KISR 2297

TECHNICAL REPORT

ATTITUDE OF STUDENTS TOWARD A COMPUTER COURSE IN SECONDARY SCHOOLS IN KUWAIT

SPP–5

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ABSTRACT (SUMMARY OF NOT MORE THAN 300 WORDS) المستخلص (ملخص لايزيد عن ٣٠٠ كلمة)

KISR recently introduced a program of research into educational technology. This study was conducted to obtain feedback from students who attended a computer literacy workshop at KISR. The majority of students showed a positive attitude toward the computer course, preferring a computer course to be taught at the secondary school level rather than having to wait until the tertiary level. Several recommendations are made for the introduction of computer courses into Kuwait's secondary schools.

KEY WORDS اهم المصطلحات

Computer technology, educational technology

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معهد الكويت للابحاث العلمية دائما يأخذ القيادة فى مجال البحوث التربوية التكنولوجية لان هذا النوع من البحوث مهم جدا وخاصة بالنسبة لدولة الكويت والخليج العربى . لذا قامت هذه الدراسة بجمع آراء الطلبة الذين شاركوا بالدورة التدريبية لتدريس مادة الكمبيوتر لطلبة مدارس الثانوية العامة والتى نظمها معهد الكويت للابحاث العلمية بالاشتراك مع جهات حكومية أخرى . وكانت النتائج تشير الى ادراك طلبة مدارس الثانوية لاهمية علم الكمبيوتر والمطالبة بامكانية تدريس هذه المادة بالمدارس الثانوية بدولة الكويت

KEY WORDS أهم المصطلحات

تقنية الكمبيوتر ـ التعليم التقنى ـ مدارس ثانوية ـ الكويت

الطلبة .

Contents

Introduction

Most countries are experiencing a great demand for computing knowledge for instruction, research, and decision making. The services based on and the educational importance of this knowledge are of growing concern to both educationalists and scientists. Computing knowledge evaluation in terms of educational efficiency, therefore, requires more research to justify the cost and the educational goals of computer courses (Knapper, 1980)

The evaluation of computing knowledge for educational purposes is difficult. There is, however, general agreement among researchers that computing knowledge and ability are of value to students of all levels and in all diciplines. But attempts to define the prerequisite skills required to develop computing capabilities have not resulted in any satisfactory solution. This subject has an impact on many practical decisions at all levels of education (Tucker, 1984).

Most studies on computing knowledge evaluation start with attitudinal investigations of students' opinions regarding computer literacy courses or computer application workshops.

Because of the importance of computing knowlege, Kuwait Institute for Scientific Research (KISR) introduced a program of research in educational technology. First, KISR introduced a Computer-Assisted Instruction (CAI) study in conjunction with the Department of Mathematics at Kuwait University (Ibrahim and Althabia, 1981). The objective of that study was to provide a preliminary assessment of CAI at Kuwait University, and to introduce educational technology to Kuwait.

Second, to test the computing knowledge in secondary school in Kuwait, KISR organized a computer literacy workshop with the support of Ministry of Education and Kuwait Computer Society for a number of students from selected secondary schools in Kuwait to learn about computers, and to evaluate this experimental setting. This workshop introduced microcomputers to 40 students during the period 19 January to 14 February 1985 (KISR, 1985).

Purpose of the Study

The computer literacy workshop needed evaluation. Therefore, a survey was conducted to obtain feedback from the 40 students who attended this workshop on their opinions and attitudes toward the course, and to determine their attitude toward computers in general and to the possibility of offering computer courses in secondary schools in Kuwait.

Method

Design of the Study

KISR organized, with the support of Ministry of Education and Kuwait Computer Society, a four-week computer literacy workshop for students from selected secondary schools in Kuwait. The workshop was called "Introduction of Microcomputers for High Schools in Kuwait". A BASIC language course was offered to 40 students (20 males and 20 females). The purpose of this course was to give each participant hands-on experience of a microcomputer. Each microcomputer was installed with keyboard, minimum 218K memory, a built-in BASIC language interpreter, operating system and printer. Arabic language was used throughout the course to support the learning process and English language was limited to computer commands. Each student was supplied with a notebook and manual.

Data Collection

At the end of the course, data were collected by an Arabic language questionnaire which consists of three parts (Appendix A). The first part determined the students' characteristics such as age, sex, nationality, academic year, and major. The second part consisted of eight questions related to computer knowledge and computer courses, for which each participant was asked to check the appropriate response, 'Yes', 'No' or 'Not Sure'. The third part consisted of nine statements related to the KISR computer workshop in particular. A five point-scale, (Scale 1 = strongly disagree, through to 5 = strongly

agree) was used here. At the end of the questionnaire, the participants had an opportunity to add their own suggestions and comments regarding the computer course.

Data Analysis

The questionnaire were statistically analyzed by chi-square (χ^2) and t-tests. The χ^2 test was used to test whether frequencies observed in the sample differed significantly from expected frequencies in various items of the questionnaire. The significance of the differences between the score means of males and females was tested by a t-test (Glass and Stanly, 1970).

The results of the three parts of the questionnaire were summarized as follows:

1. Part I. Personal data are summarized in Table 1:

   a. Thirty five (87%) of the students were science major.

   b. The average age of the students was 15.38 years. The majority were in the first and second years, 37% and 43% respectively.

   c. A χ^2 test showed that there was no significant relationship between sex and educational level at the 0.05 level, ($X^2 = 1.54$). This means that the two variables were independent.

2. Part II. Table 2 presents the students' opinions regarding computers in general. A summary of the results is the following:

   a. The majority of respondents, 70%, had no computer experiences before taking this course, Question 1.

   b. For Question 5, 92% of respondents believed that there is a need to offer computer courses at the secondary school level, and 79% preferred these computer courses to be required courses to all students, equivalent to other main subjects, Question 2.

   c. Question 3 showed that 62% of respondents would prefer to take a computer course as a free time activity, and 90% did not want to delay taking a computer course until university

Table 1. Summary of Personal Data of Students (N=40)

Variable	Male		Female		Total	
	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$
1. Age	20	15.20	20	15.55	40	15.38
2. Educational Year*	n	%	n	%	n	%
1st	6	30	9	45	15	37
2nd	9	45	8	40	17	43
3rd	4	20	3	15	7	18
4th	1	5	0	0	1	2

*χ^2 = 1.54, P > 0.05, df = 3

$\bar{X}$ = 1.85, SD = 0.80

$\bar{X}$ = Average age of all students

SD = Standard deviation of age of all students

χ^2 = Chi-square value

Table 2. Summary of Responses of Students Toward Computers in General (N=40)

No	Question	Yes		No		Not Sure		Chi-Square test**
		n	%	n	%	n	%	
1	Do you have any previous computing experience?	10	25	28	70	2	5	4.88
2.	Would you prefer to take a compulsory course at secondary school?	32	79	7	18	1	3	1.27
3	Would you prefer to take computer course at secondary school as an elective subject during free time activity?	25	62	10	25	5	13	13.73*
4	Would you prefer to delay taking a computer course until university level?	3	7	36	90	1	3	1.44
5	Do you think that students at secondary school level need to learn about computers?	37	92	1	3	2	5	3.05
6	Do you think that learning about computers makes students more responsible at secondary school?	28	70	2	5	10	25	3.74
7	Do you think that technical and mechanical problems of directly communicating with computers discourage students from taking a computer course at secondary school level?	6	15	30	75	4	10	0.80
8	Do you think that the learning knowledge in this computer course is equivalent to other subjects at secondary school level?	23	57	9	23	8	20	1.79

* $P < 0.01$

** (The chi-square test between sex and number of responses in each question)

level, Question 4, This indicates that students are ready to learn computing at secondary school level.

d. In response to Question 8, 57% of respondents believed that they had gained an equivalent level of knowledge from this course compared with their other subjects.

e. For Question 7, 75% of respondents believed that technical and mechanical problems would not discourage them from taking a computer course if it were offered in secondary schools.

f. For Question 6, 70% of respondents believed that students would be more responsible after taking a computer course.

g. A chi-square (χ^2) test showed that no statistically significant relationship existed between sex and responses' category. This means that the two variables (sex and response category) were independent of each other. However, sex did show a statistically significant relationship with responses on Question 3, "Would you prefer to take a computer course as an elective subject during free time activity?", ($\chi^2 = 13.73$, $p > 0.01$).

3. Part III. Table 3 presents the students' attitudes toward the computer course offered at KISR. The results are summarized as follows:

a. The majority of respondents, 93%, found the computer course interesting ($X = 4.63$, $SD = 0.70$), and 88% agreed that time had passed quickly during this course ($X = 4.50$, $SD = 0.78$), Statements 12 and 14.

b. For Statement 10, 63% of the respondents said that they had learned more about computers in this course ($X = 3.73$, $SD = 1.18$), and 92% agreed that they benefitted by directly communicating with the computer terminal ($X = 4.93$, $SD = 0.27$), Statement 17.

c. For Statement 15, on advising and encouraging friends to take a computer course at the secondary school level, they all agreed to do so, ($X = 4.80$, $SD = 0.41$), and 85% agreed

Table 3. Summary of Results on Attitude of Students Toward the Computer Course (N=40)

No	Statements	SA		A		NS		D		SD		$\bar{X}$	SD
		n	%	n	%	n	%	n	%	n	%		
9	You felt responsible for your learning during the computer course	16	40	18	45	6	15	0	0	0	0	4.25	0.71
10	You have learn a lot about computers from the course	13	33	12	30	7	17	7	17	1	3	3.78	1.18
11	You felt your ability challenged in this computer course	1	3	3	8	2	5	10	25	24	60	1.68	1.05
12	Learning about computers was interesting	29	73	8	20	2	5	1	2	0	0	4.63	0.70
13	Learning computering is important at secondary school level	32	80	8	20	0	0	0	0	0	0	4.80	0.41
14	Time passed quickly during this computer course	26	65	9	23	4	10	1	2	0	0	4.50	0.78
15	You will advise and encourage other students to take a computer course	32	80	8	10	0	0	0	0	0	0	4.80	0.41
16	The manual was important to understand this computer course	17	43	7	17	3	8	8	20	5	12	3.56	1.52
17	Your direct communication with computers was beneficial to you	37	92	3	8	0	0	0	0	0	0	4.93	0.27

$\bar{X}$ = Average score in each statement

SD = Standard deviation for each statement of scores

that the computer course teaches students how to be responsible in the learning process, Statement 9.

d. For Statement 11, 85% of the respondents felt that the computer course did not challenge their ability to learn the BASIC language whereas 3% did feel challenged, ($\bar{X} = 1.68$, SD = 1.05). This shows that secondary school students are able to accept and absorb these kinds of programs and technology.

e. A t-test was used to compare the average attitude scores of both males and females. Males have a significantly different attitude toward computers compared with females ($t = 3.21$, $p < 0.01$) (Table 4).

Summary and Conclusion

The evaluation of computing knowledge for educational purposes is beneficial at all levels and in all disciplines. KISR has introduced educational technology research programs in both Kuwait University and secondary schools in Kuwait.

This study was conducted to obtain feed-back from 40 students (20 males and 20 females) who attended a computer workshop organized by KISR and to measure their opinions and attitudes toward the computer course in particular, and computers in general.

The data were collected using a questionnaire, and results show that 87% of the students were science major, the majority of students, 70%, had no computer experience before taking this course, and 90% of them would like to take a computer course before attending university. All participants indicated that they will advise and encourage their friends to take computer courses at secondary school level.

The majority of students in the computer course therefore reflected a high positive attitude toward computing technology and toward the computer course in particular. They valued the importance of a computer course in secondary schools, and they are prepared to accept such an educational change.

Table 4. Comparison Between the Attitudes of Males and Females toward the Computer Course

	N	$\bar{X}$	SD	SE	t
Male	20	38.15	2.58	0.57	3.21*
Female	20	35.40	2.84	0.63	

* $p < 0.01$, df=38

They agreed that a computer course will meet their present and future needs. They also indicated that there is a need for further computer training to provide them with additional skills to help them solve problems in other areas such as mathematics, physics, chemsitry, and others.

Finally, one major point could summarize the findings of the study, which is that computing technology has been considered in the past as an upper skills knowledge, and it was a great privilege to be associated with these skills. But now these skills are performed by most high school students in the USA, Europe, and elsewhere. Therefore, these upper skills can be disseminated and changed in status to become regular routine knowledge. This change is shown in this study by 85% of computer course participants disagreeing with the statement "You felt your ability challenged in this course", and, moreover, 75% found no difficulty or discouragement in technical and mechanical problems in the computer course.

Suggestions and Recommendations

Based on the findings of this study, the following suggestions and recommendations were made:

1. A computer course in Kuwait's secondary schools is needed and should be introduced as soon as possible into some schools.

2. Caution should be exercised to avoid over-emphasising the effect of this computer course implementation on the students, even though their attitude toward the computer course was strongly positive, and extremely encouraging.

3. The introduction of a school computer course should be made under free time activities to give schools time to diagnose any problems that might be associated with the course.

4. The technical and mechanical procedures using computer terminals should be simplified and outlined carefully so that students will not have difficulity communicating with the computer.

5. Another study should be conducted on a larger sample to investigate the differences between males and females attitudes toward the computer course.

6. Other future studies should be based on computer course implementation in selected secondary schools, to study the academic achievement, social implication, and other personal and behavioral aspects that are associated with the computer courses.

7. There may be a need for a computer awareness program at earlier stages (elementary schools) in order to provide preliminary computing knowledge and an information base for students before reaching secondary schools.

Appendix A
The Model Questionnaire

استفتاء لمادة الحاسب الالى فى المدارس الثانوية العامة فى الكويت

اخى واختى الطالبة :

الان قد حضرت واطلعت من خلال هذه الدورة على مادة الحاسب الالى ، لذا يرجى الاجابة على هذا الاستفتاء .

ان الغرض من هذا الاستفتاء هو اعطاؤك الفرصة لابداء رأيك حول الاشياء التى تتفق او لا تتفق معها بهذه الدورة التدريبية بالمعهد . وبناء على هذه الاجابات سيمكننا من فهم افضل للاشياء التى تهم المتدربون والدارسون والتى تتعلق بادخال مادة الحاسب الالى فى مدارس الثانوية بالكويت .

لذا يرجى قراءة كل عبارة من هذا الاستفتاء باهتمام ثم الاجابة عليها حسب ما ترونه بصراحة وامانة .

اولا : معلومات شخصية

أرجو ان تضع علامة " " تحت الجواب الصحيح .

١- السن : _____

٢- الجنس : ذكر أنثى

٣- الجنسية : كويتى غيركويتى

٤- السنة الدراسية : اولى ثانية ثالثة رابعة

٥- مجال التخصص : علمى أدبى

ثانيـا : استفتاء الدورة التدريبية لمادة الحاسب الالى

أرجـو ان تضع علامـة " " تحت البديـل الصحيـح

	نعـم	لا	غيرمتأكد
١) هل توجد لديك خبرة سابقة من خلال تعاملك من الحاسب الالـى ؟	ـــــ	ـــــ	ـــــ
٢) هل تفضل ان تأخذ مـادة الحاسب الالى كمادة اساسية كبقية سائر المواد التـى تدرسها فى المرحلة الثانوية ؟	ـــــ	ـــــ	ـــــ
٣) هل تحب ان تأخذ مـادة الحاسب الالى كمادة تشجيعية من خلال النشاط الحر فـى المرحلة الثانوية ؟	ـــــ	ـــــ	ـــــ
٤) هل تحب ان يأجل تدريـس مادة الحاسب الالى كمـادة اساسية حتى المرحلـة الجامعيـة ؟	ـــــ	ـــــ	ـــــ
٥) هل تعتقد ان الطلبة فـى المرحلة الثانوية بحاجة لتعلم مادة الحاسب الالـى؟	ـــــ	ـــــ	ـــــ
٦) هل تعتقد ان الطلبة اكثر مسئوولية عند تعلم مـادة الحاسب الالى فى المرحلـة الثانوية ؟	ـــــ	ـــــ	ـــــ

أرجو ان تضع علامة " " تحت البديل الصحيح

	نعم	لا	غيرمتأكد
٧) هل تعتقد ان الاشياء الفنية والميكانيكية من خلال التعامل مع الحاسب الالى لا تشجع الطلبة على أخذ مادة الحاسب الالى ؟	____	____	____
٨) هل تعتقد ان التحصيل العلمى لهذه المادة يعادل التحصيل فى بقية سائر المواد فى المرحلة الثانوية ؟	____	____	____

ثالثـــا : ارجو ان تقـرأ كل عبـارة وان تضع علامة " " تحـــت البديـل الذى يتفـق مع رأيـك ..

	اوافقجدا	اوافق	غيرمتاكد	لاأوافق	لاأوافق مطلقا
٩) تشعر انك مسؤول عن تعليمك وتحصيلك العلمى من خلال اخذ مادة الحاسب الالى ؟	ـــ	ـــ	ـــ	ـــ	ـــ
١٠) تعلمت الكثير عن الحاسب الالى من خلال هذه الدورة القصيرة فى مادة الحاسب الالى ؟	ـــ	ـــ	ـــ	ـــ	ـــ
١١) تشعر انك فى منافسة شديدة لعمل الافضل من خلال هذه الدورة فى مادة الحاسب الالى	ـــ	ـــ	ـــ	ـــ	ـــ
١٢) تعليم مادة الحاسب الالى كان ممتعا جدا ؟	ـــ	ـــ	ـــ	ـــ	ـــ
١٣) تعليم مادة الحاسب الالى مهمجدا فى المرحلة الثانوية ؟	ـــ	ـــ	ـــ	ـــ	ـــ
١٤) الوقت فى تعليم مادة الحاسب الالى قد مضى سريعا ؟	ـــ	ـــ	ـــ	ـــ	ـــ
١٥) سوف تنصح وتشجع الطلبة الاخرين على اخذ مادة الحاسب الالى ؟	ـــ	ـــ	ـــ	ـــ	ـــ

تابع ثالثا : ارجو ان تقرأ كل عبارة وان تضع علامة " " تحت البديل
_____ الذى يتفق مع رأيك .

	اوافق جدا	اوافق	غيرمتأكد	لا اوافق	لا اوافق مطلقا
١٦) مذكرات المتدرب كانت مهمة جدا فى تفهم مادة الحاسب الالى ؟	_____	_____	_____	_____	_____
١٧) اتصالك المباشر بجهاز الحاسب الالى كانت مفيدة جدا ؟	_____	_____	_____	_____	_____

رابعا: اذا كنت تشعر ان هناك اسبابا واقتراحات اخرى تساعد على
_____ نجاح تعليم مادة الحاسب الالى فى المرحلة الثانوية ولم تذكر فى هذا الاستفتاء . فيرجى ذكرها لانها ستساعدنا على تقديم حلول وتوصيات .

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