ISSN (Print) : 0974-6846
**Indian Journal of Science and Technology,** *Vol 9(24), DOI: 10.17485/ijst/2016/v9i24/96036, June 2016* ISSN (Online) : 0974-5645

# Quality Control Measures for Distance Education Institutions that are Part of the Academic Credit Bank System

**Sook Ryeol Rhyou[1], Hongil Ji[2] and ChangJin Seo[3*]**

[1]Department of Secondary Special Education, Youngdong University, Korea; rhyou@yd.ac.kr
[2]Department of Automotive Software, Youngdong University, Korea; jihi61@yd.ac.kr
[3]Department of National Defense Intelligence Engineering, SangMyung University, Korea; cjseo@smu.ac.kr

## Abstract

**Background/Objectives:** This study discusses quality control measures for use in distance education institutions that are part of the academic credit bank system of lifelong education in South Korea. **Methods/Statistical Analysis:** This study proposes a standard model, which measures quality control from two perspectives, namely, learning content and Learning Management Systems (LMS). **Findings:** This model will operate as a guideline for the development of a quality control system in distance education institutions. As self-directed learning programs are important in measuring quality control from the content viewpoint, this paper suggests pre-quiz narratives, thinking, formative assessment, regular tests, assignments, and discussion methods. **Application/Improvements:** The study aims to contribute to the field of quality education by ensuring that the distance learning education system in South Korea meets a specific level of education quality in the future.

**Keywords:** Academic Credit Bank System, Distance Education, E-learning, LMS, Quality Control

## 1. Introduction

The development of Information and Communication Technology (ICT) has contributed to establishing e-learning as one of the most important teaching and learning methods in the education sector. This system, which is seen as a new media in terms of learning environmental components, is an essential element in distance education. In its early days, e-learning was focused on equality of education rather than educational excellence. It was anticipated that the educational effects and influences of e-learning would take advantage of the development of ICT[1]. With regard to both quantitative expansion and qualitative growth, the International Organization for Standardization (ISO) has emphasized that e-learning should implement quality control both in terms of LMS and learning content in order to achieve efficient distance education[2,3]. Lifelong distance education means the provision of a learning assistance system for the learner's lifelong education, utilizing interactive ICT without space, time, or class constraints, or age and gender discrimination. In South Korea, distance education has been developed into various formats including distance universities, cyber universities, and the use of Korea Open CourseWare (KOCW). In recent years, distance education has increased rapidly by utilizing up-to-date media that can accommodate recent and rapid changes in education, including lifelong education. This study aims to establish a strategy to help the development of distance-based lifelong education through distance-based quality control in contrast with existing management, which is attendance based[4].

* *Author for correspondence*

## 2. Definition of Distance Education and the Meaning of Quality

Distance education refers to providing education to learners who have different learning times or spaces than their teachers. Learning times and spaces that are shared by learners and teachers are classified as traditional face-to-face education. In order to improve and manage distance education, the quality of that education needs to be defined. This is because the development of processes to evaluate, improve, and manage the quality of education depends on how the quality of education is defined[5].

Previous studies on the quality control of distance education have not achieved any consensus, which is confusing. A number of scholars have discussed the quality of distance education without specifying any definition of quality in distance education[6]. Such mixed and diverse views on the quality of distance education are due to differences in the definition of ideal education by the various stakeholders who are interested in the quality of education. Stakeholders, such as professors, students, parents, governments, employers of graduates, and certificate or qualification providers (the Ministry of Education, the National Institute for Lifelong Education, etc.), have relatively different expectations of and demands from higher education[7]. Depending on the viewpoints of these stakeholders, the ideal higher education system can vary considerably. It is important, therefore, that the meaning of quality in higher education should be clearly defined.

## 3. Measures for Quality Improvement in Lifelong Distance Education

### 3.1 Measures to Increase Quality in terms of Content

Active communication between teachers and learners is critical in order to improve distance education, which suffers from not having face-to-face properties despite its freedom from time and space constraints. It is therefore necessary to conduct a feedback process that can return information back to learners about responses shown during learning activities. In this way, learners can verify their learning. Such feedback aims to improve self-directed learning capabilities so that learners can control their own learning[8]. The methods described below are provided as measures by which learners can conduct self-directed learning programs within a learning content environment.

#### *3.1.1 Pre-quiz Narratives*

Pre-quiz narratives provide correct answers and explanations for questions that are answered by Yes (o) or No (x) as shown in Figure 1. This minimizes lack of awareness of any errors about important concepts and increases understanding of learning content at each stage.

#### *3.1.2 Thinking*

With this method, teachers suggest their own opinions

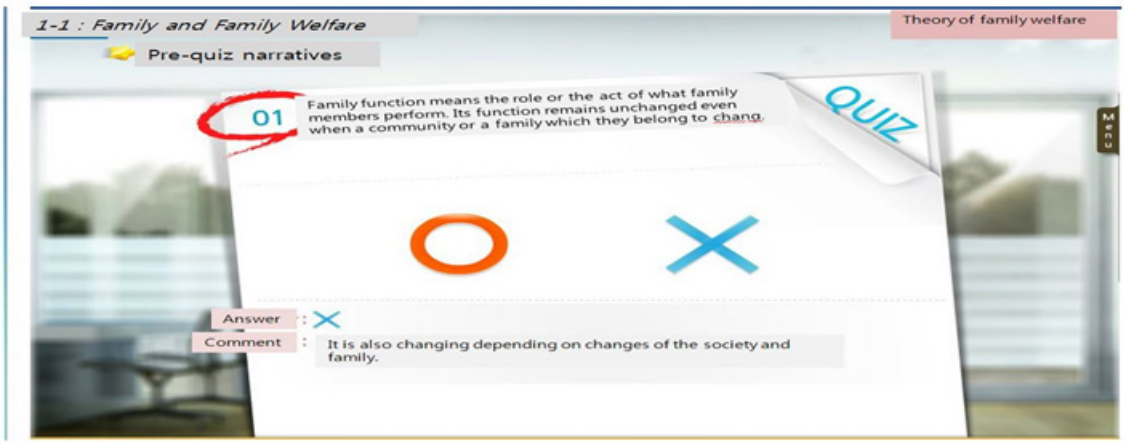



**Figure 1.** Example of pre-quiz narrative.

based on specialized knowledge after learners have established their own in-depth opinions about problems, based on content related to the subjects being taught. Learners then compare their own opinions with expert opinions, which can modify or complement their lack of knowledge as shown in Figure 2.

### *3.1.3 Formative Assessment*

Once learners have selected their own answers for two or three multiple-choice or subjective questions, based on learning content, correct answers and explanations are suggested. The level of understanding of learning content can be checked at each stage. The level of an individual learner's learning can be diagnosed as shown in Figure 3. This problem-solving process can improve educational achievement and learner satisfaction.

## 3.2 Assessment of Self-directed Learning Programs

Regular tests (mid-term or final), assignments and discussions can be used to assess learner performance via a range of objective methods. Learners can then check their own progress, thus increasing their ability to control their own learning and achieve self-directed learning.

### *3.2.1 Regular Tests*

By disclosing the correct answers to previous questions and by giving explanations to learners, individually, after mid-term or final tests have been completed as shown in Figure 4, learning achievement can be checked by the learners themselves and incorrectly-answered questions can be corrected. A learning through re-learning process can then be completed, if required.

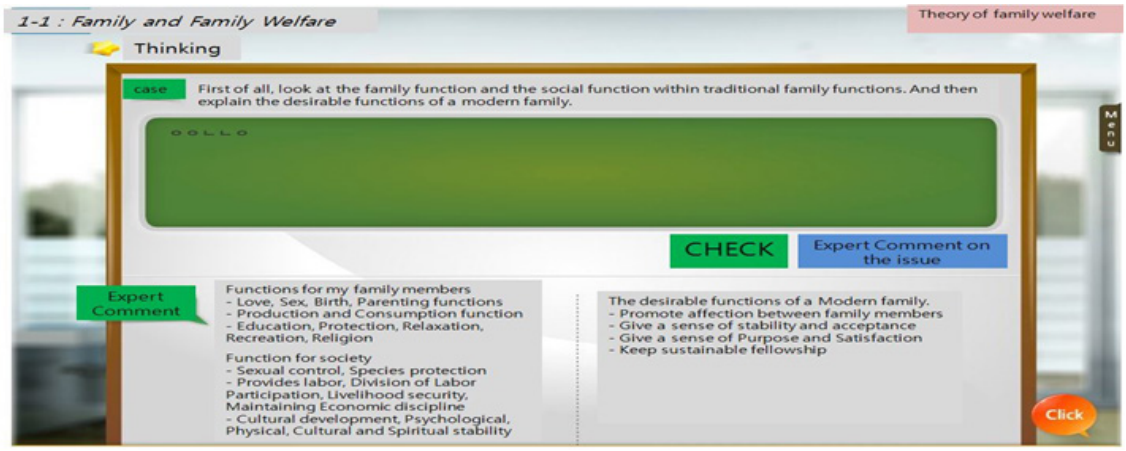



**Figure 2.** Example of thinking method.

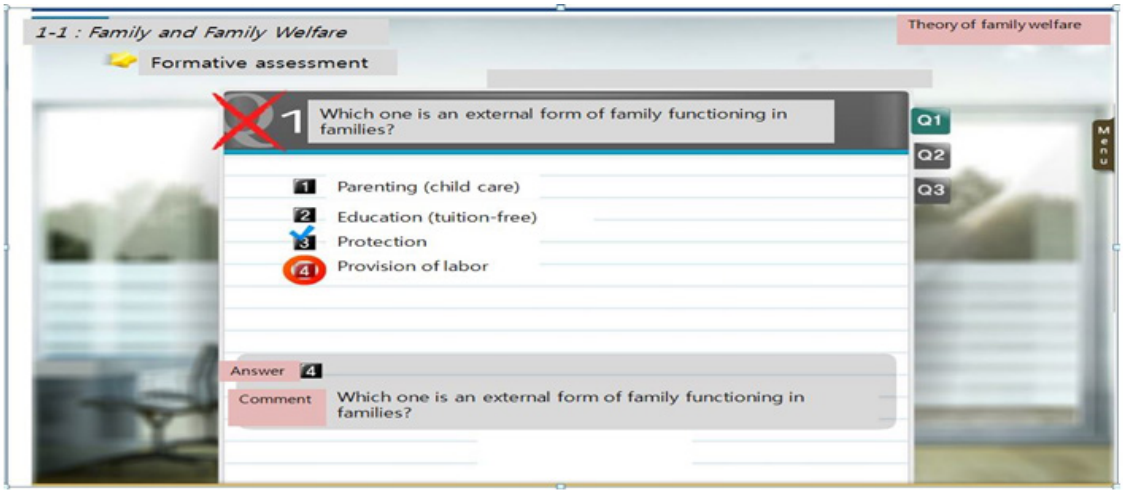



**Figure 3.** Example of formative assessment.

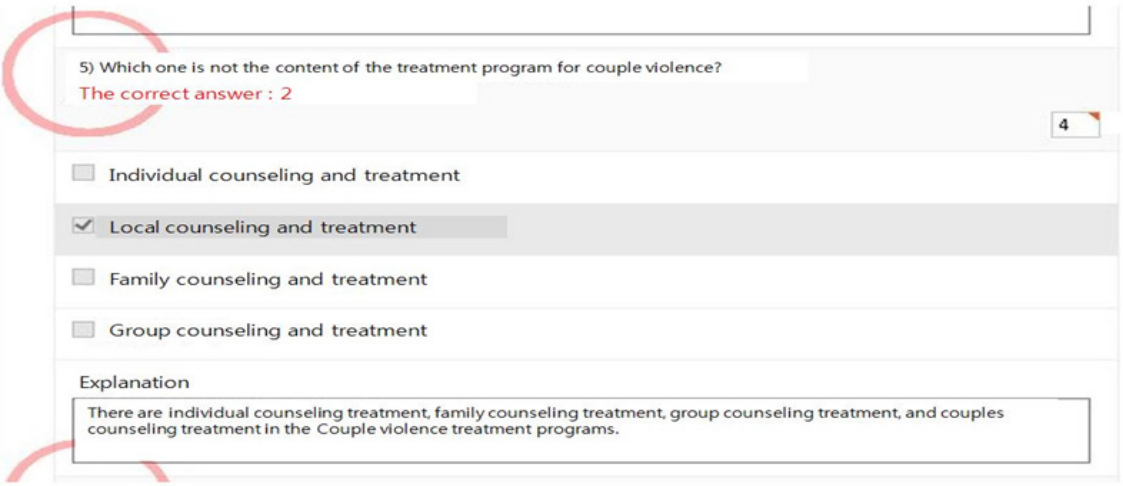



**Figure 4.** Example of regular assessment.

### *3.2.2 Assignments*

Assignments submitted by learners are assessed and reviewed by teachers as shown in Figure 5. In addition, the aims of the assignment, score criteria, and best assignment cases are suggested. In this way, learners can obtain information about the quality or quantity of submitted assignments, and can identify measures to improve their assignments, based on the information provided. The information provided can also clarify the objective of the assignment and improve self-scoring based on the scoring criteria. In this way, learners gain skills in writing assignments. Through the use of best cases, they can benchmark content structure and see how good assignments are written.

### *3.2.3 Discussion*

Assessment scores and reviews are provided for discussion with learners as shown in Figure 6. The aims of discussion topics and scoring criteria are provided and teachers summarize contents on the theoretical basis of two opposite opinions. Assessment reviews are also suggested. In this way, information about the quality or quantity of the submitted assignments can be given to learners, who can identify measures to improve their discussions, based on the information provided as well as by clarifying the objectives of the discussion topics and improving self-scoring based on the scoring criteria. In this way, learners can judge discussion topics from various viewpoints, widening their narrow and subjective conclusions.

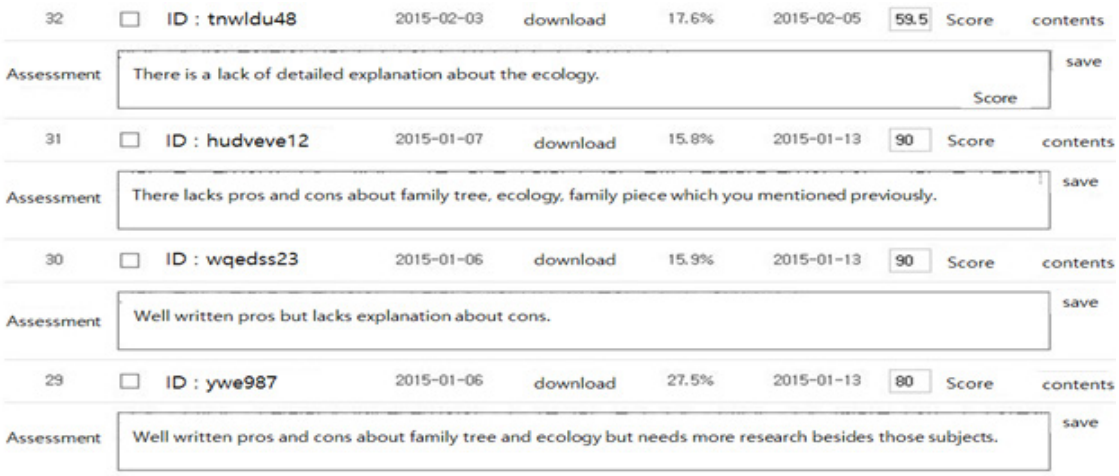



**Figure 5.** Example of assignment assessment.


Discussion assessment review –Grandchildren care 2013.06.01

This discussion topic asked about individual opinions about 'Grandchildren care' which is under Ministry of Gender equality & Family's consideration.
You have explained well about both pros and cons's logic and reason.
To summarize your opinion about pros and cons briefly.

Pros of 'Grandchildren caregiver' emphasized,
This could help grandmothers who don't have fixed incomes economically and it would be mentally helpful rather than taking care of your child by others. This could relieve childcare burden for a double income family.

Cons of 'Grandchildren caregiver' emphasized,
There are a lot of factors that could cause problems such as illegal supply and demand, the thing that only grandmothers from one's family can become a caregiver, a fairness problem for a double income family who doesn't have grandparents, and worries over waste of a lot of social expenses and human resources

According to statistical research, cons showed a fractional lead against pros at the rate of 6:4. It would be a good idea if you read other opinions whose are different from yours and reconsider it again.

Finally, this discussion leaves much to be desired. There was not enough discussion with others but insisting your own opinion as we can see among many of participants even the it was done over the internet. If you exchange your opinion and reason with others and reconsider your own opinion then you would probably submit better discussion assignment next time.

**Figure 6.** Example of discussion topics.

## 3.3 Measures for Improving Quality in terms of Learning Management Systems (LMS)

Use of an LMS can manage the quality of classes and prevent learner cheating via various methods. Typical cheating behaviors include proxy attendance, proxy exam-taking, leaking test questions, and copying other people's assignments. Quality control can involve adjusting the difficulty of tests or providing guidelines for qualitative assessment. In this way, the LMS plays a role in blocking cheating activities in advance and aims to achieve impartial and fair assessment.

### *3.3.1 Strengthening the Assessment of Lecturing*

Assessment of teaching and learning satisfaction must be carried out so that learners can query their final grades as shown in Figure 7. This improves response rates, making it possible to extract reliable data and manage quality control accurately through the analysis of feedback results.

### *3.3.2 Copy of Correct Answer Detection System*

This is a detection system for plagiarism in assignments submitted by learners, using natural language processing

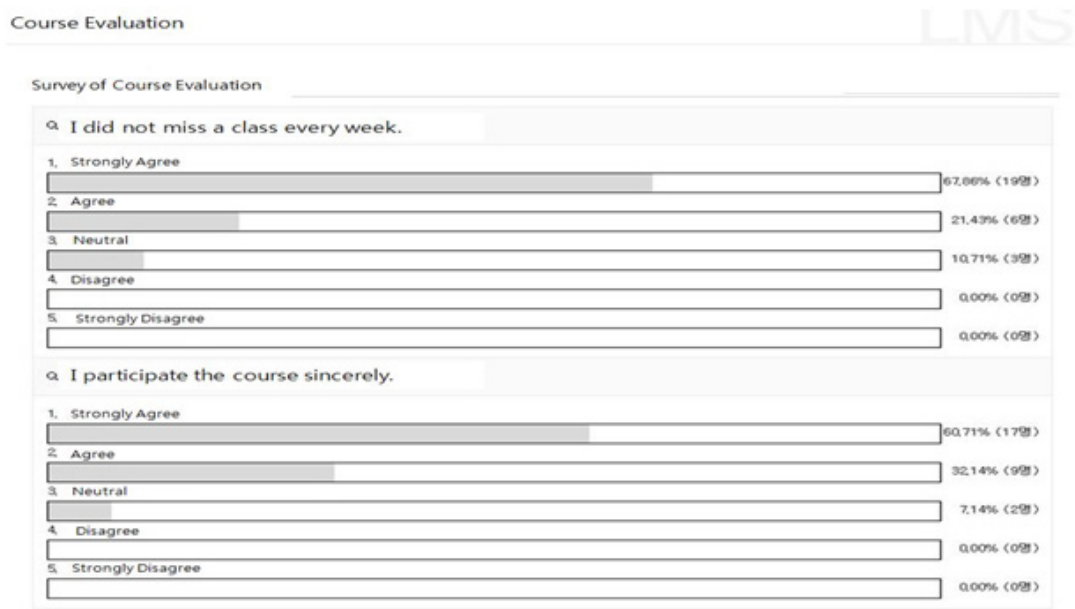
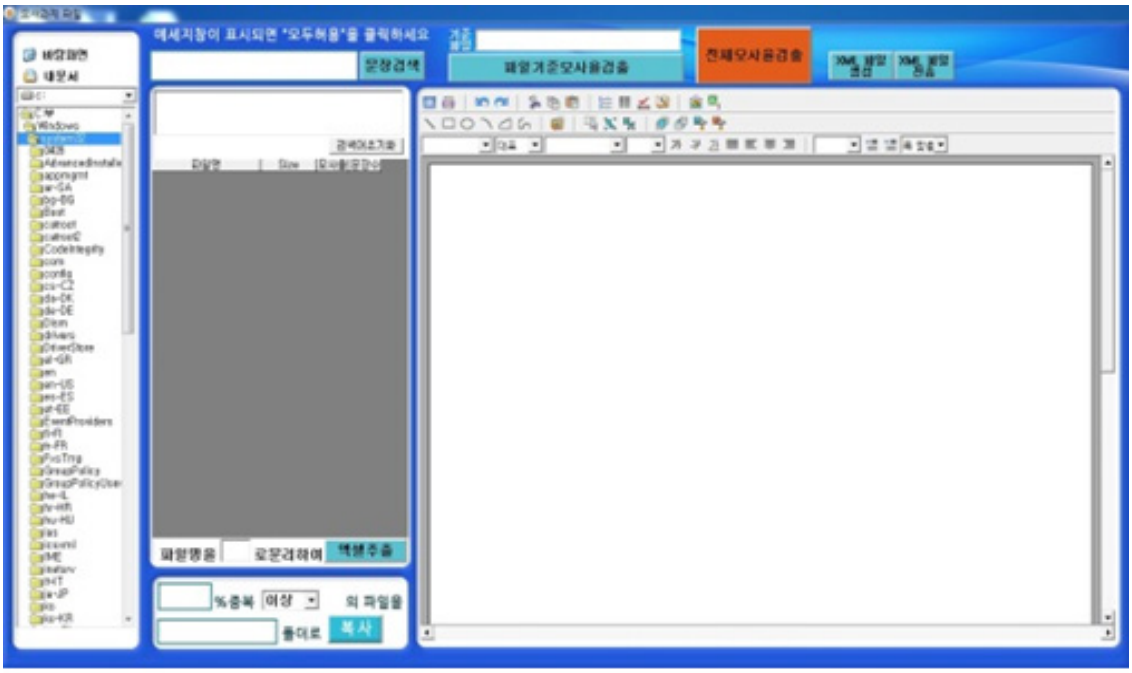



**Figure 7.** Example of lecturing assessment.



| ID | Date | File | Rate of copy |
|---|---|---|---|
| tnwldu48 | 2014-05-13 | download | 20% |
| hudveve12 | 2014-05-13 | empty | 0% |
| wqedss23 | 2014-05-13 | download | 18.4% |
| ywe987 | 2014-05-13 | download | 86.6% |

**Figure 8.** Copy of correct answer detection system.

as shown in Figure 8. It is not a one-to-one assignment comparison but a one-to-many comparison. The system can identify copied content in a complete assignment, which prevents learners from submitting content copied from other people's assignments or the Internet. It ensures strict management of plagiarism.

### *3.3.3 Preventing the Leaking of Test Questions*

The leaking of test questions can be a major threat to fair assessment because regular tests are conducted remotely. To prevent the leaking of test questions and attempts to search the Internet during testing, test screens are automatically maximized to prevent programs running simultaneously. The aim here is to prevent screen captures and ensure fair testing.

### *3.3.4 Strict Attendance Management Systems*

A system that blocks concurrent connections from two or more computers should be established. When a Shareable Content Object Reference Model (SCORM) is used, any page move is prohibited and a history of learning by pages is stored to prevent illegal course taking. In addition, attendance is awarded only on completed learning pages. A system should also be established to manage MAC and IP addresses in the LMS, thereby blocking duplicate addresses. Unexpected attendance checks or questions should be made within class content to ensure that learners are taking the course in an appropriate manner.

### *3.3.5 Strict Assessment Management System*

All tests should be based on the academic credit bank

system. Fair test management is thus dependent on the test question bank. The test question bank should hold at least six times the required number of questions. Content-authoring teachers should verify the contents before they are applied. The test question bank should manage questions on a weekly basis for fair testing. Weekly questions should be managed by level of difficulty (high, middle, low) to control test difficulty. A variety of question types—multiple-choice, subjective and descriptive—should be developed to ensure fair assessment management.

### *3.3.6 Testing the Level of Question Difficulty with a Statistical Approach*

To maintain an approximate correct answer ratio, the level of test question difficulty should be readjusted continuously according to a correct answer ratio of questions submitted in each test. A minimum submission frequency should be set and applied statistically. In addition, a measure of central tendency, scatter plots, and distribution plots should be measured to reset difficulty levels. Fair testing should be guaranteed by adjusting the level of test question difficulty according to the normal distribution by deriving, comparing and applying individual sum and total sum whenever a regular test is submitted.

### *3.3.7 Providing Assessment Guidelines for Qualitative Assessment*

As assignments and discussions are scored based on qualitative assessment, their mean, dispersion, and distribution can be distorted without consistency for each subject. Thus, a guideline of absolute assessment should be provided within a range of recognition that respects the assessor's subjectivity to produce a fair assessment.

## 4. Conclusion

This study aims to define the development direction of lifelong distance education and to maintain the duty of higher education through quality improvements for distance-based learning based on the academic credit bank system. It supports lifelong education modes that are currently recognized as one of the major components of distance education. Accordingly, this study includes measures to improve quality both from the perspective of learning content and the LMS. As self-directed learning programs are important in measuring quality control from the content viewpoint, this paper suggests pre-quiz narratives, thinking, formative assessment, regular tests, assignments, and discussion methods. From the LMS perspective, the following features provide important quality control measures: strengthening the assessment of lecturing, a copy of correct answer detection system, screen capture prevention to stop the leaking of test questions together with a system to prevent searches during testing, a strict attendance management system, and a strict assessment management system. In addition, the LMS should use a statistical approach to determine the level of test question difficulty.

## 5. References


1. Romiszowski A. How's the e-learning baby factors leading to success or failure of an educational technology innovation. Educational Technology. 2004; 44(1):5–27.
2. ISO SC36. Information technology for learning, education and training—Quality management, assurance and metrics—Part 2: harmonized quality model, ISO/IEC TC JTC1/SC 36/WG 5; 2007.
3. British Educational Communications and Technology Agency (Becta). Harnessing technology review 2007: Progress and impact of technology in education. Becta; 2007.
4. Kim S, Jung Y, Han J, Choi W. Academic credit bank system introduction and implementation plan. Seoul: Ministry of Education; 1996.
5. Hong S, Kim J, Eom T. An exploratory study on the educational quality assurance model for national open university. Korea National Open University Distance Education. 1998; 11:37–58.
6. Jelfs A. Assessing quality assurance definitions for distance education. Proceedings for the Eleventh Annual Conference and Exhibition of the Asian Association of Open Universities. 1997; 2:160–65.
7. Green D. What is quality in higher education concept policy and practice. Green D, editor. What is quality in higher education Society for Research into Higher Education & Open University Press; 1994.
8. Park Y, Lim K. Effects of environmental and human constructs on e-learning effectiveness in online university settings. Indian Journal of Science and Technology. 2015; 8(1):103–09. DOI: 10.17485/ijst/2015/v8iS1/57729.