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# THE IMPACT OF USING HANDS-ON MINDS-ON APPROACH IN ACQUIRING ARABIC LANGUAGE CONCEPTS AT SECONDARY SCHOOL LEVEL

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**Mansur Jasim Muhammed, Saad Alwan Hasan, Saad Alwan Hasan. The Impact Of Using Hands-On Minds-On Approach In Acquiring Arabic Language Concepts At Secondary School Level-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(5), 258-270-. ISSN 1567-214x**

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## ABSTRACT

This study aimed to investigate and examine the impact of hands-on, minds-on' approach on the acquisition of the linguistics concepts for secondary school students and to promote the students' attitudes towards linguistic subject. The study comprises of 60 students at secondary school and then dividing then into two groups with 30 students for each group. The first group represents the experimental group and has been taught according to the impact of hands-on, minds-on' approach whereas the second group is the adjusted one and has been taught using the traditional method. The paper examines the effect of the involved strategy in comparing groups and measuring change with pretest and posttest data using some statistical tools like the popular SPSS software. Results show that the experimental group has exceeded the other group in the idea of achievement. Thus, the differences found are said to be significant at (0.05) degree of freedom. In addition, at the same level (0.05), there is a significant impact of the proposed model on the experimental group according to the posttest results. Finally, the results confirm the use of this strategy as an effective teaching technique to improving the student's attitudes toward the related subjects.

## INTRODUCTION

From effective learning research, there is a general consensus that hands-on experiences help students to learn. The question is what it is about these activities that fosters student learning. Most studies concerned indicated the

aspects of deficiency in teaching and learning the linguistics concepts and a weakness in acquiring these concepts. Students have accustomed to memorization and on the prevailing traditional method of teaching. This can be attributed to many factors such as is the use of the common traditional methods of teaching which in turn led to impede students' way of thinking. Based on the aforementioned, academic organizations and researchers try to tackle these issues through adopting the hands-on and minds-on model which is a constructional strategy resulted from the propitious initiative of Georges Charpak. Charpak's model (hands-on and minds-on model) opens new potentials for setting up of a plan to renew the teaching techniques in schools. One does not have to be a specialist to conduct scientific activities in the secondary school. The investigation work in this paper may be simple and the knowledge to be imparted is accessible. The teacher is able to stimulate and share the pleasure and the curiosity of the pupils, and to encourage a reasoned exploration of the world around them, which they can put into words, into pictures and into arguments.

### *Problem Statement*

The modern teaching strategies depend on the student's activities and contributions in class. For this, Charpak's model which is a structural and constrictive thinking strategy can be considered from the best tools for teaching students by motivating their hands and minds in several activates. In this way, the students will be able to classify, distribute, expect, justify as well as conclude their subjects similar to researchers. In order to achieve that, the teacher should have the sufficient knowledge about selected tool be able to deliver the required information and skills according to the students with different levels or ages. In addition, teachers are requested to establish their teaching theory and method in order to give a clear insight on the analysis of teaching process and its outcomes. The hands-on/minds-on approach is one from the best tools used to solve the current teaching problems in classrooms.
Through visiting many secondary and preparatory schools, author noticed that most teachers have focused on memorization and repetitions in teaching process while ignoring thinking activities. This way results in degrading the student's attitudes toward linguistics concepts as well as prevents achieving a high level of thinking by the students. This research try to answer the following question:- What is the effect of using Charpak's approach in acquiring the linguists' concepts for the secondary school students? Is it effective to improve their realization thinking?

### *Significance of the Study*

The language is a symbolic system unique to human being for a given meaning. In spite of variety of systems used for communication, the language still the most effective and flexible way used for expressing the intended meaning [1]. From other hand, Arabic language considered as the sacred link between Muslims and Arab people as well as it is the divine miracle embodied in Holey Quran and hence it is widely spreaded in worldwide [2]. In academic

organizations, the Arabic language has been divided into different branches such as grammar, rhetoric, literature, prosody, etc. This paper concentrates on the language concepts as it is represented the important link between the branches of Arabic language.

There are several education theories have been employed for teaching purpose such as the structural theory of language which states that the student have to depends on himself to establish his knowledge in which the teacher in this structural class has not to deliver the information only but also facilitates it according to the understanding of different students taking into considerations the student contribution and caring in classroom [3].

However, Charpak model motivates learning through senses to obtain the required knowledge. This can be achieved by hands on thinking in formal or informal teaching and this is obviously needs to a physical sense for the teaching process. For example, the person who wants to learn how to repair a car needs to see a car firstly. In same way, our teaching methods should depend on work by hands to enable students to learn, thinking and criticizing and not only considering the pure knowledge. This is what is called the hands on and minds on approach [4].

The realization thinking plays a role in improving the student's capability of noticing and achieving high levels of activities in learning process due to it is strongly related to the scientific activities of human [5].

As the construction of concepts and its teaching patterns have shown a significant place in modern education sciences as it organizes the basic curriculums and thinking process as well as it highlights the importance of Islamic concepts after removing the confusions and misunderstandings around this topic [6]. Besides, the dedicational literatures that solved many concepts issues and developing its effective teaching strategies can be used for teaching the language concepts [4].

***Aim of the study:***

The aim of the study is to evaluate the using of Charpak's model in acquiring the Arabic language concepts for the secondary school students and improve their attitudes towards Arabic language concepts. Besides, this research also aims to promote the realization thinking of selected students.

**HYPOTHESES:**

There following two hypotheses are assumed:

- There is no statistical differences at (0.05) degree of freedom between the first group (the experimental group with Charpak's approach) and the second group (adjusted group with traditional method) in terms of language concepts test.

- There is no statistical differences at (0.05) degree of freedom between the pretest and posttest of the two groups in terms realization thinking test.

## RESEARCH CONSTRAINTS:

The constraints imposed by this manuscript are

- Human constrain: second year students at secondary school in morning study style.
- Location constrain: General Directorate of Education of Kirkuk Governorate – Iraq.
- Time constrain: Academic year 2018-2019.
- Course constrain: curriculum book of Arabic language grammar for secondary school students (first semester- second year), 2019 edition.

## TERMINOLOGY AND DEFINITIONS

### *Charpak's Model*

This approach employee the five senses: sight, hearing, taste, touch, and smell to develop the communication between the student and the around world to discover it [6].

The procedure of this model consists of steps to be followed by Arabic language teacher with the experimental group. First step includes "let's start" stage that motivates students for learning and then followed by the stage of searching and discovering the concepts of Arabic language subjects to validate the concepts by the students themselves. The next step represents the meaning expansion to promote the students thinking in Arabic language concepts with the help of supporting knowledge and required information. Final step consists the evaluation process for what have been learned by students.

### *Realization Thinking*

It is defined as the thinking path in which the mind performance will appear and make the mind moves according to prior knowledge and/or proved information toward discovering the unknown concepts. This process leads to obtain the necessary results of acquired knowledge without using experimental process [3].

## ACQUIRING

The knowledge acquiring saves the impressions in memory by forming links that form different units of meaning [7].

## CONCEPTS

This terminology can be defined as the ability and capacity of the learner in order to know and understand the concepts [8].

### *Structural Definition of Linguistic concepts*

These are a set of attributes and logical characteristics required to represent the language properties and to be expressed in a term with meaning. This mind picture is formed by the student about the language subjects and concepts. The acquired concepts by the students can be measured and evaluated through different tests of language concepts.

### *Secondary Stage*

This stage is the next stage to the primary school and consists of three years of postprimary education in Iraq [9].

### *Theoretical Background*

After the propitious initiatives of Georges Charpak (a French physicist owned the Nobel Prize in 1992) and others, a broad network of teachers and scientists has been developed to bear down students and teachers with science. Inquiry-based teaching has proven to be highly efficient in revitalizing teaching in primary schools. Focusing on multidisciplinary activities several traditional projects have been developed for scientific literacy, such as hands on science by Leon Lederman and later Charpak's model which involve hundreds of schools at international scale and propose simple scientific activities for young students [10].

Charpak's model rely on the following concepts

- Students observe things and phenomena of a real, close and tangible world.
- Students exchange knowledge, think logically and discuss their ideas and outcomes.
- Support the work with a group of scientific experts from researchers and academics.
- Provide a mentor teacher as a guide for teachers' training and mentoring.

This model includes the following stages [6]

- Let's start
- Search and Explore
- Meaning Construction
- Knowledge Expansion
- Evaluation Process that consists pre evaluation, intermediate evaluation and final evaluation.

### *Previous Studies*

This section provides a brief description of the related works in terms of using hands-on, minds-on approach (Charpak's model) and realization thinking. Table 1 presents the related previous studies with different factors like samples selection, target, type, tests, etc. Realizations thinking related works are presented in Table 2. It can be seen that there is a significant impact of Charpak's model on the experimental group students for all types of tests.

**Table 1:** Charpak's model related work

| **Study** | **Aim** | **Samples** | | | **Tools** | | **Outcomes** |
|---|---|---|---|---|---|---|---|
| | | **Types** | **Qty.** | **Class Subject** | **Type** | **No** | |
| [11] | To study the effect of using Charpak's model in simple scientific survey tasks between excellent and ordinary students | Secondary | 180 Students from both genders | First year, Biology | Achievement Test , skills of scientific thinking and trends | 40<br>24<br>58 | Experimental group outperforms the adjust one in achievement and skills of scientific thinking tests |
| [12] | To show the effectiveness of Charpak's model in developing the manual work and decision-making | Secondary | 67 students | First year, Chemistry | Measure the trends toward work, decision making test and achievement test | 67<br>48<br>43 | The experimental group students have better average scores than adjust group students in terms of manual work, decision-making and achievement tests. |
| [13] | Demonstrate the effectiveness of Charpak's model in teaching science to develop higher thinking skills among first year preparatory school students | Secondary | 87 Students from both genders | First year, Biology | Higher thinking skills tests | 58 | The experimental group outperformed the other group in higher thinking skills test |

**Table 2:** Realization thinking related work

| Study | Aim | Samples | | | Tools | | Outcomes |
|---|---|---|---|---|---|---|---|
| | | Types | Qty. | Class Subject | Type | No | |
| [14] | To know the effect of two types of achievement questioning for the fourth year students in Islamic education subject and to develop their realization | Preparatory | 90 | 4th year | Achievement test and realization thinking test | 40<br>35 | There is no statistically significant difference in the average growth of the realization thinking between groups |
| [15] | To show the effect of a developing program on the realization thinking of students | Primary | 52 | 5th year | Realization thinking test | - | There is a statistically difference between groups in realization thinking test. |
| [16] | To show the impact of organizations planning on the acquisition of Islamic concepts among second-year students and improving their realization thinking | Secondary | 60 | 2nd year | Achievement test and realization thinking test | 30<br>22 | The experimental group outperformed the other group in terms of Islamic concepts test and realization thinking test |

## RESEARCH METHODOLOGY AND PROCEDURES:

The experimental method is used in this paper as it is more suitable for achieving the research objective.

### *Experimental Design*

To achieve the research goal, author adopts the experimental design that contains two groups (experimental and adjust one with pretest and posttest types as shown in Table 3.

**Table 3** Experimental Design

| Group | Pretest | Independent variable | Dependent variable | Posttest |
|---|---|---|---|---|
| Experimental | Realization thinking test | Charpak's model | Language concepts and Realization thinking | Acquiring language concepts test and Realization thinking test |
| Adjust | | Traditional model | | |

### *Research community and Sample Selection*

The research area includes the second year students at morning secondary schools in Kirkuk governance- Iraq for the academic year 2018-2019.

The selection of students has been done after excluding the students those failed and then distributed them on the two groups according to table 4.

**Table 4** Sample Selection

| Group | Student number before excluding | The failed students | Student number after excluding |
|---|---|---|---|
| Experimental | 34 | 4 | 30 |
| Adjust | 32 | 2 | 32 |
| Total | 66 | 6 | 60 |

To ensure fairness comparisons, the variables that affect the results are chosen according to some statistical criteria such as:

### *Students' ages*

The students' ages have been calculated in months. Table 5 shows the statistical values of students' ages in terms of mean, standard deviation and the T value

**Table 5** The mean, standard deviation and T value of ages

| Group | Group size | Mean | Standard deviation | Degree of Freedom | T-Value | | Significance at 0.05 Level |
|---|---|---|---|---|---|---|---|
| | | | | | Calculated | Tabled | |
| Experimental | 30 | 170.40 | 5‹83 | 58 | 2.00 | 825.0 | No Function |
| Adjust | 30 | 171.43 | 3‹60 | | | | |

***Intelligent Test***

The mean, standard deviation and the T value for the intelligent test are shown in **Table 6**.

**Table 6** The mean, standard deviation and T value of Intelligent Test

| Group | Group size | Mean | Standard deviation | Degree of Freedom | T-Value | | Significance at 0.05 Level |
|---|---|---|---|---|---|---|---|
| | | | | | Calculated | Tabled | |
| Experimental | 25 | 34.033 | 3.079 | 58 | 0.889 | 2.00 | No Function |
| Adjust | 25 | 34.700 | 2.718 | | | | |

***Grades of Grammar for previous year (2017/2018)***

The grades of the students in Arabic language grammar subject for previous year (2017/2018) are investigated. The mean, standard deviation and the T value for these grades can be found in **Table 7**.

**Table 7** The mean, standard deviation and T value Grades of Grammar for previous year (2017-2018)

| Group | Group size | Mean | Standard deviation | Degree of Freedom | T-Value | | Significance at 0.05 Level |
|---|---|---|---|---|---|---|---|
| | | | | | Calculated | Tabled | |
| Experimental | 30 | 64.56 | 8.15 | 58 | 0.354 | 2.00 | No Function |
| Adjust | 30 | 63.86 | 7.10 | | | | |

The grades of the students in pretest for the realization thinking test in terms of mean, standard deviation and T-values are demonstrated in Table 8.

**Table 8** Pretest values of realization thinking test

| Group | Group size | Mean | Standard deviation | Degree of Freedom | T-Value | | Significance at 0.05 Level |
|---|---|---|---|---|---|---|---|
| | | | | | Calculated | Tabled | |
| Experimental | 30 | 12.733 | 1.507 | 58 | 1.701 | 2.00 | No Function |
| Adjust | 30 | 12.100 | 1.373 | | | | |

***Teaching Plan***

Plans for teaching process are prepared for both experimental and adjust groups. In addition, several formulations of behavioral objectives (memorization, understanding, and practice) are evaluated by experts and arbitrators and then amended and finalized accordingly.

**RESEARCH TOOLS**

There are about 18 concepts for Arabic language. These concepts are analyzed and submitted to experts for evaluations. Three concepts have been removed as they did not achieve the required level of agreements (80%) of experts' opinions and hence total number of concepts is reduced to 15 concepts only. Plans for teaching process are prepared for both experimental and adjust groups.

For the realization thinking test, a suitable measurement is developed to be compatible with students' levels, nature of Arabic language. The final measurement consists of 22 types that characterized by honest, stability and recognition ability.

***Case Study***

Author started the research experiment at secondary school (Qutaiba Bin Muslim secondary school for Boy) by making the intelligent test and pretest for realization thinking for both groups on Thursday 11/10/2018. The experiment scheduled from Sunday 14/10/2018 until Thursday 10/01/2019 on experimental group with all stages of Charpak's model i.e.(let's start, search and discover, meaning construction and meaning expansion stages). The stages of adjust group are including the topic view, explain and clarify, discussion and dialogue, summary and assessment.

***Evaluation Process and Discussion***

First process of evaluation starts with language concepts test then the proposed experiment is applied on intended group with two lectures per week for each

group. Later a test for acquiring the language concepts is made for both groups. One day later, the realization thinking test is achieved.

The grades ranged from 0 to 45 out of 100 are obtained for the acquiring the language concepts while the range of grades of the realization thinking test are ranged from 0 to22 out of 100. The statistical methods are employed by author in this research are the T-test for two independent samples and equation of Kuder-Richardson 20 to obtain the stability. The results of these tests are shown in **Table 9**.

**Table 9** Experimental statistical results

| Group | Group size | Mean | Standard deviation | Degree of Freedom | T-Value | | Significance at 0.05 Level |
|---|---|---|---|---|---|---|---|
| | | | | | Calculated | Tabled | |
| Experimental | 30 | 10.866 | 4.819 | 58 | 5.009 | 2.00 | No Function |
| Adjust | 30 | 5.700 | 2.479 | | | | |

In order to prove the validity of this assumption, the data sheet with language concepts test for both groups are recalculated considering their mean for pretest and posttest as well as the standard deviation of the difference as shown in Table 10.

**Table 10** Experimental results for pretest and posttest

| Group | Group size | Mean | | | Standard deviation | T-Value | | Function |
|---|---|---|---|---|---|---|---|---|
| | | Pretest | posttest | Difference | | Calculated | Tabled | |
| Experimental | 30 | 12.733 | 18.367 | 5.633 | 2.592 | 6.712 | 00.2 | Statistical Function |
| Adjust | 30 | 12.100 | 13.700 | 1.600 | 2.027 | | | |

It can be seen from above tables that the use of Charpak's model get the attentions of students and make them more active inside the classrooms. This is because the hands-on, mind-on approach provides the motivation, thrill and challenges factors for the students to establish their knowledge base. In fact, Charpak's model encouraged the students to be self-reliance and motivates their ability to ask about subjects learned. Besides, this model reduces the routine that prevails in classes taught in classical way.

In addition, students are more receptive to modern teaching methods because their curiosity leads them to explore new aspects of the Arabic language. They are encouraged to follow the lesson, which increases their understanding rather than the traditional style that they have been accustomed to during their

previous years. Hands-on, minds-on strategy has a great effect on teaching and gaining the Arabic language concepts and grammar as well as it significantly improves the realization thinking and mental ability of the secondary school students.

## CONCLUSION

This paper investigates the effect of using Charpak's approach in acquiring the concepts of Arabic Language among the second year students at secondary school. It can be concluded that hands-on, minds-on approach is an effective model on the acquisition of the linguistic concepts to the mentioned students. In addition, this model has proved its capability to promote the realization thinking as mental abilities of these students. It is recommended to use Charpak's model by teachers especially in facilities of Humanities to be included within the curricula of teaching methods. In addition, conducting new training courses for teachers to introduce them to the Charpak's model. Finally, future works should include the impact of using Charpak model in teaching the rhetoric course for students at different stages to enhance their speaking skills as well as mental abilities.

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