

# Investigation of Instructing Reforms in Databases

Tarik Rashid

**Abstract**— as the enlargement of database technology tools within the field of network communications and knowledge mining has created further projections and more views for information technologies and subsequently these information knowledge are thought of joined of the core technologies in data Technology. Thus, there's a great mandate from academic centers, business companies and marketplaces for extremely qualified experience in database areas. As a result, it's doubtless fundamental for academic analyses within the field of databases and education to conduct additional research works so to boost teaching, learning, and assessing strategies of database courses. This paper describes the salient properties of those database courses and highlights the challenges of conventional teaching/learning/assessing strategies of database courses at universities in Kurdistan generally. This paper provides comprehensive reformations to those challenges.

**Index Terms**— Databases Management Systems, Learning and Assessment Methods.

## 1 INTRODUCTION

**D**ATABASE tools are most helpful in technology and computer science, especially, they are utilized in administration, engineering, science, computer programming, data technology, artificial intelligence, electronic commerce, electronic government and etc. as a result, information technologies have formed to great extent the majority theoretical systems and created a decent range of workable systems after years of expansion and growth. It's truly calculable that are so 80% of the complete computer applications hook up with information technology applications. In addition to the present, the events of technologies within the field of information mining and network communications have added and formed additional prospects and more views for information technologies [1, 2].

Databases tools and technologies are the idea of knowledge assets that can be deployed, used and managed within the information of the general public. Therefore, taking responsibilities to teach and manage databases, courses and promote the theoretical and practical aspects of these courses to students at the colleges and establishments in higher educational systems are preponderating of prominence. It is worth mentioning that teacher in databases and associated courses should concern with a way to teach their students so as to satisfy the needs and requests of their community demand. The computer science department at the University College of the Cariboo (UCC) started a primary degree in applied computing. Their programs provided a powerful theoretical background in computer science and at the same time they provided

skills regarding practical technology oriented in the hope to fulfill current and future necessary of information Technology [3, 4, 5].

Obviously the lake of a definite accepted style methodology for all universities in database systems produces several challenges for teacher in academic systems. Databases props to be contingent rather on additional expertise, educated presumptions, experimental and miscalculation and perceptions than steps that are taken conveniently to style methodology [6]. Thus, along with these concerns contained in the subject, the teacher can have additional problems to clarify to their students that need to obtain management views rather than having profound treatment of some practicality that are common in computer science that may be found in textbooks [7, 8, 9, 10].

This paper intends to distinguish major challenges in ordinary teaching database courses and intends to generate recommended reformations in database teaching.

## 2 EXISTING SYSTEM

In the last several years, universities and institutions across Kurdistan have perceived several reformations in their educational system due to rapid development in the areas of Computer Sciences, Software Engineering, networking systems, information and etc. However, the enhancement and development in teaching methods especially, in databases and management information systems requires a larger deal of intensive assessment and analysis.

Kurdistan universities offer a wide range of specialties. They provide various courses in engineering, science, education, literature, business, economics and etc. In this paper, the focus is on Computer Science, Software Engineering, and Information Technology. There is no doubt that the expansion of college admission is in growth, thus, universities in Kurdistan have been rehabilitated from the leading of traditional education to quantity education.

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However, there are still many universities stick to outdated methods in terms of training and research.

The curriculum department in the ministry of higher education and scientific research in Kurdistan kept the old fashion model in science, education and engineering colleges to award degrees, relying on theories, paying less attention to the practical aspects, and the requirements of marketplaces. Thus, this negative attitude has affected badly the ability of the students in databases subjects to fail to get adapted to their society.

Each Bachelor Program covers a four year plan which includes an extensive series of topics that commences at the level of introduction and ends at the level of advancement. The matter of fact, the program of the Software Engineering is predefined and ratified. Students have no right to choose their favorite subjects. In this regards, these subjects are obligatory, modernized and updated in accordance with the popularity and dynamicity of databases types and languages in the market and research. These subjects of databases are taught as two-hour lectures in class and two-hour practical in the computer laboratory every week. Each class lecture can accommodate no less than sixty students, whereas the laboratory facilities can put up thirty students on a regular basis. The number of students per lecture is not less than sixty. The laboratory facilities accommodate thirty students on average.

The short activities are set as targets of tutorials in which students should complete within a certain time frame. As the competition is the main theme, as a result, students are not supported or encouraged to team up in groups. It is understandable here that the tutorials of databases and management information systems are dependent on the practice of the concepts and ideas of certain lectures rather than getting involved in working on projects to design and develop certain systems. In general, students in the first and second years are assigned to convey tasks of individual compulsory based on their practical marks; this is done in accordance with their results. Clearly, more project works are optionally given to those students who are only fascinated to converse straightforwardly with teachers of the courses. Of course in this case, additional marks are given to students as a bonus based on what they have accomplished or what are being submitted. It can be concluded from above that this sort of activity will fail to encourage students to team up and work together.

Students at the fourth year stage required to work on their own in order to accomplish and deliver the objectives of their final year projects. Based on the hangout of authors of this paper in the college of engineering, it is estimated that almost one fourth of the students are skilled and capable individually of working their project. On the whole, the Software Engineering, Computer Science and Information Technology departments tend to work with a lecture-core approach via which demonstrations and database structures are shown to the students in their classrooms. Then after, students are given enough time, space and guidance to ask questions in the hope

to accomplish their activities and tasks. Finally, the students will perform midterms and final exams.

At the present time, the program of undergraduate degrees in Software Engineering, Computer Science and Information Technology departments at Salahaddin University offer four courses in databases, these are namely; Introduction to Database Systems at the second year, Advanced Databases and Applications at the third level, Web programming at the third year too, in fact, this is very much related to databases driven web site design and development, and Data Mining at the fourth level. Each of which is established via a typical way in the Curriculum Department in the Ministry of Higher Education and Scientific Research in Kurdistan. These courses are tailored in a way to fulfill the demands of the educational system, Information Technology industry and the future needs of employees and business firms in Kurdistan. It is proper to say that the above standards are set in the same manner in other universities in the other four provinces (Kirkuk, Dohuk, Sulamania, and Hawler) in Kurdistan Region.

It is obvious that the knowledge of students in computer and other related subjects are various. Thus, clearly speaking, students who are coming from Computer Science & Engineering fields are more skillful in computers than others in other fields. It is noticeable that students in engineering departments have basic database structures and algorithms skills; whereas students in the physical sciences have basic programming structures but their lack of Computer Science skills. It then provides basic courses in databases in which requirements are different to students with different backgrounds are necessary. Another part of these problems are the resources of databases Teacher and their skills and the models that are taught at the universities must be considered as an important requirement in teaching this subject.

In Kurdistan universities in general, there are four courses that are being taught within the computer science, and computer engineering, information system generally, they are namely:-

In the second year within the initial semester, a course of Introduction to Database Systems which includes a set of basic topics from Data, Information, Knowledge, File Databases, Relational Database, Architecture of Databases, Data Independence, Data Modeling, Database Design, Entity Relational Database, Relational Algebra, Normalization, MS Access, SQL, Data Security, and Database Administration, Client/Server Architecture. There is another course which is called Databases Management Systems (DBMS), is introduced in the second semester and includes the following: Theory, Introduction to Database and Information Systems, Databases Design and Implementation, Database Administration, My SQL and an introduction to distributed databases.

In the third year, students study the advanced database systems course which includes Review of Basic Relational Concepts, SQL- Writing Queries using SQL, Physical Structure of data , Indexing, Clustering, Transaction Management, and

Concurrency, Query Optimization, Distributed database Concepts, Database Security, Online Adaptive Queries, Information systems, Advanced topics in DBMS, PHP Programming Language, MySQL.

Also in the third year, students study Web Programming course which includes Introduction to Web programming starting with World Wide Web history like web and internet, and web Browsers, Moving into HTML tutorial; Introducing and explaining Cascading Style Sheets (CSS). Introduction to Dynamic web pages, Moving into JavaScript tutorial; Publishing web pages/sites Introduction of ASP.NET and C# programming language, Moving to the ASP.NET control events and page events, Introduction to Visual Web Developer 2008, Introduction of connecting to SQL Server Database.

In the fourth year, students study Data mining and Data Warehousing course which includes the following topics: What is data mining? Why is data mining? Data mining functionality, interesting patterns, Classification of data mining systems, Major challenges in data mining, Data Mart, Online Analytical Processing (OLAP), Online Transaction Processing (OLTP), Predictive analysis, Software tools, working with Weka Software tool. Figure 1, shows a configuration of current databases courses at Universities in Kurdistan.

### 3 CHALLENGES

Generally speaking, concepts of databases are significant and conspicuously observed and imitated in the teaching traditional database theories and practical applications. This can be caused in the deficiency of skills and knowledge of student in training on database program and design. As a result, database teaching at universities in Kurdistan does not transform from learning and teaching theories for students to deal with tangible and practical challenges [1, 2, 3, 11, 12].

The assessment value of teaching depends wholly on a real method of assessment. The assessment is important for teaching and learning as different assessments can decide the students' the learning motivation of students. Mixing both theory assessment and actual working is considered as the learning motivations of students in database courses. The challenge here is that the assessments are the examinations of theories which are utterly focused on theory knowledge which is the relations of these theories with their practical tests are missing.

Customarily, students are unable to work with database analysis, development and design on their own in the hope to solve some particular problems. Thus, students soon get discouraged and dispirited as they only have to digest too generic ideas in abstract shapes during the course [13, 14].

Preferably, students will have to work hard to memorize in order to learn and will forget all of these gained information right after the examination is over. This is because students have learned to solve some short questions to practice as examination tests and produce an observed report. Keeping in mind that one could not deny that students will gain some skills on how operate practically. Yet, these practical operability skills are not connected altogether, but conversely students run individually some practical operability, each operation item is independent. Not to mention, soon, the teacher will detect a number of identical students' reports in terms of contents due actions that were taken by a good number of students that were basically relied on their peers to plagiarize materials from them and finally will be submitted as a final report. Subsequently, this will affect both students and teacher motivations to achieve learning outcomes effectively [15, 16].

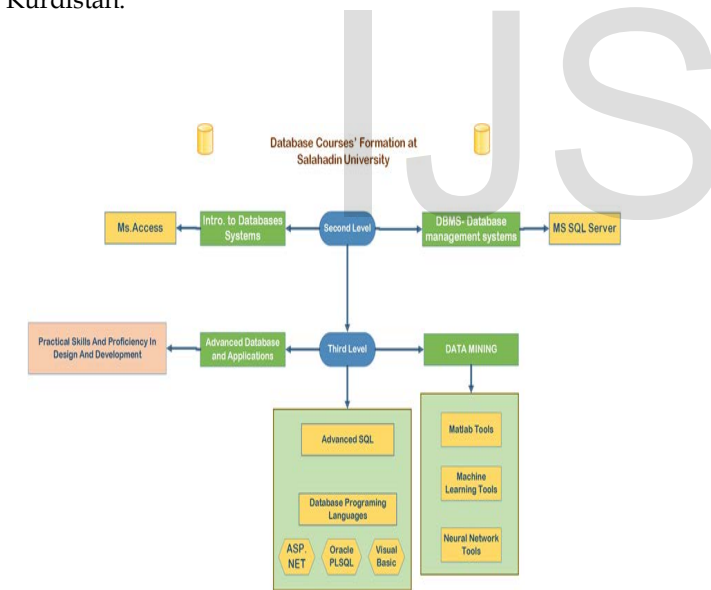


Fig 1. Shows the formation for the existing courses at Salahaddin University.

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Note that in Figure 1: blue coloured boxes represent the levels of students; green coloured boxes represent completely different courses, yellow color boxes represent tools and pink coloured boxes represent concepts).

There are not specific regulations that teachers can follow to help students to tackle the problem of not combine both theory and practice during their learning period. Most of the database courses are tailored in a way that materials are essentially structured in accordance with teaching contents and the order of acquaintance method. This means that initially the program centers on the foundation theory of Database and then put more emphasis on specific Database System software. In other words, teachers in their classes will teach in three phases: and these are namely; teaching, giving examples, and exercises. The first phase includes the introduction of basic theoretical information, and then the second phase deals with elaborating on specific use of a

Database System giving to the order of organized manuals and course books [17, 18, 19, 20]. And finally, in the third phase the corresponding illustrations will be given according to the theoretical knowledge and command. It is also noticeable that teacher have to concentrate on the procedure of approaches of data, information, knowledge and skills to their students in this kind of classroom teaching, in which data, information, knowledge and skills are in use as the central. In other words, the Teacher here put emphasis on the data, information, and knowledge to their students. Accordingly, despite the fact that students initially gain the aspect theories, but meanwhile they fail to comprehend on how and when to apply them, this is because students believe that these theories are so broad-based and very problematic for comprehension, which tips to create some sort of disinterest and discomfort in the students' learning process. Ultimately, students study some parts in Database System in a way that they can only obtain some knowledge to use and run the software tools merely as they fail to know what the actual purposes are. As a result, in this way few isolated knowledge can be acquired by the students and a simple operation of the software is mastered at the end of the course [20, 21, 22, 23].

Obviously, the students will be unsuccessful to shape and make a detailed database system and subordinate the purpose of the scheduled teaching. They followed the current situation of teaching methods is a lecturer oriented thought of the university in which a lecturer is considered as the center and gives precedence to the course and theory instead of using practice [3, 24, 25, 26]. Obviously, the course syllabus designed to allocate some hours for students to use computers for experimental purposes, in many cases just helps students use their computers as a way to validate the given theories. On the contrary, this process will not help students be able to fulfill requirements of teaching in those courses.

Commonly the lack of the subjects and their corresponding practice in database courses create problems and confusion for students. Lack of prior knowledge about the current content will not help students to establish a common base of understanding of the content.

A decisive challenge that can encounter databases students is that the teaching tenacity is not clearly defined; the lecturer did not define a consistent teaching session routine, the lecturer did not constantly define the learning objectives and refine and link them as the students are progressing in their class. Lecturer's lack of having a clear road map or an organization structure for his or her class, this will lead to time consuming and effort fading. The lack of a clear teaching purpose can have some outcomes in which the program and syllabus shorten methodical order, and might make the steps to develop courses in the professional curriculum are not straight forward.

#### 4 REFORMATIONS

It is obvious that database courses can be enhanced practically via the following steps and these are namely;

identify clearly practical objectives and requirements for all various courses, Construct and develop the contents of teaching according to students learning abilities and enhance the teaching methods via adopting a way that focuses on the interaction and attention of all learning and teaching communities in the hope to change the attitude of the students from passive information and theory database takers to seekers and searchers for knowledge actively and also to target exploring abilities of being innovative students. Moreover students are being able to link the aspect of theories to practice in their learning process and Teacher also should pave the way to accomplish this process. Having said this, Teacher should be able to cross-assess students both theoretically and practically instead of just theoretical assessment in place.

Seemingly database has been industrialized from the type of the network databases, next to the type of hierarchical databases, then the type of relational database, and finally to modern types of object-oriented database systems, distributed database systems, parallel Mobile database system, database systems and data warehouses. Seemingly this industrialization in databases has been progressed due to database technology which is in fact is well-thought-out as one of the wildest rising fields in Computer Sciences, Software Engineering, information technologies and etc.

And more, it is obvious that there is a growing demand for using students of databases from business firms and academic research centers due to their bulk utilization of a wide range of applications of Information Technology, thus there must be an effective action to enhance, update and improve the database courses in colleges and universities across Kurdistan region. Subsequently, within the database courses, the academic communities should work hand in hand to produce a teaching content that is updated which reflects the development of disciplines so that to fulfill the practical application demand for the above business and academic firms.

As a result, it is essential for the universities and colleges to determine the corresponding teaching goal and objectives, in addition, the teaching of databases in these universities and colleges should be based on several levels and different orientations and student employment. Further, these universities and colleges should have different requirements for different levels and different Teacher in database courses in order to select the corresponding teaching contents at those levels mentioned.

It is convenient for the academic communities to comprehend the changes and development of databases; thus, it is recommended that the contents of database courses should be constantly changing so that to retain the stride of the development of technologies in databases and in the same time preserve the marketplace difficulties. Therefore, it is necessary to show students a short overview can be presented about the database technologies forward-looking, these can include word logic, object database, recursive SQL, object relationship graph, XML technologies and middleware, WWW

and databases, ODBC, JDBC [8].

The regular teaching of a knowledge system is concerned with theory course which is based on the logical sequence of teaching material to present knowledge ideas. However, the teaching mode can be modified in a way in which the teaching mode can select a case as the marrow of the teaching. It is more helpful for the students if the teaching mode presents the important knowledge ideas around the case. This can be achieved via presenting the application background of the case and then directly create the functional analysis so that to help students to explore more about the problems and then after producing little or needed theoretical knowledge to tackle the problem. After students managed to work out the analysis and also succeed to solve the problem using the needed theoretical knowledge.

At the end the students will be given another case, and it is required for them to design and work this case independently using their previous experimental skills, student can accomplish this task either in classes or at home. The role of Teacher is to produce more needed knowledge around the case in their teaching material in both the design and planning parts, so that students will be able to put it into practice. In other words, the introduction of knowledge needed should not be introduced from the beginning and continues to the end. The knowledge should come along with components of other cases [4, 8, 20, 21, 24, 25, 26, 27, 28]. Subsequently, the students will be able to have application abilities for new knowledge via helping them implement the knowledge of the case, plus the students also are presented with knowledge at first place as well.

The above enhancement can be accomplished by amalgamating both theoretical and practical teaching via presenting multimedia, which can be used in a way to teach databases teaching and practical aspects. A live demonstration of the entire process is achieved via some software's in the classrooms, and this is done when an Teacher will take a leading step in the practical aspects and provide some elaborations in that regard. This process will bolster the learning, enthusiasm and initiative and consolidate comprehension of the students; also, in doing so, this means a mixture of both theory and practice is reflected here in this process. There are some examples of using multimedia such as sound, text and animation, which mimic the procedure and the properties of the database, and stimulate the students.

Using projects technique is introduced by authors in University College of the Cariboo (UCC) to help students enhance their confidence and comprehension abilities in dealing with database subjects, their courses of databases include some projects. For instance an independent client/server course is included in the course of the introductory Database Systems. The project is split into three steps, these are namely: database logical and physical design and implementation; the architecture of client/server architecture, implementation with client application completed in both Access and VBA; and Web publishing from

a database. A set of requirements such as registration and reservation systems for a large campground organization is carried out by all students worked [5].

Databases courses are not only purely theoretical, they are rather practical courses. The impact of computer operation affects directly the teaching effect and helps students comprehend and digest the theoretical aspects that were taught in classrooms [8, 2]. Thus, it is considered as the most aspects of students to learn database and get succeed in database courses. For this reason, it is essential for us to emphasize on reinforcing the practice in teaching so that to promote team consciousness and creative ability for students of databases. This can be achieved by creating a rational plan for the computer experiment classes, coordinating and connecting the computer experiments to the theoretical teaching. Thus, this process needs Teacher to develop computer experiment contents in accordance with the course content progress prior to class. Then connect the written experiment instructions shadowed by samples and workouts and training to the teaching material.

It is fairly compulsory for the Teacher to make sure to take the impact of the experiment and all the written steps of computer experiment unmistakably into consideration. In this manner students should operate computers based on the written instructions of computer experiment. Then the teacher need to do some elaborations on some problems existed in the experiment. This process can be done via dedication of time by Teacher so that to guide their students through all the difficulties that students faced in the process of computer practice. This period of time to guide students must completely be allocated for solving and working out the problems as Teacher are unable to create such a chance/time in normal teaching classes. It is also can be a better opportunity to present the standard ways of designing and programing databases so that to help bolster the abilities of students in programing databases.

It is then required for students to record the purpose, content, experimental phases, practical experiences and problems that they have faced before, during and after that assigned tasks in an all-inclusive report. The role of Teacher is to allocate time to go through each report and give favorable and unfavorable comments and suggestions. In this way, students will learn to be able to work independently or in a team. Eventually, students are needed to work out with a relatively small database application system in relational database management system, say for example for a department or a company. They can use suitable tools and techniques of application systems development, and demonstrate phases of design, key functions, operational steps and instructions of the system plus record their own conclusions based on their experiences about different problems that are being solved or unsolved, finally furnish their future suggestions, comments and recommendation thoughts [2].

In doing so, and in the process of system design and

development, students will be able to get stimulated to leading the course contents, models, skills, tools, and promote the practical ability, innovative spirit, the systematic thinking and the sense of teamwork.

In order to find the effect of how important the teaching for the students was, we need carry out an assessment via tests. This has been a vital standard for students and Teacher. Conventionally, Teacher test the students in a written way. Then after teaching in the implementation of the project, the teacher could find that the written examination cannot effectively reflect the teaching of the ambiguities and dodges, as the tests at the end of the course produce the scores which are deemed to be the silent features to appraise the students. Thus, this type of assessment would help students in most of the cases give clearance to pass the exam. Yet, the university will fail to concentrate on students' progress in terms of capacity and compression of learning the database courses. This way is surely not helpful for the students. Thus, it is crucial for the teacher to ask their students to turn in their research and development work as the content of the exam and let students resolve their problems. In doing so, the practical skill of students will be highly effective, refined and nurtured.

Consequently, the scores of practical will help students learn and gain knowledge over the key concepts. Apparently solving problems and thinking skills for students can be achieved and created via examining the integrated use of knowledge by the students.

## 5 RESEARCH ANALYSIS

The investigation is carried out to examine the significant impact of the suggested challenges and reformations on approaches of teaching, learning, and assessing at the Software Engineering, Computer Science, information, and related departments at universities. This investigation is a mixed mode technique that involves two phases: The first phase comprises interviewing a focus group of IT/Computer Sciences/Software Engineering teacher at some chosen universities in Kurdistan. The main purpose of this phase is to accumulate in depth intuitions, reactions and thoughts in the hope help develop and build insightful questionnaires. The focus group interview is semi-structured to ensure that all interviewees are asked the same set of open ended questions. The duration of the interview is 2 hours. The number of focus group members is 7. Groups were carefully chosen to guarantee, actual partaking and considerable exposure of database teaching methods in higher education in Kurdistan. In the focus group interview phase the authors learnt the current situation of the teaching databases in Kurdistan.

Upon closing the focus group task, the major challenges and reformations are discussed so that to construct questionnaires. The design of structured questionnaires is the second phase. The structured questionnaire covered 51 questions. These Questions addressed the challenges and reformations in teaching, learning and assessing database

courses in universities in Kurdistan. The questionnaire included the following five rating scale: 1- strongly disagree, 2-disagree, 3-neither agree nor disagree, 4- agree and 5-strongly agree. Questionnaires were disseminated among roughly 170 students at different levels and 7 teacher of Databases courses. The authors received only 140 complete responses from participant students (See Appendix at the end paper).

Based on our investigations for the challenges, it is obvious that most of the teachers and students noticed challenges which shake the database courses in terms of teaching and evaluation, and these are; the customary teaching methods and the lack of valuation of practical skills.

According to our results, it is evident that both students and teacher mostly are in favor of using multimedia in the teaching database courses, this indicates that it is necessary for the academic teacher to surge the amount of information and knowledge so that to enhance the competence of teaching, and quality of teaching. It is understood that the usage of multimedia and software tools in teaching methods, will help students not only energetically contribute in teaching undertakings, but will similarly nurture long-lasting interest in educational technology, in return this will stimulate the creativity and responsiveness of learning knowledge and will actually encourage students' total quality and spirit.

Roughly both students and teachers evidently proved that there is a need for upgrading the teaching content. Since databases technologies are considered as rapidly increasing discipline and as there are different types of databases; thus, it is compulsory that the course contents in databases should be unceasingly attuned so that to retain the rapidity of database technology development.

It is also clear that the course of database is very practical. The lecturer should encourage students to give in reports after the practical, and teacher also should check on students to compose the practical purpose, practical contents, practical steps and the knowledge, outlooks and glitches run into in the process of the experiments in the experiment reports [10].

Databases and its applications are courses in which both theory and practice must be combined. Students will only be able to memorize the important theoretical knowledge if there is only a theory test for them as an evaluation method. Figure 2, clearly shows almost all students believe that the importance of updating of teaching methods can be completed through using projects, reinforcing practice, and using case studies respectively.

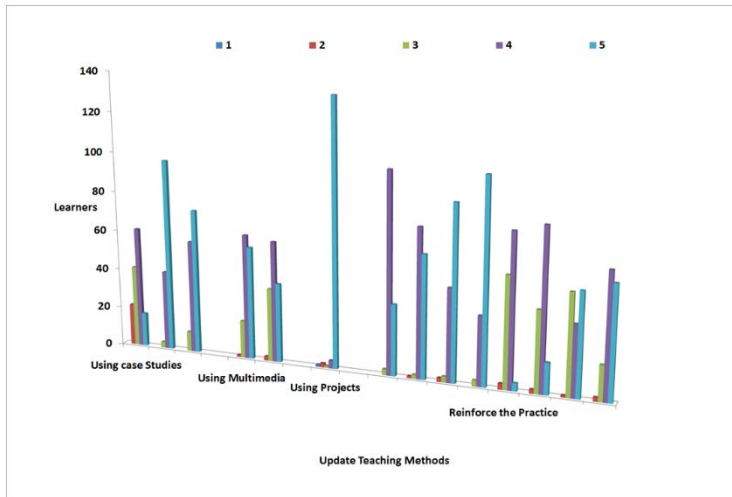


Fig. 2, displays students' opinions on update teaching methods.

Clearly, the absence of these reformations will deter students' abilities to comprehend, learn and think seriously to apply the theory into practice [11]. Figure 3 confirms almost the same reflection update teaching methods.

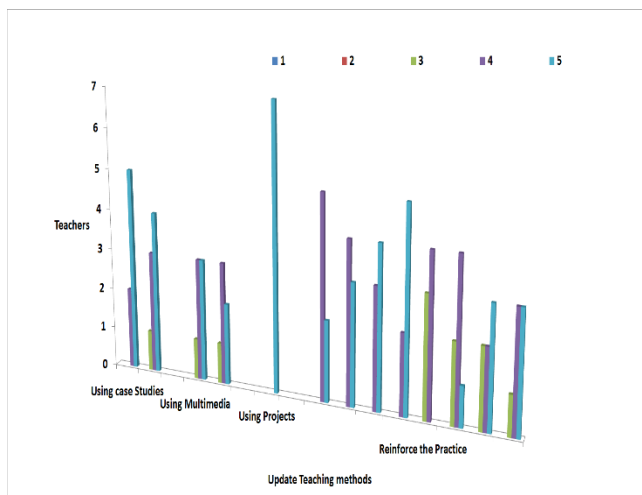


Fig. 3, displays teacher' opinions on the updating of teaching methods.

It is important for the teacher to add practical quiz tests and practical activity tests into practical sessions in addition to

theoretical quizzes and theoretical activity tests. The assessment after accomplishment of the class of practice will help students obtain an aptitude to resolve application problems quantitatively and advance on the course of computer experiment and likewise help students make a complete explanation. Moreover, this assessment helps students increase ability to develop broad or minor database system via applying the knowledge and skills they have learned. Teacher have to keep track of students' records, as part of the total score in the practical assessment scores.

## 6 CONCLUSIONS

The paper discusses the challenges in tools and courses in databases that are widely applied in the areas of management, business, intelligent systems, security and others. It is vital to deal with theory and practice concurrently; this research work has reinforced complete reforms in the educational systems in databases in Kurdistan universities. This paper also promotes the teaching to practical application. In addition various teaching means are combined in the hope to produce a contented learning settings at local universities.

## 7 FUTURE PLANS

The authors suggest the following future steps to be piloted in universities in Kurdistan:-

- The discussed methods of theory and practice have to be more co-operated and liaised.
- Since the teaching and learning database systems are dynamic and its working environment is very challenging and interesting, thus, they need constant evaluations and revisions by academic communities.
- Including even relatively minor practical lab resources and advanced software tools will provide a greater chance for students to achieve high quality of the learning environment.
- More practical projects must be encompassed in the teaching methods.

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## APPENDIX: QUESTIONNAIRE

Name: Occupation: University:

- 1: Strongly disagree
- 2: Disagree
- 3: Neither agree nor disagree
- 4: Agree
- 5: Strongly agree

### 1) Challenges

#### A. Assessment of practical skills Is Missing

- 1) Testing the effectiveness of teaching relies on an effective and valid assessment.
- 2) Learning motivation of students rests on several assessment techniques.
- 3) The examinations of theories are concentrated on theoretical knowledge.
- 4) Students are unable to work with database analysis, development and design on their own in the hope to solve some particular problems.
- 5) Students memorise in order to learn and will forget all of these gained information right after the examination is over.
- 6) Students run individually some practical operability, each operation item is independent.
- 7) The teachers will detect a number of identical students' reports in terms of contents due to plagiarism by students.

#### B. Traditional teaching methods

- 1) The teachers do not have a way to overcome the problem of not combine both theory and practice.
- 2) Teacher in their classes will teach in three phases: and these are namely; teaching, giving examples, and exercises
- 3) The teachers here put emphasis on the data, information, and knowledge to their students.
- 4) Students believe that theories are so broad-based and very problematic for comprehension.
- 5) Students learn some aspects in database management system so that to only run the software tools merely as they fail to know what the actual purposes are.
- 6) Few isolated knowledge can be acquired by the students and a simple operation of the software is mastered at the end of the course.
- 7) The current situation of teaching methods is a teacher is considered as the center.
- 8) The course syllabus designed to allocate some hours for students to use computers for experimental purposes, in many cases just helps students use their computers as a way to validate the given theories.

#### C. The contradiction of Content and Theory

- 1) The absence of the contents and their matching practice in database courses create problems and confusion for students.
- 2) Lack of prior knowledge about the current content will not help students to establish a common base of understanding of the content.

#### D. The absence of teaching Determination

- 1) The teacher did not define a consistent teaching session routine



- 2) The teacher did not constantly define the learning objectives and refine and link them.
- 3) Lack of having road maps in a class will lead to time consuming and effort fading.
- 4) The absence of a clear teaching purpose.

2) Reformations

A. Teaching Determination

- 1) Recognize clear, concrete purposes and requirements for all various courses
- 2) Build and develop the contents of teaching in accordance with students learning aptitudes
- 3) Enrich the teaching methods through implementing a way that emphasizes on the communication and attention of all learning and teaching communities.
- 4) Teachers should be able to cross-assess students both theoretically and practically instead of just theoretical assessment in place.

B. Upgrade the Teaching Content

- 1) The need for an effective action to increase, update and progress the database courses in colleges and universities across Kurdistan region.
- 2) Teachers and students should work closely to produce a teaching content that is updated which reflects the development of disciplines.
- 3) It is essential for the academies to control the corresponding teaching objectives.
- 4) Databases teaching in the academies should be based on several levels and different orientations and students' employment.
- 5) These the academies should have different requirements for different levels and different teachers in database courses
- 6) It is recommended that the contents of the courses of databases should be constantly changing..
- 7) It is needed to show students a short overview can be presented about the database technologies.

C. Update Teaching Methods

i. Using case Studies

- 1) The teaching mode can be adapted to select a case at the heart of the teaching.
- 2) It is more supportive of students if the teaching mode produces the important knowledge ideas around the case.
- 3) At the end the students will be given another case, and it is required for them to design and work this case independently using their previous experimental skills.
- 4) The role of teachers is to produce more needed knowledge around the case in their teaching material.

ii. Using Multimedia

- 1) Amalgamating both theoretical and practical teaching using multimedia, so that to teach databases teaching and practical aspects.
- 2) Multimedia such as sound, text and animation are very helpful for students when teaching database courses.

iii. Using Projects

- 1) Projects technique helps students improve their confidence and comprehension abilities when dealing with database subjects.

iv. Reinforce the Practice

- 1) The impact of computer operation affects directly the teaching effect and helps students comprehend and digest the theoretical aspects that were taught in classrooms
- 2) It is vital to emphasize on reinforcing the practice of teaching in order to encourage team consciousness and creative ability for database students.
- 3) It is necessary to have computer experiment classes connected to the theoretical teaching.
- 4) It is necessary to have dedication of time by teachers to guide their students through all the difficulties that students faced in the process of computer practice.
- 5) It is also can be a better opportunity to present the standard ways of designing and programing databases
- 6) It is required for students to record the purpose, content, experimental phases, practical experiences and problems that they have faced before, during and after that assigned tasks in an all-inclusive report.
- 7) The role of teachers is to allocate time to go through each report and give favorable and unfavorable comments and suggestions.
- 8) In the process of system project and progress, students will be able to get enthused to leading the course contents, models, skills, tools.

D. Update assessment method

- 1) It is fundamental for the teachers ask their students to turn in their research and development work as the content of the exam and let students solve their problems.

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