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RESEARCH ARTICLE

THE IMPACT OF TEACHING ICT FOR DEVELOPING EDUCATION SYSTEMS.

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Manuscript Info	*Abstract*

Information and Communication Technology (ICT) in education is widely promoted to have a positive impact on enhancing student learning. Different models for learning technology are defined, especially in basic schools. In Kurdistan Region and Iraq learning technology for basic school is a new subject called ICT. The problem is we do not know how effective this subject could be to improve the education system. To solve this issue, we arranged a questionnaire form between 120 students and 30 teachers in Slemani city, and then we highlighted two basic schools, one of them studied ICT subject and the other one, didn't. As a result, the students that studied ICT, used technology better for learning and were more intelligent compared to the students that didnt studied ICT. Moreover teachers confirmed the student answers. As a conclusion, our result showed that studing and learning ICT, is more affective for education system, and helps students to improve their knowledge in other subjects.

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Introduction:-

The term Information and Communication Technology (ICT) is a broad and comprehensive expression. It is not restricted to the computers or the internet alone. It ranges from the use of FM radio to satellite for communication (ANDERSON 2002). Opines that ICTs are the fundamental building blocks of the present day society. The contemporary society is highly influenced by ICTs in every aspect of life, including education. The effects are experienced more in the field of education since it has the potential for teachers to transform the teaching methodology to meet individual needs (Yusuf 2005). Today, schools are under pressure to adapt to this technological innovation. ICT provide remarkable opportunities for developing countries to enrich their educational system since it can help in acquiring and assimilating knowledge (L.Tinio 2002).

The importance of ICT has been recognized by educational institutions worldwide. Asserts that ICT has influenced the way people function today, both personally and professionally, which demands change in the educational arena. Schools that train their students in yesterday's skills and outdated technologies are not meeting the needs of tomorrow's world. Such children will not fit into tomorrow's professional requirements. According to Telecommunications Standardization Sector(ITU), ICTs can act as a facilitator in promoting learning skills, when implemented and utilized effectively. Effective use of ICT is crucial to countries that are progressing towards information or knowledge-based society (Watson 2001).

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ICT is a pivotal tool in spreading quality education. According to Kofi Annan, the former General Secretary of the United Nations, ICT helps to achieve the aim of Universal Primary Education by 2015; since it can take learning beyond the four walls of the classroom. This implies the vital role played by ICT in the educational sector. The application of information and communication technologies in education has been divided into two main categories: ICTs for Education and ICTs in Education. ICT for education identifies the development of information and communications technology especially for teaching-learning purposes while the ICTs in education includes the adoption of basic elements of information and communication technologies in the teaching-learning process. ICT provides great flexibility in education to ensure that learners are able to access knowledge anytime and from anywhere. It also affects the way knowledge is imparted and how students learn. Research undertaken worldwide has confirmed that ICT can help to improve student learning by providing better instructional techniques (Lemke and Coughlin 1998; Davis and Tearle 1999).

Kurdistan Region and Iraq newly start to teach computer subject in basic and high schools, Iraqi education system recorded low ranking especially after increasing technology. In this paper we present the capability teaching ICT or Computer subject on education system. For solving this problem we prepare a questionnaires form for students at the basic schools in Kurdistan Region-Iraq, then we get the result after their answers.

The paper is organized as follows: the Section 2 explains the background work on effectiveness ICT in learning and teaching. The Section 3 prepared research process for solving problem. In the section 4 presents the result of implementation research process. Section 5 presents some concluding remarks and points to future works

Related Work:-
There are a number of literature review on efficiency ICT in education was exist (Newhouse 2002; Osborne and Hennessy 2003; Attwell and Hughes 2010; Fu 2013; Noor-Ul-Amin 2013). ICTs have influenced educational practices to some extent and will increase considerably in future. ICT will become a powerful agent in transforming several educational practices. Persistent application and development of ICTs in the education system will have a strong influence on teaching learning process, accessibility of education, motivating learners, creating a congenial learning environment and improving academic performance.

ICT is ubiquitous in Asia in high-income and/or developed countries, while in many developing countries its integration and use especially more advanced forms of ICT and broadband connectivity often lag behind other social and economic spheres, including general communications, employment and commerce. As a consequence, children and youth in these countries frequently learn more about how to use ICT informally outside of the school system than in the classroom. Nonetheless, as the integration of ICT in education rises and evolves with evermore sophisticated tools, and participation and transition rates to higher levels of education increase, children and adults will increasingly need to develop digital literacy, not only for life skills but also to support their education throughout the secondary, post-secondary and tertiary levels. The early integration of ICT into primary and secondary curricula through formal recommendations is therefore vital and moreover acts as an important lever for ensuring the introduction and implementation of ICT into educational institutions and classrooms. Especially where ICTs are absent in households, learning basic computer skills or computing is important for lifelong learning. Table 1 presents both developed and developing countries that have specific curricular objectives or a course on basic computer skills.

Table 1:- National curricula with specific objectives or a course on basic computer skills or computing by level, 2012 (Bank 2012)

	Primary	Lower secondary	Upper secondary		Primary	Lower secondary	Upper secondary
				Bangladesh	√	√	√
Kyrgyzstan	x	√	x	China	√	√	√
Kazakhstan	…	…	√	China, Hong Kong	√	√	√
Cambodia	x	x	√	China, Macao	√	√	√
Myanmar	x	x	√	Georgia	√	√	√
Nepal	x	x	√	Indonesia	√	√	√
Sri Lanka	x	x	√	Iran, Islamic Rep.	√	√	√
Armenia	x	√	√	Japan	√	√	√
Bhutan	x	√	√	Malaysia	√	√	√
Lao PDR	x	√	√	Maldives	√	√	√
Philippines	x	√	√	Mongolia	√	√	√
Samoa	…	√	√	New Zealand	√	√	√
Australia	√	√	√	Singapore	√	√	√
Azerbaijan	√	√	√	Thailand	√	√	√

More than one-half of the countries in the current data collection have integrated objectives or courses on basic computer skills or computing at primary, lower secondary and upper secondary levels of education, in some cases despite capacity to meet national curricula. For example, the available resources in developed countries such as Singapore, Japan and New Zealand are adequate to meet objectives, while Bangladesh faces challenges to universalize access to basic computer skills or computing in schools. In countries that do not have objectives or courses on basic computer skills (or computing) at all levels, emphasis is placed on secondary education. For instance in Armenia, Bhutan, Lao People's Democratic Republic and the Philippines, basic computer skills and computing are emphasized beginning in lower secondary education, while in Cambodia, Myanmar, Nepal and Sri Lanka this occurs in upper secondary education. In Kyrgyzstan, a course in basic computer skills or computing occurs specifically at the lower secondary level (Bank 2012).

In addition to the instruction of basic computer skills or computing, ICT is used to teach other subjects to enhance or expand student learning opportunities. National curriculum may be explicit about ICT being used at certain levels of education, number of hours per week (see Box 3), or about the form of ICT, while other countries may have a more generalised and comprehensive set of recommendations for ICT-assisted instruction to be implemented across the entire curriculum at all levels of education.

Despite some countries having more capacity to provide ICT in education than others, formal recommendations to integrate ICT in all subjects and at all levels exist in Armenia, Hong Kong Special Administrative Region of China, Macao Special Administrative Region of China, Japan, Kazakhstan, Malaysia, the Philippines, Singapore, Sri Lanka and Thailand. In the case of Kazakhstan, this is related to their ambitious programme of using e-learning packages in local languages in all subjects in all schools, and having 100% connectivity to eliminate the domestic digital divide. In comparison, there are no formal recommendations for integrating ICT across curricula in Bhutan, Kyrgyzstan, Lao People's Democratic Republic and Nepal; however, the latter does offer a computer science course as an optional subject in secondary school (Nepal 2012) as pesented in Table 2.

Table 2:- Instructional hours using ICT by level, 2012(Bank 2012).

	Primary	Lower secondary	Upper secondary
Cambodia	.	.	1 ~ 5
Bhutan	.	< 1	< 1
Philippines	.	1 ~ 5	...
Kyrgyzstan	-	1 ~ 5	-
Mongolia	< 1	< 1	1 ~ 5
Myanmar	< 1	< 1	1 ~ 5
Bangladesh	1 ~ 5	...	...
Iran	1 ~ 5	< 1	1 ~ 5
Indonesia	...	1 ~ 5	1 ~ 5
Azerbaijan	1 ~ 5	1 ~ 5	1 ~ 5
Georgia	1 ~ 5	1 ~ 5	1 ~ 5
Kazakhstan	1 ~ 5	1 ~ 5	1 ~ 5
Sri Lanka	1 ~ 5	1 ~ 5	1 ~ 5
Thailand	1 ~ 5	6 ~ 10	11 ~ 20
Malaysia	11 ~ 20	11 ~ 20	11 ~ 20
Armenia	...	> 21	> 21

Other developed and developing countries have set recommendations for the integration of ICT in education in all subjects and at all levels, but not necessarily at each grade. This group of countries includes: Australia, Azerbaijan, Georgia, and the Islamic Republic of Iran, where a new course on business and technology is offered to Grade 6 students since 2013 (Iran 2013). Meanwhile, Bangladesh emphasises ICT in mathematics and natural sciences but not in second languages. In Cambodia, formal recommendations are even more uncommon only existing for natural sciences at the upper secondary level; similarly in Mongolia, recommendations for using ICT are currently formalised only for mathematics in secondary education, as shown in Table 2.

Shakir, et al. 2016 in their research concluded that most of the teachers did not know the utilization of ICTs in classroom and laboratory. When this competency was discussed with school principals, majority of principals were of the view that the teachers' cluster training centers were not equipped with the latest technological equipment. On the bases of research conclusions, this research suggests that the teachers' cluster training centers should be equipped with latest technologies so that they may learn to use the ICTs in teaching. Furthermore, this research study also suggests that Ministry of Education, Pakistan should design and conduct workshops for the proper use of ICTs to train the teachers for the better application of ICTs in teaching (Shakir, Akhtar et al. 2016). In Saudi Arabia, with this tremendous development in the field of ICT, many challenges have emerged, such as the use of the internet in a manner inconsistent with Islamic values and the traditions of Saudi society, since Saudi Arabia is a religiously and socially conservative country with a high cultural homogeneity that is based on Islamic and tribal affiliation, which makes the culture complex and unique. This is particularly challenging for the government, especially since the country is trying to catch up with other developing countries, and, clearly, ICT learning is an important component of this development. This paper aims to investigate the cultural and religious barriers that influence Saudi's adoption of ICT (Albugami and Ahmed 2016).

Future more the lack of qualified computing graduates to fill the growing number of computing vacancies is of concern to government and industry and are few female students entering the computing pipeline at high school level. Lang, et al. presented three outreach programs that have the underlying assumption that students need to be reminded about the creativity and potential of computing so that it remains on the radar of their future career options. Each program instigated social and cultural change through a paradigm shift where girls moved from being ICT consumers to ICT creators. By exposing students to a wide variety of ICT activities and careers during secondary schooling, they were more likely to consider studying information systems, computer science or any other computing course at the university level. Results are presented showing student attitudinal changes as well as observed increases in enrolments at secondary school and university courses (Lang, Craig et al. 2016).

Methodology:-

For presenting impact of teaching ICT for developing education systems we use questionnaires method. The population of the study consisted of two secondary schools of government sector in Slemani city, Iraq. One of them not study ICT named of Layalazana basic school, another one study ICT as subject names is Xakalewa basic School. Then we prepared a questionnaires form for teachers that working in basic schools in five basic schools in Slemani city, as shown in Fig. 1.
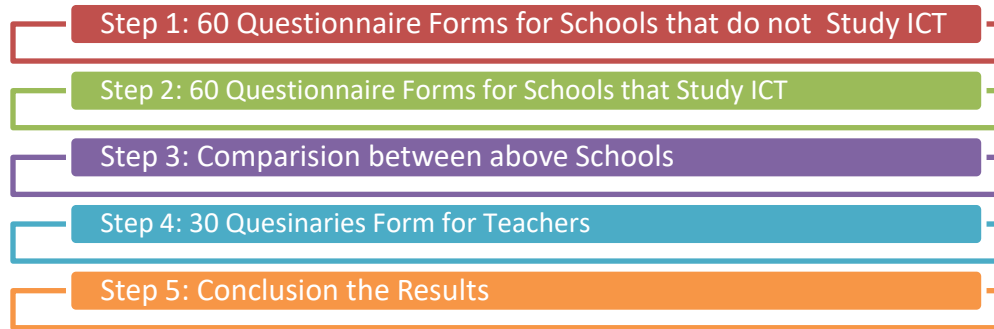
Step 1: 60 Questionnaire Forms for Schools that do not Study ICT

Step 2: 60 Questionnaire Forms for Schools that Study ICT

Step 3: Comparision between above Schools

Step 4: 30 Quesinaries Form for Teachers

Step 5: Conclusion the Results

Fig. 1:- Research Process.

Step 1 and 2: in these steps we prepared 5 questions for 120 students randomly, that consists of:
1.   Do you study ICT subject in your school?
2.   Are you using ICT for assignments?
3.   Are you using internet and search engine?
4.   Does ICT subject help you with other subjects?
5.   Do you use internet for informationexchange?

Step 3: we make a comparison between students that study ICT subject and no study ICT subject.

Step 4: we prepared 5 questions for 30 teachers randomly, that consists of:
1-   Do you have knowledge about ICT?
2-   Do you use ICT for teaching?
3-   Do you think the students who use ICT,are better than the others?
4-   Do you use internet to exchange knowledge between your students?
5-   Do your students used e-books to write reports and assignments?

Step 5: after answering the questions from students and teachers we will conclude the results the we will show the rate of impact ICT for education systems.

Result and Discussion:-

After implementing our methodology in the Khakalewa and Laylazana basic school in Slemani-iraq, we selected 120 students randomly, and we selected 30 teachers randomly in the Slemani city. After collecting form and separated "Yes"and "No" the students that study ICT at Khakalewaschool more intelligent compared with students that not studied ICT at Layalazana School as shown answers in Table 3, Table 4, Table 5, Fig. 1, and Fig. 2. Moreover teachers comfortable teaching with technology also they thought students that know technology and studied ICT more intelligent compared with other students as shown Table 6 and Fig. 3.

Table 3:- Student answers in Khakalewa School.

No.	Questions	Yes	No
Q.1	Do you study ICT subject in your school	60	0
Q.2	Are you using ICT for assignments?	39	21
Q.3	Are you using internet and search engine?	44	16
Q.4	Does ICT subject help you with other subjects?	59	1
Q.5	Do you use internet for informationexchange?	34	26
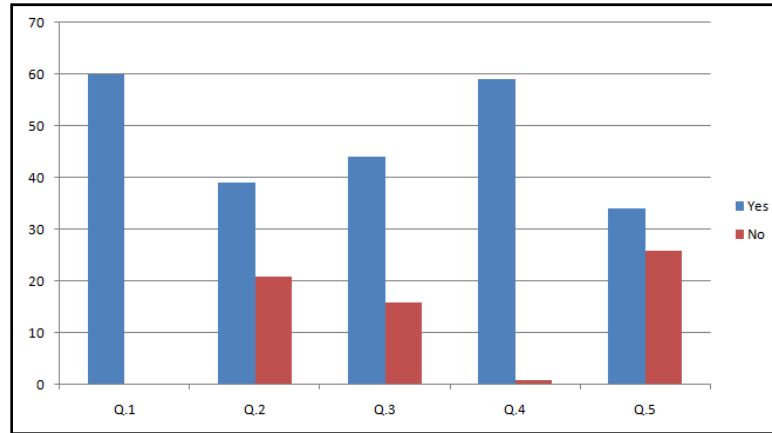
Fig. 1:- Chart for Student Answers in Khakalewa School.

Table 4:- Student answers in Laylazana School.

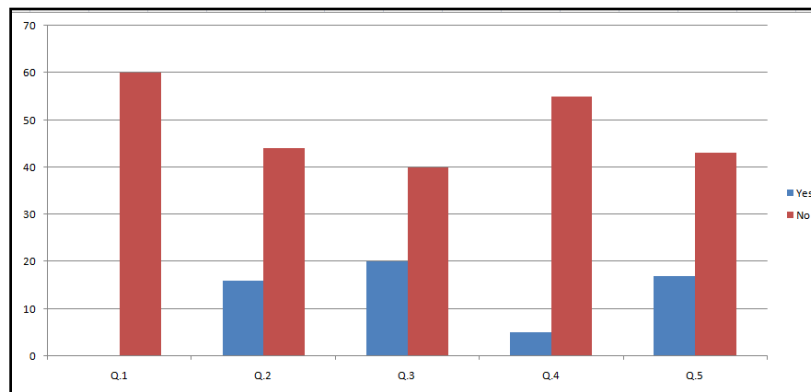| No.	Questions	Yes	No
Q.1	Do you study ICT subject in your school	0	60
Q.2	Are you using ICT for assignments?	16	44
Q.3	Are you using internet and search engine?	20	40
Q.4	Does ICT subject help you with other subjects?	5	55
Q.5	Do you use internet for informationexchange?	17	43

Fig. 2:- Chart for Student Answers in Laylazana School.

Table 5:- Comparison between Khakalewa and Laylazana Schools.

No.	Questions	Khakalewa		Laylazana	
		Yes	No	Yes	No
Q.1	Do you study ICT subject in your school?	100%	0%	0%	100%
Q.2	Are you used ICT for solving assignments?	65%	35%	27%	73%
Q.3	Are you used internet and search engine for more information?	73%	27%	33%	67%
Q.4	Is it ICT subject help you for study in other subjects?	98%	2%	8%	92%
Q.5	Do you use internet for exchange information?	57%	43%	72%	28%

Table 6:- Answers from Teachers.

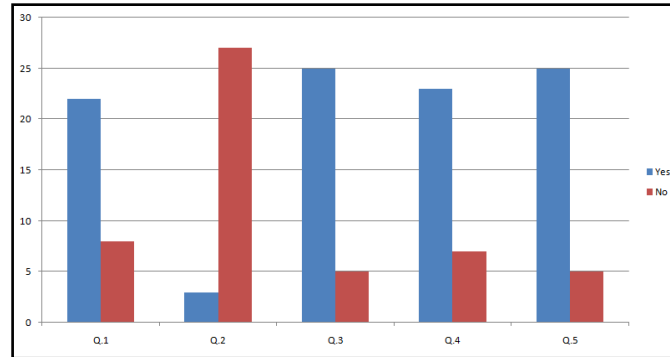| No.	Questions	Yes	No
Q.1	Do you have knowledge about ICT?	22	8
Q.2	Do you use ICT for teaching?	3	27
Q.3	Do you think the students who use ICT, are better than the others?	25	5
Q.4	Do you use internet to exchange knowledge between your students?	23	7
Q.5	Do your students used e-books to write reports and assignments?	25	5

Fig. 3:- Chart for Answers from Teachers.

Conclusion and Future work:-

In this paper we arranged a questionnaire form between 120 students and 30 teachers in Slemani city, and then we highlighted two basic schools, one of them studied ICT subject and the other one, didn't. As a result, the students that studied ICT, used technology better for learning and were more intelligent compared to the students that didnt studied ICT. Moreover teachers confirmed the student answers. As a conclusion, our result showed that studing and learning ICT, is more affective for education system, and helps students to improve their knowledge in other subjects.We recommend to researchers that used more criteria for finding effectiveness technology in education systems and finding new methods for learning technology.

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