

## *Employing Facebook in Knowledge and Skill Achievement in Basics of Communication Systems for Computer Science Section Students*

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### **Abstract**

**T**his study aimed at investigating the difficulties facing computer networks, "Basics of Communication Systems". Sixty students were selected randomly from students of Computer Science section at Kafr-Elshiekh Higher Institute for Information Technology and were divided in to two random groups : experimental and control groups , 30 students each . The study used the experimental method and the following material and tools: A learning strategy based on Facebook for basics of communication systems in computer networks course. An educational interactive group for basics of communication systems in computer networks course. Test of knowledge achievement in basics of communication systems. The results were as follows : There is a significant difference between both groups in achievement in both post-application and difference between pre-and post-applications which refers that there is a significant difference between both groups at significance level ( $0.05 \geq$ ) in achievement in post-application free of pre-application in favor of the experimental group being owner of the higher mean scores and the researcher attributes this for Facebook effectiveness. There is a significant difference between both groups in skill performance in both post-application and difference between pre-and post-applications which refers that there is a significant difference between both groups at significance level ( $0.05 \geq$ ) in skill performance in post-application free of pre-application effects in favor of the experimental group being owner of the higher average and the researcher attributes this for Facebook effectiveness.

**Key words: Social Networks, Facebook Social Network.**

### **Introduction:**

The world witnessed great changes in forms of life. Knowledge and learning are currently considered the source of wealth and a scale of wealth among nations. In addition, utilizing

digital technology, represented in the internet, has become one of necessities for any educational system in providing knowledge and learning, so electronic learning is an undeniable fact nowadays and does not need a proof for its significance after proving its existence and efficiency. Accordingly, it contributed to change features of the educational system with its various elements.

Moreover, social networks online are considered among the latest and the most popular outcomes of information revolution. Although these websites were established as social communication networks among persons, their use extended to include all political, social and cultural aspects (Awad, 2011: 4). As mentioned by (Al Saadani & Hussain, 2012: 261), social networks are online communities consisting of persons who share interests and activities. These networks also provide various and multiple ways for users to interact through conversations, messages or via e-mails (Jawaher Bint Zaher Mohamed Al Anzi, 2013).

The role of social networks is no longer limited to communication with friends and exchange social and political debates, but that role also went much beyond that as many companies started using these websites to promote their products and to connect with the target audience, and governments used them as well for the dissemination of data and information, receive views and comments by members of society. On the academic level, a lot of teaching staff members in the Arab and international universities have started using these networks to communicate with students in order to create a transparent and interactive learning environment where the student is an active element involved in the responsibility, not just a recipient of negative information being taught by teachers in classes.

The primary objective of the web is to be as a tool for scientists that enable them to share information and discuss results of their experiments. This means that it was the core for social programs since early use. Nowadays, there is an increasing development in web technologies which is based on the first use

(Conference, 2005). It's the network that is created by people and the first goal is the people themselves not the content, so it can be called a connection network, which continues growing in two ways in order to facilitate finding people and content they make and making their own needs on the web.

There are three main views interpreting characteristics of the web's second generation (Bram, 2007) as follows:

- **Sociological Point of View:** Beners-Lee, 2005 refers that Web 2 is like a dual channel through which reading and writing activities are applied in two ways (read-write web) by users to ensure enrichment and consistency. Therefore, Web 2 is about persons and relations they establish during the use of software. Tim O'Reilly, 2005 described Web 2 as "a structure of participation: usage base and self-organization forming a cooperative network.
- **Technical Point of View:** Web 2 is a combination of work environments and languages used in the generation prior to Web and these proved efficiency in making applications on web browsers such as: JavaScript, the Document Object Model, CSS and XML.
- **Economic Point of View:** Web 2 is subject to consumer's desire in terms of content building and adaptation according to user's needs and personal desires.

With these characteristics, Web transformed into "Collaboration Web", which refers to new tools that facilitate participation in tasks online as users can easily publish documents, make live interviews, arrange data and information and cooperate with other parts within web community without having to leave their places. All of these are made via web browser. However, we should consider the development of user's personality in Web 2 as this user became more able to build his/her private life on the web: work activities, learning and social relationships, so this generation is called the "n-gen" and

“digital natives” (Downes,2005), (Marc,2001). (Ghada Bint Abdullah Al Amoudi – Jeddah).

In the age of informatics and free access, a group of affiliates to the educational field demanding liberation from restrictions of electronic learning management systems and replace them with more open systems to keep up with rapid changes in web technologies. Hotrum, 2005 and Dalsgaard, 2006 said that learning management systems do not necessarily support the social constructivist approach which stresses on self-learning and regular student activities.

With the development of the internet and increasing speed, the concept of e-learning changed as well as its presentation and interaction methods to include more interactive aspects which led to the emergence of what is called e-learning second generation (E-Learning 2.0). This type is concerned with employing social programs such as Blogs, Wikis and others in the educational process (Hend Bint Soliman Al Khalifa, 2010) and (Trentin, 1999 ; Preece,2000; Hofman,2003).

Learning through web is one of the latest educational methods in learning in small groups as it is defined as education philosophy (Panitz, 1996; Wiersaia, 2000) as it depends on interaction between learners' personalities and lifestyles when they feel responsible for learning, respect to your abilities and contributions in work achievement. The infrastructure is based on cooperation by group members compared with their competitors in other groups, which is the suitable philosophy to the current globalized world based on a set of principles as follows:

- This work leads to better outcome in achievement, skills and enhance social relationships which is better than individual work.
- Oral, auditory and read interactions among learners contribute to increase understanding.
- It helps increase perception and understanding through their experience and interactive social relationships.

- Participation in education through web is made freely and objectively.

### **There are two main principles on which web learning is based:**

- There are no persons who know everything about anything.
- Each one of us has what to give and to present.

In addition, modern educational studies proved that there are seven practices in educational process. If these are used, this process will be correct with great efficiency and influence, and these practices are as follows:

- Encouraging interaction between teacher and learners.
- Encouraging learning among learners themselves.
- Presenting a quick feedback.
- Encouraging active and effective learning.
- Providing enough time for learning.
- Setting high expectations to results of the educational process and standards of learners (if you expect more, you will get more responds).
- Understanding that there are multiple types of intelligence with various learning methods for learners.

All of these practices can be achieved and carried out through collaborative learning (Ebidat, Zawqan & Sohaila Abou Semid, Op. Cit.).

Among the most important benefits presented by learning through Web 2.0, there are: development of individual responsibility and collective responsibility, development of the spirit of cooperation and teamwork among learners, which helps them to exchange ideas and respect and accept opinions of others, train them to solve problems or contribute to their solution, and then the ability to make decisions, their self-confidence and ability to express feelings and ideas will grow through activities, field visits, dialogue with specialists and

discussion among colleagues. This overcomes their teamwork difficulties and gives them skills of leadership, communication and communication as they keep them away from receiving information routine, and through which they get to know the surrounding reality, touching and interacting with it. Moreover, practicing the activity in the form of groups plays a significant role in consolidating relations among learners on the one hand and between them and school on the other hand, it is then the exchange of experiences and information through constructive dialogue and discussion that proved they are more useful and funnier than individual learning, because this sums up time and effort, keeps learners from selfishness, strengthens their friendship ties, develops their personal relationships, helps to connect slow learners with members of groups and develops their integration (Encyclopedia of education and training, 2009).

### **Facebook**

The idea of launching Facebook emerged from a dream by Mark Zuckerberg, one of the students of Harvard University who are passionate about computers. He was sitting in front of his PC screen in his room at students' dormitory in Harvard, USA. He started to design a new website online. His goal was clear, to design a website that gathers his colleagues in the university and enable them to exchange their news, photos and opinions. Zuckerberg simply thought of launching a website to facilitate communication among university students based on the fact that such communication will have great popularity if implemented successfully. Hence, the idea of launching Facebook emerged. Facebook can be defined as a website that helps make friends, exchange information, personal photos, video clips and comment on them besides facilitating formation of relationships in a short period of time (Ibrahim El Far, 2012: 201).

### **The Role of Social Networks in Academic Studies:**

There are a lot of questions about the significance of social networks in academic university study. MySpace and Facebook come on top of these networks and these are some points to consider:

- All of these networks are fixed, regardless of the type of computer, operating system or web browser.
- It is great to use tools known by a great number of students, so they can complete their scientific discussions outside classes which will enrich the scientific material.

**Yet, at the same time:**

- Students may feel annoyed from your presence in their personal pages as they find this a breach to their personal freedom.
- Some students may not own accounts in such networks, but they can make temporary accounts.
- Some students are unable to differentiate academic and personal conversations.
- As a professor, you may face problems in privacy of published information or maintaining copyrights. This may be avoided using multiple privacy systems by these networks.

**Facebook in Education:**

Social networks use Web 2.0 technology to reach all individuals together through and effective meaningful way, so it creates an effective education. Hence, the extent of benefit from social networks (Facebook) in education can be summed up as follows:

- Establishing a group or a page about a material or educational topic by professors or students to invite students to participate in it, exchange information, share and exchange links of pages relevant to such topic or material.
- Posting educational photos and video clips relevant to the material, exchange, comment on and discuss them among students and the interested.
- Make friendships and relationships with those interested in the subject or a particular educational topic from all

over the world and the exchange of information and experiences among them.

- Using it as a means of continuing the relationship between graduates to continue learning and self-development in the same specialization.
- Using it as a way to invite students and others to various educational events.
- Using it as a means for the exchange and dissemination of information and access to new information in different disciplines.

### **Facebook Applications**

There were numerous Facebook Apps that can be benefited from in e-learning as follows:

- **Webinaria Screencast Recorder:** This app records all movements and it can add sound and run the webcam at the same time to make a lesson, an explanation or recording a presentation with voice explanation and then add to the Facebook page and share them with others in a practical and easy way.
- If you have an account at slideshare.com – which is a website that encompasses many presentations that allow downloading and sharing with others – presentations can be listed from Slideshare to Facebook easily through this app and its synchronization.
- To add lessons, activities and courses, manage, share them, open a section for discussions, download and share files.
- To create your quick test via Quiz Creator.
- To make voting and collect views about various subjects created by “Poll” app.

### **Schoology System:**

Schoology.com website is one of these modern systems that offer a free service to create and manage learning systems, combine social network interface with learning management



tools in a way that enables teachers, students (parents and administrators) and all persons to communicate and cooperate in educational matters. In addition, the website provides traditional educational jobs in the most famous learning systems such as Blackboard and Model. Therefore, when we use Schoology, we will finally be able to find that we can use Facebook features in learning management system in order to be more efficient and effective.

### **Characteristics of Facebook**

First: Facebook is characterized with including a lot of Web 0.2 apps that include a number of websites, but with less quality and characteristics, so Facebook includes the following:

- Minimized blogs: this may be enough without using other websites such as Twitter and the like.
- Addition, sharing and ability to comment on photos without using websites such as Flickr and the like.
- Addition, sharing and ability to comment on video clips without using websites such as Youtube and the like.
- Sharing friend links, without using websites such as del.icio.us and other websites.
- Mail and chatting without using Ebay or other similar programs.
- Adding notes without using Blogs and Forums.
- Adding general or private events, the ability to visit Google for friends without using websites such as Calendar and other similar programs.
- Addition or joining pages or groups that contain spaces for dialogue such as Wiki.

Second: It is one of the most famous social networks and Web 0.2 websites in general and the most used as it is considered the forth most websites visited around the world according to Leska ranking with members exceeding 500 million users.

Third: It contains an interface in Arabic language and another interface in English according to the learner's view or the website user.

Fourth: It is for free with no return.

Fifth: Ease of use so that it can be used by all students and general education students from the first primary grade to the third secondary grade, but the site does not currently allow to register those with 13 years old or primary school students and approximately first prep grade students. (Ibrahim El Far, 2012: 207).

There are many researches that tackled efficiency of Facebook in learning and teaching such as:

The study by (Jawaher Bint Zaher Mohamed Al Anzi, 2013) which is entitled: "The effectiveness of using social networks in science achievement and the trend towards society of knowledge for middle third grade students in Medina". The present study aimed to find out the effectiveness of using social networks in science achievement and the trend towards society of knowledge for middle third grade students in Medina and detect the presence of correlation, or lack of correlation between the achievement of science and the trend towards a society of knowledge. The study was applied on a random sample consisting of 63 female students of which there are 32 representing the experimental group and 31 for the control group. Results showed that there are statistically significant differences between average grades of female students in post-achievement in favor of the experimental group. Accordingly, the study recommended employing social networks, especially Facebook, teaching most study courses and include programs of teacher preparation for the stage of dealing with social networks.

The study by (Dalshad Mohamed Sherif Ali, 2002) is entitled: "The Effectiveness of a Training Program to Develop Social Network Skills for a Sample of Autistic Children". This study aimed to ensure the effectiveness of a training program to develop social network skills for a sample of autistic children

with a sample consisting of 12 male and female children diagnosed with classical autistic disorder based on autism standards in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and found that the training program is effective in developing social network skills with all of its dimensions.

The study of (Piu Research Center, 2012) is entitled: "Civil Participation in Digital Age". The study found that a percentage of 43% of social network users extend their knowledge about one of the political or social issues after reviewing it for the first time through social media websites. The study also took 18% of decisions regarding one of the political issues based on articles they read via these websites. This study included 2253 American adults in eighteen years old and beyond. The study aimed to measure political online interaction and outside it with consideration of the role of social networks within a year in the period between 16 and 16 July and 7 August, 2012 tackling the factors affecting political participation. Since it is common to involve in political activities online through traditional means among persons with the highest income and education, income level does not affect at the same degree when considering social networks and the educational level's effect remains clear as university graduates are more attracted to participate in political activity through social media compared with secondary school graduates.

A study by (Maher Arafat, 2011) entitled: "Social and Educational Effect of using Social Networks and Facebook on Students at College of Information Technology, Al Najah National University". The study aimed to determine the effect of communicating via the Facebook on social relations and process of the study in order to determine its drawbacks and advantages on students of administrative information systems in information technology - Al Najah National University. The sample of study included information technology students at Al - Najah National University of males and females by 50% to 50% from four different school years from the first to fourth year, and the results were that there are important points to be done to

enable the community to achieve the greatest benefit from Facebook so as to be compatible and in tune with reality of society. Its goals and ambitions are:

- Deepen and generalize the idea of Facebook and show it to the family in order to enter the process of socialization in order to achieve goals of society.
- Educate Facebook users with the best way of using it in order to communicate in a way that reduces moral losses.

The study by Jareh Fares Al Otaiby (2011) tackled Facebook and its use by university students. The significance of the study is that it reflects the reality and patterns of using Facebook. The study aimed to show the most prominent motives that drive students to use it, satisfactions earned from it, the resulting effects to benefit from its positive uses, trying to overcome its disadvantages and activate its use in the educational process. The study sample consisted of students in the preparatory year from three Saudi universities, namely: King Saud University, King Faisal University and King Abdul Aziz University. Results of the study illustrated the widespread usage of Facebook among students in Saudi universities by 77%.

Moreover, the study by (Bialik, 2010) referred to findings of a study in Australia by Karl Bialik on a sample of 2000 volunteering Facebook users who are more able to solve problems and more productive than non-users. These findings were confirmed in a survey by Ohio University in 2009 adding that the GPA of these students ranges between 3.0 and 3.5 which is seen by researchers as an excellent rate.

A study by Tiffany, et al (2009) aiming to provide descriptive information about the use of social networking sites by university students. The study sample consisted of 92 of undergraduate students at a private university in the United States. In order to achieve the purposes of the study, the researchers applied scales such as Notepad app on the research sample. This scale contains seven questions using a specific duration of time every day along one week, where students

record the time that has been spent in the use of Facebook daily and activities they have done every day. After the completion of the notepad application scale, students were given 24 hours to complete the survey by a scale contains 54 questions divided into two parts. In the first part, students answered 31 questions about their activity on Facebook in the week in which data of the Notepad scale were collected, and in the second part, they answered 23 open-ended questions that revolve around asking why students use social networks, especially Facebook and how they interact with each other on that site. Results showed that students spend an average 30 minutes a day on Facebook as part of their daily routines, 85% of university students use Facebook for social interaction with friends who have a relationship with them before, and that about only 9% used Facebook to make new friends. Students who participated in the study explained that Facebook network already caused a change in their lifestyles.

In the study by Dan, 2008, the researcher aimed to determine the extent of Facebook's effect on communications in real world. He found that Facebook has a great effect on people's lives as the majority were communicating multiple times along the week for enjoyment and watching, while negative effects resulted from excessive use and chatting for long periods.

## **2- Context of the Problem**

The researcher noticed that there is a difficulty facing students in understanding the course of computer networks in basics of communication systems. Since networking is one of the courses that are difficult to learn through practical demonstration of its included skills that are difficult for students to understand practically without a communication network configuration, here was an urgent need for creating an interactive page (group) on Facebook that participates in the acquisition of communication skills, and the researcher made a survey to determine the extent of difficulties they face in studying of practical part of the networks, as follows:

- Creating an internal network in the lab to connect devices to exchange data.
- **Simple Communication System:**
  - First Model – Telephone Call.
  - Second Model – using computers to connect the internet
- **Transmission Modes:**
  - One-way transmission (Simplex).
  - Two-way transmission at the same time (Full Duplex).
  - Two-way transmission, but not at the same time (Half Duplex).
- **Transmission Impairments:**
  - Attenuation Distortion.
  - Delay Distortion.
  - Noise.
- **Signal Modulation:**
  - Analogue Signal Modulation.
  - Digital Signal Modulation.

From the survey, it was found that the number of students who face difficulty in understanding the practical part of the networks course is 91% of total number of students.

- **Problem of the Study**

There is a difficulty facing students in understanding the course of computer networks in basics of communication systems.
- **Sample of the Study:**

Students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh (60 students) were divided into two random groups: experimental and control groups (30 students each) and the study ensured group equality in both achievement test and the observation card.
- **Limitations of the Study**

The current study has the following Limitations:

- A random sample of students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh.
- Knowledge achievement in basics of communication systems.
- Skill performance in basics of communication systems.
- **Objectives of the Study:**  
The current study aims to:
  - Ensure employment of Facebook in basics of communication systems on knowledge achievement level.
  - Developing skill performance in basics of communication systems for students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh.
- **Significance of the Study**  
The significance of this study is due to:
  - The attempt to produce an educational interactive group contributing to increase knowledge achievement for computer network courses.
  - The attempt to develop skill performance in basics of communication systems for students.
  - The attempt to shed light on the importance for students to acquire skills of dealing with networks using one of the web's second generation techniques, "Facebook".
  - This study is an objective respond to calls by modern educators in terms of the need to benefit from qualities and possibilities enjoyed by modern technology in educational process and what can be contributed in overcoming some education problems such as increasing attraction on education, increasing number of students and the possibility of this type of education to overcome aspects of time and place.
  - Scarcity of Arabic studies that tackled Facebook – to the researcher's knowledge – which gives this study the aspect of initiative and pioneering.

- **Methodology of the Study**

This study uses the experimental method, which aims to investigate the effect of independent variables on dependent variables.

(pre-test – post-test) x (experimental – control)

### Variables of the Study

- Independent Variable: teaching networks course through an educational interactive group on Facebook.
- Dependent Variables: (Knowledge aspect in basics of communication systems & skill performance basics of communication systems).
- **Material and Tools of the Study**
- A learning strategy based on Facebook for basics of communication systems in computer networks course.
- An educational interactive group for basics of communication systems in computer networks course.
- Test of knowledge achievement in basics of communication systems.

The test of knowledge achievement for the course was conducted and presented to arbitrators to make the proposed adaptations in order to be in its final form consisting of (46) questions as follows:

*Tabel (1): Achievement Test Question*

Number of questions Type	Number of questions (right or wrong)	Number of choosing from multiple questions	Total
Recall	9	5	14
Understanding	6	8	14
Application	13	5	18
Total	28	18	46

### Calculating Validity and Reliability of Knowledge Test:

#### Validity:

The researcher – beside arbitrators' validity – calculated internal consistency measured by correlation coefficients



between each item and total of the test ranging between (0.533 ) and (0.643) significant at level (0.01) with correlation coefficients among the three aspects and total and these were:

For recall =0.547 , understanding= 0.538 , application= 0.633 and it is significant at level (0.01)

### Reliability

The researcher calculated test reliability using two methods as follows:

- Alpha Cronbach's method, and it was reasonable.
- Split- Half Reliability, and it was reasonable too.

\*\*\* Observations Card to measure skills of communication system basics:

An observations Card was prepared to include skills of communication system basics and it was presented to arbitrators to make proposed adaptations to become in its final form consisting of (34) skills distributed on eight major skills as follows:

*Tabel (2): Communication Skills*

S	Major Skill	Number of Secondary Skills
	Skills of using the Oscilloscope	5
	Skills of using the Signal Generators	5
	Adjusting wave capacity in analogue signal	5
	Adjusting wave frequency in analogue signal	3
	Adjusting wave angle in analogue signal	4
	Adjusting wave capacity in digital signal	5
	Adjusting wave frequency in digital signal	3
	Adjusting wave angle in digital signal	4
	Total	34

### Calculating Validity and Reliability of the Observations Card:

#### Validity:

The researcher – beside arbitrators' validity – calculated internal consistency measured by correlation coefficients between each item and total of the test ranging between ( 0.433 )

and ( 0.521) significant at level (0.01) with correlation coefficients among the three aspects and total and these were:

- using the Oscilloscope =0.534 , using Signal Generators = 0.531 ,
- Adjusting wave capacity in analogue signal = 0.516
- Adjusting wave frequency in analogue signal=0.431
- Adjusting wave angle in analogue signal= 0.456
- Adjusting wave capacity in digital signal=0.477
- Adjusting wave frequency in digital signal=0.399
- Adjusting wave angle in digital signal=0.349 and it is significant at level (0.01)

### **Reliability**

The researcher calculated test reliability using two methods as follows:

- Alpha Cronbach's method, and it was reasonable.(0.981)
- Split- Half Reliability, and it was reasonable too.(0.666)

### **10- Hypotheses of the Study**

The researcher of this study formulated the following main hypothesis:

There are statistically significant differences at level: ( $\leq 0.05$ ) between the mean scores of students at the experimental and control groups in knowledge and skill achievement in communication media unit for students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh.

From this main hypothesis, the following two hypotheses are also formulated:

- There are statistically significant differences at level: ( $\leq 0.05$ ) between the mean scores of students at the experimental and control groups in knowledge achievement in communication media unit in computer networks course for students of Computer Science Section

at the Higher Institute for Management & Information Technology, Kafr El Sheikh in favor of the experimental group.

- There are statistically significant differences at level: ( $\leq 0.05$ ) between the mean scores of students at the experimental and control groups in skill performance in communication media unit in computer networks course for students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh in favor of the experimental group.

### **11- Procedures of the Study:**

1. Literature review for relevant studies to the current study.
2. Reviewing opinions of specialists to determine the main necessary skills for network means of communication as follows:
  - Network communication skills.
  - Network structure skills.
  - Network design skills.
  - Skills of creating a wired network between two devices.
  - Skills of creating a wireless network.
3. Selecting tools, pieces and routers.
4. Connecting pieces and tools.
5. Adjusting settings of pieces and tools.
6. Settings of protection.
7. Connecting personal computers to network.
8. Determining elements of the educational content of the course and prepare related educational content in the light of general courses of the course:
9. Set education strategy based on social networks (Facebook) for basics of communication systems.
10. Designing a page entitled: Basics of Communication Systems.

*Tabel (3): Basics of Communication System Contents*

The Objective	Item
Remembering a specific definition of network concept.	Simple Communication System
Defining components of communication system	Transmitter Receiver Communication Channel
Clear definition of protocol	Transmitter and receiver protocols
Defining components of transmitter	The coder Modulator
Accurate definition of communication channel	Phone call model Using computers for connecting the internet
Defining components of future	Demodulator and decoder
Multiple transmission modes	Transmission Modes: One-way transmission (Simplex). Two-way transmission at the same time (Full Duplex). Two-way transmission, but not at the same time (Half Duplex).
Defining Simplex, Full Duplex and Half Duplex	Simplex means "individual" or "simple" Full Duplex is transmission in two ways at the same time. Half Duplex is transmission in two ways but not at the same time, as it is an average case between both previous cases.
Multiple constituent parts of the modem unit.	The modem The Modulator The Demodulator
Multiple constituent parts of the codec unit.	The Codec The Coder The Decoder
Multiple impairments affecting signal	Transmission Impairments Attenuation Distortion Delay Distortion Noise
Distinguishing various types of noise	Thermal noise Impulse noise
Define the effect of noise on received signal and signal modulation.	Signal Modulation Analogue Signal Modulation Digital signal Modulation
The relation showing percentage between signals, noise and types of signal modulation	Amplitude Shift Keying Frequency Shift Keying Phase Shift Keying

<https://www.facebook.com/groups/679880095451494/>



Figure (1) Home Page of Basics of Communication System



Figure (2) Sub-field of Communication System



Figure (3) Oscilloscope , Generator



Figure (4) Working with Oscilloscope , Generator

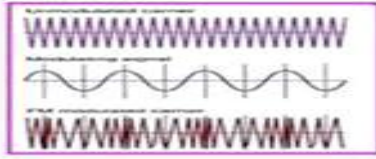
By clicking on transmission medium, comments appear as follows:



Figure (5) Comments of the Research Group on "Transmission Medium"



Reham Essa  
الإشارة المنقطعة والأشارة الرقمية



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Maged Hoany likes this. Seen by 13

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 8 hours ago - Like

**Reham Essa** المقدم المصروف تعديل الإشارة المنقطعة  
 تعديل الإشارة (Signal Modulation) : يمكن للإشارة أن يتم نقلها عبر وسط اتصالات مواترة إذا كانت المنقطعة بين مصدر الإشارة (Signal Source) والوجهة (Destination) متوافقة حول هذه المنقطعة على نوع الإشارة المرغوبة وكذا نوع وسط الاتصالات المستخدم، فليس يمكن نقل إشارة رقمية للإشارات المنقطعة (Analogue Signal) يمكن لنمطه الموجية (Voice Signal) أن نقل على خط النقل مواترة المنقطعة حتى 3-5 كم طبقا لنمطه الموجية (Digital Signal) (Digital Signal) المتناهي الحد يمكن نقلها على الخط أو الكابل مواترة المنقطعة تزيد عن 15 كم، وكما هو الحال بالنسبة للإرسال عند انتقاله من مكان إلى مكان آخر، فيمكن أن يتغير سيموا على الأرقام إذا كانت المنقطعة قصيرة ولديه نطاق kHz - ألف إذا كانت المنقطعة بعيدة لأنه يحدث من وسيله انتقال (Carrier) تحمله هذه المنقطعة، وتتمثل بالنسبة للإشارة إذا كانت المنقطعة المقولة لها كبيرة فالأمر من استخدام موجة حاملة (Carrier Signal) قادرة على السفر لمسافات طويلة ونقل وحمل الإشارة إلى الطرف البعيد (Far End) وعند وصول الإشارة إلى النهاية المستهدفة يتم عملية عكسية لتلك التحليل واستخلاص وترى الإشارة الأصلية من فوق الموجة الحاملة وعملية تحليل الإشارة الأصلية (Signal) على الموجة الحاملة تسمى "تعديل" (Modulation) أما عملية التحليل في حد ذاتها فهي عبارة عن تعديل في شكل الموجة الحاملة باستخدام الإشارة الأصلية، أما عملية فك التحليل تسمى "فك التعديل" (Demodulation) حيث أنها عكس العملية السابقة - وتسمى إعادة الموجة الحاملة إلى سابق شكلها أي تكون بدون أي تعديل وهو استخلاص الإشارة الأصلية سواء، ولتحت أن الإشارة الأصلية تكون في أحد شكلين أما عملية (Analogue Signal Modulation) : 1- تعديل الإشارات المنقطعة ( Analogue Signal Modulation) أو رقمية (Digital) : لذا نجد أن هناك نوعين من أنواع التعديل طبقا لنمط الإشارة الأصلية وهما : 1- تعديل الإشارات المنقطعة ( Analogue Signal Modulation) : 2- تعديل الإشارات الرقمية (Digital Modulation) : 1- تعديل الإشارات الرقمية (Digital Modulation) : تكون عبارة عن تردد منقطعة ما بين 3 إلى 4 كيلو هرتز وتلك يتم اختيار الموجة الحاملة (Carrier Signal) بحيث تكون ذات تردد أعلى بكثير (أكثر من 10 أضع) من تردد الموجة الحاملة، وفي حين الموجة الحاملة هذه الموجة الحاملة تكون في "أقصى لها تواتر" (Amplitude) و"أدنى لها تواتر" (Frequency) "زاوية الطور" أو (Phase Angle) هذه العناصر الثلاثة هي التي تحدد شكل الموجة الحاملة (Carrier signal) وهو منطوق الإشارة الأصلية في تعديل السعة (Amplitude Modulation) وتسمى الإشارة (AM) 2- تعديل التردد (Frequency Modulation) وتسمى الإشارة (FM) 3- تعديل زاوية الطور (Phase Modulation) وتسمى الإشارة (PM) 34 minutes ago - Like

**Reham Essa** المقدم المصروف تعديل الإشارة الرقمية  
 تعديل الإشارة الرقمية (Digital Signal Modulation) : في الحاسبات والشبكات الطرفية تكون البيانات متاحتفا على شكله بيانات رقمية طبقا لتقنيات التمثيل (Binary numbers) أي (0,1) وبعد معالجة هذه البيانات يصبح الناتج من الحاسبات عبارة عن موجة (Square Waves) : وتكون المنقطعة إما على (Digital Transmission) : وتكون المنقطعة إما على شكل إشارة رقمية متناوبة، ولكن في معظم الحالات تكون المنقطعة المقطوعة أكثر من هذا ويكون التردد بين الطرفين من خلال خط لنقلها مثلا، ولكن هذا الخط التلغرافي هو نظام معقد جدا هذا الوسيط المنقطعة أي تحويل الإشارة الرقمية إلى إشارة منقطعة عملية تحويل الإشارات الرقمية إلى إشارات منقطعة في طرف الإرسال تسمى "تعديل" (Modulation) وفي طرف الاستقبال تتم العملية العكسية لتحويل الإشارة المنقطعة إلى رقمية تسمى "فك التعديل" (Demodulation) وهذه العملية تتم بوضع أنواع التعديل الرقمي حيث تستخدم شبكات الرقمية في تعديل الموجة الحاملة، ولتحت أن الإشارة عبارة عن نبضات منقطعة - لذلك تسمى هذا النوع "تعديل النبض" (Pulse modulation) والتي تسمى "مقطع النبض" أو "موجة النبض" أي (Shift Keying) : لذا نجد أن هناك أنواع من التعديل الرقمي هي : 1- تعديل السعة (Amplitude Shift Keying) وتسمى الإشارة (ASK) 2- تعديل التردد (Frequency Shift Keying) وتسمى الإشارة (FSK) 3- تعديل زاوية الطور (Phase Shift Keying) وتسمى الإشارة (PSK) المقدم المصروف تعديل الإشارة الرقمية  
 30 minutes ago - Like

Figure (6) Comments of the Research Group on " Analog and Digital Signals"





Figure (7) Types of Digital Modulations

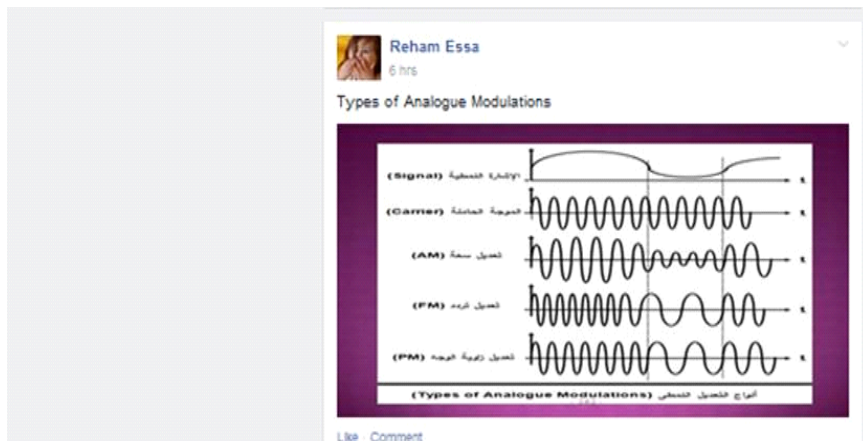


Figure (8) Types of Analogue Modulations

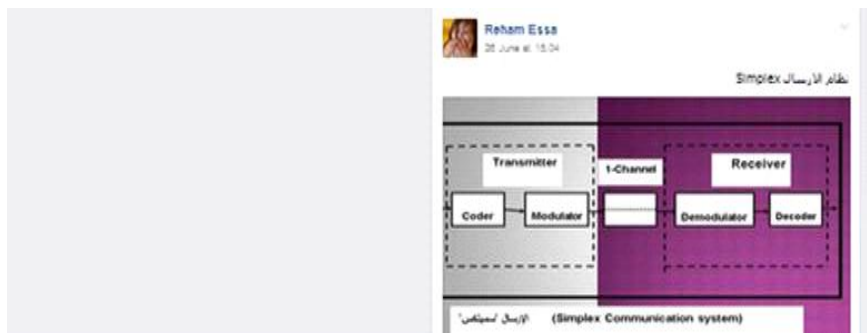


Figure (9) System of Sending Simplex Signal





**Figure (10) System of Sending Half Duplex Signal**



**Figure (11) System of Sending Full Duplex Signal**

11. Selecting the study sample and dividing it into two groups (experimental and control groups).
12. Application of knowledge achievement test on the study sample as a pre-application.
13. Application of observations Card prior to communication skills.
14. Study through an educational interactive education on Facebook for means of communication.
15. Application of knowledge achievement test on the study sample as a post-application.
16. Post-application of observation cards for communication skills.
17. Performing statistical treatment of data.
18. Discussing and explaining results.

## Testing Validity of Hypotheses:

To test the validity of the hypothesis: "There are statistically significant differences at level: ( $\leq 0.05$ ) between the mean scores of students at the experimental and control groups in knowledge achievement in communication media unit in computer networks course for students of Computer Science Section at the Higher Institute for Management & Information Technology, Kafr El Sheikh in favor of the experimental group", the researcher used the "T" Test through the use of SPSS for Windows V(17) to compare both groups (experimental group N1= 30, control group N2= 30) in pre- and post-tests with difference between them for mean scores of students of both groups in the achievement test as shown in table (1):

**Table (4) Means, Standard Deviations S.D, (T) Values and Significance Level to Compare both Groups (Experimental and Control groups) in the Achievement Test**

Application	Groups	Mean	S.D	(T) Value	Significance Level
Pre-test	Experimental	11.100	3.477	0.116	0.908
	Control	10.966	5.343		
Post-test	Experimental	33.733	1.089	7.740	0.001
	Control	24.167	5.675		
Difference	Experimental	22.633	1.295	10.652	0.001
	Control	13.200	3.575		

Table . (4) shows that there is a significant difference between both groups in achievement in both post-application and difference between pre- and post-applications which refers that there is a significant difference between both groups at significance level ( $0.05 \geq$ ) in achievement in post-application free of pre-application in favor of the experimental group being owner of the higher mean scores and the researcher attributes this for Facebook effectiveness.

To test validity of the second hypothesis that says: "There are statistically significant differences at level: ( $\leq 0.05$ ) between the mean scores of students at the experimental and control groups in skill performance in communication media unit in computer networks course for students of Computer Science Section at the Higher Institute for Management & Information

Technology, Kafr El Sheikh”, the researcher used the “T” Test through the use of SPSS for Windows V(17) to compare both groups (experimental group N1= 30, control group N2= 30) in pre- and post-tests with difference between them for mean scores of students of both groups in the observations Card test as shown in table (5):

**Table (5) Means, Standard Deviations S.D, (T) Values and Significance Level to Compare both Groups (Experimental and Control groups) in the Observations Card**

Application	Groups	Mean	S.D	(T) Value	Significance Level
Pre-test	Experimental	5.200	7.152	0.578	0.566
	Control	4.206	7.148		
Post-test	Experimental	67.000	6.822	13.109	0.001
	Control	25.166	15.523		
Difference	Experimental	61.800	8.313	16.262	0.001
	Control	20.810	11.309		

Table (5) shows that there is a significant difference between both groups in skill performance in both post-application and difference between pre- and post-applications which refers that there is a significant difference between both groups at significance level ( $0.05 \geq$ ) in skill performance in post-application free of pre-application effects in favor of the experimental group being owner of the higher average and the researcher attributes this for Facebook effectiveness.

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