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Abstract

This study aimed to explore the effect of activity-based teaching on academic achievement and motivation of secondary school students in Najran region. An experimental research design was used to collect data from a study sample that consisted of 43 high school students who were randomly selected. The study tools were an achievement test and a motivation scale. These instruments were implemented during the first semester of the academic year 1443/1444. The results of this study showed that the achievement of the students of the experimental group was higher than that of the students of the control group. The results also showed that the majority of students found activity-based teaching more interesting than lecture-based teaching. The study concluded with some recommendations in order to enhance the role of activities in teaching secondary sciences.

Keywords: Teaching based on activities, Achievement, motivation.

Introduction:

Teaching and learning always go hand in hand. Education is the only tool that aims to provide learners with correct knowledge. This knowledge works to provide the learner with various competencies and skills necessary to achieve comprehensive growth. Meanwhile, a teacher is the most important element in the process of enabling students to acquire knowledge and skills. Therefore, the teacher must possess the knowledge and at the same time the ability to transfer that knowledge to the learners in more creative and effective ways that enable them to acquire information in a functional manner and help them develop their higher abilities, which are represented in skills such as problem-solving skills, critical thinking skills, and creative thinking skills.

The school essentially seeks to achieve comprehensive growth for the learner in terms of knowledge, skills and emotional aspects, and in doing so it builds the learner's personality in a balanced manner so that he becomes able to interact and adapt to his environment to meet the requirements of contemporary life. To achieve this, the school must adopt effective teaching strategies. Eriksen (1978) asserts that effective teaching in the classroom depends on the teacher's ability to attract students' attention to learning, and focusing on effective teaching in the classroom is of vital importance as it increases students' ability to comprehend and retain information. Teachers should show a real response to accommodate students' needs, as this increases their desire to learn and makes their learning an enjoyable process (Eriksen, 1978). The Bektas study (2021) also revealed that teachers' use of educational activities enables them to plan lessons better and also enables them to implement lessons more smoothly and increases their ability to control the course of lessons and adjust the learning environment, while at the same time achieving the required learning outcomes.

Activity-based learning is one of the most important teaching methods, which is defined as the learning process in which students engage in the educational process on an ongoing basis (Panko et al., 2005). Activity-based teaching is also defined as setting up a learning environment in which students actively participate in learning rather than receiving information from the teacher. Panko et al. (2005) assert that the active teaching method differs from the traditional teaching method through: (a) the active role and participation of students in the classroom and (b) cooperation among students in an

interactive learning environment. These two elements are considered the key to activity-based learning, which aims to create a positive learning environment in the classroom. Okulu and Oguz (2021) also emphasized that activity-based learning helps students and teachers build mental models that allow for high-level performance such as applying knowledge, problem solving, and critical thinking.

School activities are among the basic pillars on which education depends, as they link theory and practice, and at the same time contribute effectively to satisfying the needs of learners by providing what meets their needs. Mulla (2001) points out that school activity is an effective means of achieving many educational goals if it is well planned, implemented, and evaluated at the same time. The activities contribute effectively to the learner's understanding of concepts in a functional manner and help reveal his/her inclinations and abilities and work to develop them (Sarpong1, Sarpong2, & Asor, 2020).

Clark (2002) confirmed that activity-based teaching clearly develops students' ability to achieve academic achievement, and added that this type of teaching always tries to embrace some of the issues and problems that become accessible to students and are required to be discussed and solutions to them. Thus, existing education The activities provide students with opportunities to measure their learning through experience, direct observation, and participation. The role of the teacher becomes a facilitator of the educational process by providing the student with the required tasks as well as the necessary instructions, allowing them to engage in the educational process. Garba's study (2012) also showed that the opportunity to work together provided by activity-based teaching leads students to better understand various academic topics. Under these circumstances, students work together in small groups to complete project tasks. Garba concludes that activity-based learning aims to enrich learning through practice and engagement in the real world outside the school walls. Timur and Cetin (2019) also showed the impact of activities on students' academic achievement and their involvement in group work and the effectiveness of the activities in improving their level of academic achievement as well as in developing their teamwork skills.

On the same level, many studies, such as the study of Al-Mughira (2020), the study of Anwar (2019), the study of Noreen (2019), the study of Al-

Jahouri, Al-Saeedi, Khatiba, and Al-Bariki (2016), the study of Khayal and Ubaid (2015), and the study of Ghamri (2003), emphasized the role of activity-based teaching in improving the level of academic achievement of learners. In addition to developing student's achievement, activity-based learning contributes to the development of some habits of mind, which are a set of performances that push the individual towards using the skills and mental processes associated with self-regulation, critical thinking, and innovative thinking on an ongoing basis in all the tasks he undertakes (Muhammad, 2021).

From another angle, educational activities strengthen the connection between the student and his colleagues, teachers, and society as well. It also seeks to prepare learners for educational situations similar to life situations, as it enables them to benefit from what they have learned in the classroom, and to transfer the impact of what they have learned to their future lives. It contributes to the formation of habits, skills, values, and ways of thinking necessary to continue learning and participate in comprehensive development (Shehata, 2004).

The activities meet many of the learners' needs, such as the need for belonging, self-actualization and appreciation, and help get rid of some psychological problems such as anxiety, disorder and isolation. The activities also develop the learner's inclinations and attitudes, stimulate his readiness to learn, and make him more capable of confronting and interacting with educational situations (Lozano, & Solbes, 2021). This has been confirmed by many studies, such as Al-Khatib (2003); and Radwan (2005); Al-Ghamdi (2008); Nurjanah Wibisono (Nurjanah, Wibisono, 2021); Svobodov (2008); Dillon (2006) emphasized the importance of scientific activities and their role in achieving learning goals, and the necessity of including them in curricula and textbooks. Classroom activities represent all the work that the learner does inside the classroom under the direct guidance and supervision of the teacher, and the learners implement them individually or collectively, such as solving some exercises, or discussing a topic.

Activity-based learning sees learners as having the ability to learn through doing and experimenting, where learners seek to explain things according to their thinking and experiences. This style of learning can be achieved through many teaching strategies that support the idea of activity-based learning.

Among these strategies, according to Bo, Bing, and Xiaoling (2020), are the scout approach, cooperative learning in small groups, problem solving, scientific investigation, and projects.

Perhaps one of the most important obstacles to implementing classroom activities, according to Al-Rasheed (2010), is the lack of resources and capabilities necessary to implement the activities. Al-Ardan (2021) classified the difficulties of using activity-based learning into difficulties related to the teacher, such as the degree of the teacher's readiness to implement the activities, difficulties related to the students, such as the lack of motivation to learn, and difficulties related to the educational content in terms of its suitability for practicing the activity. Hussein (2020) also indicated that implementing activities requires a great deal of time as well as effort by the teacher and student.

There are many factors affecting education, student learning, and academic achievement. Examples of these factors are: motivation, trends, inclinations, and aspects of appreciation. Motivation, as one of the aspects of the learner's internal behavior, greatly affects students' learning and academic achievement (Yunus, etal., 2021). Motivation works to direct the learner's potential towards achieving the goals he wants to achieve. That is, motivation urges the individual to perform a behavioral activity that is directed towards a specific destination. Abu Hatab and Sadeq (2000:446) define motivation as "an internal state in the organism that leads to stimulating behavior, continuing it, organizing it, and directing it toward a specific goal." This internal state represents a procedural concept that can be observed and measured and not just a theoretical or hypothetical concept (Bani Yonous, 2012). This means that it can also be tested and evaluated.

The importance of motivation educationally is evident in that it is a tool that can be used to achieve educational goals in a more effective way. Motivation is characterized by the fact that it acts as a basic guide to the student's tendencies to carry out some activities related to his needs (Al-Kandari, 2014). Al-Kandari adds that students with a low level of motivation show a low level of academic achievement. Motivation plays the most important role in an individual's perseverance in completing a job, and it is perhaps one of the best measures used to estimate the level of motivation of this individual. In this sense, motivation achieves a number of functions,

including stimulating behavior. It urges the individual to perform a certain behavior after he is in a state of relative balance. Motivation also affects the type of expectations that individuals have based on their actions and activities, and thus affects the levels of ambition that characterize them. At the same time, it maintains the sustainability of behavior, as the individual maintains a behavior pattern as long as he is motivated to do so (Bani Yonous, 2012; A'shehri, 2013).

Motivation to learn is considered one of the most important types of motivation as it is used in behavior directed towards a specific goal within the classroom (Saeed, 2008). Thus, it represents a force used to stimulate the learner's behavior to achieve the greatest possible achievement. Some studies have touched on methods of stimulating motivation, and among these methods is the use of active learning strategies, as they contribute greatly to developing learners' motivation towards learning (Ambo Saeed and Al Hosani, 2015). Many studies, such as the study by Hijazi and AlNatour (2020), Demir's study (Demir, 2021), Yunus et al.'s study (Yunus, etal., 2021), and the study of Al-Jarrah, Al-Mufleh, Al-Rabi', and Ghawanmeh (2014), have confirmed the importance of activity-based teaching strategies. In developing students' motivation towards learning. These studies have shown that the educational activities practiced by students increase their motivation towards learning. Manuel's study (2022), Lozano and Solbes' study (Lozano, Solbes, 2021), and Anwer's study (Anwer, 2019) also showed the effective role of activity-based learning in developing students' motivation to learn and at the same time developing desirable attitudes in them towards the role of institutions. Education in achieving comprehensive development for members of society.

Aim of this study:

The research questions that guide this study are:

1. What is the effect of activity-based teaching techniques on students' motivation and academic achievement to the students in education at secondary level?
2. Is there a significant difference on the effect of activity-based teaching technique on students' motivation and achievement according to the two groups of respondents?

Methodology:

The study used the experimental method with a quasi-experimental design, where two equal groups were used (experimental and control). The achievement test and the motivation scale were applied later:

Population and Sampling:

The study population consisted of secondary school students in the city of Najran for the academic year 1443/1444, numbering (2479) students. While the study sample consisted of (43 students) from the third year of secondary school in a school in the city of Najran, the sample members were distributed randomly into an experimental group, the number of students (22 students), which was taught using the activity-based teaching strategy, and a control group consisting of (21 students) studied within the traditional Method.

Instrumentation and Procedures:

1. Achievement test:

The test was prepared by researcher. The test consisted of 40 multiple-choice questions designed to measure students' achievement in the Energy and Chemical Changes unit from the Chemistry (3) course system book for secondary school students, the validity of the test was calculated by judging the questions by experts in science teaching methods. Reliability was also calculated by splitting the test in half, and the degree of reliability of the test was 0.68.

2. Motivation scale:

The study used the Town, Chin, & Shieh scale (Tuan, Chin, & Shieh, 2005) to measure students' motivation toward learning chemistry. The scale consists of (35) items that include the following themes: self-efficacy, learning strategies, performance, achievement, and learning environment. The self-efficacy subscale refers to the students' self-evaluation and confidence in their abilities, while the learning strategies subscale focuses on strategies that enable the student to learn concepts in a functional way and link them to scientific processes. The performance subscale also seeks to measure the student's achievement and his occupation of a prominent level among his colleagues, and finally the learning environment subscale is represented in: The extent to which the learning content is exciting for the student and the suitability of the educational environment for participation and work with others.

Results:

As shown in table (1) there is a statistically significant difference between the average scores of students in the experimental group and the average scores of students of the control group on the achievement test in the unit of

energy and chemical changes, in favor of the students in the experimental group. The value of "t" was (3.91) at the significance level (0.05), which is a statistically significant value.

Table (1): Achievement test results; mean; standard deviation; t-test

Groups	N	Mean	Std	t	alpha
Experimental	22	3.89	2.7	3.91	<0.05
Controlled	21	2.27	1.95		

As shown in table (2) there is a statistically significant difference between the experimental and control groups in the total score of the motivation scale towards learning science in favor of the experimental group. At the same time, it is indicated from Table (2) that there are statistically significant differences for all five subscales (self-efficacy, learning strategies, performance, achievement, and learning environment) in favor of the experimental group.

T**able (2): Results of the motivation scale; SMA; standard deviation; F test**

	Group	Mean	Std	F	alpha
Self-efficacy	Experimental	3.64	1.14	3.23	0.041
	Controlled	2.83	1.34		
Active learning strategies	Experimental	3.13	1.89	3.51	0.017
	Controlled	2.63	2.09		
Performance	Experimental	3.55	1.46	5.29	0.029
	Controlled	3.05	2.27		
Achievement	Experimental	3.78	1.77	4.17	0.036
	Controlled	2.18	1.96		
Learning environment	Experimental	3.81	2.10	3.33	0.022
	Controlled	2.33	1.35		

Discussion of the Results:

The superiority of the students of the experimental group over the students of the control group in the achievement test can be explained in light of the stimulating learning environment provided by the activity-based teaching strategy. As the learners' practice of the activities has enhanced their level of understanding of the scientific concepts within the unit of energy and chemical changes. This is due to the capabilities provided by this strategy that have contributed fundamentally to simplifying scientific concepts. Learning through activities achieves meaningful learning and increases learners' understanding of scientific facts and concepts to a more profound degree. At the same time, educational activities represent a mental activity through

which learners seek to achieve better learning through active participation and group work directed towards completing tasks designed to challenge the abilities and potential of the learners, and this is consistent with the study of Noreen (2019) and the study of Muhammad (2021).

The results showed that there were statistically significant differences for all aspects of the motivation scale in favor of the experimental group. This can be explained by the fact that activity-based learning seeks to provide sufficient space for learners to participate and learn science while acting and relying on their own ability, and at the same time creates a learning environment characterized by challenging abilities. Learner. Therefore, we find that activity-based learning clearly focuses on developing learners' motivation to learn science. These results are consistent with the study of Yunus et al. (2021) and the study of Manuel (2020).

The superiority of the experimental group over the control group with regard to the self-efficacy subscale can be explained by the role played by the activities in enhancing the learners' self-confidence through dialogues and discussions, group work and mastery of scientific material and enhancing the learner's self-efficacy in terms of developing thinking and generating ideas, developing thinking and encouraging problem solving. And originality in the production of ideas. It also targets mental processes of deduction, analysis, and summarization, in addition to its role in developing inductive thinking. This result is consistent with the results of the study by Hijazi and Al-Natour (2020)

The superiority of the experimental group over the control group in relation to the active learning strategies aspect can be explained in that activity-based learning enabled the learners to achieve meaningful learning and acquire information in a functional way, which enhanced their motivation for active learning strategies because they meet their needs. This is consistent with the results of the study by Lozono and Selbs (2021). At the same time, the superiority of the experimental group over the control group in the performance subscale may be due to the role of activity-based learning in providing opportunities for discussion and reflection for learners about what they have learned, as well as providing them with the opportunity by the teacher and encouraging them to inquire and ask questions, which increases their desire to obtain continuous appreciation. On the part of the teacher and the feeling of his interest.

The superiority of the experimental group over the control group in terms of academic achievement can also be explained by the nature of the activity-

based learning strategy, which enabled the learners to achieve a better understanding of scientific facts and concepts, and thus retain the information and keep the learning effect for a longer period, which enhances the learners' desire to achieve a high level of academic achievement. Finally, the superiority of the control group over the control group in the learning environment subscale may be due to the flexible environment provided by the activity-based learning strategy, where the learner feels free and the level of pressure is low, and this is also consistent with the results of the Lozono and Selbs study (2021).

Conclusion:

In this study, it was found that secondary school students who were taught with the activity-based teaching method scored in achievement test much better than those who were taught with traditional method, that means that the students within activity-based teaching method were enabled to get a better understanding of energy and Chemical Changes. On the other hand, the activity-based teaching method empower students to increase the confidence in their abilities and enables them to learn concepts in a functional way and link them to scientific processes. The results of this study suggest that further research is required to better understand how the activity-based teaching method may help students to actively lean concepts of other areas of science.

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