

# USE THE INSTRUCTION PROGRAM TO SIMULATE THE EXPERIENCES OF ELECTRONIC

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**Abstract** - This study aimed at the effect of using a computer education program in a survey . Experiments transistor in the collection of first-grade students at the Technical Institute compared to the traditional way of conducting experiments in Laboratory .The study sample consisted of 120 male and female students using computerized tests conducted with an educational program to ensure the credibility and stability of the software program displays the Multisim in educational programs designed The research found many of the conclusions, including: - The effectiveness of simulation method of overcoming the difficulty of understanding the topics electronics as it provides the atmosphere that helps. The user to visualize the behavior of the electronics only over the unimaginably view it or without it. Simulated events were enough to achieve specific behavioral goals. The proposed simulation program helped reduce the time and effort expended to train students compared to traditional training methods.

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**Keywords** - instruction, simulation, training, program, electronic

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## I. INTRODUCTION

Educational software is considered one of the most important and most successful use of computers in education. That helps to teach and learn the various and diverse concepts,

In addition to conducting various processes and skills, although many learners find it difficult to teach advanced concepts, especially those associated applications include graphics [1], but with the evolution of technology, especially in the use of educational software by computer helped. Overcome these difficulties, and mastery of education in various grades seamlessly, Dependent production of educational software process as little resourceful on the theory of (Dick) in programmed instruction, which is based on the principle of division of labor into small sequential steps logically [2], and based on the principles And based on the fundamental principles of learning which are determined to:

1. learner to reach the correct answer himself.
2. To provide immediate feedback to the learner's response, whether right or wrong.
3. Providing scientific material for the learner gradually from easy to difficult and it is known to the unknown.
4. The proportional content gradient in the learner's abilities the educational technology without the availability of appropriate educational software useless, despite the availability of a large amount of educational software in developed societies, And the introduction of technology [3].

Educational and support in the local environment, we must produce and develop the necessary educational software to use.

## II. TYPES OF SOFTWARE:

The software is generally divided into systems and application software.

### 2.1 First: systems software:

Is a software that uses computer controls and directs and oversees the physical components and application software, and can be divided into four basic groups, which are as follows:

#### 2.1.1. Software Services:

It is offering different services as a platform for integration and the screening and diagnosis of software errors, and detect errors [4].

#### 2.1.2 Support Software:

Software Templates used shortcut programmed time and stages of trust in him, as matters of engineering design documents and other supporting software and engineering design and system of systems' circuit huge databases as a system used in medium and large computers and systems used in personal computers.

#### 2.1.3. Translation software:

It is a privately held software that converts program written in a language of programming source program (source program) to the executive program written in machine language [5].

#### 2.1.4. Operating systems:

It is a set of programs and instruction in basic computer resource management function and organization of work on it. These resources include the processor and the main memory, and input and

output units, programs and secondary memory and CDs and magnetic tapes.

## 2.2 Second Applied Software:

Are programs that meet the specific needs of users, and can be classified according to the authority that you develop into two types: packaged applications software, software user applications (private).

Types of application software:

This software is divided into two types

### 2.2.1. Ready Software applications:

And it develops software production companies and manufacturers of computers, which are designed to meet a large segment of users' requirements, and examples of the texts and programs, electronic scales and programs databases processing programs [6].

### 2.2.2. Software applications:

In this type of software every user can write your own programs For example, programs to solve mathematical problems identified and programs to solve transportation, linear programming and software issues Statistical data analysis and other

## 2.3. The concept of educational software:

A set of steps and instructions that are carried out through the computer for the purpose of providing specific educational units, supported by multimedia (voice, image, movement .....), so as to enable the learner to interact and direct dealing with the scientific material presented, and the self-performance.

Advantages of educational software, including:

### 2.3.1. Interactive:

It represents a bidirectional seminar between the program and the learner, where the learner can review what they have learned or recollection of what he wants, and if it is difficult to understand a particular point of the program is to provide him with guidance, and a simple explanation [7].

### 2.3.2. learner control program:

Provide the opportunity for the learner to learn whatever he wants whenever he wants, and whatever he wants, it allows greater freedom for the learner as much, providing many options such as the freedom to choose the topic that the learner wants to learn, and the chances of re-presentation, stop, and save achievement, and this in fact an important advantage, choosing the right timing for teaching and learning his direct and indirect repercussions on the quality and effectiveness of teaching and learning outcomes.

## III. THE TRANSFER OF LEARNING TO THE LEARNER AXIS:

Is to move the focus of the educational process to the learner, and change the role of mere recipient of knowledge to the reactant with those Inferred her knowledge, which develops when the learner comprehension and thinking skills.

## IV. THRILL:

Advantages that must be achieved by educational software element of excitement and thrill of the learner, when construction of any educational software which take into account this element, and focuses him hard, and Photo thrill in this software given learner feedback [8], and immediate strengthening of answered, which pays for further learning, this along with visual and sound effects that increase the suspense during the learner to learn.

## V. TYPES OF EDUCATIONAL SOFTWARE USED FOR COMPUTER-AIDED:

There are many types of software used in computer-assisted, and I have this issue received a lot of attention by researchers to develop new types of computing education as a means or to evaluate the use and study of their effectiveness and the advantages and disadvantages and we will try as follows to give a brief idea about each type of educational software

### 5.1. educational software directed:

It is a custom content specific to the theme of a curriculum topics software, and difficult to change something from their content. B- educational software is targeted:

It is open-content software and is not dedicated to a specific content [9], and can be invested topics educational variety, meaning that the software is targeted is only commercial software built for public use of the computer, ie it is ready programs are not prepared for educational purposes, not related to the content of any school subject but can used in the field of education, and examples of these electronic software and coordinator of words tables, graphics and images, and databases. As it can be classified as educational software intended to several patterns as follows:

### 5.2. Learning simulated Simulation

This method is intended to provide useful models to build realistic process by simulating the model and training operations are difficult to perform in real situations. The process of representation or create a set of representation or an imitation of the events of real life situations so as to facilitate presentation and depth in which to explore the secrets and learn about the potential for near their results. The need arises to

this type of program when it is difficult to embody a particular event, in fact because of the cost or because he needs to perform many complex operations.

1. Learning simulated Simulation features:
2. Allow students to commit mistakes not be a bad outcome.
3. Allow the student to exercise some power in the learning process.
4. Provide an educational non-traditional positions for the learner and it raises in his thinking and uses advanced computer capabilities which are not enjoyed by other media.
5. From which to study the processes and procedures those are difficult to study with conventional methods.
6. Provides an opportunity to apply some of the skills that have been learned in the positions may not be available to the learner the opportunity to apply it in a real environment.

### 5.3 Learning Simulation simulated defects:

1. Require a great deal of planning and programming to become effective and influential and similar natural conditions.
2. Computer Hardware devices and equipment with special specifications required to represent complex phenomena clearly
3. You need a team of teachers, programmers and experts, curriculum and teaching methods and material experts, psychologists and does not hide what at that time, effort and considerable material cost[10].

## VI. THE IMPORTANCE OF THE TRANSISTOR

The transistor is the most modern electronic components for their superior ability to produce using automated processes to "semiconductor manufacturing processes," which makes the production of low-cost

That the vast majority of the transistor, which produces be in integrated circuit "Integrated circuit" which is abbreviated to "IC" and contains the integrated circuits on many transistors and bilateral links and resistors, capacitors and other electronic components[11], which represent a complete electronic circuit is doing a particular job, and there is also a "logic gates "(Logic gates), which consists of a number of the transistor, which has up to twenty to work logic gate, The transistor has many advantages, namely:

- 1: - small size and weight, which leads to the development of electronic circuits to be very small
- 2: - automated manufacturing processes which reduce the cost per single unit
- 3: - Small efforts can work on them, making it valid for applications with small batteries circles

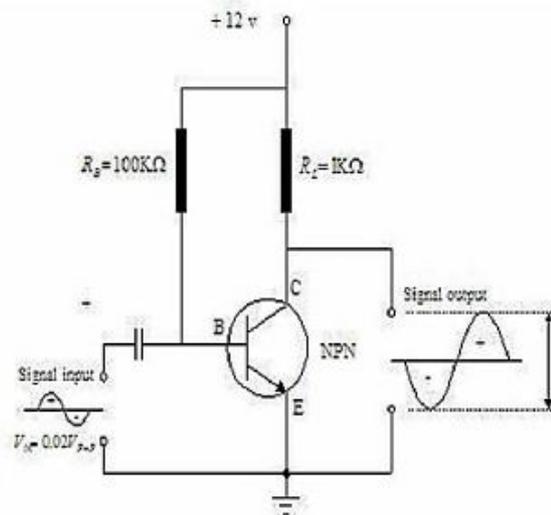


Fig.1. Transistor as amplifier

- 4: - you do not need to warm-up session for the cathode heaters after applying power
- 5: - minimal energy consumption and high Competence in the use of energy
- 6: - high reliability and physical endurance

## VII. TRANSISTOR AS AMPLIFIER

Designed transistor with the emitter connected land in order to respond to the small incoming signals to the base, and will magnify these signals to the director at the complex, and there are many configurations of the circles are zoomed have different features, both for current or voltage or both as required as shown in figure (1).

In some mobile phones and television, there are many products which enter the transistor like a microphone, such as speakers or radio transport, signal processing, and was the first transistor circuit with a weak capacities up to some parts of the ten watt been enlarged. However progress zoom and purity ratio increased gradually [12].

## VIII. RESEARCH PROCEDURE:

To achieve the objectives of the research, the researcher numbers instructional program software to simulate the use of theories transistor circuit analysis .Using the design and simulation of electronic circuits Multisim program and Figure (2)shown the flowchart for research procedures of instructional program.

- Steps have been identified program of a series of steps as he came
- Identify the problem: - and identified how to employ simulation method in the use of the transistor circuit analysis
2. To determine the category of beneficiary: - have been identified beneficiary category students of the first

phase in the electronics departments in institutes' technology.

C - the selection of electrical circuits stomach for analysis: - have been chosen by the researcher (20) electronic circuit were picked up Reliable and scientific sources figure (3) shown the instruction design processor.

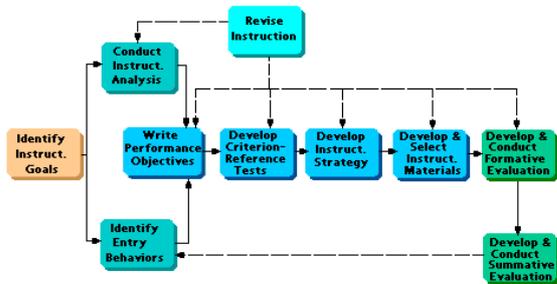


Fig.2.Flowchart of the research procedure

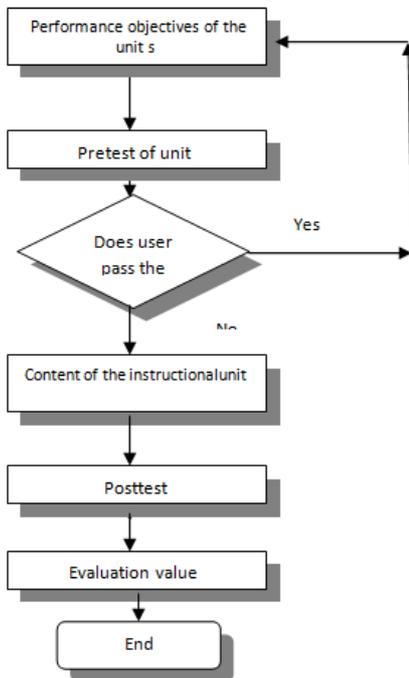


Fig .3. The step of instructional program

## IX. RESULTS

Experimental indicate the results that could be obtained from the simulation and compared with the results that could be

Obtained from the approved scientific sources [1,2] to the software included in the simulation accuracy Instructional program

And efficiency in electronic circuit analysis which makes it an effective tool in the simulation analysis and get Walking Results from the real results as they shorten the time and effort required to study the circuit analysis compared to traditional survey methods.

Experts on aspects of the design of the instructional program computer, figure (4) The figure shows a model of the experiments that have been performed using Multisim program, which was presented to a Category Beneficiaries as well as the views of many experts in the field of competence of electronics Table shows (1) the arithmetic mean weighted values Answers Category Beneficiaries about the benefit that they receive as a result of their use, which can be discussed as follows

Table.1. The arithmetic mean weighted values Answers Category Beneficiaries

sequence	Paragraphs	Weighted average
1	The instructions use the program was marked by clarity and comprehensiveness.	4.7
2	information and concepts presented were correct from the scientific point of view	4.6
3	over the scientific content linked to the objectives of the program	4.8
4	The scientific content of the program and the language drafted sequential clear	4.9
5	The program activities sufficient to achieve specific behavioral goals	4.8
6	The possibility of using the program by the user without relying on the designer	4.9
7	The information presented through the program commensurate with the level of beneficiary category	4.8
8	The display screens fit design in terms of information density and the colors used	4.8

**Content:** - shows the arithmetic mean of the values likely to paragraphs (1,2,3,4) on the scientific content of the instructional program, The computer software was sequenced and clear wording, and the selected electrical circuits and stomach, Analysis was enough and directly related to the subject in the targeted school, and this is what rate with those values Which it was respectively (4.7 and 4.6, and 4.8 and 4.9)

**Objectives:** - To indicate the arithmetic mean of the values likely to paragraphs (5,6,7,8) which was (4.8 and 4.9 and 4.8

And 4.8 respectively) to link behavioral objectives to be achieved scientific content of the instructional program simulation.

Computing and this is due to the accuracy of these goals, which was built in the light of the needs of the beneficiary category, as well as the clarity and precision of those objectives.

**Objectives:** - To indicate the arithmetic mean of the values likely to paragraphs (4,5,6,7,8), which was (4.7 and 4.8 and 4.6And 4.8 respectively) to link behavioral objectives to be achieved scientific content of the instructional program simulation 8Computing, and this is due to the accuracy of these goals, which was built in the light of the needs of the beneficiary category, as well as the clarity and precision of those objectives.

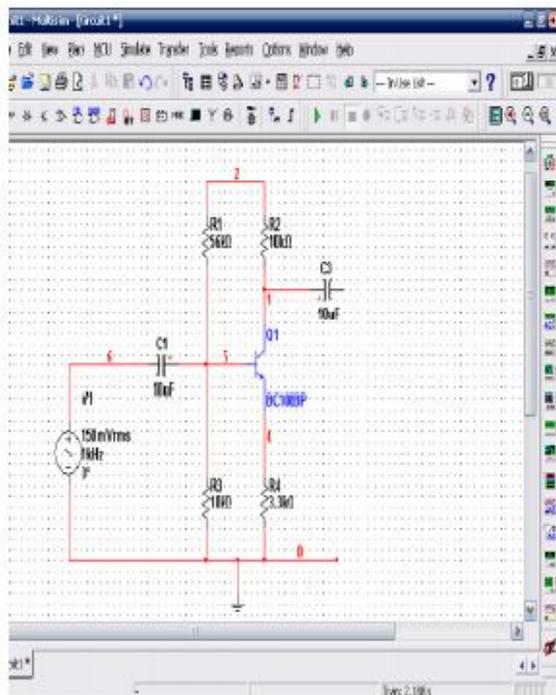


Fig .4. Sample of the instructional program

## CONSOLATION

Within the results obtained from the research and analysis researcher reached the following conclusions:-

1. The use of simulation method as a basis for analysis gives a constant and close scientific results of the real results and abbreviated Time and effort required to study the theories and laws of the transistor circuit analysis.
2. The adoption of teaching engineering concepts on the basis of standards and regulate the relationship between art theory and practical activities. Cybernetic integration achieved between the

theoretical foundations and ways to implement them.

3. The proposed simulations instructional program provides the freedom to choose the data and data.
4. The use of systems methodology as a way of thinking, organization and work in the preparation of the search may Contributed to the interdependence between the different aspects of the research in an integrated and coherent.
5. The proposed computer simulations instructional program facilitate the teaching of electronics process by establishing a Concepts and theories of the laws of electrical circuit analysis in the mind of the student through achieving Show close to the truth And simulate and analyze the electrical circuits of the characteristics of the circuit making it easier for the student perceived clearly.
6. Efficient simulation method of overcoming the difficulty of understanding the topics electronic engineering as it provides the atmosphere that helpsThe user on the electronic Tsoaldoair which unimaginably view it or without it.

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