

Construction And Validation Of E-Content Package On Atomic Structure For Standard Xi Students

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ABSTRACT

There is always a tremendous need for technological support in education in the recent days. Technology has got an irreplaceable place in the process of teaching and learning. A shift from regular chalk and talk method of teaching is required today as the world has come through many tools of technology recently. Technology in the hands of a teacher can definitely take education to the next level. The learning interest of the students is also aroused when technology is infused during lesson transaction. This study focuses on the planning, development and validation of an e-content package on the topic atomic structure from the subject chemistry for the standard XI students. As far as chemistry is considered, there are a number of reactions and bonds to be studied by the students. Teaching those equations, reactions and bonds will be interesting to the students with the use of technology. The students will be exposed to a simulated environment when taught with an e-content package.

KEYWORDS: E-content Package, Atomic Structure, Standard XI Students.

Introduction

Technology has changed a number of times in the field of education in the present day. Traditional classroom lectures have been ranked as boring by the students and rather than picking and choosing what they write in their notes from their teacher's lectures, students feel compelled to write down every single word that is projected using any technology gadget. Technology has also changed student behaviour. Students learn with interest when they are taught with technology. Technology has become an integral part in both teaching and learning. The place of technology is irreplaceable and in fact the teacher is being replaced with technology. Teaching of chemistry using technology would be more interesting when a number of reactions, bonds etc are brought before eyes of the student. This study attempts to construct and validate an e-content package on atomic structure for standard XI students.

Statement of the Problem

The investigator has selected the present study with the aim of establishing the reliability and validity of the e-content package on "Atomic Structure" for standard XI students. Therefore, it has been entitled as "CONSTRUCTION AND VALIDATION OF E-CONTENT PACKAGE ON ATOMIC STRUCTURE FOR STANDARD XI STUDENTS".

Objectives of the Study

Objectives of the present study include the following

- ✓ To plan an e-content package on atomic structure for standard XI students.
- ✓ To design an e-content package on atomic structure for standard XI students.
- ✓ To develop an e-content package on atomic structure for standard XI students.
- ✓ To validate the e-content package on atomic structure for standard XI students.

CONSTRUCTION OF E-CONTENT ON ATOMIC STRUCTURE FOR STANDARD XI STUDENTS

Identification of Chapters in Chemistry

To develop an e-content package the researcher selected the major topics from the chapter “Atomic Structure” from the subject chemistry

in the syllabus of XI Standard. After discussion with the experts, the researcher selected the content for the preparation of e-content package.

Identification of Teaching Points

The researcher after selecting the chapter from the subject chemistry, with the guidance of the experts, identified the teaching points for which the e-content package has to be prepared.

Table 1 – Identification of Teaching Points

S.No	Teaching Points
1	JOHN DALTON ATOMIC MODEL
2	THOMSON ATOMIC MODEL
3	RUTHERFORD ATOMIC MODEL
4	ATOMIC NUMBER & MASS NUMBER
5	DEFECTS OF RUTHERFORD ATOMIC MODEL
6	NEILS BOHR ATOMIC MODEL
7	DEFECTS OF NEILS BOHR MODEL
8	HEISENBERG UNCERTAINTY PRINCIPLE
9	ZEEMAN EFFECT
10	PRINCIPAL QUANTUM NUMBER
11	AZIMUTHAL QUANTUM NUMBER
12	MAGNETIC QUANTUM NUMBER
13	SPIN QUANTUM NUMBER
14	S-ORBITAL
15	P-ORBITAL
16	D-ORBITAL
17	PAULI’S EXCLUSION PRINCIPLE
18	USES OF PAULI’S EXCLUSION PRINCIPLE
19	HUND’S RULE
20	EXAMPLE OF HUND’S RULE
21	AUFBAU PRINCIPLE

22	STABILITY OF ORBITALS
23	ELECTRONIC CONFIGURATION

Review by Experts

The investigator presented the teaching points to the Professors working in Arts and Science Colleges and Post Graduate Teachers in Chemistry working in Higher Secondary Schools and they were appraised about the purpose of the experiment. The experts then verified the teaching points and gave suggestions to the researcher who had applied those suggestions to arrive at the final points for teaching.

Development of Script for Video Lesson

The researcher prepared the script for the Video Lesson after review by experts. The script covers all subject matter for the concept "Atomic Structure" from chemistry for standard XI students. Based on the script prepared, the researcher developed the video content for the same. The developed video lessons were given to the experts to check the accuracy and feasibility of the content of the script.

The following steps were followed by the researcher to develop the video scripts

1. The researcher collected all content relevant materials by referring books

from libraries and online digital resources. The collected materials were given to experts for review.

2. The researched logically arranged the content of the script from the base of the topic through familiar to unfamiliar and end the script with proper closure points.
3. The researcher rewrote the script and necessary modifications were carried out to give the final scripts proper continuity and proportion.
4. The researcher finally drafted the content of the scripts and collected audio-video and animation with visual illustrations.

Developing Visual Content

The researcher after preparing the content, developed the visual content for the e-content package. Appropriate texts, images, animations, audio and video were used to develop the visual content. The researcher had also sought the opinion of the experts while preparing the visual content.

S.No	Teaching Points	E-Content
1	JOHN DALTON ATOMIC MODEL	Audio/Video/Images/Animation
2	THOMSON ATOMIC MODEL	Audio/Video/Images/Animation
3	RUTHERFORD ATOMIC MODEL	Audio/Video/Images/Animation
4	ATOMIC NUMBER & MASS NUMBER	Audio/Video/Images/Animation
5	DEFECTS OF RUTHERFORD ATOMIC MODEL	Audio/Video/Images/Animation
6	NEILS BOHR ATOMIC MODEL	Audio/Video/Images/Animation
7	DEFECTS OF NEILS BOHR MODEL	Audio/Video/Images/Animation
8	HEISENBERG UNCERTAINTY PRINCIPLE	Audio/Video/Images/Animation
9	ZEEMAN EFFECT	Audio/Video/Images/Animation

10	PRINCIPAL QUANTUM NUMBER	Audio/Video/Images/Animation
11	AZIMUTHAL QUANTUM NUMBER	Audio/Video/Images/Animation
12	MAGNETIC QUANTUM NUMBER	Audio/Video/Images/Animation
13	SPIN QUANTUM NUMBER	Audio/Video/Images/Animation
14	S-ORBITAL	Audio/Video/Images/Animation
15	P-ORBITAL	Audio/Video/Images/Animation
16	D-ORBITAL	Audio/Video/Images/Animation
17	PAULI'S EXCLUSION PRINCIPLE	Audio/Video/Images/Animation
18	USES OF PAULI'S EXCLUSION PRINCIPLE	Audio/Video/Images/Animation
19	HUND'S RULE	Audio/Video/Images/Animation
20	EXAMPLE OF HUND'S RULE	Audio/Video/Images/Animation
21	AUFBAU PRINCIPLE	Audio/Video/Images/Animation
22	STABILITY OF ORBITALS	Audio/Video/Images/Animation
23	ELECTRONIC CONFIGURATION	Audio/Video/Images/Animation

Try out of the E-content package

The researcher tried out the e-content package on 10 higher secondary science students by maintaining an observation schedule. The total length of the video, reaction of the students was observed by the researcher and it was noted down. Finally, after considering the observations made, the researcher made slight modification to the e-content package.

Validation of the E-Content Package

After developing the e-content package, two subject experts were asked to scrutinize the e-content package in order to validate it. The Feedback from the experts was received. Based on the feedback modifications were done in the e-content package. The modified e-content package was again reviewed by the experts. With the approval of the experts, the final form of e-content package on "Atomic Structure" was attained.

Conclusion

Technology in teaching and learning always serves better in the present day. The performance of the learner greatly rises and the participation too is becoming more effective. E-content packages help the students to learn at their own pace and convenience. This also gives a favourable environment for the teacher by arousing the interest of the learner. Hence, it is the duty of the teachers to prepare e-content packages to bind the students in their class. For that purpose, in this study the researcher has developed and validated e-content package on "Atomic Structure" for the standard XI students. This Video Package will have a positive impact on standard XI students' achievement in chemistry.

References

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