

# The Level Of Blended Learning Competencies For Teachers Of Life Sciences Departments At The University Of Diyala

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## Research problem

The problem of the research is that some professors of life sciences departments have weaknesses in some areas of blended learning competencies (computer competencies), in addition to the lack of programs offered to professors towards the use of technology in education and confinement to traditional training courses that do not meet their training needs associated with employing technology in Education and its innovations, including blended education, and the researcher considered conducting a study that reveals the extent to which the university professor possesses the competencies of blended education necessary to perform his profession to the fullest, and according to the researcher's knowledge, there is no study that dealt with the competencies of blended education locally - to the researcher's knowledge – and thus the research problem is determined through the question The following main: - What is the level of blended learning competencies for teachers of life sciences departments at Diyala University?

**Importance of the research:** The importance of this research lies in the following points:

- ❖ This is the first local research - as far as the researcher knows - that dealt with this variable in Iraq in his field of specialization and other scientific disciplines.
- ❖ It is possible to reveal the importance of the basic blended learning competencies that should be available to those studying life sciences departments at the University of Diyala.
- ❖ It is possible to assist in knowing what the teacher needs in terms of training to be able to possess the competencies of blended learning so that he can devise educational and pedagogical methods that facilitate the student's development of his thought and talents, and lead him towards self-education and distance learning.

## research aims

- ❖ What is the level of blended learning competencies for teachers of life sciences departments at Diyala University?
- ❖ What is the level of blended learning competencies for teachers of life sciences departments in the sub-paragraphs of each field?
- ❖ Are there statistically significant differences at the level (0.05) between the arithmetic averages of the level of blended learning competencies for the teachers of life sciences departments due to the variables (gender, experience, academic rank, educational qualification)?

## search limits

- Scientific limits: the competencies of blended education, which include four areas (competencies of blended education culture, preparation of blended education courses, competencies of computer use, competencies of using the Internet).

- **Human Boundaries:** a sample of professors from the departments of life sciences.
- **Spatial boundaries:** the departments of life sciences at the University of Diyala, represented by the faculties of Basic Education, the Faculty of Education for Pure Sciences, and the Faculty of Science.
- **Time limits:** the academic year 2021 AD - 2022 AD.

### define terms

**First: Competencies:** - Defined by Sowangmyu (2014) as: “possessing the knowledge and skills that help a person perform work in the required manner, achieving goals and motives” (p162: 2014, Sowangmyu).

**Procedural definition:** A set of knowledge, skills, attitudes and abilities possessed by a faculty member in the life sciences departments to achieve cognitive, skill and emotional goals and communicate with others in order to improve the educational process.

**Second / Blended Education:** - He defined it (Al-Sayed, 2019) as: “A style of education that combines the traditional face-to-face method of university teaching with e-learning via the Internet in order to reach the uniqueness of education and taking into account the needs of students and the individual differences among them” (Al-Sayed, 2019). : pg 283).

**Procedural definition:** An educational system of education used by the teachers of life sciences departments with modern technologies without giving up the usual education and attendance in the lecture room, where part of the face-to-face teaching time is replaced by a set of online activities in an attempt to expand the circle of communication between faculty members and students and shorten time, effort and cost In the educational process and creating an attractive and more effective learning environment.

**Third / Blended Learning Competencies:-** Defined by (Al-Sayed 2021) as: “All abilities, skills and knowledge possessed by the faculty member to employ blended education in the educational process, which contribute significantly to improving the learning and teaching process at the university” (Al-Sayed, 2021: p. 153) .

**Procedural definition:** The set of knowledge, skills, attitudes, and abilities possessed by the life sciences departments at Diyala University to employ blended education in the educational process, which contribute effectively to improving the teaching and learning process at the university, which is represented in the competencies of the blended education culture, competencies of dealing with Internet programs and services, competencies Preparing blended learning courses.

### Theoretical background and previous studies

#### First / Blended Learning Competencies:

The blended learning competencies that a faculty member must have are classified in light of the following: -

#### A/Competencies related to the culture of blended learning: These competencies include the following:

- Knowledge of the concept, characteristics, importance and advantages of blended education.
- Knowledge of the philosophical premises and requirements for the application of blended education.
- Familiarity with educational standards for the blended learning environment, the regulations and legislation governing online transactions, and the roles of the university professor and students in the blended learning environment.
- Identify the operating software and educational media in which the computer works, synchronous and asynchronous communication tools, viruses, and ways to prevent them.
- Knowledge of paper and electronic information sources, with the ability to evaluate electronic information sources available online.
- Knowledge of the basic principles of educational design, and the intellectual property rights of information available on the Internet (Al-Marefaa, 2015: p. 56).

#### B/ Competencies related to the use of Internet programs and services. These competencies include the following:

- Proficiency in dealing with the Windows operating system and its various versions.
- Using different search engines to access the information it needs, dealing with the basic services on which the educational applications of the network are based, such as search service - conversation - file transfer - mailing lists.
- The ability to download files from the network and save them.
- Ability to upload files to the network and publish them, mastering a programming language for designing educational pages and websites.
- The ability to participate through computing applications in discussion groups available online through computing applications.
- The ability to compress or decompress files to and from the network.
- Creating educational pages and websites, publishing and updating them periodically.
- Access to educational platforms, global libraries and databases.
- Possessing the technological and technical skills necessary to deal with electronic courses (Al-Ajlan, 2019: p. 332).

**C / Competencies related to the preparation of blended learning courses: These competencies include the following:**

**First / Planning Competencies:** These competencies are as follows:

- Defining the general and sub-objectives of the theoretical and practical courses to be prepared for blended learning.
- Determining the suitability of the course to be presented on the network.
- Determining the beneficiaries of the course, their previous experiences, and their social and psychological characteristics.
- Preparing the educational scenario for the paper and electronic course to be taught according to the blended learning model.

- Determining the material and human requirements necessary for preparing the paper and electronic course.

**Second / Design and Development Competencies:** These competencies include the following:

- Determining the teaching strategies necessary to achieve the course objectives.
- Identifying learning activities that encourage interaction among students.
- Determining the various means included in the paper and electronic course.
- Determining teaching methods that take into account individual differences between students and allow them to express their opinions freely.
- Define feedback methods.

**Third / Evaluation competencies:** These competencies include the following:

- Using and applying different methods of electronic calendar through the network.
- Identifying students' strengths and weaknesses.
- Preparing enrichment and remedial programs for students, setting scientific standards against which students are evaluated.
- Providing feedback to students (Amayrah, 2019: p. 15).

**D / Competencies related to the adequacy of computer culture. These competencies include the following:**

- Distinguishing between input, output and storage tools.
- The use of computers in the presentation of lessons.
- Knowledge of software installation and removal processes.
- Possession of basic Windows operating skills.

**Second / previous studies**

Local Studies / The researcher did not find any local study that dealt with the competencies of

blended education, to the best of the researcher's knowledge.

Arab Studies / Study (El-Sayed, 2020): The study aimed to identify the competencies of hybrid education that are required for faculty members in Egyptian universities from the point of view of some education experts, and the sample size was 144 faculty members. Availability of blended learning competencies among faculty members to a high degree.

### Research Methodology and Procedures

The researcher followed the descriptive research method because it is compatible with the nature and objectives of the research, and the research community consisted of (110) male teachers, with (38) male and (72) female teachers, and the research sample consisted of (40) male teachers, (14) male teachers and (26) female teachers in Three faculties at the University of Diyala are the College of Education - the College of Science - the College of Basic Education. The researcher used the questionnaire as a tool for the current research. The paragraphs of the questionnaire were prepared after the researcher reviewed a lot of literature and previous studies related to (the competencies of blended education) such as the study (Al-Sayed, 2020). And (Mukhlis, 2018) and took the opinions of a group of specialists in the field of education, psychology and methods of teaching science, as he identified (4) areas for the questionnaire, then the researcher formulated a number of paragraphs for each field, which numbered (42) paragraphs in its final form Annex (1) It is divided into the following areas:-

**First** / the competencies of the culture of blended learning (11) paragraphs.

**Second** / Computer use competencies (10) paragraphs.

**Third** / the competencies of using Internet programs and services (10) paragraphs.

**Fourth** / Competencies of preparing blended learning courses (14) paragraphs.

The validity was verified by agreement (80%) or more of the opinions of experts and arbitrators, and the questionnaire was applied to an exploratory sample of (10) teachers to determine the clarity of the paragraphs and answer instructions, and to calculate the time taken to answer the paragraphs of the questionnaire. Then the resolution paragraphs were analyzed and the distinction of the resolution paragraphs was extracted, as it ranged between (2.283 - 9.648), and the value of the reliability coefficient of the resolution was (0.81), and this value is good if the reliability coefficient reaches (0.60) or more (P125: 1981, Cropland).

The researcher applied the tool to the members of the basic research sample amounting to (70) male and female teachers in the confined period (12-16/12/2021) from the faculties of (Education for Pure Sciences), the Faculty of (Science) and the Faculty of (Basic Education) for the departments of life sciences. The researcher used the bag Statistical for Social Sciences (SPSS) to statistically process data and extract results.

### Presentation and interpretation of results

The chapter includes a presentation of the results that have been reached and their interpretation in light of the specific objectives of his research, as follows:

**First Objective / Level of blended learning competencies for teachers of life sciences departments / University of Diyala by fields:**

**Table (1) The results of the one-sample T-test for the domains of the blended learning competencies questionnaire**

The meaning of the difference	T value		degree of freedom	hypothetical mean	standard deviation	SMA	fields
	Tabular	Calculated					
Function in	2.000	11.180	69	27	11.875	42.869	Blended Learning Culture Competencies

favor of the arithmetic mean							
function in favor of the arithmetic mean	2.000	6.011	69	39	5.013	42.602	Competencies of preparing blended learning courses
function in favor of the arithmetic mean	2.000	5.645	69	30	12.915	38.714	Internet usage efficiencies
Not a function in favor of the arithmetic mean	2.000	0,885	69	30	6.085	29.356	Computer use competencies

It is clear from the above table that the T-value calculated for the members of the research sample on the blended learning competency questionnaire is respectively (11.180) (6.011) (5.645), which is greater than the tabular value of (2000) with a significance level of (0.05) and a degree of freedom (69), which means that The research sample possesses competencies in the field of blended education culture, the preparation of blended education courses and the use of the Internet. Therefore, the researcher explains this result to the fact that there is interest in the university in providing training programs in blended education, as well as providing books and studies concerned with blended education and spreading the culture of blended education, as well as the presence of a department and a unit in Faculties have experience in this field, which is the Department of Computers and the Continuing Education Unit. The introduction of modern technologies in education, including the use of the Internet, has an impact on the elements of the educational process. The professor's possession of tablets (mobile) as the most important and easiest way to transfer and deliver information in conferences and scientific seminars that are held and organized by After he contributed significantly to the development of these competencies.

It is also clear from the above table that the calculated T value for the computer competencies axis was (0.885), which is less than the tabular value of (2000) and with a significance level of (0.05) and a degree of freedom (69), which means that the research sample does not have this competence or the extent of Their possession was weak. Therefore, the researcher explains this result to the fact that the use of the computer may require high technical skills that are commensurate with computer specialists, as well as the lack of training courses for the use and maintenance of the computer, especially when sudden malfunctions occur during the process of using it in the communication process, as well as for the diversity of its programs and continuous updates that need to continuous follow up.

**Second Objective / What is the level of blended learning competencies for teachers of life sciences departments in the sub-paragraphs of each field?**

- ✓ **The first domain** / the competencies of the blended education culture: the fifth paragraph, which states (I have knowledge of the roles of the university professor and the student in the blended learning environment) ranked first with a weighted mean of (4.64) and a weight percentile of (92.8).

- ✓ **The second field** / competencies of preparing blended education courses: Paragraph (34) which states (I have the ability to determine the suitability of the course content to the characteristics, abilities and mental levels of students) ranked first with a weighted average of (4.59) and a weight percentage (91.8).
- ✓ **The third field** / the efficiencies of using the Internet: Paragraph (22) which states (I follow various video conferences and seminars over the Internet) ranked first with a weighted average of (4.40) and a weight percentage (88).
- ✓ **Fourth Domain** / Computer Use Competencies: Paragraph (11) which states (I can use the computer in lesson presentations) ranked first with a weighted mean of (4.22) and a weight percentage of (84.4).

**The third objective/** Are there statistically significant differences at the level (0.05) between the arithmetic averages of the level of blended learning competencies among the teachers of life sciences departments according to the variables (gender, academic qualification, years of experience, academic rank)?

The arithmetic mean of the degrees of the gender variable for males was (168,000), the arithmetic mean of the female scores (158.766), and the calculated t-value reached (8.128), which is greater than the tabular t-value of (2,000), and this indicates that there are statistically significant differences at the level of significance (0.05). ) in the gender variable and in favor of males. The researcher attributes this result to the fact that educational psychology theories refer to the male mentality being characterized by logical thinking and mathematics, which is compatible with this mental programming in general, while females rely on imaginative literary aspects and intuition (Sihoud, 2021), as well as the society's view of females from Where the installation of males to work in programming offices more than females.

As for the variable (**scientific qualification**) the arithmetic mean of PhD holders reached (171.971), and the arithmetic mean of master's degree holders reached (159,200), and the

calculated t-value amounted to (5.793), which is greater than the tabular t-value of (2,000), and this indicates that there are differences Statistically significant at the level of significance (0.05) in favor of PhD holders, and the researcher attributes this result to the fact that faculty members with PhD degrees have competencies than their counterparts because of their scientific experience because they studied at the PhD level subjects that include the use of modern technologies such as computers or subjects that include the use of Educational technology in teaching.

As for the variable (**years of experience**) the arithmetic mean of the variable (5 years or more) amounted to (171.215), and the arithmetic mean of the variable (1-5 years) amounted to (157.322), and the calculated t-value amounted to (3.469), which is greater than the tabular t-value of (2,000), and this indicates that there are statistically significant differences at the level of significance (0.05) in favor of (5) years and more. The researcher explains this result, the more the teacher's educational experience increases, the more it has an impact on the educational process and is more effective.

As for the (**academic rank variable**) the arithmetic averages of the variables (professor, assistant professor, teacher, assistant teacher), according to each scientific rank, were as follows: - Where the arithmetic mean of the rank of assistant professor reached (172.888), and the arithmetic mean of the rank of professor was (167.130) The arithmetic mean of the rank of teacher was (156.952), and the arithmetic mean of the rank of assistant teacher was (150.125), the one-way analysis of variance test was used, as the calculated value reached (148,890), which is a statistical function when compared to the tabular value of (2.758) at the degree of freedom (3) 66) and the level (0.05), and this result indicates: the presence of statistically significant differences between the arithmetic averages of the academic rank variable in favor of the assistant professor. In addition, the researcher believes, from his point of view, that the older professor is relatively less knowledgeable and connected to technology and prefers traditional education due to their lack of knowledge of the concept and importance of blended education.

**The researcher concludes the following:**

1) The competencies of blended learning are available among the teachers of the life sciences departments to a good degree, and the responses of the sample members for each field can be summarized as follows:-

- ❖ The degree of adequacy of the blended learning culture, the adequacy of using the Internet, and the adequacy of preparing blended learning curricula came to a high degree.
- ❖ The degree of sufficiency in using the computer came to a weak degree among the teachers of the departments of life sciences at the University of Diyala.

2) The results of the research showed that there were statistically significant differences between the average competencies of blended education due to the difference in gender in favor of males, academic qualification in favor of a doctorate, years of experience in favor of 5 years or more, and academic rank in favor of an assistant professor.

#### **The researcher recommends the following:-**

1) The necessity for the teaching staff in universities to pay attention to blended education and its importance and dissemination of its culture to achieve interaction between them.

2) Develop special training programs for both teachers and students in universities to employ blended education, which increases their skills, as well as the use of modern technologies in the educational process, which helps develop students' motivation.

3) Emphasis on the importance of using technology in teaching at the university.

**The researcher suggests** conducting a study on the availability of blended learning competencies among faculty members in the Science Department of the College of Basic Education and its relationship to another variable among students.

#### **resources**

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