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Awareness of nanotechnology among students of scientific departments at the university of diyala and its relationship to their technical enlightenment

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***Abstract*---**Aim to search Present Identify on me "Awareness with technology nano I have students' sections Scientific in University Diyala and his relationship enlighten them technical "and knowing the differences between responses a sample search according to for college. adopted researcher curriculum descriptive Analytical, the study associative, and to achieve Goals search Lost It was completed Preparation Scale Awareness with technology nano and scale technical, and be the society From students(College Education the basic and college Education for science pure and college Sciences to swear Sciences and science life), for the year school(2021-2022)and the adult their number(275)Student female student, so did researcher apply a tool the study on them distance making sure From honesty and constancy, Done Use packet stats(SPSS), to analyze the data and extract the results, and the search results showed the following: -1. that students Division Sciences in Education the basic and students Division Sciences life in College Education for science pure no they own Awareness with technology nano on me the opposite from students Division Sciences life in College Sciences They have consciousness Appropriate with technology nano. 2. that students Division Sciences in Education the basic and students Division Sciences life in College Education for science pure and students Division Sciences life in College Sciences they own oven Technical. 3. there are differences in level Knowledge apps technology nano I have students' sections Scientific in Community search. 4. there is Relationship associative between level Knowledge with technology nano I have students' sections Scientific in University Diyala and

enlighten them technical. has It been completed Explanation Results and provided researcher Number from Conclusions and recommendations and suggestions.

***Keywords*---**awareness, nanotechnology, technical enlightenment**.**

Introduction

Research problem

formed idea Preparation the individual enlightened scientifically And technically goal essential and whatever on me the level Global and aim Basic in education Sciences Seek to me achieve it From During Education Scientific that Prepare basically for the future generations, and in age Present that Witnessed has evolved enormous in various fields life, It is the necessary on me students Familiarity with developments Scientific and techniques contemporary in order to be more awareness and able on me Confrontation Challenges that facing them, Where I became phenomenon Quantum massive in the information and applications Technology woman must From deal with him and use Standards and controls and considerations moral in order to included deal proper with her. (Al-Otaibi,2021: 38)

and confirmed many From Studies local and Arabic and global on me Return Guidance Activities and practices Undergraduate to develop information's and skills students related with technology nano and its applications, and importance study technology nano and organize it in Curriculum and courses school to increase Awareness and get to know on me its effects different in life as a study clinic(2017)Lost signal to me decrease years in Awareness with technology nano I have teachers and the students in the form of general. (Ayyad,202:2017) and study Blessing and Kazem (2018) Where signal to me Presence weakness in Awareness with technology nano I have student's chemistry in University Baghdad College Education Son Haitham. (Blessing and Kazem,384:2018) and study Al-Otaibi (2020) signal to me low level Awareness with technology nano I have students and not their knowledge and know them with some Topics technology nano.

Research Importance:

Live Societies in squeeze out technology, and affected a path and nature Development general for countries and societies self-rates the growth fast for discoveries Scientific and innovations technology and civilized and done Use this is Knowledge with a goal development Techniques production and achieve the level optimum for performance and adaptation with Circumstances different, and that age that we live it today he is squeeze out progress Scientific when characterized with it From Speed in Spread the information, And from Yes keeping up Development and progress Scientific must that is being The human conversant with variables and updates Scientific it's up that help him on me Understanding What Spins From around it. (urban,60:2014)

Goals search:

Aim to search Present to me:

1- Identify on me Bezel consciousness students' sections Scientific in University Diyala with technology nano.

2- finding the differences in level Knowledge apps technology nano I have students' sections Scientific in University Diyala different their colleges.

3- Identify on me Bezel light technical for students' sections Scientific in University Diyala.

4- find out nature Relationship between level Knowledge with technology nano I have students' sections Scientific in University Diyala and enlighten them technical.

Bearch:

Confined search Present on me:

1. Students University Diyala in faculties

   a- College Education the basic/Division Sciences stage the fourth.

   b- College Education for science pure/Division Sciences life stage the fourth.

   c- College Sciences/Division Sciences life stage the fourth.

2. General school2021-2022the study morning.

Terminology

Awareness:

(Son Perspective,1979): that consciousness the thing is aware the talk awareness and oh understand it and save it he is conscious and so-and-so don't know from so-and-so Which I understand and save. (Son Perspective,4876:1979)

Nano technology

(Al Rifai,2016): that it is Science and engineering and technology that give us Ability on me control in atoms and molecules and materials and compositions that its dimensions say About (100) nano meter and that From During watch her and measure and study Characteristics and ability on me manufactured. (Al Rifai,2016:8)

Technical enlightenment:

(bowie,2020): that absorb style Scientific to figure innovations Technology contemporary and understand relations and links between them what Lead to me benefit. (bowie,37:2020)

Theoretical Background and Previous Studies

Awareness

back to me many From dictionaries linguistic Such as Tongue Arab We see that Awareness came meaning Preservation and understanding Which save the heart for the thing consciousness the thing and talk aware awareness save it and understand it and before him, he is conscious (Son Perspective,348:1418)

as such came with a dictionary (longman, 2001) Awareness he is same verb awarein the language English and this is You know? that Awareness It includes Knowledge I understand or Feeling. (longman (2001:31)

Nanotechnology: -

Technology nano she technology new Derivative From nanometer, and the word nano she in the origin Greek It means troll and this is You know? that nanometer one Equal part From Billion part From meter the one, and deals Scientists and engineers with Subject in this the scale on me level precise very, Which level atoms and molecules, Not to construct devices nano just, but to create Material New self-gathering and arrangements and properties innovative and change present in natural. (safety,17:2009)

The importance of nanotechnology

1- she cannulates works on the integration of science and technology, as its work starts from the basic components of matter (atoms and molecules), which makes its impact broad and large, and includes all fields of science and technology.

2- It's technical Inexpensive and modern compared to the technologies currently used, and its economic returns are very high.

3- The development and research in the field of nanotechnology will change many traditional practices in the design and production of products, consumer and electronic goods, computers, information and communications technology, biotechnology, energy, and other fields.life.(safety, 37:2009)

Properties Nano technology

Change Properties Materials Nanoparticles When be by size nano has It was completed Determine some this is Properties Of which: -

1-Properties magnetism: Energy magnet Depends depending entirely on me Scale dimensions grains Subject the factory of which and the smaller size granules and increased space surface increased Energy magnet and intensity.

2-Properties physical: like hardness and strength for the material she is increase when the level nano Example on me that Labs Power and hardness tubes carbon Nanoparticles Reaches sometimes (1210) Newton/M2what equivalent to five double Matter steel.

3-Properties electrical: for material Nanoparticles Ability on me Connecting the current electric tubes carbon Nanoparticles own Property Farida Where able Electrons from Sir through it Without Presence Which Resistance So used in industry devices sensors the minute and slides e she is self-Technique High.

4-Properties chemical: Due to have Preparation Huge from Atoms Materials Nanoparticles on me their surfaces external Where Working as stimulants react Strongly with gases toxic to be nominated Than It was to her Role Important in limit from pollution environmental. (Al-Otaibi,41:2021)

Nanotechnology Applications

1. Medical application

   The medical applications of nanotechnology are among the most promising of all, and it is possible to obtain nanocomposites It is characterized by its small size It enters the human body, and monitors sites for diseases with a high degree of accuracy and inject medicines. (Al-Jabali, 2010:16)

2. Food preservation

   Food packaging can be improved by applying antimicrobial agents directly on the surface using a coating of the nanocomposite material and when clay nanoparticles are used in the polymer floor it can lead to reduced oxygen and water leakage.

3. Nano electronic industries

   Nanotechnology is important in Manufacture of electronic devices in terms of improving specifications, reducing energy consumption, reducing cost and minimizing space. (Abdullah, 70:2014)

4. Nano and the Air Pollution

   The most dangerous type of pollution is air pollution with elements Toxic gases that are in many cases invisible and imperceptible Nano technology reagents provide very high sensitivity They are called nano-detectors, as they can detect any pollution in the air very accurately, up to the point of detecting a few particles of polluting gases or vapors..(Ahmed, 23:2020)

5. Water treatment and purification

   Water pollution is one of the most serious health problems in the world, as it affects the fish and other aquatic life, and is not suitable for human consumption as drinking water ,Nanotechnology is used to reduce water pollution as And that By producing membranes containing very small (1 nanometer) holes that can trap organic matter such as pesticide molecules and allow only water molecules to pass through them.. (Al-Baghdadi, 2020: 140)

6. Energy

   The combination of several factors, including population growth and economic growth, by putting pressure on traditional supplies of fossil fuels and the increase in the price of oil, led to the development of alternative sources of energy, where nanotechnology was able to provide, produce and transform energy, the most important of which are Light bulbs, solar cells, environmentally friendly batteries.

7. Agriculture

   One of the most important goals of agricultural policy in any country in the world is to improve production and increase the quantity of agricultural products in order to meet the needs of the growing population, and nanotechnology has a role in achieving this goal.

8. Nanotextiles

   When using nanofibers or adding them to traditional textiles, whether natural or synthetic, this gives the resulting textiles called nanotextiles (Self-cleaning nano textiles It has many advantages, including:

   - Water and oil repellent, wrinkle resistant.
   - Can absorb body odors
   - You can change its color with changing ambient conditions such as changing lighting.
   - You can exclude toxic gases.

Importance Technology Nano In Education:

Due for importance technology nano Lost I had Carefully Countries the scientist sought to me entered in area teaching education, Where considered as the states United From early Countries that did reformation Curriculum to guarantee area technology nano And that to prepare educated and guide them future as such I gave the states United interest teaching and teach technology nano in schools and universities and where topped up technology nano existing interests Scientific and research in most Countries the scientist, Where did(52)nation During the years past founding units and programs and centers research and academy .

represents growth technology nano challenge for the media Scientific interested in Universities to prepare powers working to provide chances functional futuristic in this the field as such Submitted Establishment Sciences national in states United American(NSF)many From grants To implement Courses and laboratories related with technology nano in which Become students on me Degree From Familiarity by this the field. (Ayyad,182:2017)

Second: technical enlightenment

Technical enlightenment is the ability to understand applications in an individual's life and their role in solving real problems and in an individual's daily life, in other words, it is the minimum level of understanding that enables an ordinary individual from any society to employ technology in an effective, positive and beneficial way for him and his society..(Tharthar, 2018: 289)

has indicated (Miller)There are three levels of technical expertise for an individual: The first level: not technically enlightened and includes anyone who does not possess the minimum level of technical enlightenment.

The second level: the intermediate level of technical enlightenment and refers to everyone who has the minimum level of technical enlightenment.

The third level: the advanced level of technical expertise and includes technicians, experts and specialists in this science. (Miller, 1986: 192)

The foundations of technical enlightenment

1- Cognitive basis: It includes the information necessary to understand the nature of the study canals Its characteristics, principles, its relationship to science and society, the issues resulting from its interaction with science and society, and how to apply it coffee and ways to deal with it.

2- The skill base: It includes the mental, practical and social skills necessary to deal with technologies and their applications.

3- The value basis: It is the ethical limits for dealing with technologies and their applications, commitment to those limits and not exceeding them, and resolving legitimate, legal and controversial issues that may exceed those limits and include outputs related to emotional aspects.

4- Ethical foundations: It focuses on providing the individual with ethical behavior patterns and standards when dealing with information technology applications and their use. (Al-Deeb, 131:2012)

Dimensions Of Technical Enlightenment:

1- The dimension Cognitive:

It includes this The dimension the information necessary To understand nature Technology and its characteristics and its relationship with science and

society and issues resulting From her reaction with Science and society and information the basic Around Applications Technology and ways deal with her As well as About shoot ideas wrong I have individuals Around Technologies and its applications.

2 -The dimension skills:
It includes this the dimension skills that Should earn it per person to make it enlightened technically Include skills mental and process and social necessary to deal with Technologies and its applications.

3- The dimension sentimental:
It includes output related by the side emotional like inclination and awareness and sense and appreciation Science and on all levels the side sentimental represented by in Reception and response and acting Value and organization and discrimination It includes like that the side moral related with ethics Technology.

4- The dimension moral
concentrate this the dimension on me earn the individual patterns the behavior moral and standards during deal with apps Science and technology and use it addition to me Awareness issues moral self-Relationship with science and technology and development capacity the individual on me Understanding and analysis reasons That issues and its results.

5- The dimension social
this dimension includes Of experience that needed earn it per person Around fields technical enlightenment related antiquities and results and issues Social and changes positivity and negative resulting About Science and technology and extent its reflection on me habits and values Social for any Community. (bowie,37:2020)

Technical Enlightenment Characteristics:

The technical enlightenment is characterized by a number of characteristics, as follows:

1- An urgent necessity for the individual in any society to keep pace with his times and keep pace with the new technological changes that are going on around him.

2- It is difficult to define it absolutely and determine its levels because the specifications of the technically enlightened individual differ from one country to another and from time to time. For example, the use of computers is a technological luxury in some countries of the developing world, but in most developed countries it has become an essential part of reading and writing.

3- It is not achieved in a short period of time, as it is one of the long-term goals that need a relatively long time to be achieved, as the time taken depends on the level to be reached and the expertise needed to reach this level.

4- It is a public responsibility that falls on the shoulders of several institutions and authorities, not just the educational institution

Technically enlightening individuals in society is a shared responsibility between educational institutions on the one hand and other non-educational institutions such as media institutions.

5- Technical enlightenment is not fixed but changes with time and this is due to the cumulative knowledge. What was the top of technology several years ago has now become one of its remnants. (Zaqout, 14:2013)

6- It is affected by local and global changes as it is affected in terms of the nature of society, values, customs and traditions that prevail in that society and the problems that the individual encounters in his daily life and is affected by scientific and technical changes at the global level in the surrounding societies.

7- It is not limited to workers in the field of science and technology. The ordinary individual who does not take technology as his field of specialization and work will not be fully prepared for the fruitful participation in building his society without technical education that will give him an appropriate degree of technical enlightenment.

8- It is not the responsibility of a particular curriculum. Technical enlightenment as one of the goals of any educational system can be achieved through all curricula and subjects of different specializations by integrating expertise and technical topics in the content of those curricula according to the nature of the content.

9- It is not the responsibility of a teacher or a specific specialization, but rather the responsibility of all teachers of different specializations in all fields. It is a goal that governmental and non-governmental educational institutions must achieve.

10- Technical enlightenment is multi-level and multidimensional, as technical enlightenment requires the individual to acquire an appropriate set of experiences in many fields and topics related to technologies, and it is not limited to the level of the cognitive dimension, but also the skill, practical, emotional, social and moral dimension.(Muhammad, 36:2015)

Traits of a Technically Enlightened Person:

The characteristics of a technically enlightened individual can be summarized from the standpoint of the cognitive dimension, the skill dimension, and the dimension

The social, ethical dimension of technical enlightenment is that it must be able to:

- Understand the nature of technologies and the nature of their relationship to work on the one hand, and society on the other hand

- Follow up on continuous and successive developments in all fields and fields of technology.

- Understand the issues resulting from the interaction of science, technologies or technology and society, analyze their causes and consequences, and take appropriate decisions about them.

- Knowledge of the principles, concepts and scientific theories on which technical applications are based, and knowledge of

Information about the installation of these applications and the rules for dealing with them and how to use them.

- Using technical applications in his daily life to solve his problems and his well-being in a way that benefits him and his society.

- Mastering the mental and practical skills to deal with technological devices and materials.

- Determining the ethical limits of the use of technologies, and understanding the implications, legality, legal, and social metrics to cross those limits.

- Proficiency in the language of techniques, and a minimal understanding of that language and how to deal with it.

- Awareness of the importance of technology in an individual's life and appreciation of its role in their well-being.

- Awareness of other aspects of technology and the harms resulting from its misuse. (Zaqout, 2013:23)

Importance Technologies in education

That Recruit Technology in education for him Benefits many for learners, van use Lead to me Share positivity for students, and gain Experience and follow thinking Scientific to reach to me Solution the problems, And the efficiency Subject school and improve quality learning and working Technologies on me a plus effectiveness students From During link Of experience sensual realistically and bring them close to mind learner, saving Learn deeper and kept Effect, to subscribe More From sense in process learning, and excitement their interests, and satiate their need to learn, and consider the differences individual, and clarify Concepts in pictures sensuality, and boost responses and skills, and share positivity for students in acquisition Experience, and development Precision And the note. (Alyan,14:2012)

And as and prepare Technologies Instrument to encourage for students, Complete From through it motivate them on me learning, and make them more turnout on him, and raise level thinking And the note and raises use Technologies outcome students linguistic, and helps on me diversification Techniques reinforcement that lead to me solidify responses and confirm learning, and her trace in

formation trends positive desirable and overtake border time and the place and size and distance, approximation the scientist outer, and contribute in chances learning self and work as groups, And as allow for students employing What they learned it in attitudes the Actual for life the operation. (Moroccan,89:2014)

Previous studies:

Nanotechnology

A study (Neama and Kazem, 2018), where the research aims to identify the acquisition of nanotechnology concepts among chemistry students in the College of Education for Pure Sciences / Ibn Al-Haytham. The sample consisted of (100) students from the Department of Chemistry, 63% of the research community. The tool was prepared It is a test of acquiring nanotechnology concepts. The results showed a weakness in acquiring nanotechnology concepts among students at a rate of (59%) of the sample, i.e. below the average.

Technical Enlightenment

A study (Al-Obaids, 2021), where the aim of the research is to identify the technological awareness of the students of the College of Basic Education in the Department of History The results indicate that the students have a high level of technological awareness

Chapter Three / Research Methodology and Procedures:

First: Research Methodology: The researcher followed the descriptive approach because it fits with the nature and objectives of the research. Where (257) students were selected as a basic research sample And the (50) male and female students as an exploratory sample and (50) male and female students as a statistical analysis sample.

The questionnaire was applied to an exploratory sample of (50) male and female students to determine the extent of the clarity of the paragraphs and the instructions for answering the scale and the time taken. (50) male and female students, and the Pearson correlation coefficient was used, as the correlation coefficient enjoys high stability. The researcher applied the questionnaire to the basic research sample. (257) A male and a female student, and the researcher used the statistical bag (SPSS) to process the data statistically and extract the results.

Presentation and interpretation of results

This chapter includes a presentation of the findings and their interpretation in light of the specific objectives of the research, as follows:

Results related to the first objective:

included the first objective (Identify On the awareness of the students of the scientific departments/University of Diyala of nanotechnology):

To achieve this goal, the arithmetic mean of the research sample scores on the scale (awareness of nanotechnology) was extracted, which amounted to (89,397) degrees with a standard deviation of (9,079), and a variance of (82,428) degrees, while the hypothetical average reached (90) degrees, and to know the significance of statistical differences Between the arithmetic mean and the hypothetical mean, a one-sample t-test was used (OneSampleT-test The results showed that the calculated t-value was equal to (1,064) which is smaller than the tabular t-value of (1.96), at the level (0.05) and the degree of freedom (256), and this indicates that the sample members do not have technology awareness Table (1) shows this:
schedule (1)

It shows the results of the T-test for one sample of the research sample

The meaning of the difference	Indication level	T value		Degree Freedom	hypothetical mean	variance	deviation normative	average Arithmetic	pilgrimage sample m
		tabular	Calculated						
Not statistically significant	0.05	1,96	1,064	256	90	82,428	9,079	89,397	257

members on the nanotechnology awareness scale

Results related to the second objective:

The second objective included (getting to know Over the technical enlightenment of students of the scientific departments / University of Diyala):

To achieve this goal, the arithmetic mean of the research sample scores on the scale (technical enlightenment) was extracted, which amounted to (159,930) degrees, with a standard deviation of (22,488), and a variance of (505,710) degrees, while the hypothetical average reached (126) degrees, and to find out the significance of statistical differences Between the arithmetic mean and the hypothetical mean, the t-test was used for one sample, and the results showed that the calculated t-value was equal to (24,188), which is greater than the tabular t-value of (1.96), at the level (0.05) and the degree of freedom (256). , and this indicates that the sample members have technical enlightenment, and the table (2)

Schedule (2)
It shows the results of the t-test for one sample of the research sample members on the technical enlightenment scale

The meaning of the difference	Indication level	T value		Degree Freedom	hypothetical mean	variance	deviation normative	average Arithmetic	Sample volume
		tabular	Calculated						
not D statistically	0.05	1,96	24,188	256	126	505,710	22,488	159,930	257

Results related to the third objective:-

The third objective (Identifying the differences in the level of knowledge of nanotechnology applications and technical enlightenment among students of scientific departments / University of Diyala by college):-

1- The arithmetic averages of the three faculties of the nanotechnology awareness scale according to the students' grades for each faculty as follows: -

The arithmetic means of the degrees of the students of the College of Basic Education reached (88,699) degrees, with a standard deviation of (9,845) degrees and a variance of (96,924) degrees. OneSampleT-test), as the calculated T-value amounted to (1,453) degrees, which is not statistically significant when compared with the tabular T-value of (1.98) degrees, and this indicates that students of the College of Basic Education (males and females) do not have awareness of nanotechnology.

- The arithmetic means of the students of the College of Education for Pure Sciences reached (87,695) degrees with a standard deviation of (12,088) degrees and a variance of (146,119) degrees. OneSampleT-test) where the calculated T-value reached (1,716) degrees and is not statistically significant when compared to the tabular T-value of (2,000) degrees, and this indicates that the students of the College of Education for Pure Sciences do not have awareness of nanotechnology.

- The arithmetic average of the students of the College of Science reached (91,797) degrees with a standard deviation of (5,305) degrees and a variance of (53,363) degrees. OneSampleT-test), as the calculated T-value reached (2,512) degrees, which is statistically significant when compared

to the tabular value of (2,000) degrees, meaning that students of the College of Science have awareness of nanotechnology.

2-averages Arithmetic for degrees students' colleges the three on me Scale technical enlightenment she was as follows: -

- Reach average Arithmetic for degrees students College Education the basic(160,809)Degree skewed normative its amount(22,824)Degree contrast capacity(520,934)Degree, and to find out the differences self-indication Statistics between(average Arithmetic)And the(average hypothetical)It was completed Use the test the ti to sample one(OneSampleT-test)so reached the value T calculated(16,776)Degree Which function statistically when compare it in value T tabular adult(1,98)Degree, and this is Indicates to me that there difference D statistically and for the sake of average Arithmetic.

- The arithmetic mean of the students of the College of Education for Pure Sciences reached (154,098) degrees with a standard deviation of (22,736) degrees and a variance of (516,925) degrees. OneSampleT-test) as the calculated T-value reached (11,123) degrees, which is statistically significant when compared with the tabular T-value of (2,000) degrees, and this indicates that there is a statistically significant difference in favor of the arithmetic mean.

- The arithmetic average of the students of the College of Science reached (166,581) degrees with a standard deviation of (19,395) degrees and a variance of (376,166) degrees. OneSampleT-test), as the calculated T-value reached (15,517) degrees, which is statistically significant when compared to the tabular value of (2,000) degrees, and this indicates that there is a statistically significant difference in favor of the arithmetic mean.

Results related to the fourth goal: -

The fourth objective (To identify the correlation between the level of awareness of nanotechnology among students of the scientific departments / University of Diyala and technical enlightenment)

To achieve this goal, the Pearson correlation coefficient was calculated, between the total score of the research sample members on the nanotechnology awareness scale, and the total score on the technical enlightenment scale, where the value of the correlation coefficient was (0.770) degrees, and to test the significance of the correlation coefficient, the T-test was used to indicate the correlation coefficient, and it showed The results that the calculated t value for the significance of the correlation coefficient was equal to (19,271) degrees, which is greater than the tabular t value of (1.96) degrees at the significance level (0.05) and the degree of freedom (255), and this indicates that there is a positive direct correlation between Awareness of nanotechnology and technical enlightenment.

With regard to awareness of nanotechnology, the researcher concludes the following:

And they may be This result is attributed to the following: -

1. The novelty of nanotechnology in the world and its survival and the study in Scientific departments.

2. failure Including advanced nanotechnology concepts, information and applications in university curricula and courses at its various stages.

3. that the students did not touched on Topics related to the field of nanotechnology during the undergraduate level.

4. lack of participation Students in any scientific activity such as seminars or conferences related to nanotechnology.

5. Weak technical capabilities in universities to deepen the study of nanotechnology.

6. The high cost of materials and technical devices for working on nanotechnology and its applications.

7. Weakness of the scientific research sector and the allocated amounts for nanotechnology majors.

As for technical enlightenment, the researcher concludes the following:

This result is due to the following: -

1. The interest of the students of the research community in technical enlightenment for the easy availability of technical information and learning technical skills through modern technology provided by the Internet, which has become not limited to computers only, but also through mobile devices.

2. The speed of communication between people and the transfer of information between them, which facilitates technical awareness, whether in forums, or social media, which includes a lot of technical awareness information. The importance of technologies in increasing students' motivation and desire to develop the educational process.

3. Ease of dealing with modern technology and striving to develop individual skills in this field.

4. The wide leaps in the development of technical methods worldwide, whether through tools or through renewable and modern ideas.

5. The pursuit of distinction between individuals leads students to search more for what adds to their experiences or to try to learn new skills.
6. The spread of paid and even free platforms that are leading in the field of education in terms of technical and practical skills, which contribute to refining their talents and opening new horizons.

7. Flexibility in using modern technologies to solve daily problems in an innovative and effective manner through special applications and programs.

The researcher recommends the following:

1. Adopt a Ministry Education Higher and scientific research A strategic plan to include the curriculum scholastic facts and nanotechnology concepts Within the different academic levels.

2. given the opportunity to for students to complete their undergraduate studiesupperIn a field of nanotechnology, And meet the needs and requirements of the labor market from the expertise and human energies specialized and qualified in nanotechnology.

3. Developing laboratories, centers and learning resources in universities, preparing them and providing them with laboratories Pratt.

4. Holding seminars, scientific and educational conferences, holding scientific exhibitions, and field visits to research centers and nanotechnology laboratories, with the aim of developing students' scientific awareness of nanotechnology and developing a trend They are scientific towards it.

5. The interest of educational institutions in creating a technically conscious generation by building a cultural and intellectual base capable of keeping pace with the developments of the times.

6. Preparing training courses that help students develop technical enlightenment to keep pace with the development that is taking place in our society and increase their skills to confront the problems they face and work to solve them.

7. Benefiting from the results of the current study in research and conferences related to nanotechnology and technical enlightenment.

The researcher suggests

-study descriptive on the relationship of nanotechnology with other variables.

-study descriptive on the relationship of technical enlightenment with other variables.

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