25	10	
<i>9. Evaluate software for administrative purposes</i>			0.61
a	70	28	
b	157	62.8	
c	23	9.2	

The scale was a=Novice, b=Moderate, c=Expert

B. Qualitative Data

Tables 9 and 10 show the domains and comments about hardware and software use. They derived from the domains and comments given by the teachers of English and students. They used the computer applications or programs to organize and manage data presentations, and data analysis and display. The teachers and students made use of their computers knowledgeably for their teaching and learning process.

TABLE IX. OTHER USES OF HARDWARE AND SOFTWARE BY TEACHERS OF ENGLISH (COMMENT DATA)

Presentations	Using powerpoint to prepare presentations; Using computer with a projector to make presentations;
Statistical analysis	Using statistical programs to run data such as excel application to calculate, means, standard deviation, sums, and create

	graphics, diagrams, score tables, comparisons between the data in a chart, table or other template.
Management	Using some software to display data by organizing and managing them; Using some software to analyze data; Collecting survey data via the internet, mobile devices, and exchange and delete files; Integrating new data with the existing data files; Processing, validating, and transforming collected data automatically; Visualizing the processed data in form of tables, graphs, pictures; Enabling shared data access and access policy management

TABLE X. OTHER USES OF HARDWARE AND SOFTWARE BY STUDENTS (COMMENT DATA)

Presentations	Using powerpoint to prepare presentations as assigned by the teacher; Using computer with a projector to present the assigned tasks in front of the class;
Statistical analysis	Using Excel to analyze data, for example, in mathematics and economics subjects calculating accounts, budgets, billing and using spreadsheets doing basic math, adding and deleting columns and rows, and preparing the worksheet for printing.
Management	Using some software to display data by organizing and managing them; Collecting survey data via the Internet, mobile devices; Deleting and/or exchanging files; Supports data import from various sources; and Integrating existing data of various formats;

The proficiency of teachers of English in using computers in the teaching and learning process and proficiency of students in using computers in their learning process are given in Tables 11 and 12. They show that half of the majority of the teacher respondents recorded their classroom observation and any inappropriate code of conduct. The remaining teacher respondents stated that in doing these tasks they considered themselves belonging to the moderate or expert level of proficiency. More than half of the teachers stated that they were in the moderate and expert level of proficiency in the doing the tasks of monitoring students' achievement data, students' grades, preparing classroom evaluations, and searching sources of the curriculum. Forty-two per cent to sixty-three point three of the responding teachers stated they were at the moderate or expert level of proficiency in preparing school scheduling template, curriculum, graphs and charts.

Many teachers of English may not do themselves for preparing all the above tasks. It is clear that many of them possess the important instructional monitoring skills. In other words, the teachers made use of computers for various tasks.

TABLE XI. PROFICIENCY OF TEACHERS OF ENGLISH IN USING COMPUTERS IN TEACHING AND LEARNING PROCESS, N = 50

Instructional tasks and proficiency levels	N	%	SD
<i>Classrooms observations record</i>			0.70
a	26	52	
b	8	16	
c	9	18	
d	7	14	
<i>Student achievement monitoring</i>			0.61
a	4	8	
b	23	46	
c	14	28	
d	9	18	
<i>Monitor students' grades</i>			0.63
a	6	12	
b	20	40	
c	13	26	
d	11	22	
<i>Create a master schedule</i>			0.79
a	11	22	
b	13	26	
c	9	18	
d	17	34	
<i>Write up classroom evaluations</i>			0.53
a	8	16	
b	15	30	
c	24	48	
d	38	76	
<i>Monitor achievement data</i>			0.63
a	5	10	
b	24	48	
c	15	30	
d	6	12	

The scale was a=Novice, b=Moderate, c=Expert, d=Did not use it

TABLE XII. PROFICIENCY OF STUDENTS USING COMPUTERS FOR THEIR LEARNING, N = 250

Conducting tasks and proficiency levels	N	%	SD
<i>Monitoring own achievement</i>			0.61
a	20	8	
b	115	46	
c	70	28	
d	45	18	
<i>Monitoring own grades</i>			0.63
A	30	12	

B	100	40	
C	65	26	
D	55	22	
<i>Monitoring achievement data</i>			0.63
A	25	10	
B	120	48	
C	75	30	
D	30	12	

The scale was a=Novice, b=Moderate, c=Expert, d=Did not use it

The data of types of training taken by the teachers of English showed that over 70% of the responding teachers attended a formal computer course. More than 70% attended a training computer course and more than 25% had more than five training courses. Some of them completed the courses through in-service training. However, very few studied by themselves. Obviously, these respondents seemed unconfident for the ICT, particularly the training of the use of technology.

Twenty-three per cent of the responding students having not accomplished their formal computer training stated that they learned the computer by themselves, asking help from others, and attending in-service computer training conducted by their schools. However, most of them just participated and used trial-and-error methods.

Most teachers of English told that they got improved in doing their routine tasks due to the help of computer. Many stated that they spent less time in doing their paperwork with a computer. Still, almost two-thirds responded that they were not free from doing their routine paperwork. Over 85 per cent approved the results of their work to have good quality and need a little time to accomplish it. The respondents reported that the time they could save in a week was on the average of 6.97. If teachers work a normal 40-hour week, this is a time saving of 17.5%—it is quite a lot of saving time. Clearly, the use of computers for administrative tasks improves the quality and accuracy of work and saves time for large numbers of the teachers of English.

A scale of comfort scale used to assess the general attitudes of the respondents showed that how comfortable they were in making use of computers. Based on the data, of the six items measured, on the average the responding teachers of English belonged to being comfortable and moderately being comfortable. They reported that the computer had made their administrative work less monotonous, classroom activity learning was improved, teachers felt happy, school and community communications were improved, and curriculum was developed. Nevertheless, a few of the teachers felt uncomfortable about the effects of the computer on administrative work, the educational process, and life itself. However, in general, the responding teachers had a positive attitude toward the effects of computers.

Using Pearson product moment correlation coefficients on the relationships among attitude toward computer use and

the measures of proficiency in computer use by teachers of English showed that the relationships between attitude toward computer use and internet proficiency were positive and significant. When the proficiency measure result improves, other measures of proficiency also increased. General attitude toward computer use was positively and significantly correlated with the four proficiencies (hardware and software, instructional, administrative, and overall). Still, the correlations were relatively small ($r=.22$ to $r=.40$). This is not surprising because general attitudes are not very good predictors of behaviors. Nor are overall, instructional, administrative, and hardware and software proficiencies strongly correlated with the internet proficiency. All four had coefficients of .36 or less. This may mean that the teachers did not have much time to spend on the internet regardless of their level of proficiency in the use of computers. In contrast, the responding students enjoyed their time using the internet.

IV. CONCLUSION, LIMITATION, AND RECOMMENDATION

This study aimed to evaluate the use of computers by teachers of English and students of public senior high schools in Palembang City. The conclusions drawn from the findings, a discussion of the results, and recommendations for further research are included.

Most of the teachers of English and students owned a home computer. They also used their office computers. Laptop computers were used by almost half of the teachers and two-thirds of the students. The laptops, PDA, and Tablet PC allow both teachers and students more flexibility and mobility of settings in the use of computers. They seemed to have no difficulty in accessing computers because they use computers almost every day.

This study was limited to fifty teachers of English and 250 students of public senior high schools in Palembang City in 2019. Proficiency was based on the perceptions of the participating respondents. Some of them may have overrated their proficiency. Others may have underrated their proficiency. These ratings may not reflect the true proficiency levels of the principals.

For future research, it is recommended that some methods be more appropriate in specific contexts and contents or skills than others. On-line training options should be included. The study should have been conducted to explore effective methods of using computers. Various methods of staff development may include formal training, informal training, and demonstrations by vendors, experiential learning and hands-on practice.

It is hoped that the use of the Internet for administrative and instructional purposes should be explored more. The Internet can be used for researching information and data to assist the teachers in making decision. Additional research on school principals' use of the Internet would indicate how principals use the Internet as a decision-making tool. With the rapid change in technology, periodic surveys of teachers of English and students of senior high schools will be useful in identifying needs for school city/district investments in hardware, software, and staff development.

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