



VALIDATION OF E-LEARNING PACKAGE & CONSTRUCTION AND VALIDATION OF ACHIEVEMENT TEST

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ABSTRACT :

These science processes (often called a science inquiry) motivate students by fostering their natural curiosity about the world around them, encouraging them to persist through difficulty to master complex science concepts. E-learning can support the new, inquiry-based approaches to science instruction, providing virtual laboratories or field learning experiences that overcome practical and logistical constraints to student investigations. They can allow learners to visualize, explore, and formulate scientific explanations for scientific phenomena that would otherwise be impossible to observe and manipulate. They can help learners mentally link abstract representations of a scientific phenomenon (for example, equations) with the invisible processes. This paper focuses on the Design and the development of E-learning package and the validation of achievement test to see the effectiveness of e-learning package for final study. The E-learning package is used for individual learning purpose through computer based.



KEYWORDS : science processes , natural curiosity , E-leaning package.

INTRODUCTION

The learning materials designed based on Technology will facilitate the learners to achieve the better performance. The learning materials obviously are designed appropriately then only it can have the desired outcome of learning. The E-learning bundles will in general send the media in an inventive and gainful route and to rebuild the instruction to react valuably and continuously to the innovative and social change. The accomplishment of the E-inclining bundle relies on the powerful development of the bundle. E-leaning package is a unique learning tool where the students are able to learn at their own pace and visualize the leaning. The investigators have developed an E-Learning package for IX standard students based on the subject experts, subject teachers and E-Learning technology experts' suggestions. The contents were selected for this package is eight lessons from IX standard science subject. This paper deals with the validation of E-Learning package by means of individual and group tryout and Pilot study for validating the tool for measuring achievement in science for final study appropriately.

EXPERT VALIDATION

The purpose of instruction is to assist individual as a learner. The selection of content or topic for the development of instructions is very important by considering all its components, concepts and

the resources to be adopted for imparting the instructional software. Validation is a critical function and one that carries with it a heavy responsibility. Validation means inspection and approval of the materials by the subject experts to judge whether the materials are technically valid and correct and instructional design experts to judge whether the treatment given to the subject matter is pedagogically valid and creative. Normally, validation may occur at two different levels;

- As a part of the lesson planning process in order to select suitable existing materials.
- Multimedia elements need for suitable place in the selected lesson, and
- In order to correct the initial draft of materials before evaluation on sample of students.

For the present study, the investigator took both two levels of Validation. Also, the investigator has consulted subject experts, subject teachers and E-content technology experts for the development of E-Learning package. Hence, the selection of topic could be done with the suggestion given by the eminent expert in the concern field. Here, the grammatical errors, conceptual deviation, frames' sequential orders and other technical disparity have been carried out on the basis of suggestions given by the experts in the concern field. With it when an E-learning package development was completed, it is ready for peer evaluation in the sense it has to be placed before the experts such as E-content developers, Web studio Expert for their opinion about the technical aspects involved. The software has to be modified according to the suggestions given by the experts.

INDIVIDUAL TRY-OUT

After completing the expert and technical validation, the E-Learning package was given to the target students. The purpose of this tryout is to improve the software with reference to terminologies and comprehension, language ambiguity of the frames. This tryout has been done on five different individuals separately. Here, the vocabulary terms and comprehension difficulties have been identified and removed.

SMALL GROUP TRY-OUT

The next stage is to test the E-Learning package with a group of pupils. 15 students have been used for this purpose. The selected students were representative of those for whom the programme was intended. The student responses and their reactions about the programme have been considered for improving and modifying the frames of the programme.

GROUP TRY-OUT

In this tryout, the E-Learning package was tried on a group of students in real learning atmosphere to find out the learning difficulties and the other Para meters with which the E- Learning Package content was developed. After this stage the E-Learning package was ready for use in the teaching learning process.

Construction and Validation of Achievement Test

To see the effectiveness of the developed E-Learning Package in teaching of science among IX standard students it is essential to have a valid achievement test. According to Good (1959), achievement as accomplishment or proficiency of performance in a given skill or body of knowledge.

Preparation of Test Items for Pilot Study

The investigator has prepared 60 test items with the help of subject experts and subject teachers on the basis of blue print related to the content matter which presented in the E - Learning Package for IX standard science subject. All the test items are objective type and each item carries one mark. For the purpose of the pilot study, the simple random sampling technique has been used to select the sample. For which 100 IX standard students studying the higher secondary school of Cuddalore district were selected as sample. Enough time was given so as to enable all the students to complete the test. The scoring was done according to the scoring key prepared for this purpose.

Item Analysis

The quality of each item was determined by analyzing two important characteristics of the test items such as difficulty index and discriminating power.

Procedure of Item Analysis

In this pilot study the Achievement test was conducted with 100 students and the response sheets of the students were arranged in descending order from the highest score to lowest score. The response of the top scoring 27% and the bottom scoring 27% response sheets were used for item analysis. The each item the number of correct responses in the upper group was counted and it was indicated as 'U'. For each item, the number of correct response in the lower group was counted and it was indicated as 'L'.

The Difficulty index was calculated by using the formula $D_i = \frac{U + L}{2N}$

The Discriminating power was calculated by using the formula $D_p = \frac{U - L}{N}$

The Item for the Final Test was selected based on the score between Difficulty Index= 0.3 or more and less than 0.7 (Garret-1973) Discriminating Power = 0.4 or more and less than 0.7 (Garret-1973)

The details of the Difficulty Index and Discriminating Power of each Item are given in the following table.

Table-1

S.No.	No. of Students (27) in the Upper Group who responded correctly	No. of Students (27) in the Lower Group who responded correctly	Index of Item Difficulty	Index of Discrimination	Item Selected
1.	20	11	57.40	0.33	S
2.	22	8	55.55	0.51	S
3.	22	18	74.07	0.14	NS
4.	21	10	57.40	0.40	S
5.	21	9	55.55	0.44	S
6.	19	7	48.14	0.44	S
7.	20	9	53.70	0.40	S
8.	19	9	74.07	0.14	NS
9.	19	5	44.44	0.51	S
10.	20	18	70.37	0.07	NS
11.	20	16	66.66	0.14	NS
12.	20	8	51.85	0.44	S
13.	18	16	62.96	0.07	NS
14.	22	7	53.70	0.55	S
15.	21	10	57.40	0.40	S
16.	20	7	50.00	0.48	S
17.	19	17	66.66	0.07	NS

18.	22	4	48.15	0.66	S
19.	23	9	59.25	0.51	S
20.	21	7	51.85	0.51	S
21.	21	8	53.70	0.48	S
22.	24	8	59.25	0.59	S
23.	23	5	51.85	0.55	S
24.	16	12	51.85	0.14	NS
25.	19	8	50.00	0.40	S
26.	18	7	46.29	0.40	S
27.	24	7	57.40	0.62	S
28.	19	7	48.14	0.44	S
29.	22	5	50.00	0.62	S
30.	14	12	48.14	0.07	NS
31.	23	5	51.85	0.66	S
32.	21	9	55.55	0.44	S
33.	17	8	46.29	0.33	S
34.	21	7	51.85	0.51	S
35.	24	7	57.40	0.62	S
36.	25	6	57.60	0.70	S
37.	21	19	74.07	0.07	NS
38.	22	3	46.29	0.70	S
39.	18	7	46.29	0.40	S
40.	17	8	46.29	0.33	S
41.	23	6	53.70	0.62	S
42.	24	5	53.70	0.70	S
43.	25	22	87.03	0.11	NS
44.	17	10	50.00	0.37	S
45.	24	6	55.55	0.66	S
46.	23	6	53.70	0.62	S
47.	24	8	59.25	0.59	S
48.	22	8	55.00	0.5	S
49.	22	9	57.40	0.48	S
50.	24	4	51.85	0.74	NS
51.	15	12	50.00	0.11	S
52.	23	4	50	0.70	S
53.	26	18	77.77	0.22	NS
54.	24	6	55.55	0.66	S
55.	24	4	51.85	0.74	NS
56.	17	14	57.40	0.11	NS
57.	22	4	48.14	0.66	S

58.	24	7	57.40	0.62	S
59.	24	19	79.62	0.18	NS
60.	22	4	48.14	0.66	S

Note: S-indicates the items selected and NS-indicates the items not selected.

The final version of the achievement test has been prepared with 45 valid items. Each item carries one mark and the total score is 45 marks. Lower scores indicate that the poor achievement, Middle scores indicate that average achievement and higher scores indicates that high achievement in science.

Reliability and Validity of the Tool

The reliability of the achievement in science tool was determined by test-retest method and it was found to 0.81. The validity has been established by a panel of experts, faculty members from the Department of Education and Higher Secondary School Science Teachers.

Percentile Norms

Norms have been worked out for the achievement scores. The percentile norm is as follows

Percentile	
Score Range	Norms
Score Range From 0-15	Low Achievement
Score Range From 16-30	Average Achievement
Score Range From 31-45	High Achievement

CONCLUSION

This tool will provide a chance to find out the effectiveness of E- learning in teaching of science for IX standard students according to their needs.

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