

**Action Research Study
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Title of the Study: The Effect of Animation on students' Understanding of Chemistry Concepts
Location or Institution (optional) Omar Bin Al-Khattab Secondary School
Abstract This study focused on answering the following question: "Will the use of animations and films improve students' understanding of chemistry concepts?" The research has been conducted on two groups of grade eleven students enrolled in a chemistry course. We prepared the scientific material and appropriate animation to explain the concepts included in the scientific material. The unit is about electro-chemistry, grade 11, advanced level and in accordance with the SEC standards. At the end of every week, students were given a short quiz on the concepts taught throughout the same week, and in the third week there was a short quiz related only to the concepts explained through the use of animation. At the end of the unit, students were given a comprehensive test on all the concepts taught in the unit. It was found that the use of animation in the classroom stimulates more discussion and interest among students, and it motivates them to do their homework since students can use animation on their computer screen at home and this provides them with a good opportunity to review and understand the concepts that have not been understood clearly in the classroom.
Grade Level: Secondary
Data Collection Methods: <ul style="list-style-type: none">• Questionnaire• Interview• Observation• Examinations
Subject/Topic: Science

The Effect of Animation on Students' Understanding of Chemistry Concepts

By

Hamza Eid AL-Far

Introduction:

- Chemistry teachers in Omar Bin Al-Khattab Secondary school noticed that many students find difficulty to understand some chemistry concepts, so they tend to memorize these concepts.
- It is known that a clear understanding of chemistry concepts and skills is the main goal, which the teacher seeks to achieve in order to satisfy the objectives of curriculum, so we started serious thinking to solve this problem by searching for the best means to help students understand these concepts and skills in depth.
- The idea of this action research will focus on answering the following question: “will the use of animations and films improve students’ understanding?”

Procedure

1. study groups

- a. The research has been conducted on two groups of grade eleven students
- b. The first group included 23 students
- c. The second group included 24
- d. The unit is about electrochemistry – advanced level – in accordance with the SEC standards.

2. before beginning the research:

- a. We analyzed the results of first semester tests for the year 2007-2008 and previous years.
 - i. The results of the two groups were very close
 - ii. High percentage of students responded well to questions that depend on memory.
 - iii. Students failed to answer questions based on skills and clear understanding.

- b. We began informal talks with students in the school by asking questions about
 - i. this phenomenon
 - ii. And the reason of it
- c. Individual interviews with some students of the two groups
 - i. Revealed a complaint about not being able to clearly understand chemistry concepts.
 - ii. So students resorted to rote memorizing of the concepts to pass the test.

3. according to the results:

- a. we discussed the results in:
 - i. the chemistry department
 - ii. with the administration
 - iii. we came with the idea of the research

4. action:

- a. the administration provided us with the requirements such as computers and data show
- b. we prepared the
 - i. scientific material
 - ii. appropriate animations that required to explain the concepts
 - iii. power point slides included links to animations of the concepts
 - iv. two surveys:
 - 1. one for the teachers to probe into their opinions about using animations in their classroom
 - 2. the other one for students and parents to probe into their opinions about the new strategy in explaining the lesson
- c. these survey were distributed, collected and analyzed at the end of the research

5. tests:

- a. at the end of every week students were given a short quiz on the concepts that discussed during the same week
- b. At the end of the unit students were given a comprehensive test in all the concepts.

Results

1. From statistical analysis of the results of quizzes and chapter tests we noted that:
 - a. The average scores of chapter tests and quizzes of experimental group are higher than that of control group.
 - b. The average score of the first chapter test and the third quiz which included questions that depend on clear understanding of concepts for experimental group is **significantly** higher than that of control group.
 - c. The scores of the second chapter test of experimental group is higher than that of control group but with less degree (**not significant**) where the second chapter test include questions that students can answer them through imitating examples included in explanation in classroom.

So we can conclude that the use of animation in classroom has direct influence on:

- Clarifying the concepts
 - Help students to understand these concepts in conceivable manner.
2. From analysis of questionnaire of students and parents and from my observation and follow-up students in the classroom we noticed that: The use of animation
 - a. Stimulates more discussion and interest among students.
 - b. Motivates students to do their homework since students can use animation on their computer in home which provide them with good opportunity to review the concepts which they did not understood them in classroom.
 - c. Minimize student's boredom when they watch animations or participate in experiments that involve using computer.
 - d. The lessons become more comfortable because teachers exert less effort in explaining and describing experiments.

Limitations of the Study:

The duration of the research is relatively short and is confined to only one unit in Chemistry.

- The sample selected for conducting the research is relatively small. To get more reliable results, I recommend a larger sample.
- The research dealt with one subject, i.e. Chemistry.

I believe that having more than just one subject allows more accurate and reliable results that can be applied to all subjects

- In the light of the results of this research ,it can be deduced that the use of animation as an explanatory device proved to be effective for the student's achievement as it helps him considerably to grasp the essential concepts of chemistry and therefore , saves a lot of effort that the student puts to memorize these concepts ,

Besides, the chemistry department recommends that research should be continued to come up with the best means and methods that maximize student's performance, which will eventually lead to better academic accomplishments on the part of students.