The Effectiveness of Multimedia Content in Enhancing Undergraduate EFL Students' Conceptual Understanding and Performance

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Abstract

Learning environment with Multimedia technology fosters creativity and discovery through

Computer-based simulation, and modeling. Education as other fields of human endeavor is highly affected by the rapid change of technology where the various types of technology applications used in education obviously increase every day. One of these tools is multimedia. In this Study, an intervention was made for one week. For studying the effectiveness of the intervention, a control group (N=31) and a experimental group (N=34) were formed where the former was taught in the traditional way while the latter being taught with the use of Multimedia. The performance of both groups was compared by administering pre-test and post-test. A questionnaire was also developed and administered to the participants of the experimental group (the undergraduate students) to collect their opinion and grading the Multimedia content. The statistical analysis of the performance that there is no significant difference in the performance of both groups. However, on comparing the performance of each group before and after the treatment, it was found that both groups have improved significantly. Majority of the students indicated that the use of Multimedia is useful in creating interest among learners to learn English Language. However, they graded the Multimedia content as 'Good' or 'Very Good'.

Keywords: Effectiveness, Multimedia, Competence, Conceptual understanding

الخلاصة

البيئة تعليمية باستخدام تكنولوجيا الوسائط المتعددة تشجع الابداع والاكتشاف من خلال الكمبيوتر والمحاكاة والنمذجة. التعليم كما هو الحال فى كل من ميادين النشاطات الانسانية الاخرى قد تاثر بشكل واضح بالتغير السريع في التكنولوجياحيث أزداد عدد وانواع تطبيقات التكنولوجيا المستخدمة فى التعليم يوما بعد يوم ، واحد هذه الادوات هي تكنولوجيا الوسائط المتعددة. هذه الدراسة استمرت لمدة اسبوع واحد حيث لاجل دراسة فعالية التدخل باستخدام الوسائط المتعددة تم تشكيل مجموعة ضابطة (31) ومجموعة تجريبية (٣٤) حيث تم تدريس المجموعة الضابطة بالطريقة التقليدية بينما المجموعة التجريبية باستخدام الوسائط المتعددة. تمت مقارنة اداء المجموعتين من خلال القيام باختبار قبلي وبعدي وتم ايضا تصميم استبانة للمشتركين (طلبة المجموعة التجريبية) لجمع رأيهم وتقييم محتويات الوسائط المتعددة. إن تحليل البيانات تشير الى عدم وجود اختلاف واضح فى اداء كلا المجموعتين.على اية حال، بمقارنة إداء كل مجموعة تبين أن كلا المجموعتين قد تطورت بشكل واضح . أغلب التلاميذ بينوا إن استعمال الوسائط المتعددة مفيد فى اثارة الاهتمام بين المتعلمين لتعلم اللغة الانجليزية ،حيث انهم صنفوا محتويات الوسائط المتعددة بجيد وجيد جدا .

الكلمات المفتاحية: الفعالية ، الوسائط المتعددة ،المهارة ، الفهم الادراكي.

1. INTRODUCTION

In order to ensure quality education in schools, we need to develop teachers through effective training programmes both at pre-service as well as in-service level. However, quality of Training has been an area of concern for several decades among the teacher educators and training institutes. A number of methodologies, teacher training designs and practices have been tried out in this field, but none of them has been found full proof in itself, which one can be used universally for developing the repertoire of teachers.

The Recent National Curriculum Framework (NCF) (2012) had focused on refreshing the skills of pre-service as well as in-service teachers with the use of educational technology, it recommended that there is a need to :

- Create a system of lifelong professional development and support, especially of educational leaders and academic educators.
- Encourage ICT (Information and Communication Technology) literacy for official and personal use to increase comfort, interest, and later enhance creativity in the educational work.
- Introducing the use of Multimedia and technology enabled methods of learning, making it inherent and embedded in the teaching-learning process of student-teachers (pre-service teachers).

Commenting on the need of ET, the NCF document further says that, "even while we set out to accomplish this goal, revamping the ET component of the course requires immediate attention. As long as ET is used in isolation from the other components related to teaching-learning, it will fail to convince a student-teacher about the significance of her/his role in engineering the teaching-learning situation and the importance of making it a more meaningful experience for both the teacher and the pupils."

In view of the above, the teacher education programmes need to be meticulously planned and organized with the use of different material and methods, so that the teachers of desired pedagogical skills, attitudes and competences are developed through training.

"As teachers, we can find out what intrigues our learners and we can orient our approaches accordingly" (NCF,2012).

In present age of ICT, the pedagogical content knowledge and skill of teachers should be enhanced with the use of Multimedia content. Teaching English Language is one of the areas in which lots of scope for the use of content and ICT based resources. Mainstreaming the technological media within what is called ‘‘Multimedia’’ is the pattern which led to infinite applications of computer technologies. The concept of this technology came into being with the appearance of sound cards, then compact disks, then came the use of digital camera, then the video which made computer an essential educational tool. Nowadays, Multimedia expanded to become a field on its own. The use of educational technology should be tried to be important component of training strategies for both student-teachers and in-service teachers.

2. WHAT IS MULTIMEDIA?

Mayer (2001) states that Multimedia is the multiple introduction of a material with picture or text. On the other hand, Multimedia is defined by (Dinç, 2000) as the synthesis of digital platforms such as text, audio, graph, animation, visual and video. In another explanation , is "the field concerned with the computer-controlled integration of text, graphics, drawings, still and moving images, animation, audio, and any other media where every type of information can be represented, stored,

transmitted and processed digitally" (Marshall, 2001:57) . Related to these, Tomei (2003) defines Multimedia as the use of more than one platform bodily to increase the effectiveness of instruction. However, it is generally used to refer to computer-based Multimedia today. In the Multimedia definition of Brook (1997) , on the other hand, the use of platforms like movies, slides, music and light for purposes such as education or advertisement are emphasized.

In summary, it could be stated that Multimedia is composed of computer platforms where written media is presented with audial, visual and animation media, and high definition and graphs are set (Maddux et al., 2001).

From the literature, it could be asserted that Multimedia use eases and objectifies learning as it presents more than one technological factor to the learner and it addresses more than one emotion of the receiver .

3. THE STUDY

3.1 Need of the Study

In the current age of ICT, a lot of Multimedia resources are available to teachers and learners. But a debate is on, whether the use of Multimedia to support or help the students to improve or enhance their performance in English Language education. The present study has been an attempt study to investigate whether the use of Multimedia is more effective than the traditional method of "chalk (whiteboard)-and-talk" in teaching, training, and developing pre-service teachers' (student-teachers) language learning skills. The reformed Curriculum (2012) has strongly recommended the use of educational Technology; To encourage ICT literacy for official and personal use to increase comfort, interest, and later enhance creativity in educational work; Introducing the use of Multimedia and technology enabled methods of learning, and making it inherent and embedded in the learning process of student-teachers ; and to train student-teachers to evaluate and integrate available materials into the learning process. In view of the current revolution in the Multimedia development and the above recommendations, it becomes pertinent to see the effectiveness of Multimedia resources in the teaching-learning of English Language in Departments of English at Colleges of basic education and the training process of student-teachers through these resources.

3.2 Rationale of the Study

The findings of such studies can make a significance contribution towards the processes of EFL students' development and future organization of their training. Further, such study will the learners help in planning the classroom interventions by handling the given materials along with enabling teachers in guiding and teaching the wide ability groups of learners and to develop an interest and positive attitude towards language learning. This study reports the effort made to investigate and establish whether teaching English using Multimedia language content could be effective for developing students' performance by way of enhancing their pedagogical content knowledge. The study was focused on the capacity enhancment of students in the Colleges of Basic Education/ English Department.

3.3 Objectives of the Study

1. To investigate the effectiveness of Multimedia content in enhancing the conceptual understanding and pedagogical content knowledge and skills of undergraduate English language learners in Colleges of Basic education.

2. To compare the effectiveness of Multimedia content based teaching inputs with the traditional method of teaching of undergraduate English language learners.

3.4 Hypothesis

There is no significant difference in the level of competence of undergraduate English language learners (pre-service teachers) who are taught through Multimedia and those of traditional method teaching.

4. REVIEW OF RELATED LITRATURE

According to (Ginsurg and Opper,1988), constructivist approaches to teaching and learning assert that learners learn new concepts by expressing their understandings. Quicke, J. (1999); and Dimopoulos &Koulaidis (2003), have put forth the argument about language curriculum in risk society and Science and Technology Education for citizenship, respectively.

Shih-Hsiung Liu (2012) proposed a multivariate model of factors influencing technology use by pre-service teachers during practice teaching. The paper investigated the significance of, and relationships between, process factors and their direct and indirect effects on technology integration and further tests a multivariate hypothesized model. The proposed model has implication for teacher education and it suggests that technology should be integrated into core method courses, not limited to isolated courses.

Mariss (1980) presented a study aims at comparing the efficiency of the teacher's traditional explanation and the Multimedia method in the students' academic achievement and their attitudes. The researcher divided a sample ,comprising 80 students from the ninth grade, into control and experimental groups. The researcher used (diagrams, tapes & programed films) achievement tests designed by him. The results were: the academic achievement of the experimental group students increased as a result of using Multimedia as there were statistically-significant differences of the average achievement in favor of the experimental group students who used the Multimedia group .

Atawaim (2000) conducted a study to investigate the effect of the computer as an educational tool on students' academic achievement in the Arabic grammar taught to the 6th grade primary students in Riyadh. A sample consisted of an experimental group including 30 students studied by using computer and a control group including 30 students studied by the traditional method. The study showed significant statistical differences in students' average academic achievement between the two groups in the level of remembrance and the absence of significant statistical differences in the level of academic achievement and application and the overall test level.

As there is very little work reported on the use of Multimedia in teaching pre-service teachers, hence we carried out this study.

5. RESEARCH METHTHODOLOGY

The researcher used the experimental method in studying the effectiveness of Multimedia on the dependent variable (conceptual understanding and performance), a comparison was made between the experimental group who was taught by using Multimedia group along with a teacher, and the other group is a control one who was taught by using the traditional way of teaching. The variables were controlled, which mean that both groups are equivalent in terms of academic level, teacher and teaching location and the two groups have undergone a pre and post tests.

5.1 Tools

- The researcher selected passages from reading Comprehension textbook "Developing Skills" by Alexander which is prescribed for second year students in the English Department.
- A questionnaire (EMMCS) containing 21 items was developed to collect feedback from the participants about the overall impact and effectiveness of the intervention made through multimedia.
- A pre-test was prepared and administered to the control and experimental groups before conducting the study and its duration was 45 mins (Appendix A).
- A post-test was prepared and administered to the control and experimental groups after the week of the study and its duration was 45 mins (Appendix A).

5.2 Sampling

The sample was selected randomly from the study community, where it consisted of TWO intact groups from Second year students in the English department at the College of Basic Education/ University of Babylon. The researcher divided them into control group and experimental group; the control group of 31 students and the experimental group of 34 2nd year students. The experimental group was taught with the aid of Multimedia whereas the other group was given classes through using the traditional ways of teaching (teacher, lecture, and discussion).

5.3 Delimitation

The study limited to undergraduate English Language learners in English Department at the College of Basic Education during the academic year 2016-2017.

6. RESULTS AND DISCUSSION

6.1 Organizing teaching classes with the use of Multimedia content: After administering the pre-test on the 1st day of teaching the selected groups, classes were organized with the group of 2nd year students by using the Multimedia content. The requisite arrangements were made in the language Lab in English Department. A brief introduction of the content was given by the investigator and with a request to participants to carefully and attentively view the content presented and note down all important points, concepts and queries. Based on the observations of the participants, discussions were held after each class on the presented topics. In order to seek the opinion about the effectiveness of intervention made with the use of Multimedia content, EMMCS questionnaire containing 21 items was developed and administered to the sample at the end of the intervention.

The control group was oriented on the same topics by the traditional method of teaching.

6.2 Analysis of the data: The data collected was analyzed by applying appropriate statistics and presented as below:

Table1: Pre-test data of Control as well as Experimental Group

Statistics	Control Group(N=31)	Exp. Group (N=34)
Mean	**19.81**	**19.52**
SD	**3.00**	**4.06**
SEM	**0.54**	**0.71**
df	**62**	
t	**0.3244**	
SED	**0.898**	
P value (two tailed)	**0.7467**	

By conventional criteria, p value of 0.7467 is considered to be not statistically significant. The 't' value is also not significant at 0.05 and 0.01 level.

Table 2: Pre-test and Post-test data of Control Group

Statistics	Control Group(N=31) Pre-test	Control Group (N=31) Post-test
Mean	19.81	21.19
SD	3.00	3.06
SEM	0.54	0.53
df	30	
t	2.6576	
SED	0.522	
P value (two tailed)	0.0125	

The two-tailed P value equals 0.0125 and by conventional criteria, this difference is considered to be statistically significant. The 't' value is also significant at 0.05 level and not significant at 0.01 level.

Table 3: Pre-test and Post-test data of Experimental Group

Statistics	Exp. Group(N=34) Pre-test	Exp. Group (N=34) Post-test
Mean	19.52	22.79
SD	4.06	3.67
SEM	0.71	0.63
df	33	
t	6.1073	
SED	0.522	
P value (two tailed)	0.0001	

The two-tailed P value equals 0.0001 and by conventional criteria, this difference is considered to be statistically significant. The 't' value is also significant at 0.05 level and 0.01 level. This indicates that the intervention has been effective in improving the performance of the students.

Table4: Post-test data of Control as well as Experimental Group

Statistics	Control Group(N=31)	Exp. Group (N=34)
Mean	21.17	22.79
SD	3.06	3.67
SEM	0.53	0.63
df	62	
t	1.9122	
SED	0.851	
P value (two tailed)	0.0605	

The above data indicates that the mean score of the experimental group was a bit higher than that of the control group. The P value indicates that the performance of the two groups is not statistically significant. The 't' value is also not significant at 0.05 level and 0.01 level. This indicates that both groups have shown improvement in their performance. Thus, it is not certain whether Multimedia method of teaching is superior to the traditional method.

On the basis of the above analysis, the hypothesis that there is no significant difference in competence of undergraduate English language learners (student-teachers) who are taught through Multimedia and those of traditional method teaching is approved.

6.3 Effectiveness of the Multimedia content as perceived by the students: The tool constructed for the purpose was administered to know the feedback from the participants in the experimental group. The analysis of the responses (%) collected

from the 34 respondents forming the experimental group is given below in the form on numerical data .

Table 5: Opinion of Students (N=34) about the Effectiveness of the Multimedia

Item No.	The Items	Yes (%)	No (%)
1.	Did you find the language activities and content of Multimedia materials interesting?	**28 (82.35)**	**6 (17.65)**
2.	Can you organize the activities shown without any of the tools used in this experiment?	**11 (32.35)**	**23 (67.65)**
3.	Did you find the content of Multimedia tools informative and sensitizing?	**30 (88.18)**	**4 (11.76)**
4.	Was the content useful for explaining the language concepts behind daily life observations?	**31 (91.18)**	**3 (8.82)**
5.	Whether the content of the tools used could be used for educating and teaching pupils and public?	**22 (64.71)**	**12 (35.29)**
6.	Is it suitable to develop positive' attitude towards reading comprehension (RC)?	**24 (70.59)**	**10 (29.41)**
7.	Can the content be used in eradicating superstitions from language learners?	**28 (82.35)**	**6 (17.65)**
8.	Whether the content is useful in developing the language learners' strong belief in truth?	**28 (82.35)**	**6 (17.65)**
9.	Whether the content is suitable in developing the learners' interest in language, in general, and in reading comprehension, in particular?	**26 (76.48)**	**8 (23.52)**
10.	Did you find these activities shown in the experiments innovative?	**28 (82.35)**	**6 (17.65)**
11.	Is it possible to use this type of teaching in ordinary classroom?	**18 (52.94)**	**16 (47.06)**
12.	Do you feel that use of Multimedia content can replace the teachers in classroom?	**3 (8.82)**	**31 (91.18)**
13.	Do you still need teachers' intervention after viewing the Multimedia content?	**32 (94.12)**	**2 (5.88)**
14.	Is there any need for further explanation of the activities presented in the class with the use of Multimedia?	**28 (82.35)**	**6 (17.65)**
15.	Whether the material for such activities could be arranged from surrounding?	**29 (85.29)**	**5 (14.71)**
16.	Is there any risk or challenge in designing such type of activities to learn English Language skills in your class?	**13 (38.24)**	**21 (61.76)**

As indicated by the data in the above table, majority of students found the Multimedia content interesting, sanitizing, and suitable to explain the concepts behind daily life observations, useful to eradicate suspensions, innovative, not requiring further explanations and intervention of the teachers. However, a majority of the students (67.35%) indicated that it is not possible to organize such activities without the tools used in this experiment and a huge majority of students (91.18%) was of the view that such Multimedia cannot replace the teachers in the classroom. Regarding the use of such content in the classroom around half of the sample was in agreement and 47.06% denied it.

Efforts were also made to collect data about grading of the Multimedia content by students on the basis of motivating the learners, presentations, and explanation of the concepts and vocabularies. The following 3 items were included in the EMMCS questionnaire and respondents were asked to indicate their grading as; **Excellent/Very Good/ Good/ Average/ Poor.**

17.	Grading of the Multimedia content in motivating them (the learners) towards exploring the language content.
18.	Grading of the presentation of the Multimedia content.
19.	How do you grade explanation of the language new concepts and vocabularies through the content presented with the Multimedia?

Table 6: Grading of the Activities by the Respondents

Item No.	Excellent	Very Good	Good	Average	Poor
17.	**0**	**11 (32.35%)**	**19 (55.88%)**	**4 (11.76%)**	**0**
18.	**2(5.88%)**	**12 (35.29%)**	**16 (47.06%)**	**4 (11.76%)**	**0**
19.	**2(5.88%)**	**15 (44.12%)**	**10 (29.41%)**	**7 (20.59%)**	**0**

The data presented above indicated that a majority (55.88%) of the respondents in the experimental group graded the Multimedia content as 'Good' in motivating the learners. The presentation of the Multimedia content was also graded as 'Good' by majority (47.06%) of the respondents. Regarding the explanation of language new concepts and vocabularies, majority (44.12%) found the content 'Very Good' followed by sizable population (29.41% and 20.59%) indicating it as 'Good' and 'Average', respectively. Only 5.88% of the sample graded the content as 'Excellent', while responding to the item number 18 and 19, respectively.

Respondents were also asked to indicate about the cost of the Multimedia material used for development and presentation of Language content. The item 20 was included to collect data about this objective which is as follows:

Table 7: categorization of the Multimedia Content by the Teachers in terms of Cost

20. How do you categorize these activities and tools in terms of cost involved?					
Item No.	**No Cost (% responses)**	**Low Cost (% responses)**	**Neutral (% responses)**	**A bit Costly (% responses)**	**High Cost (% responses)**
20.	**0**	**14 (41.18%)**	**9 (26.47%)**	**7 (20.59%)**	**4 (11.76%)**

The data in table 7 indicated that the majority (41.18%) of the respondents were of the opinion that the Multimedia content was of 'Low Cost' category. None of them indicated it as ' No Cost' category. Only 20.59% and 11.76% of the respondents indicated that Multimedia content was of 'A bit high Cost' and 'High Cost', category, respectively.

Item number 21 was kept as an open ended to receive comments and suggestions from the participants. Only few of them furnished some comments such as non-availability of facilities is one of the major reasons that make the teachers present the materials in a traditional way. Some participants suggested that such material should be made available by the training institutes. The large size of class is a major constraint in organizing teaching-learning with Multimedia.

7. CONCLUSION

The study was carried out to find out the effectiveness of the Multimedia content in language learning in enhancing the students understanding and performance. The statistical analysis of the performance that there is no significant difference in the performance of both groups. However, on comparing the performance of each group before and after the treatment, it was found that both groups have improved significantly. A majority of students found the Multimedia content interesting, sensitizing and suitable to explain the concepts and vocabularies behind daily life observations, useful to eradicate superstitions, innovative, not requiring further explanations and intervention of the teachers. However, a majority of the students indicated that it is not possible to organize such activities without Multimedia tools and a majority of respondents was of the view that such Multimedia cannot replace the teachers in the classroom.

According to the findings of the study, it could not be established that the use of Multimedia content is actually effective in enhancing competence of learners. Probably, an amalgamated approach of teaching which includes traditional method supplemented with Multimedia would give better results.

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Appendix A

Pre-Test of Students

Read the passage carefully,

16 Mary had a Little Lamb

the little black lamb was almost white

Mary and her husband Dimitri lived in the tiny village of Perachora in southern Greece. One of Mary's prize possessions was a little white lamb which her husband had given her. She kept it tied to a tree in a field during the day and went to fetch it every evening. One evening, however, the lamb was missing. The rope had been cut, so it was obvious that the lamb had been stolen.

When Dimitri came in from the fields, his wife told him what had happened. Dimitri at once set out to find the thief. He knew it would not prove difficult in such a small village. After telling several of his friends about the theft, Dimitri found out that his neighbour, Aleko, had suddenly acquired a new lamb. Dimitri immediately went to Aleko's house and angrily accused him of stealing the lamb. He told him he had better return it or he would call the police. Aleko denied taking it and led Dimitri into his back-yard. It was true that he had just bought a lamb, he explained, but *his* lamb was black. Ashamed of having acted so rashly, Dimitri apologized to Aleko for having accused him. While they were talking it began to rain and Dimitri stayed in Aleko's house until the rain stopped. When he went outside half an hour later, he was astonished to find that the little black lamb was almost white. Its wool, which had been dyed black, had been washed clean by the rain!

Now, start working on the following

Q1// In the paragraph, find another word that means the same: (Choose 5 only) (5Ms.)

lost	
clear	
immediately	
refused	
quickly	
surprised	

Q2// Answer the following questions. (Choose 5 only) (10Ms)

1- What did Mary tell Dimitri when he came home?
2- What did Dimitri learn about his Neighbour , Aleko?
3- What did he accuse Aleko of?
4- What did Dimitri do when he saw it was black?
5- Why did he get a surprise when he went outside?
6- Had the lamb been dyed or not?

Q3// Are the following statements true or false? Justify you answer (5Ms.)

1.Mary's prize possession is a black lamb.	
2. Mary kept the lamb free at the back-yard.	
3. Dimitri accused Aleko of stealing his lamb.	
4. Aleko admitted of taking Dimitri's lamb	
5. When the rain stopped, Dimitri found his lamb being dyed black by Aleko.	

Q4// Write the following sentences again , changing the form of the phrases in Italics. (5Ms)

1- I believed *that he owned property abroad.*
2- The Minister declared *that the treaty was invalid.*
3- I know *that he is a person of high integrity.*
4- I guess *that he is about twenty-five years old*
5- We estimated *that the picture is worth at least 5000 Dollars.*

Q5// A-**Re-order the following words so as to make a meaningful sentence. (5Ms.)**

Scientist - Marie Curie- The French- first- became- the – to- woman-Nobel – the – Prize , world- the –honors-one of – in – greatest –the .

B- Complete each sentence with the correct form of the verb in parentheses.

1. If your parents were here, they (understand) _____ the problem better.
2. If Jan (know) _____ how to do it, she would not ask me.

Post-Test of Students

Ancient Arab Astronomy

Perhaps the most vital reason that the Muslims studied the sky in so much detail was for the purpose of time-keeping. The Islamic religion requires believers to pray five times a day at specified positions of the sun. Astronomical time-keeping was the most accurate way to determine when to pray, and was also used to pin-point religious festivals. Aside from religious uses, astronomy was used as a tool for navigation. The astrolabe, an instrument which calculated the positions of certain stars in order to determine direction, was invented by the Greeks and adopted and perfected by the Arabs.

In 830, the Khalifah, al-Ma'muun, founded ‘Bayt-al-Hikma’, the 'House of Wisdom' in Baghdad, as a central gathering place for scholars to translate texts from Greek and Persian into Arabic. These texts formed the basis of Islamic scientific knowledge. One of the greatest Islamic astronomers was al-Khwarizmi, who lived in the 9th century and was the inventor of algebra. Al-Khwarizmi performed detailed calculations of the positions of the Sun, Moon, and planets, and did a number of eclipse calculations.

Another Islamic astronomer who later had an impact on Western science was al-Farghani. In the late 9th century, he wrote extensively on the motion of celestial bodies. He was involved in the calculation of the diameter of the Earth.

Omar Khayyam was a great Persian scientist, philosopher, and poet who lived from 1048-1131. He performed a reformation of the calendar which was more accurate. An amazing feat was his calculation of the year to be 365 days long and making every fourth year a leap-year of 366 days throughout each cycle.

Western science owes a large debt to Islamic and Arab scientists, whose contributions range from the Arabic names of stars which we still use today to the mathematical and astronomical treatises used by Europeans to enter our modern world of science.

Now, start working on the following:

Q1//Are these statements True or False? Correct the false ones. (Choose 5 only) (5Ms)

1-Muslims had a special interest in astronomy so as to calculate the times for prayer and fasting .

2- The astrolabe is an ancient astronomical instrument, used to observe the positions of the stars.

3- The astrolabe was invented by the Romans and adopted by the Greeks.

4-The House of Wisdom was a scientific institution founded in Persia by the Abbasid caliph al-Ma'mun, in 630.

5- Omar Khayyam invented Algebra.

6- Omar Khayyam was an Arab scientist.

Q2//-Answer the following questions according to the text. (5Ms)

1-Why did Muslims have a special interest in astronomy?

2-Who invented the astrolabe?

3- What is an astrolabe?

4-Where was 'Bayt-al-Hikma' situated? And who was its founder?

5-What are al-Khwarizmi's accomplishments?

Q3// Match each word with its definition according to the text. (10Ms)

a-Festival	1 - any occasion for celebration
b-Astronomy	2 -information and understanding that you have in your mind
c- Knowledge	3 -an occasion when the sun is covered by the moon, or the moon is covered by the earth's shadow
d-Eclipse	4-the scientific study of the universe, including the stars and planets
e-Celestial	5 - of or relating to the sky
f-Diameter	6-achievement , accomplishment
g-Feat	7- a straight line that goes from one side of a circle to the other side and through the centre
h-Leap-year	8- to be in debt
i-To owe	9- a calendar year of 366 days, February 29 being the extra day, that occurs every four years
j-Treatise	10- a formal work on a subject

Q4// Fill in the gaps with the appropriate word. (5Ms.)

head - light - gravity - fall - scientists - apple - observation - rainbow - down - ground

There is a story that as Newton sat under an apple tree; an …….struck him on the…….. . He wondered why the apple fell ……. instead of up. Was some force that no one could see pulling the apple to the …… ?

Actually, it was Newton's …… of the motions of the planets that contributed most importantly to his great discovery: the Law of Universal Gravitation. This "natural law" helps explain how the Earth and the Moon and the planets keep from bumping into each other. It explains why things feel …….. or heavy and what makes them …….. to the ground. What Newton decided was that everything has……. . Newton figured out many other things too. Did you know that white light is actually made of seven colors? They are the colors that make up a……. . Newton discovered that. Isaac Newton, one of the greatest ……who ever lived, died in 1727 and was buried in Westminster Abbey in London, England.

Q5//Rearrange the set of words to make coherent sentences . (Choose 5 only) (5 Ms.)

1-The - has -that -on or near it - Earth – everything- pulls down on- gravity

2- force - It is this – us – all – keeps - on Earth – that

3- The - and the – also – Sun- gravity – Moon- have

4- All – in- gravity- the – universe - have – bodies

5- In fact, - hold - all - together - of them gravity- helps

6- Sir Isaac Newton- first- introduced – gravity- the idea of- and Albert Einstein- to- added - Newton's ideas.