

Applying New Strategy with Key Features to Enhance Students Performance Using E-Assessment Methods Secure Data

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ABSTRACT- With the recent rapid development and growth in information technology, the profile of student learners has changed [1], and the teachers need to improve their quality of teaching and learning to synchronize with the developing growth in technology.

In this research paper, confidentiality, integrity and availability (c-i-a) model was used to secure the information of students as well as teachers. Using c-i-a model, the main emphasis was on the security goals which are precise to online summative and formative assessment methods, authorization of students and receiving the feedback in a confidential way respecting the privacy of the individual.

Also, the teacher needs to secure the data and enhance the student performance as a part of improvement in the progress evaluation methods relevant to the associated disciplines, thus providing students more skills and values.

The new teaching strategy evolves around ensuring that adequate academic and/or professional standards are achieved by students through implementing appropriate e-assessment methods, namely formative and summative assessments. In this research paper, the online feedback obtained from the formative assessment is found to enhance the students' performance in the summative assessment with security techniques for marking, grading and assessment of their knowledge, abilities and skills in privacy.

The conclusions that when used online environment after applying the c-i-a concepts its increase the security level for the data and from unauthorized students.

In addition, the students' enhanced positively their performance after design and implementing the new strategy techniques and adding new key features. as well as increased their performance to achieve the pilo's satisfying the pilo's respectively. Also, the author recommended finding the new appropriate features to enhance their performance.

Index Terms- Available, Confidentiality, E-assessment Integrity, Students' performance.

I. INTRODUCTION

A positive classroom environment is essential for ensuring behavioral problems are minimized and learning outcomes maximized, and so the ways in which teachers can create positive classroom environments are discussed in this paper [1]. It discusses the effects of a positive classroom environment on learner behavior and achievements, and provides strategies to assist in the development of positive expectations concerning student achievements, and the importance of encouraging parental involvement in learning.

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When implementing online summative assessments, security aspects are very important to ensure the authenticated login of the student and the authorization to access period of the online test. The formative e-assessment gives feedback to the students to enhance their performance during the summative e-assessment methods.

The main objective is to improve the usage of feedback e-summative and/or e-formative assessments that reflect positively on students' performance as a whole through new strategy and design to analyze and evaluate the students' performance.

In this research paper, some security aspects such as confidentiality, integrity and availability (C-I-A), as well as, the authentication method with a new technique by using summative via formative e-assessment to achieve their verification.

Methodology to enhance model applied by the teacher when sending online feedback to the students through implementation of the privacy, confidential security method shows the model achieved by students through appropriate feedback, marking, grading and assess their knowledge, abilities and skills.

II. PROBLEM DEFINITION

When teaching different level of students, some are absent from the classroom, and they cannot get any feedback until their contact with the teacher, also in the confidentiality in the traditional classroom assessment methods. So, there is a need to assess and improve these assessment methods through appropriate online summative via formative methods of some course curricula to fill the gaps and the data will be available at all time. Also, could be found in the privacy of data and feedback of assessment methods.

III. SCOPE AND DIFFICULTIES

The e- summative assessment methods sometimes de-motivates individuals and the tauter needs more efforts to encourage the students towards their studies. Some students have difficulties especially in the Middle East for some reason as stated below:

- Either related to the culture and students' behavior or the interaction and communication between the lecturer and them.
- Difficulties in English language.
- Difficulties in using the MOODLE.

IV. SIGNIFICANCE OF THE STUDY

The new teaching strategy involves enhancing, ensuring that adequate academic and/or professional standards and verifies student's presence during online summative via formative assessment methods.

This used the Confidentiality, Integrity and Availability (C-I-A) security aspects to protect the data from unauthorized students, and the output of information will be available any time for both teachers and students to communicate and enhanced the performance for the students after received their feedback.

The main goal of security aspects of computer system includes Confidentiality, Integrity and Availability (C-I-A) which are used to protect the data from threats. Also, the C-I-A are designed as a guide to implement the policies in the organization.

The input values for authentication are put to simplify the authentication and privacy efficiently at the same time. The virtual environment helps teachers to support the students at all times through online feedback, as well as confidentiality and integrity to achieve security level.

V. OBJECTIVES

The main objective of this paper is to establish how teachers can make effective use of both the formal and the informal learning environment to facilitate learning. It also describes how learners needs can be met through educational support and guidance using recently developed strategies.

VI. LITERATURE REVIEW

A. Confidentiality, Integrity and Availability

Confidentiality: is designed to prevent sensitive information from reaching the wrong people, while making sure that the right people can in fact get it [2,3]. According to this definition the online summative assessment through the test will be used to ensure that the authorized student will use e-Learning and the data will not be changed.

Integrity: Integrity involves maintaining the consistency, accuracy, and trustworthiness of data over its entire life cycle [3]. So, the authorized people need to use various access controls to prevent actual data erroneous changes.

Availability: To be operational and accessible whenever it is needed; except during authorized downtimes (availability)[4]. The data will be available 24/7 in the system bank.

B. Authentication

It is the assurance that communicating entity is the one claimed using the identification code, and this has a very importance in network application where the communication is remotely [5].

C. Formative & Summative Assessment Methods

The assessment [1] is probably the most important thing that can be done to help students' learning using

formative and summative, while the e-summative via formative assessment methods are the efficient than the previous method.

The definition of formative Assessment method is the assessment that gathers information about student learning [6] and give student feedback without any grading to enhance their performance.

Summative assessment means giving student feedback with grades to evaluate what students have been learnt [6]. Also, this method of assessment conducted in the last few years of term to see how well students have been learnt [7].

Feedback is "the most powerful single moderator that enhances achievement"[12].The new techniques use summative via formative e-assessment methods to reflect the feedback in summative test, to prevent data from unauthorized students and to give privacy to each student feedback.

D. Rubrics

Rubric is a process used to develop a specific task to be sure that the students are undertaking. This process links to the 4Ds (define, design, do, and debrief). The 4Ds approach could apply to develop rubrics for both e-summative and formative assessment of processes, interactions, skills, and knowledge [10].

To design rubrics should be structured in a SMART way when writing tasks of each assessment method (e-summative and formative).

1. Benefits of Rubric Assessment

For an assessment to be formative, students must take the feedback and use it to adjust their learning. The feedback and assessment therefore must also be timed. The student cannot learn, change, and develop it if the unit of work has been finished when received the feedback.

Using rubric in Formative assessments to develop the performance of the students and show them the answer's level for example (excellent answer, very good but you need more efforts to complete all answer, satisfactory, unsatisfactory, or fail). The received feedback of the student receives is essential and discussed with the teacher to enhance their performance via e-summative exam. . The teacher will achieve the quality of learning outcomes for the willing student. So, the formative assessment is detailed, developmental, timely, appropriate, and transparent spatially when using secured computerized system such as MODDLE. The impact of timely and appropriate feedback is enormous. Without feedback, assessment is not a learning activity; but it is a compliance task [10].

2. Avoid Disadvantage of Summative Assessment

A rubric is a scoring tool that explicitly represents the performance expectations for an assignment or part of work. A rubric divides the assigned work into component parts and provides clear descriptions of the characteristics of the work associated with each component, on varying levels of mastery [11].

As we know that the summative assessments tools used to help evaluating the performance of the students as well as the effectiveness of programs to improve the Collage goals, alignment of curriculum, or student placement in specific programs.

Also, one of the disadvantage in traditional summative assessment methods that the students will receive the feedback after the teacher correct the exam after few days, weeks, or months. For this reason the online summative via formative assessment is very important to avoid the above problem and achieve the college goal using security techniques.

VII. KEY FEATURES

The purpose of using Key Feature (KF) to prove the hypothesis that procedural knowledge may teste questions in written exams. The format that used in summative assessment exams are either tested orally, practically in written form or digitally in written form [8].

Another issue to consider in this study is the major factors that determine the positive or negative impacts/factors of taking a job while studying on academic performance, GPA, and future employment prospects. Intuitively, it is concluded that, because time and energy are finite resources, holding a job will detract students from studying and be harmful to their GPA. Most studies concluded that this is only the case when student's number of hours worked each week exceeds 20 hours. In fact, students who work fewer than 15-20 hours often report higher GPAs than those who do not work at all [4].

Furthermore, the concept of Open Educational Resources does not only refer to teaching and learning materials. It also reflects on the use of software and tools that enable development, usage, adaptation and sharing of teaching/learning content, learning management systems (such as Moodle), tools to develop learning communities and the resources required to implement the above-mentioned items; e.g. open licenses [6].

VIII. METHODOLOGY

In this research paper, Confidentiality, Integrity and Availability (C-I-A) model will be used to secure the information of students and teachers as well, and to protect data via unauthorized user. The researcher used C-I-A model, the main emphasis will be on the security goals which are precise to online summative and formative assessment methods, and authorization of students and receiving the feedback in a confidential way respecting the privacy of the individuals. The main objective is to improve the usage of feedback of e-summative via formative assessment that reflected positively to enhance the student's performance as a whole. Using new strategy by adding new key features to achieve the target of the CLIOS as well as PLIO's.

The framework represents the authentication process to protect the summative via formative e-assessment methods using virtual environment. This cycle is using

new techniques to protect and provide data depending virtual environment.

When using virtual environment, there is a specific role for each level implemented to integrate with each other in order to achieve the confidential security level of data. Also, the new techniques enhanced the student performance in summative via formative e-assessment methods, when implementing the system to face the goal as shown in Fig.1.

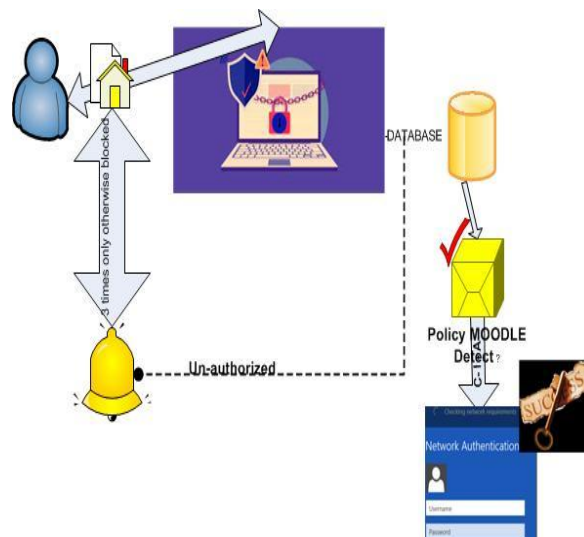


Fig.1. Shows the C-I-A secured e-system process.

A. Students Feedback Objective of Assess

This project discusses how to assess and gave feedback to students using security techniques by applying new strategy supported key features such as rubrics' mechanize, uploads assessment weekly etc For these reasons it will be focused on some issues to satisfy the objective, as below:

The main types of summative via (and/or) formative assessment which be used with students learners, whether formal or informal methods:

- How and why choosing the particular approaches when implemented and make a decision.
- The improvement to ensure the assessments are valid indicators for students to learn,
- How to support students' feedback in secure ways.
- And, how be ensured the feedback enhances and helps students to improve their understanding and performance.

B. Applying New Strategy with Key Features (KF)

The online summative exams applied in the 2009 when the author worked in another country , it's the first time used e-summative assessment in the lab exams because had more than 150-200 students in one subject in different sections. To avoid students' difficulties the author should answer all the questions that help the students how to answer using the online exam.

The new idea used new key features respectively, such as:

- The integrity, confidentially to pilot the level of secure data and keep the feedbacks available to the students through the interaction and communication between lecturer and learner. Avoiding any limitation concerning the place and time to be sure to secure data within the period you could access.
- In the 2nd period add rubrics in the MOODLE.
- Lastly upload the assessment weekly in the MOODLE.

For that, the author prepared a workshop in the lab before the final exam to train the students and enhance the performance before the exam. When shifted to the Middle East in 2010, the author decided to implement the same idea with new students with the same rang of participation for the subject by the colleges, but appeared some difficulties founded as shown in Table I.

C. Different Types of Assessment Methods

In this section used different types of assessment methods we are trained to do around university, the author will be use a mixture of informal, formative and summative assessment tools to be able to track the progress achieved by students regarding to the rubrics criteria.

1. Informal Assessment

Effective teaching involves acquiring relevant knowledge about students to be able to support the students, and using that knowledge to update teaching activities to provide them with the help and support that is sufficient to meet their needs.

For undergraduates, is used various activities, such as group discussions, real life case studies, modern technological tools, virtual environment and laboratories to enrich their learning process, and making it less complicated and more exciting as it be.

According to my professional experience in teaching, the author has found out that some of the adopted activities are not enough for some courses, such as “Decision Support System”. So, the author thought of implementing teamwork to get more efficient decisions.

In the classroom lectures[9]. The author has developed several group discussions using real life case studies to be more realistic in teaching and getting them closer to real life situations that may be comforted in their career life later on.

One of the informal assessment tools I use is “face to face”. An example for this is that have found that students are not so strong in presenting and defending themselves in their “Final Year Project and “Internship Presentation” . The author raised the issue with the colleagues searching for an effective method to boost student’s confidence in a practical way. So, the committee decided to use Mock Viva. The author implemented it guiding students in the 4th level on the last two semesters; and explained the guidelines step by step to the group and then assessed them “face to face”

for each student’s report. In such a way, that the author was able to follow their progress through checking if the problem definition reflects the objectives of the project, the results that satisfied their objectives and used methods which were suitable for the implementation. After revising their report, gave them a written feedback sheets and directed comments with the panel during the mock viva before the actual discussion. This strategy was very supporting and efficient for their confidence and defense during the debate. Also, the author observed the improvement of students’ performance in the real viva through the positive feedback and written evaluation reports of the panel about their presentation and defense.

In addition, the author used some formative assessment methods such as case studies, group discussion, quizzes, direct questions, peer and self-assessment to get an idea and real judgment about students understanding and the level of their perception concerning different areas of curriculums. So, found that these methods helped students to understand their mistakes and avoid them in their summative assessment methods to get highest marks. The author was noticed that using peer-feedback way gave students more confidence in their evaluation, and improved their contribution in developing each other.

2. E-Summative via Formative Assessment using e-Learning as a modern technology

The confidential, Integrity and Availability model, the main emphasis are on the security goals which are precise to online summative and formative assessment methods, authorization of students and receiving the feedback in a confidential way respecting the privacy of the individuals.

The Information security used to prevent unauthorized user to access the system. The rectangle of confidentiality, integrity, and availability are the heart of any information security system. Using these concepts to increase secured data and prevent unauthorized user to cress to the system.

The author used summative assessment method employing the Computer System which as a Quiz. I upload the questions with the correct answers on E-learning Moodle platform of the university. I organized all details such as date/time, deadline of exam, and the grades for each question. After the students finished the quiz, the system gave the total grade with the model answers automatically (formative feedback). If any student has difficulties in the exam or types of answering, I shall meet students to explain the procedure and gave them simple examples to clarify any difficulty. The author noticed that this way has enhance using e-Learning as a modern technology of evaluating student performance to put them on the right track.

3. E- Formative Assessment using MOODLE as a modern technology

Normally, used some formative assessment methods in the classroom such as case studies, group discussion, quizzes, direct questions, peer and self- assessment to get an idea and real judgment about student’s

understanding and the level of their perception about different areas of curriculums. The author found that these methods have helped students to know their mistakes and avoid them in their summative assessment methods to get higher marks. The author noticed that using peer-feedback way gave students more confidence in their evaluation, and improved their contribution in developing each another.

This way it's not very efficient method, for this reason searched for new methodology to enhance their performance effectively in secure methods.

As [12] described it, feedback is "the most powerful single moderator that enhances achievement". The author used the "Student feedback Sheet" for any course as the accustomed way which was not very efficient, and didn't giving the students their final marks without notes. Therefore, the author began giving them overall feedback for the Midterm exams for each question with the model answer using MOODLE as a modern technology.

So that students could compare their answers to the model ones, and make use of formative comments for each question.

The author could monitor of students' progress and allowed them to write down their feedback on the same sheet. The e-formative method enhanced students' abilities and skills to improve their performance in the following exams. As well as the feedbacks were available for each student in secure way and 7/2h hours.

IX. RESULTS AND DISCUSSION

In this chapter will discuss the three types of key features used to enhance the student performance, that applied with in the period 2010-2016.

A. Enhance the student performance by applying new KF's

The three key's features are implemented in real case, as below:

- New Key Feature with secured data.
- New Key Feature using Rubrics Mechanize in the MOODLE.
- New Key Feature by uploading the assignments of the MOODLE, weekly.

B. New Key Feature with secured data

Table I: Relationship between student within different period and % of KF using e-assessment methods secured data.

Country	No of students Participants	Academic Year	% Using MOODLE	% Using IT	% Secure Data	%Interaction Communication
Middle East	100-150	2010-2013	69	75	90	40
Middle East	100-150	2013-2015	80	90	95	55
Middle East	100-150	2016-2017	90	95	100	80

The Table I, shows the same sample within different period of using MOODLE (i.e: e-summative assessment and/or e-formative assessment) there it has been a progress about 11% of student in 2013-2015 and 10% increased from the last period.

When looking at the students reasons' founded as below:

- Some of the students have a problem in their understanding or/and education.
- They haven't attending always to the class or forgetting the username and password.
- Some of the student did not use the MOODLE before, unless they had an exam.
- They don't always open the MOODLE or they forgot their password.
- Some students don't download or use online always.

The Fig2, below analysis the student's performance after applies key features.

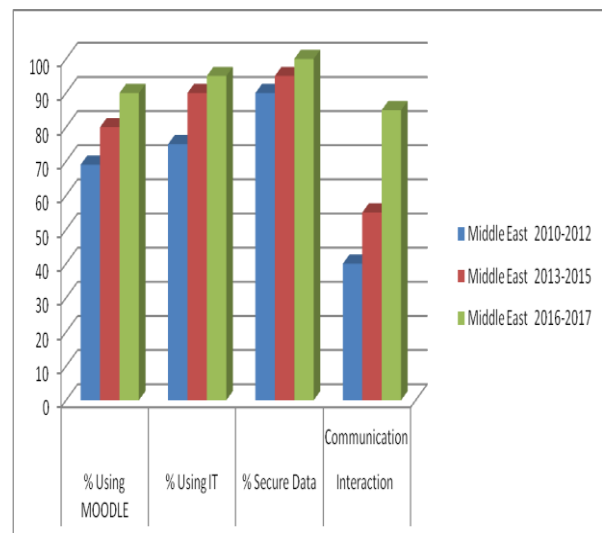


Fig.2. Analysis the student's performance when applying Normal KF

C. New Key Feature using Rubrics Mechanize in the MOODLE

When looking at the column "Add Rubrics in the MOODLE " in the Table II below. We find the percentage progress has enhanced the students performance from 40 % to 95% after uploading the

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rubrics mechanize in the MOODLE and explained it's benefits.

Table II: Enhance the students performance after adding new KF -Rubrics in the MOODLE

Country	No of students Participants	Academic Year	% Using MOODLE	% Using IT	% Secure Date	% Add rubrics in the	% Interaction Communication
Middle East	100-150	2010-2-13	69	75	90	40	40
Middle East	100-150	2013-2015	80	90	95	80	55
Middle East	100-150	2016-2017	90	95	100	95	80

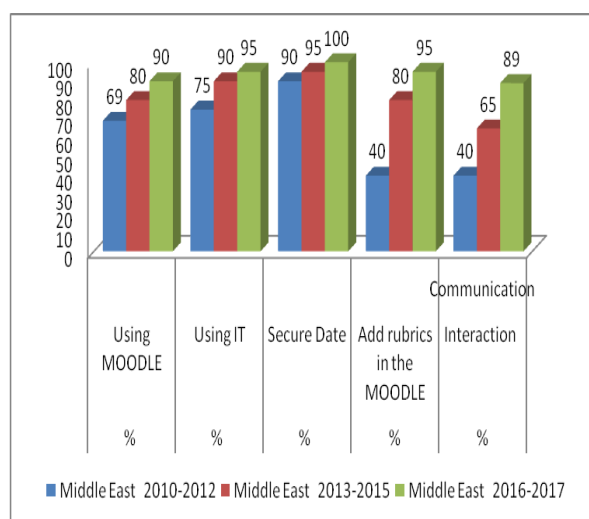


Fig. 3. Analysis the student's performance after adding new KF -Rubrics in the MOODLE

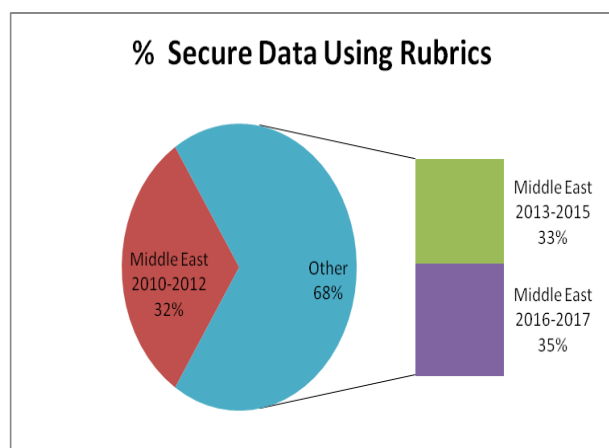


Fig. 4. Discribe the % of secured data using Rubruc Mechanizem

Fig.4, shows the slight persantage of the secured data using Rubruc Mechanizem , for this resoin we have tried to improve their performance . So, decided to add another new KF device to reimprove the performand continuously.

D. New Key Feature by Uploading the assignments of the MOODLE, weekly

In the third period, I decided to apply new strategy and add another new key feature for evaluation by

pushing and encouraging the students to use the e-formative and e-summative assessment every week. I uploaded each assignments weekly in the MOODLE and gave the students online feedbacks either formative or summative methods. This new strategy helped the students to avoid 95% of their difficulties founded previously, as shown in the Table III:

Table III: Evaluation of the e-summative via formative assessments after added new key feature - Uploaded the assignment in the MOODLE- weekly

Country	Academic Year	% Using MOODLE	% Uploaed the assignmets in the MOODLE weekly	% Students satisfactory	% Inter action Com muni catio n
Middle East	2010-2013	69	70	75	50
Middle East	2013-2015	80	85	80	70
Middle East	2016-2017	90	95	90	95

Analysis: Evaluation of the e-summative via formative assessment after added new key feature - Uploaded the assignment in the MOODLE, weekly

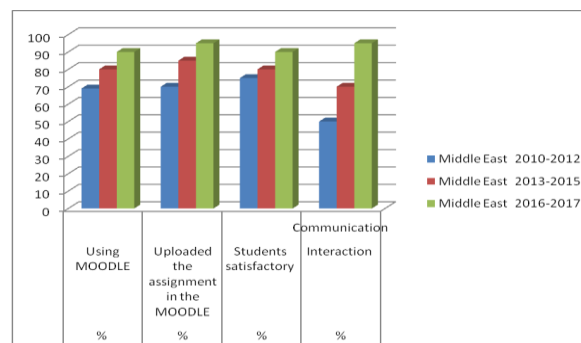


Fig. 5. Evaluation e-summative via formative assessment after adding new key

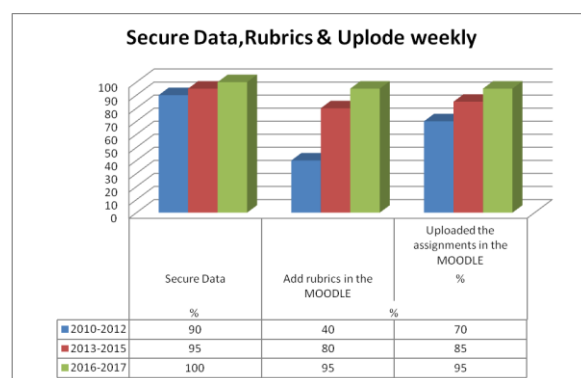


Fig. 6. Secure Data,Rubrics & Uploede weekly

Fig. 6, shows the three key features used to improve the performance. The secure data sattede or sliete progress within most of the perioed . But the Rubrics mechanizem has clear progress from 40% to 95% till 2016, while uplodng the assingmnet weekly in the MOODLE has an effective performance using e-

summative via formative assessment methods, as shown in the Fig.7.

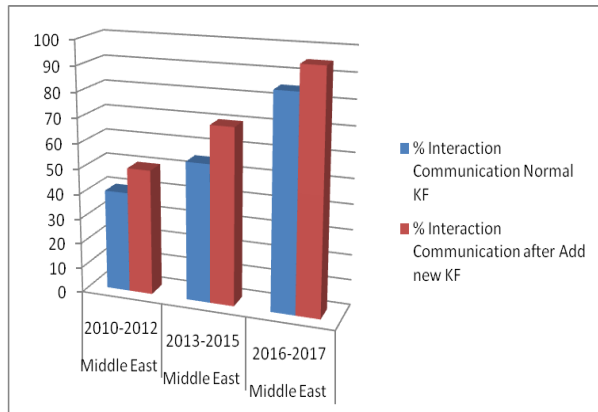


Fig. 7: Comparison the student performance after adding new KF (weekly upode the e-assessment menthod).

X. CONCLUSIONS AND RECOMMENDATIONS

The following could be concluded according to the analysis data:

1. The secured data was increased when used online environment after applying the C-I-A.
2. The students can access to their assessment methods confidentially access and secured data.
3. The students' have enhanced their performance after implementing the new strategy and design three new key features.
4. The goal of interaction and communication in the learning activities is to provide students with learning opportunities while learners are able to interact sharing and processing new information.
5. Enhancing the students' performance to achieve the CLIO's satisfying the PLIO's respectively.
6. The students' acceptance of e-assessment methods, used three key features focusing on:
 - a. The socialization of learners by e-assessment method through group discussion –chatting-online communication and interaction;
 - b. Guiding and preparation the students using Rubrics Mechanism that be offered by computer-based assessment.
 - c. Issuing and impacting the e-assessment design by uploading the assignments in the MOODLE weekly.

XI. RECOMMENDATIONS

The author will recommend the following:

1. Update the data
2. Looking for new features to enhance the students' performance
3. Don't forgot to analysis the feedbacks because it's very important to develop the teacher experience

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