

## ***ẽ*-economics Supplements: Supporting the Teaching and Learning of Economics through Open and Distance Learning**

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**Abstract:** This paper reports on the findings of a study conducted on the used of e-economics supplements to support teaching and learning of an Economics course in an open and distance learning environment. At Open University Malaysia (OUM),The Economics Support Team (TEST) designed a unique teaching and learning supplement called the *ẽ*-economics to address the issue of low performance. The supplements, developed based on learning outcomes, incorporated various learning activities using different levels of the Bloom's Taxonomy.This study aims to determine the effectiveness of *ẽ*-economics supplements in (1) enhancing teaching and learning activities (2) instill interest, motivation and confidence to learn the course; and (3) improve overall performance of learners in the course. The outcome of this study will be useful for Open and Distance Learning institutions to produce effective teaching and learning activities for Economics and other quantitative courses delivered through open distance learning.

### **Introduction**

Quality education through open and distance learning has been the driving principle embedded in all aspects of Open University Malaysia (OUM)'s operations since its inception in year 2000. Being Malaysia's first Open and Distance Learning (ODL) institution, OUM leverages on technology and adopts a flexible mode of learning in providing a conducive and engaging learning environment at a competitive and affordable cost to its learners. In addition to its mission to widen access to higher education and lifelong learning opportunities, OUM also aims to produce quality and competent graduates thus places strong emphasis on improving its teaching and learning activities.

Teaching and learning through distance education can be challenging for both the educator and the learner. The task to teach and learn quantitative courses such as Mathematics, Accounting, Finance and Economics can be more intimidating compared to teaching and learning non-quantitative courses. This problem is further intensified when learning occurs at an open and distance environment. In conventional settings, learners do hands-on exercises, trial-and-error practices, and obtain on-the-spot feedback from their teachers during classroom activities throughout the course. Distant learners, on the other hand, mainly struggle through these courses in isolation. Educators often find it difficult to develop teaching and learning activities that cater to the needs of these distant learners. Besides encouraging independent learning, they must also keep learners engaged, motivated and focused throughout the course. Educators not only play the role as a subject matter expert, but at the same he/she is required to play the motivating role in the teacher-learner relationship. Given the factors above and the difficulty level of these courses, it is not surprising that learners who feel disheartened usually perform below average in their assessments.

Majority of OUM learners comprised of working adults who may have left school for a number of years and has now returned to pursue higher education. Taking into consideration the unique characteristics of this group of learners, additional support must be provided to help them cope with the current demands of the academia apart from developing learners' interest, motivation and understanding for a course.

This study attempts to determine the effectiveness of using *ẽ*-economics supplements in (1) enhancing teaching and learning activities (2) instill interest, motivation and confidence to learn the course; and (3) improve overall performance of learners in the course.

## Literature Review

Bloom's Taxonomy developed by Benjamin Bloom (1956) is among theories of learning widely used in the education field. One of the major categorization of education activities in the taxonomy is the cognitive (knowledge) domain. In this domain, the development of knowledge and intellectual skills are emphasized. Learners progress through six levels of learning, namely knowledge, comprehension, application, analysis, synthesis, and evaluation. Each level must be mastered from a lower level before the next level can take place. Understanding of the taxonomy would enable learners to expand their cognitive domain and achieve higher levels of thinking. On the other hand, educators could guide learners to reach higher level of thinking by incorporating "instructional support" of various levels when developing their learning materials and assessments.

In order to learning to be successful, the development learning materials, delivery of courses as well as assessment should be closely tied up to the learning outcomes of a course. Learning outcomes are statements of what a learner is expected to know, understand and /or be able to do at the end of a period of learning. (Bologna Process). Learning outcomes which must be made explicit to learners, will groom them while they learn and keep them focus and align in their courses.

According to Shaw & Polovina (1999), as compared to the conventional face-to-face educational experiences, open and distance learners feel lonely and isolated in learning due to the limited contact with the instructors and fellow course mates. Regardless of the significance of additional support in the eye of the public, any forms of support would be a blessing to the learners.

Holmberg (1989), widely regarded as a seminal author in the field of distance and open education, also stresses "support" for students as being an important factor in successful learning. He focuses on the idea of the "emotional involvement" of the students in their study and the necessity for students to feel a rapport with both their teachers and the providing institution (Holmberg, 1989, p.162).

According to Young (2002), online education has changed the roles of educators. Online teaching redefined faculty members' schedules, as well as their duties and relationships with students by requiring more pre-course planning, distribution of time online over the course implementation, and virtual connectedness with students on a daily basis.

The utilisation of emerging technologies in distance education led to the American theory of equivalency, which seeks to make equivalent the learning experiences of all students no matter how they are linked to the resources or instruction they require (Simonson et al., 2000). According to this theory, distance education providers have the responsibility to design instructions that provide learners with equal learning experiences and values.

Quinn (2005) cautioned that in designing content, educators should be designing experiences instead and keep their learners engaged in the learning process. He suggested that a structure which comprises elements of objective, introduction concept, examples, practice and summary – can be used to develop a learning experience. Learning will be at its best when it is goal-oriented, contextual, interesting, challenging and interactive.

Desmond Keegan's (1990,1996) theoretical framework for distance education focuses on the concept of reintegration of teaching acts. To Keegan, education requires intersubjectivity, and it is crucial to recreate artificially this shares experience between teacher and student by making learning materials as dialogical as possible and by utilising different communication techniques (Simonson et al., 2000).

With today's educational technology and learning management system, more opportunities can be created for communication and collaboration even if learners' are separated by time and space. The tools used can be e-mail, chat rooms, online forums, bulletin boards etc. These tools allow for collaborative work and immediate feedback. Given such technology available today, learners are able to share freely their viewpoints and problem faced, thereby gaining insights and perspectives which otherwise would not have been exposed to. This type of environment allows for social interaction and creates meaningful, active learning experiences (Bonk, 1998). However, online learners must be familiar with the technology used in the course in order to be successful (Belanger & Jordan, 2000).

Nokelainen (2006) conducted a study on the criteria for evaluating the pedagogical usability of digital learning material. The purpose of the criteria is not to brand any learning material as “good” or “bad” but rather to help learners to choose the most suitable alternative for any particular learning situation. Different goals necessarily lead to different fields of interest.

One of Kay and Knaack’s (2007) conclusions in a review of the literature is that there is a tendency that evaluation of the technology is emphasized ahead of evaluation of learning. One possible interpretation is that this is because the point of view of the developer has been emphasized more than the point of view of the user. However, many researchers endeavor to reduce the complexity to a manageable set of rules, guidelines, or descriptive terms (Hinze-Hoare, 2007).

Based on literature, it is important that distant educators consider new ways of developing teaching and learning mechanisms to enhance the learning experience of distant learners and to keep them engage and motivated especially throughout quantitative courses.

## Methodology

Teaching methods that activate learning such as short exercises were used with lectures to enhance learning in a first year university course for business and management students. The activating methods were planned to support student-centred learning and were also aimed at meeting the different needs of every student. Five subject matter experts in the field of Economics were selected to form *The Economics Support Team* (TEST). TEST designed a unique teaching and learning supplement, *ẽ-conomics* to support a level-4 course, Principles of Macroeconomics. *ẽ-conomics* is a guided supplement that contains questions developed based on the learning outcomes of the course. In each activity, learners are exposed to a concept using different variations of the Bloom’s Taxonomy from a lower level to a higher level in the taxonomy. As a guide, keywords are provided for each presented problem. The guiding principle behind *ẽ-conomics* is that learners should be exposed (be taught and learn) to a course in a similar manner in which they will be assessed.

A total of sixty learners from two OUM learning centres were selected to participate in the study. During the first tutorial meeting, the learners were asked to express their opinions, feelings and perception towards the course. They were then informed that they would receive the *ẽ-conomics* supplements periodically throughout the course. The supplements were uploaded into the learning management system, myLMS and notifications as well as reminders were sent to the learners’ emails. At the end of the course and after their final assessment, data were gathered from the participants using a 20-items questionnaire. Learners gave their opinion on the effectiveness of the supplements in supporting their learning for the course on a Likert scale of 1 – 5.

The performances of these participants were measured at the end of the semester by their final grades for the course. These results were also compared to the overall learners who registered for the same course. Results were tabulated and analysed using descriptive statistics.

## Analysis and Discussions

All 60 respondents selected for the study completed and returned the questionnaire. Data collected were analysed using SPSS software. Descriptive statistics on the respondents demographic are presented according to gender, learning centre, ethnic, and age. The detailed statistical data (frequency and percentage) can be obtained in Table (i), Table (ii), Table (iii) and Table (iv).

**Table 1 (i)**

Gender	Frequency	Percent
Male	23	38.3
Female	37	61.7
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 1 (ii)**

Learning Centres	Frequency	Percent
Klang Valley	15	25
Outside Klang Valley	45	75
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 1 (iii)**

<b>Ethnic</b>	<b>Frequency</b>	<b>Percent</b>
Malay	43	71.7
Chinese	6	10
Indian	8	13.3
Others	3	5
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 1 (iv)**

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
<30	15	25
30-40	13	21.7
41-50	28	46.7
>50	4	6.7
<b>Total</b>	<b>60</b>	<b>100</b>

Based on the findings, female respondents (61.7%) outnumbered the male respondents (38.3%). Majority of the respondents (75%) studied at the learning centre out of Klang Valley, while the remaining 25% were from the Klang Valley learning centre. Of the 60 respondents who participated in the study, 71.7% are Malays, 10% Chinese, 13.3% Indians and 5% from the other ethnic groups. Majority of the participants were between the age group of 41-50 (46.7%) and below 30 (25%). Respondents between the ages of 30-40 made up 21.7% of the group while a small majority of them (6.7%) were above 50 years.

The 20-item questionnaire used to obtain feedback from participants in the study with regards to the effectiveness of the *e-economics* supplements was based on a 5-point Likert ranging from Strongly Disagree (1) to Strongly Agree (5). The Cronbach' alpha of 0.83 suggested good internal consistency reliability for the scale with this sample. Table 2 shows the seven dimensions used to measure the effectiveness e-economics supplements (e-S) in supporting teaching and learning of the Economic course.

**Table 2**

<b>Dimension</b>	<b>Question Items</b>	<b>Mean Score</b>
Facilitates learning and understanding of the subject	Q1, Q2, Q4, Q8 & Q12	4.21
Instill confidence, interest and motivation to learn	Q9, Q11 & Q13	4.27
Used as learning tool with tutors and peers	Q7, Q14, Q15 & Q19	3.91
Dependency as revision materials	Q3 & Q18	4.22
Reflects learning outcomes	Q5 & Q16	4.19
Complements self-managed learning of Economics in ODL setting	Q10	4.28
Relevant for other ODL courses	Q6, Q17 & Q20	4.18

Five items in the questionnaire were used to examine the effectiveness of the e-S in facilitating learning and understanding of the subject. The mean score for this dimension was 4.21. Most participants in the study agree that the e-S help them make sense of the subject. The important and difficult concepts highlighted through e-S activities has improved the participants' understanding and kept them focused throughout the course. This increases their ability to analyze more difficult economic concepts.

Majority of the participants in the study concur that the e-S was also useful in instilling confidence, interest and motivation to learn the course. This dimension was measured using 3 items in the questionnaire and it yielded a mean score of 4.27. Participants felt more confident to attempt their upcoming assessments as the exercises were able to stimulate their rationalisation of difficult theories. They were also more prepared knowing the assessment styles as well as the levels in which they will be tested.

Participants in the study, however, had mixed reactions towards using the e-S as a learning tool together with their tutors and peers. The mean for the four items in this dimension was 3.91. Participants had mostly attempted the e-S on their own. The reason could be attributable to the fact that the e-S had provided key answers and guidance hence there would be no need for learners to discuss the questions with their tutors or their peers. The finding is in concurrence with the development of the e-S as a tool to support learning in an open and distance environment.

Majority of participants in the study had relied on the e-S during revision prior to their final assessments. Two items were used to measure this dimension in the questionnaire. The mean score was found to be 4.22. Instead of reading through the whole module, learners found that the e-S keep them focused on important topics and helps them maximize their time during the revision period.

Participants also felt that learning becomes more meaningful with the e-S as it is closely linked to the learning outcomes for the course. Two items which measure this dimension produced a mean score of 4.19. When learners become aware of what it expected out of them at the end of the course, they become more align and are better prepared to achieve these goals.

An item in the questionnaire which measure the suitability of using e-S to learn economics through open and distance environment yield a mean score of 4.28. e-S was found to not only complement the existing learning materials but also add value to self-managed learning. Participants also felt that e-S should be provided for other OUM courses especially in quantitative subjects. The mean score for this dimension is 4.18.

At the end of the semester, the overall results of all learners registered for the course were obtained and the following results were tabulated in Table 3.

**Table 3**

<b>Grade</b>	<b>Results of Other Registered Learners</b>	<b>%</b>	<b>Results of Sample Group</b>	<b>%</b>
A	28	6.3%	4	6.7%
A-	15	3.4%	8	13.3%
B+	43	9.6%	13	21.7%
B	43	9.6%	16	26.7%
B-	40	8.9%	11	18.3%
C+	69	15.4%	6	10%
C	79	17.7%	2	3.3%

A total of 507 learners registered for the course in the chosen semester of study. The sampled participants (60 learners) made up 11.8% of the population. Of the sample, a total of 6.75% scored A, 13.3% scored A-, 21.7% scored B+, 26.7% scored B, 18.3% scored B-, 10% scored C+ and 3.3% managed to score a grade C. None of the participants of the study scored below C as compared to the 130 (25.6%) learners of the population who were not included in the study. Generally, learners who were provided with the *e-economics* supplements performed better compared to the overall population who were not provided with the additional learning supplements. The below average performance were also not noted within the sampled group.

Studies on using the *e-economics* supplements as a learning tool will continue, and improvements in portfolio tasks will be tested. More calculations and small essays will be added to replace the lecture diaries. Also, a bigger selection of tasks would motivate students to work and be responsible for their own learning. Based on the estimated learning outcomes and feedback, it was observed that exercises and continuous practices do improve learning. The former is not a new fact, but it is worth remembering that the core content and learning outcomes must be carefully determined beforehand and studying activities must be focused towards those issues to provide effective learning.

Different teaching and learning methods can be used to enhance learning. These methods require not only more effort from the student but also more work from the teacher, both of whom have limited time for teaching and learning. Hence careful timetabling and resource planning becomes very crucial. From the study, it was found that *e-economics supplements* can be resourceful to support teaching and learning as it provides better understanding, to the course. Evaluation of learning outcomes plays an important role in finding the best and most effective ways of teaching where the resources can also be used effectively.

## **Recommendations and Conclusions**

*e-economics* supplements used in this study could enhance the teaching and learning activities for the quantitative course, Principles of Macroeconomics. Distant educators must adopt a proactive approach

to understand and develop additional learning tools to support distant learning as learners tend to lose confidence and motivation if the course becomes too difficult to apprehend. Besides the adult learners may have left school for a number of years, and their struggle to cope with the existing demands of the academia should be empathically considered.

In this study, the *ẽ-conomics* supplements were found to instil interest and increase learners' motivation and confidence to learn the quantitative course via distance learning. The supplements exposed learners to the various ways in which a particular concept can be assessed. Learners feel more confident and ready to attempt their final assessments as the supplements had prepared them mentally to face the upcoming challenges. As the supplements were developed based on learning outcomes, learners become more aware of what is required from them throughout the course. This ultimately leads to meeting the course objectives and makes teaching and learning more meaningful to both the educators and learners.

The findings of the study also revealed that learners who were periodically given the *ẽ-conomics* supplements outperformed those without the supplementary support. The additional learning tools which incorporate higher level order questions closely resemble the assessment approach in which the learners will be assessed. When learners learn and are taught in a similar manner in which they will be assessed, this would result in a more confident and competent learner.

Since the study was confined to a particular course in a selected semester, future researchers may consider expanding the study to include a wider sample of the population or even to other quantitative courses such as Mathematics, Accounting and Finance. Demographic variables and other motivational factors that may affect the findings of the study should also be included in future researches. However, careful consideration must be given in developing the content of the supplements in order to meet the needs of the distant learner, the objectives of the course as well as the goal to create a competent learner.

In designing a course, the ultimate goal is to achieve learning, and the goal in teaching is to support this learning process. Because learning happens via studying, more emphasis should be given to the learners' studying process. In the future more emphasis must be put on the assessment of learning during the course, where understanding the basic concepts play an important role together with proficiency in basic calculations.

Feedback is also an important issue to solve, because it is important to students but it requires time resources from the teacher. One solution worth testing would be the development of student self-assessment and peer assessment as a part of the studying process. Of course, teacher feedback will always be needed, but it could be used in a more directed manner. Every action must be in balance with available teaching resources, the resources the students are able to use for learning and the learning goals of the course.

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