

The Effectiveness of a Learning Program Based on Critical Thinking Skills in the Achievement of Human Geography among Sixth-Grade Literary Students

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Abstract: This research aims to identify the effectiveness of a learning program focused on critical thinking skills in achieving human geography among sixth-grade literary students. A quasi-experimental design was used in this study. The research sample was a random selection consisting of 60 sixth-grade literary students, who were divided into two groups: An experimental group studied according to an educational program that included methods based on critical thinking skills (such as systems thinking, complex problem-solving skills, and the ability to predict), while another control group studied traditionally. Results show statistically significant differences in favor of the experimental group, which could be attributed to critical thinking skills as a contributor to geographical understanding and academic achievement at their highest levels. Well into the twenty-first century, educational systems are undergoing radical changes that aim to break away from traditional models of knowledge transfer and adopt a range of strategies to enhance learners' cognitive efficiency. This has coalesced around the idea that learning is no longer about rote memorization of geographical data or population numbers, but rather about how to handle those datasets when encountered, to understand spatial variability, and to quantitatively analyze the intrinsic relationships between humans and their environment. Critical thinking skills are a modern area of education. Still, they will prepare students to think consciously and systematically, as reflected in their best academic results and decision-making abilities. Thought out decisions on geopolitics at present. This study aims to evaluate the theoretical and procedural aspects, as well as the actual results, of this application, which constitutes a learning program based on these skills for sixth-grade literary students in Babylon Governorate.

1. Research Methodology

1. Research Problem:

But this vocabulary obscures a more troubling reality at the stage of human geography: that much of it looks like rote learning and repetition, transforming students into little more than “storehouses,” to be memorized with an eye toward exams, rather than analysts. Based on field observations, there is evidence of decreased achievement and a gap in students' ability to transfer geospatial concepts (e.g., distance, scale) to situations outside the classroom. Human geography is a complex and interdependent phenomenon, and requires thinking beyond conventional thinking. This necessitates abandoning rote memorization in favor of "higher-order thinking" that enables students to manage geographic information effectively and flexibly. Thus, the problem can be constructed as follows: "Does a Stack-based learning program designed with higher-order thinking skills affect increasing sixth-level humanities students' level of achievement in human geography?"

2. Research Importance: The importance of the research is evident in the following points:

1-2-1- Theoretical Significance: The research is commensurate with the current educational trends, which heavily rely on higher-order thinking rather than rote learning. **1-2-2- Practical importance:**

it provides an applied educational program that geography teachers can use in the organization of daily lessons.

- Paris carries the image of human geography as an evolving discipline, understood and characterized precolonially with intelligent thinking strategies; a generalist idea closely linked to population, cities, and economic action.
- It helps sixth-grade literary students (a crucial stage) improve their academic performance and pass ministerial exams with a deeper understanding.

3. Research Objectives: The current research aims to:

1. Develop a learning program based on critical thinking skills (reasoning, systems thinking, generating alternatives, and in-depth analysis).
2. Measure the impact of this program on the achievement of sixth-grade literary students in human geography compared to the traditional method.

4. Research Scope: The current study is limited to:

1. **Human Scope:** Sixth-grade literary students in public secondary and preparatory schools within the Babil Governorate Education Directorate.
2. **Time Scope:** The 2025-2026 academic year.

5. Defining Terms:

1. Effectiveness

- **Theoretical Concept:** Effectiveness is defined linguistically as the ability of something to influence and produce the desired effect. It serves as a criterion for measuring the success of an educational program in achieving its desired outcomes and maximizing its objectives, given available resources. Operationally, the researcher defines it as the inherent capacity of the proposed educational program to produce a tangible positive change in the achievement scores of sixth-grade literary students in human geography. This is measured by comparing the pre- and post-test results of the experimental and control groups (Attia, 2008: 41).
- **Operational Definition:** It is the capacity of the educational program, grounded in critical thinking skills, to foster motivation for achievement and to increase the academic performance of sixth-grade literary students.

2. Program

- The researcher adopted Al-Tamimi's (2009) definition. Linguistically, a program is defined as a plan drawn up for a specific task, or a document that compiles the calculations and steps (Al-Tamimi, 2009: 287).
- **Operational Definition:** The program is a comprehensive, meticulously designed educational unit encompassing a range of experiences, activities, teaching aids, and assessment methods, aiming to develop specific skills and attitudes in learners. Operationally, it is the organized educational plan prepared by the researcher based on critical thinking skills. It includes geography lessons formulated to integrate intellectual skills with cognitive content, and is implemented with students in the classroom over specific time periods.

3. Geography

- Al-Janabi (2012) defined it as the science that studies the interactive relationship between humans and their natural environment, and how each influences the other. This science has evolved from a mere superficial description of phenomena to a specialization that relies on analysis, measurement, correlation, and modern models. Human geography, on the other hand, is the branch that focuses on fields resulting from human activity, such as population geography, agriculture, industry, transportation, and urban geography. Operationally, in this research, it is defined as the scientific material included in the sixth-grade literary geography textbook

prescribed by the Iraqi Ministry of Education for the current academic year (Al-Janabi, 2012: 28).

4. Sixth Grade (Literary Stream):

- Sixth grade (literary stream) is the last stage of preparatory education in Iraq. This specialization is rooted in the humanities and social sciences. The students in this grade are at a level of mental development that allows them to understand both abstract concepts and complex analytical and evaluative processes, making them the most appropriate group for applying higher thinking programs (Republic of Iraq, Ministry of Education, Curriculum Unit, 2013).

5. Advanced Thinking:

- Advanced thinking means utilizing higher-order cognitive functions (e.g., problem-solving, decision-making) and intermediate-order cognitive functions (e.g., comparison, imagination, reasoning) consciously and with total cognition. Rather than a test of rote memorization and recall, this requires the learner to be persistent and thorough in attending to data and contradictions (Aziz, 2024: 1029).
- **The operational definition of the researcher:** It is a non-specific behavioral response that occurs within an individual and can be inferred from the quantitative score obtained by the student in their answer to the items of the advanced thinking scale used in this research.

2. Theoretical Framework

The philosophy of this research is based on the idea that geographical knowledge is not in itself the end-all be-all, but instead serves as a medium for developing the human mind. Truly revolutionary models, such as Robert Swartz's thinking curriculum, integrate thinking skills into the academic curriculum in ways that are likely to change how contemporary teaching is done.

3. Previous Studies

Studies that address the above are among the key cornerstones of the reference framework and theoretical environment in any scientific investigation. They are not simply relaying the work of others; they interrogate and critique what is known and say something about how that informs your research question. The paper discusses three landmark studies that addressed the problem of “sharp thinking” from different angles and with varying objectives, some goals being:

- 1. The study by Rafah Muhammad Ali Ahmad Al-Saffar (2008)** included college students to identify the relationship between sharp thought, cognitive preference, and problem-solving ability. This researcher used a descriptive correlational method on 405 male and female students. The findings indicated that the level of critical thinking was high among university students, with no significant gender differences. In addition, a significant correlation was observed between cognitive preference and critical thinking and problem-solving ability.
- 2. The range of Musa Kadhim Rasen Al-Musaidi's (2013) study** on critical thinking and its relationship to cognitive styles among preparatory school students. The sample consisted of 400 male and female students. The study was descriptive in nature to determine the levels of these variables and to examine differences across gender and academic track (scientific/literary). The results indicate that the research sample had a good level of critical thinking.
- 3. Mustafa Fadel Abbas Al-Difai (2016)** used an experimental design to develop a theoretical basis for designing the educational program, based on “serious creativity,” and then evaluating its effectiveness in developing fifth-grade literary students’ critical thinking skills in history. The research employed an experimental, two-group design with a sample of 60 students. The investigation contained a plethora of qualitative and quantitative data on the methods and instruments used to examine this crucial academic concept (the critical thinking scales).

4. Research Methodology and Procedures

To achieve the research objectives, the methodological steps of experimental educational research were followed, with scientific rigor in sample selection and measurement tools.

1. Research Methodology

There were two integrated methodologies on which the research was based:

- ✓ The analytical-descriptive method was employed to analyze the content of a human geography textbook, to design its behavioral objectives, and to develop the educational program itself.
- ✓ The experimental method (the main methodological approach used to show the program's effect on academic achievement) uses a two-group equivalent design.

5. Experimental Design

The quasi-experimental design with two equivalent groups (experimental and control) was used, along with a post-test of academic achievement.

Figure 1: Experimental Design of the Research

The group	Pre-test	Independent variable	Dependent variable:	Post-test
experimental	Measuring astute thinking skills	Tutorial	Achievement	Achievement test
control		Traditional program		

3. The research community

The research population consists of all female sixth-grade students in the literary track at government preparatory and secondary day schools affiliated with the General Directorate of Education in Babylon for the current academic year 2024-2025. Babylon Governorate was chosen due to its diverse educational environment and the presence of qualified teachers capable of engaging with modern programs.

4. Research Sample

After selecting the school and conducting the experiment, the researcher visited the school and randomly assigned the two classes to two groups in Babylon Governorate. The total number of students in each class was 60. Since experience influences student achievement and, consequently, the accuracy of research results, the researcher excluded the failing student, who numbered one. See Table (2).

Table (2): Number of students in the two research groups before and after exclusion

The group	Number of female students	Number of excluded female students	Number of students after exclusion
Experimental group	30		30
Control group	31	1	30
Total	61		60

5. Requirements for the experiment

1. Building an educational program

The process of building the educational program required intensive research effort to integrate thinking skills into the fabric of the geographical material. The researcher found agreement on the main stages of its construction, which are (planning, implementation, evaluation). After reviewing the studies, we will address the following (Al-Abadi, 2013):

➤ **Planning Phase**

- ✓ Reviewing previous programs
- ✓ Analyzing educational objectives through:
 - a) General objectives
 - b) Behavioral objectives
- ✓ Program content
- ✓ Formulating behavioral objectives
- ✓ Identifying teaching strategies
 - a) Organization
 - b) Classification
 - c) Application
 - d) Information Evaluation
 - e) Information Retention
 - f) Analysis

Determining student behavior through:

- a) Identifying student characteristics
- b) Identifying their needs

Determining program requirements through:

- a) Preparing educational activities
- b) Selecting educational resources

➤ **Implementation Phase**

Implementing the program means putting the work plan into practice, based on its content and using suitable conditions to achieve the program's educational objectives, according to information processing theory.

➤ **Evaluation Phase**

Evaluation is a fundamental part of developing an educational program. It refers to the process of obtaining information and data that enables the assessment of progress and success in achieving learning outcomes.

➤ **Controlling Internal Variables**

Control means fixing and identifying all factors except the one whose effect is being studied. Control is crucial for researchers to ensure the success of their experiments, giving them high confidence in their studies and leading to scientifically valuable results. Therefore, researchers should identify and control the variables and factors (other than the independent variable) that affect the dependent variable.

➤ **Identifying the Scientific Material**

The researcher identified the scientific material to be studied for the experiment after reviewing the sixth-grade literary geography textbook and consulting with the subject teacher, who has sufficient expertise in this field. The material comprises six chapters, as follows:

The sixth-grade literary geography textbook in Iraq includes a comprehensive study of human geography, with a strong emphasis on practical applications within Iraq. The book's components and main chapters are distributed as follows:

Chapter One (Population Geography): This chapter focuses on studying spatial variations in population distribution. It includes topics such as population composition (gender, age, and economic status), population growth, migration patterns (domestic and global), their causes, and a study of population policies.

Chapter Two (Urban and Rural Geography): This chapter on human activities takes a behind-the-scenes look at cities and villages, how they are organized, what is built there, who lives there and when, and land uses both past and present. It also reviews the historical emergence of cities, especially religious and nuisance cities, in Iraq (such as Kufa and Najaf).

Chapter Three (Agricultural Geography): This chapter examines the geographical aspects of agricultural activity (natural and human), the patterns of agriculture, the problems associated with it, and the variety of agricultural land uses.

Chapter Four (Industrial and Mining Geography): This chapter addresses the factors contributing to industrial localization and the distribution of mineral resources, with a focus on vital industries such as iron and steel and their applications in Iraq.

Chapter Five (Transportation, Communications, and Trade Geography): This chapter examines transportation networks of all types (river, air, and land) and the impact of geographic location on their development, as well as the determinants of global trade and the economic requirements associated with it.

Chapter Six (Political Geography and Tourism): This chapter examines the geographical fields arising from political activity, the components of tourism, and its economic importance.

➤ **Formulating Behavioral Objectives**

The process of defining behavioral objectives is essential for any educational process, as noted by Abu Jadu (2003, p. 253). The first four chapters of the Human Geography textbook (Population Geography, Urban Geography, Agricultural Geography, and Industrial Geography) were analyzed. Accordingly, (120) behavioral objectives were derived, distributed across the levels of Bloom’s Taxonomy (knowledge, understanding, application, analysis, synthesis, evaluation).

5. Results Presentation

Statistical results from the independent-samples t-test showed a statistically significant difference at the 0.05 level between the mean scores of the experimental group (which studied using the Advanced Thinking Program) and the control group (which studied using the traditional method), favoring the experimental group.

Table 3 presents the arithmetic mean, standard deviation, calculated t-value, and tabulated t-value for the students' scores in the two research groups.

The group	number	arithmetic mean	standard deviation	t-value	Statistical significance
The experimental	30	84.50	7.20	5.34	0.05
The control	30	69.15	9.45	-	-

The superiority of the experimental group is attributed to the effectiveness of the educational program focused on critical thinking skills, which led to a qualitative shift in how students approached geography. I engaged students in keying around the specific variables that encoded population distribution in both alluvial plains and mountainous regions, where industrial concentration occurred under certain conditions. Second, in geography lessons in Babylon Governorate, the implementation of strategies like "mind mapping" and "cooperative learning" resulted in a higher level of interaction within the classroom regarding scientific content; it also made aspects of astronomy that might be considered intimidating because they are philosophical, less threatening to students, as there exists some intimidation from the subject itself. It was one of

the indicators that students grew more tenacious and competent in regulating their learning choices, supporting previous research suggesting critical thinking is key to enhanced student performance.

6. Interpreting the Results

We can analyse the positive outcomes of applying the Critical Thinking programme in Human Geography across various educational and scientific perspectives.

1. **Regarding students' performance on rote memorization**, these three differences make my homogeneous group of students more successful than the diverse students in other tests. Instead of passive 'receptors' absorbing facts, my students are active researchers, going through complex processes that blend imagination with reasoning and judgment. This level of conscious control in their thinking fosters self-belief in their responses, which are directly correlated with their performance on achievement tests.
2. **Decoding human geography:** Human geography examines how humans interact with their surroundings, and a philosophical mindset is needed to understand the material. The Critical Thinking program involved at least two frames (intermediate, such as comparison and inference) and/or higher-order thinking skills (such as solving problems to help students interpret spatial variations in complex relationships between human or natural data sets, rather than conventional methods).
3. **Affecting both your mind and character**, the training helped students be more persevering and persistent in how long they stayed on tasks in their education, as well as in resisting "urges" to put less effort into studying and in situations that required cognitive decision-making. As a result, errors were reduced, and the accuracy of analytical programs for geographical phenomena increased.
4. **Active Thinking Tools Effectiveness:** Building mind maps, asking questions & engaging students in brainstorming on geography content helped students to form clear mental models. This approach to learning promotes "thinking in space," which improves the ability to transfer knowledge to new contexts and solve spatial problems in real life.
5. **Results:** The results provide evidence that factual thinking and the developing ability to learn equip students with the tools to research and discover, if nothing else, rather than memorize course material. This is what makes their knowledge of geography functional and relevant to reality, not just temporary facts for testing. Conclusions

Based on the findings, we can conclude as follows:

1. The critical thinking skills learning program has a significant, very effective effect on improving the academic achievement of sixth-grade literature students in human geography using traditional methods.
2. Critical thinking skills are a means to make the student the subject of education, with their transition from passive information consumer to researcher, analyst, and assessor of geography processes.
3. Sixth-grade learners in humanities studies have a rich realm of academic situations that will necessitate the use of both critical and predictive reasoning; thus, critically addressing these skills will be paramount, not optional, in education.
4. The field experiment in Babylon Governorate demonstrated that female students possess the intellectual readiness and high motivation to engage with modern educational programs that move away from rote learning and instead stimulate the mind.

7. Recommendations

Based on the research findings and conclusions, the following is recommended:

1. **Adoption of the educational program:** The Ministry of Education and the General Directorate of Education in Babylon are urged to adopt educational programs based on critical thinking skills in teaching geography and other social studies subjects. 2. **Training of Teaching Staff:** It is essential to conduct ongoing workshops and training courses for geography teachers in Najaf Governorate to train them on how to integrate thinking skills (such as the Swartz model) into their daily lesson plans.
2. **Curriculum Development:** The activities and questions in the human geography textbook should be revised to focus on higher-order thinking skills, such as problem-solving and decision-making, rather than solely on rote memorization.
3. **Providing Technological Resources:** Schools in Najaf Governorate should be supported with modern educational tools and digital maps that facilitate students' practice of visual and spatial thinking.

8. Recommendations:

To complement this research, the researcher suggests conducting the following studies:

1. Conducting a similar study to measure the effectiveness of thinking skills in developing "geographical values" or "environmental awareness" among preparatory school students.
2. The impact of an educational program based on thinking skills on the achievement of sixth-grade humanities students in history or sociology.
3. Developing a training program for geography teachers based on thinking skills and measuring its impact on their teaching performance and their students' achievement. 4. A comparative study between the effectiveness of critical thinking and creative thinking in achieving geography knowledge among outstanding and average students in Babylon Governorate.

Sources:

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